



Minnesota State Zoological Board.
Zoo-Related Organizations Files.

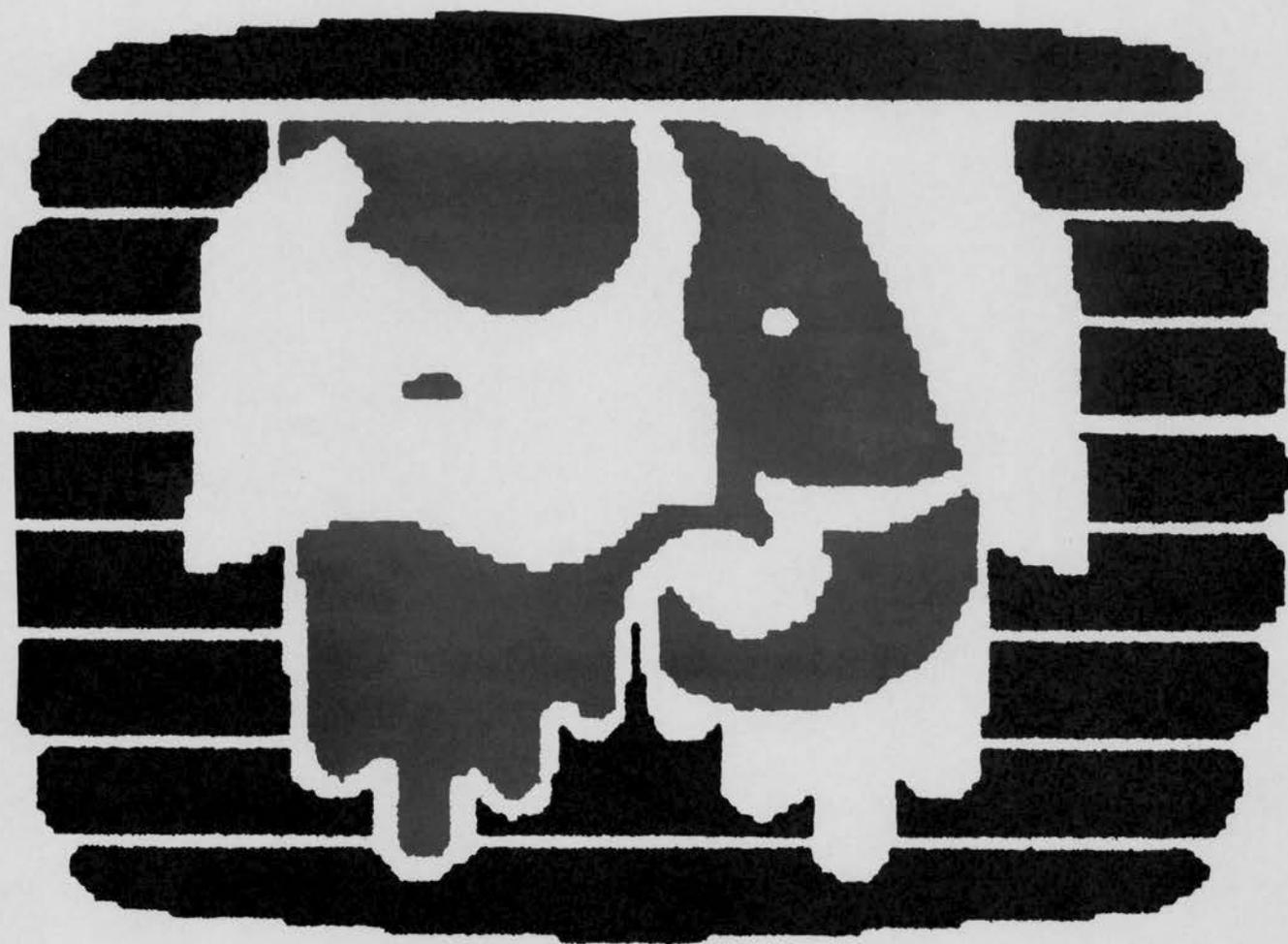
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ISIS

**Animal Records
Keeping System**

ARKS



ARKS

In 1985 a PC software package for zoological records was released by the International Species Information System (ISIS). Called ARKS, this PC system provided the first reliable and affordable computer based system for recording births, moves, and deaths of individual zoo animals. It was well received by zoos and has become the world standard for computerized zoo inventory records.

Over time ARKS has grown and been improved, and today is in use at over 480 ISIS member zoos from 53 countries on 6 continents around the world. Over a million animal records have been recorded in these ARKS systems.

In 1990 the decision was made to completely rewrite ARKS. Unfortunately, the enormity of this project was underestimated and ARKS 3.0 is being released much later than was anticipated. ARKS 3.0 will be available for distribution in Fall 1995. All ISIS members in good standing who submit an ARKS 3.0 Request Form will receive a copy as soon as it is available for distribution.

What does ARKS do?

ARKS performs five basic central functions: 1) provides for consistent collection and validation of animal record data, 2) automates reporting animal record data to ISIS for inclusion in its global database, produces 3) specimen reports, 4) taxon reports, and 5) collection inventory reports.

Consistent data collection: Consistent animal record data is collected by ARKS using a set of rules developed by ISIS with the assistance of numerous records keepers in the zoological community. Additionally, ISIS' Taxonomic and Institution Authority files provide for consistent recording of animal taxonomy and institutions involved in animal moves.

Automated data pooling: ARKS enables an ISIS member institution to easily submit information about its collection for incorporation into ISIS' global database. This global database is then shared among members, and used to generate abstracts of who has what and where, create studbook like datasets, and aid in numerous other conservation related programs which need this type of data.

Specimen Report: This provides all entered information on any specimen you choose. You identify the specimen by its accession number, house name, tag, tattoo or band. This report shows the basic biological facts about the specimen, its complete transaction history, enclosure history (if entered), etc. It also serves as an excellent shipping report.

Taxon Report: This provides much more detail on the Genus, Species, or Subspecies you choose. It summarizes basic facts about each specimen. It can be limited to those on inventory as of a particular date, or expanded to include some time span of your choice. It has become the standard method of responding to studbook questionnaires.

Collection Inventory: Similar to the Annual Report produced by many facilities, this is an extensive 8 column tabulation of holdings and changes, species by species. It can be produced for the traditional 1 January through 31 December period, or any other chosen time interval.

In addition to these five central functions, ARKS provides many additional functions. These are reports and utilities that can be used to assist in animal management and animal record keeping.

Additional Reports

◆ *signifies a new or significantly enhanced feature in ARKS 3.0*

Transaction Report: This is a very powerful report producing option. You choose one "transaction type", such as Loans to Another, select the time span of interest (one month, five years, etc.), and a report showing all loan-out transactions in the time interval is printed. You can restrict the report to just one institution, producing a listing of all loans to that one particular institution. You can select births and have a monthly or yearly listing of births. Choice of loans to you, deaths, sales, etc. produce similar lists of these events.

◆ Comment Retrieval Report: ARKS provides the ability to codify and store special comments about the animals in your collection. The Comment Retrieval Report gives you the ability to generate a report of whatever type of comments you wish to see, for example, gorilla reproductive behavior notes. This report allows reporting by date range, taxon, initials of person entering the data, special comment codes, specified text string, or a combination of these options. The resulting report can also be sorted in nine different ways.

IZY Census Report: Most zoological facilities respond to the annual International Zoo Yearbook questionnaires. ARKS will assist greatly with this. The Transaction Report described above will generate a list of all births in your institution for the year of interest. Additionally, information needed to answer the "Rare Animal Census" portion can be produced automatically by the "IZY Census Report" option. ISIS has coordinated this report with the IZY staff.

Pedigree Report: You identify the specimen of interest and ARKS produces a pedigree diagram. The pedigree includes traceable ancestry within your collection, as well as including any individuals you have identified as the parents of specimens you obtained from elsewhere. It does not include traceable ancestry outside your collection, except for identified parents of specimens you have held. It is intended as a guide for within-facility collection management. Fully evaluating relationships through studbook-type data sets is a task for other software.

Sibling Table: Identify the specimen of interest and ARKS produces lists of full and half siblings. Full siblings are presented in order of birth date, then half siblings are presented in order of birth date. Both parents of each specimen are identified, as is the sibling's sex.

Reproductive History Report: You identify the specimen of interest and ARKS produces a table showing all offspring born to this individual. Offspring are grouped by birth date, the other parent is identified, and the age of the requested parent at the time of the birth is shown.

Age Pyramid: You choose the species or subspecies and ARKS can produce an "age pyramid", presenting your facility's population graphically by age and sex. Additionally, it will print a table identifying each specimen in each sex and age class. For species you hold in substantial numbers, this image of age structure can be a considerable aid to rational management and decisions about surplus.

Fecundity and Mortality: You choose the species or subspecies and the time span of interest and ARKS produces a table of the age- and sex- specific fecundity and mortality values for your facility. This may be a useful tool for evaluating changes in management, or projecting population trends. To have any statistical validity, it should be applied to species you have held in substantial numbers. *This report has not been converted to ARKS 3.0 due to limited use. Sample included in this hand out is from ARKS 2.05.*

Inbreeding Co-efficients: Choose the taxon and ARKS will produce a listing of animals and their local inbreeding coefficients - based on whatever pedigree information is stored in your ARKS system.

Because your ARKS system does not contain much information from outside your facility, these inbreeding coefficients are "local" inbreeding, and reflect just inbreeding within your facility. Full analysis of inbreeding will require a studbook data set and other software.

Additional Utilities

◆ *signifies a new or significantly enhanced feature in ARKS 3.0*

Enclosure Log: If you choose to enter the series of enclosures or cages through which a specimen has moved, you can later request reports on all the specimens that have been in the enclosure or cage during a specified time span - a narrow span if you are interested in identifying paternity, perhaps a wider span if you are checking for epidemiological reasons. The Specimen Report shows all enclosures one specimen has been in - if this information is recorded.

More elaborate use of this feature is possible. ARKS maintains a table ("Exhibit to Enclosure Relationships") where you can construct relationships involving the sets of cages or enclosures in a building, an exhibit, a keeper's area of responsibility, etc. - and produce reports for these sets of enclosures, or any named grouping.

◆ Lookup assistance: This feature offers a convenient way to find one or more Specimen Identifiers, when starting with another identifier. It can also be used to find a specimen's identity when you have only part of an identifier. From the list that is produced you can select one of the animals and immediately start editing that animal's data.

◆ Batch comment adding: This new feature allows you to enter a list of specimen IDs that you wish to assign an identical special comment. Once you have entered the list of IDs then you enter the special comment. When you are finished entering the special comment, that comment is then added to the records of each specimen ID which you specified.

◆ Free form text special comments: ARKS is distributed with a sample set of codes for discrimination of comments - i.e. reproductive, research, behavior, etc. These can be altered, replaced, or adopted as is by the ARKS users. ARKS 3 allows unlimited text entry with your special comments. The only limitation is the size of your hard disk.

◆ Deferred print queue: The ARKS Deferred Print Queue feature allows you to generate reports for printing, while separately controlling the printing. It also allows you to save printer-ready reports, and to view them, print them, or remove them from the Print Queue at any time.

- ◆ Transfer ARKS 3 to ARKS 2 format: Once you are using ARKS 3 you may have a need to transfer your ARKS 3.0 data back into an ARKS 2.05 readable format. MedARKS will need this to continue to interface with ARKS data, and for users at your institution who look at the data but do not have the hardware to run ARKS 3.0, they will be able to continue looking at your ARKS 3.0 data in ARKS 2.05.

Resend / Toggle / Resync utilities: ARKS and ISIS are intended to function "in synchrony" so that changes and additions you make to your ARKS system are fully reflected in the ISIS global database. Once in a while, this fails in spite of our best efforts and the ISIS data begins to diverge. In this case, ARKS users can re-send their data to ISIS, cleaning up the ISIS global database. You are able to resend individual animals, whole taxa, or the whole collection (only if necessary). You are also given the ability to toggle whether or not a particular specimen's information is sent to ISIS or not.

- ◆ Data integrity checking routines: This feature verifies internal consistency of ARKS 3 data and authority files. Your data files are also checked against your authority files for any inconsistencies. Additionally, the Sire/Dam integrity check will check that each sire and dam listed for an animal is of the correct sex and (sub)species. Any discrepancies that are found will be written to a report along with a brief description of how to correct the problem.

Batch accessioning of simple births: Batch Accession is a powerful tool to save effort when recording the acquisition of a number of similar specimens. It currently will only work on simple birth type transactions. It is quite flexible, and allows you to control which kinds of information will be automatically placed in each specimen's records.

Batch Accession replicates some of the information in the BASE specimen you select. Since Specimen Identifiers are intended to be unique, this information is not replicated. If you choose to enter all specimens of each sex together at one time, sex may usefully be replicated. You can also decide whether or not to replicate weight/length measurements, transactions, comments, and enclosure log information.

- ◆ Batch moves by enclosure: The ARKS Batch Enclosure Move feature allows you to quickly record movement of a large number of specimens between any two enclosures. It is also a powerful way to start using the Enclosure Log aspects of ARKS, as you can quickly build current enclosure records for the specimens now in them.

- ◆ Enclosure synchronization: When a removal transaction is entered for a specimen such as Loan To, Traded, Death, etc., an Enclosure Log entry of REMOVED is generated (if ARKS detects you are utilizing your Enclosure Log system). If an animal is sent in and out of the collection frequently or a removal transaction is entered in error and then deleted, the Enclosure Log can get out of synch with the Transactions file. This utility will go through the database, checking that all REMOVED entries match up with a removal transaction. If they do not, the data will be corrected based on the Transactions file.

- ◆ Configuration information: This feature is a fast and convenient presentation of vital information about the computer system on which ARKS is installed: available mass storage (hard disk), available RAM, the subdirectories and names of your data files, the indexes which are in use,

the percent of records which have been marked for deletion, etc. This is intended to be an aid in communicating with ISIS' technical support, as well as a convenient technical tool for your own use.

- ◆ On-line help: ARKS On-line Help is available anywhere in ARKS, by pressing the [F1] key. The information in this on-line help system is very similar to the information presented in the printed manual and is always available to you while working in ARKS.

Necessary Computer Equipment

ARKS 2 will work on virtually any IBM compatible computer.

ARKS 3 is following the general software trend of requiring a more powerful computer to achieve more powerful capabilities. While we recommend more, the bare **minimum** required computer is a 386 CPU, 4 megabytes of RAM, mouse, color monitor, and as large a hard drive as you can afford.

At the time this handout was written, ISIS was recommending the following specifications for the "ideal" computer to make use of some of the new products and technology that ISIS will soon be making available.

Suggested "Ideal" System:

CPU:	Pentium
Hard Drive:	800 megabytes (or more)
RAM:	8 megabytes (or more)
Mouse:	Any pointing device
Monitor:	Color VGA
CD-ROM:	4x Reader
Modem:	14.4 baud (or faster)

Future Directions

ARKS 3.0 will be released Fall 1995. Then work will begin to add multi-user capabilities to it, and shortly after that work will begin on moving ARKS 3.0 to the Windows environment.

Medical Records

ARKS systems are not intended for veterinary medical records. However, ISIS does distribute a companion system called MedARKS. The currently released version is 5.02 and includes the following modules: Clinical Notes, Clinical Pathology, Anesthesia, Integrated Medical Histories including Inventory reports, and an ARKS 2 interface. The Drug Treatment and Vaccinations, and Parasitology Exam modules are presently only available in the older MedARKS version 4.0.

Presently MedARKS offers an ARKS 2 interface which supplies basic inventory information to MedARKS. The current version of MedARKS has not yet been adapted to interface with ARKS 3. So to use ARKS 3 and maintain an ARKS link to MedARKS the "Transfer ARKS 3 to ARKS 2 Format"

utility supplied with ARKS 3 will have to be used.

Cost and Availability of ARKS

ARKS is available to all ISIS members in good standing, at no additional charge. Contact ISIS for membership applications, fees, and requirements.

Acknowledgements

ARKS was initially constructed through the generosity of the U.S. Institute of Museum Services, the Zoological Societies of New York and Chicago-Brookfield, the Smithsonian Institution on behalf of the U.S. National Zoo, and the Smithsonian's National Museum Act. The willingness of these organizations to pool resources and to fund ISIS development work allowed us to build ARKS.

ARKS 3 was made possible through an initial grant from I.M.S and through the fees paid by all of ISIS' member institutions

Sample Reports

The following sample reports were produced by ARKS 3, with the exception of Fecundity and Mortality which is an ARKS 2.05 report. ISIS determined that the use of the Fecundity and Mortality Report was so limited, it did not warrant being converted to ARKS 3. If we hear that there is a strong need for this report we will consider converting it to ARKS 3 in the future.

Specimen Report
International Species Information Syst

Report Date:
9 Aug 1995

```
=====
Taxon Name: Berenicornis comatus           Accession Number: 110601
Common Name: WHITE-CRESTED HORNBILL       Acquis. Date: 10 Jun 1981
=====
```

Current Status >>>

```

Age: ~26Y                               Sex: Female
Time on Inventory: 14Y,2M,2D             House Name: MILDRED
Tattoo:                                  Tattoo Loc.:
Tag/Band/Ring: DI 5600                   Tag/Band/Ring Loc.:
Transponder:                             Transponder Loc.:
Int. Studbook #:                         Reg. Studbook #:
Enclosure: No Encl.                     Sire ID:
Rearing: Unknown                         Dam ID:
Birth Type: Wild Born                   Sire's Institution:
Birth Location: UNKNOWN                  Dam's Institution:
Birth Date: ~1969

```

Transaction History >>>

Date	Terms/Party	Their Spec. ID	Price	Delivery
10 Jun 1981	Loan from	72A659		
	FRANKLINP: Boston Metroparks Zoos			

Specimen Identifiers >>>

Identifier/Text	Location, Permit, Studbook	Date
Tag/Band/Ring DI 5600		25 Dec 1991
House Name MILDRED		10 Jun 1981

Specimen Weight/Length >>>

Date	Category	Length Type	Unit	Weight/Length
9 Dec 1993	Weight		Kilograms	1.55
5 Mar 1994	Weight		Kilograms	1.45

Special Comments >>>

Date	Comment Key	Initials
7 Jun 1993	Reproductive behavior Has been playing with clay and mulch. Added more to the exhibit.	
24 Jul 1993	Reproductive behavior In nestbox all afternoon. She and 1.0 have both been experimenting with the clay. There was a little fresh clay plastered on side of nestbox opening.	

Enclosure Log >>>

Enclosure	Date	Reason
No Enclosure Information for this Specimen		

Report Start Date:
1 Jan 1995

Taxon Report
International Species Information Syst

Report End Date
30 Jun 1995

Taxon Name: *Berenicornis comatus*
Common Name: WHITE-CRESTED HORNBILL

Page Number: 1

ID and Identifiers (Location)	Sex/Age	Dates: Birth/In/Out	Terms:	Origin or Party	Their ID	Sire ID	Dam ID
<i>Berenicornis comatus</i> Spec.ID : 080103 Removed (loan out) House Nm: MARTHA Tag/Band: DI 5603	Female ~19Y	~1976 1 Jan 1978 12 Mar 1993	Wild Born Purchase from Loan to	FERNDALE SANDIEGOZ	UNK 393110		
<i>Berenicornis comatus</i> Spec.ID : 110601 Enclose : No Encl. House Nm: MILDRED Tag/Band: DI 5600	Female ~26Y	~1969 10 Jun 1981	Wild Born Loan from	UNKNOWN FRANKLINP	72A659		
<i>Berenicornis comatus</i> Spec.ID : 220201 Enclose : No Encl. Tag/Band: C70,AP8-013	Male 7Y,5M,29D	1 Jan 1988 5 Feb 1992	UNK Birth Loan from	SD-WAP	890035		
<i>Berenicornis comatus</i> Spec.ID : 241011 Enclose : No Encl. * Sire ID 890035. Loan from SD-WAP. * Dam ID 72A659. Loan from FRANKLINP.	Unknown 0Y,8M,18D	11 Oct 1994	Captive Born			220201*	110601*

Inventory Summary - Transaction Counts

Category	Status 01/01/1995			Births	Other Acquis'n	Deaths	[< 30 Days]		Other Dispos'n	Status 30/06/1995		
							Births	Acquis'n				
Owned and On Site	0.	0.	1	.	.	.	.	.	.	0.	0.	1
Out on Loan	-	0.	1.	0	.	.	.	.	.	-	0.	1.
In on Loan	+	1.	1.	0	.	.	.	.	.	+	1.	1.

Inventory Summary - Net Specimen Counts

Category	Status 01/01/1995			Births	Other Acquis'n	Deaths	[< 30 Days]		Other Dispos'n	Row Change	Status 30/06/1995		
							Births	Acquis'n					
Owned and On Site	0.	0.	1	.	.	.	.	.	.	.	0.	0.	1
Out on Loan	-	0.	1.	0	.	.	.	.	.	.	-	0.	1.
In on Loan	+	1.	1.	0	.	.	.	.	.	.	+	1.	1.

	Current Inventory	Historic Inventory	Net Disposition Summary
Captive Born :	1	1	By Sale, Trade, Donation : 0.0.0 = (0)
Wild Born :	2	2	By Escape, Release, Theft: 0.0.0 = (0)
Birth Type Unk:	1	1	By Term Free, Disappeared: 0.0.0 = (0)
			By Move to Quarantine : 0.0.0 = (0)
			By Move to Rehab. : 0.0.0 = (0)
			By Death : 0.0.0 = (0)
			By Death in Transit : 0.0.0 = (0)
			By Loan to Another : 0.1.0 = (1)
			By Loan Transfer : 0.0.0 = (0)
			By Loan Returned. : 0.0.0 = (0)

Report Start Date:
1 Jan 1995

Status of AVES Inventory - Net Specimen Counting
International Species Information Syst

Report End Date:
30 Jun 1995

Identification	Status		Births	Other	Deaths	[< 30 Days]		Other	Row	Status
	01/01/1995					Births	Acquis'n				Births	Acquis'n	Dispon'n	Change	30/06/1995
AVES										
PELECANIFORMES										
PELECANIDAE										
Pelecanus occidenta	1.	1.	6	.	.	.	.	.	.	1. 1. 6
eastern brown pelican										
CICONIIFORMES										
ARDEIDAE										
Egretta thula	(OOS)	1.	0.	0	.	.	.	.	.	1. 0. 0
snowy egret										
SCOPIDAE										
Scopus umbretta	(OOS)	0.	1.	0	0. 0. 1	.	.	0. 0. 1	0. 0. 1	0. 1. 0
hammerkop	(IOL)+	1.	0.	0	.	.	.	.	.	+ 1. 0. 0
CICONIIDAE										
Ciconia maguari	(OOS)	4.	3.	0	0. 2. 0	.	.	0. 1. 0	0. 1. 0	2. 4. 0
maguari stork	(OOL)-	0.	1.	0	.	.	.	.	.	- 2. 1. 0
	(IOL)+	1.	1.	0	.	.	.	.	.	+ 1. 1. 0
THRESKIORNITHIDAE										
Eudocimus ruber	(OOS)	70.	58.	84	.	.	.	.	.	70. 58. 84
scarlet ibis	(OOL)-	2.	2.	0	.	.	.	.	.	- 2. 2. 0
Ajaia ajaja	(OOS)	3.	0.	27	.	.	1. 0. 0	.	.	2. 0. 27
roseate spoonbill										
PHOENICOPTERIDAE										
Phoenicopterus chil	(OOS)	17.	11.	24	.	.	.	.	.	17. 11. 24
chilean flamingo										
STRIGIDAE										
Otus asio	(OOS)	1.	1.	2	.	.	.	.	.	1. 1. 2
common screech owl										
Speotyto cuniculari	(OOS)	0.	0.	2	.	.	.	.	.	0. 0. 2
burrowing owl										
CORACIIFORMES										
BUCEROTIDAE										
Anthracoceros malay	(OOS)	0.	1.	0	.	.	.	.	.	0. 1. 0
black hornbill										
Berenicornis comatu	(OOS)	0.	0.	1	.	.	.	.	.	0. 0. 1
white-crested horn	(OOL)-	0.	1.	0	.	.	.	.	.	- 0. 1. 0
	(IOL)+	1.	1.	0	.	.	.	.	.	+ 1. 1. 0
Buceros rhinoceros	(OOS)	1.	0.	0	.	.	.	.	.	1. 0. 0
rhinoceros hornbil	(IOL)+	0.	1.	0	.	.	.	.	.	+ 0. 1. 0
Bycanistes bucinato	(OOS)	2.	2.	0	.	.	.	.	.	2. 2. 0
trumpeter hornbill										
Tockus flavirostris	(OOS)	1.	1.	0	.	.	.	.	.	1. 1. 0
yellow-billed hornbill										
PICIFORMES										
RAMPHASTIDAE										
Pteroglossus aracar	(OOS)	5.	4.	3	0. 0. 2	.	.	.	.	5. 4. 5
black-necked aracari										
Ramphastos sulfurat	(OOS)	1.	0.	0	.	.	.	.	.	1. 0. 0
keel-billed toucan										
Ramphastos toco (no	(OOS)	0.	1.	0	.	.	.	.	.	0. 1. 0
toco toucan	(IOL)+	1.	0.	0	.	.	.	.	.	+ 1. 0. 0

Report Start Date:
1 Jan 1980

Transaction Report
International Species Information Syst

Report End Date:
31 Dec 1989

Transaction Selection (*): Loan to Us

Sort Order :Spec. ID, Spec. ID
Party Specification :

Spec ID Stud #	Taxon Name Common Name	Sex Age	Transactions	Trans. Date	Party	I=Sire/Dam ID Vend ID \$=Price
000816	Cacatua moluccensis salmon-crested cockatoo	Male ~23Y	Loan to Us	28 Oct 1986	NZP-WASH	204675
000817	Cacatua moluccensis salmon-crested cockatoo	Female ~23Y	Loan to Us	28 Oct 1986	NZP-WASH	204694
110601	Berenicornis comatus white-crested hornbill	Female ~20Y	Loan to Us	10 Jun 1981	FRANKLINP	72A659
130401	Buceros rhinoceros (no subsp) rhinoceros hornbill	Female ~6Y,9M,0D (Unk)	Loan to Us	3 Apr 1983	NY BRONX	822484
141201	Ajaia ajaja roseate spoonbill	Unknown 5Y,6M,29D	Loan to Us	4 Dec 1984	FORTWORTH	0674
141202	Ajaia ajaja roseate spoonbill	Unknown 5Y,7M,15D	Loan to Us	4 Dec 1984	FORTWORTH	0665
141203	Ajaia ajaja roseate spoonbill	Unknown 5Y,7M,10D	Loan to Us	4 Dec 1984	FORTWORTH	0666
141204	Ajaia ajaja roseate spoonbill	Unknown 5Y,7M,8D	Loan to Us	4 Dec 1984	FORTWORTH	0675
141206	Ajaia ajaja roseate spoonbill	Unknown 6Y,6M,27D	Loan to Us	4 Dec 1984	FORTWORTH	0650
141207	Ajaia ajaja roseate spoonbill	Unknown 6Y,6M,26D	Loan to Us	4 Dec 1984	FORTWORTH	0651
141208	Ajaia ajaja roseate spoonbill	Unknown 6Y,6M,14D	Loan to Us	4 Dec 1984	FORTWORTH	0653
150802	Leucopsar rothschildi bali/rothschild's mynah	Female 5Y,4M,2D	Loan to Us	31 Jan 1985	SANFORD	5100
150901	Amazona leucocephala leucocephala cuban amazon	Male 5Y,8M,1D	Loan to Us	1 Sep 1985	NEW AGE	Unk
150902	Amazona leucocephala leucocephala cuban amazon	Female 5Y,7M,1D	Loan to Us	1 Sep 1985	NEW AGE	Unk
161001	Anodorhynchus hyacinthinus hyacinth macaw	Male ~25Y	Loan to Us Donation to Us	28 Oct 1986 9 Jul 1987	NZP-WASH NZP-WASH	209245 209245
161002	Anodorhynchus hyacinthinus hyacinth macaw	Female ~25Y	Loan to Us Donation to Us	28 Oct 1986 9 Jul 1987	NZP-WASH NZP-WASH	209246 209246
180401	Buceros rhinoceros (no subsp) rhinoceros hornbill	Male 1Y,9M,0D	Loan to Us	1 Apr 1988	NY BRONX	Unk

Report Start Date:
1 Jan 1980

Text Retrieval Report
International Species Information Syst

Report End Date:
31 Dec 1993

Retrieval Filtering: None

Codes Selected: Reproductive behavior
Text Selected: egg
Taxon Selected: BERENICORNIS COMATUS

Sort Order: Specimen ID
And/Or Condition: OR

HN - House Name SN - Studbook # BI - Birth Date
TB - Tag Band TR - Transponder RR - Rearing

Berenicornis comatus

110601 Female
HN: MILDRED
TB: DI 5600
TT:
SN:
BI: Wild Born 13/06/1969
RR: Unknown

6 Oct 1993 Code: Note
Nest box inspected today. No eggs or young found.

12 Oct 1993 Code: Note
Checked out nest box. No signs of eggshells. Knocked down clay.

7 Jun 1993 Code: Reproductive behavior
Has been playing with clay and mulch. Added more to the exhibit.

24 Jul 1993 Code: Reproductive behavior
In nestbox all afternoon. She and 1.0 have both been experimenting with the clay. There was a little fresh clay plastered on side of nestbox opening.

25 Jul 1993 Code: Reproductive behavior
In nestbox all afternoon. Observed 1.0 feeding her a mouse. This was the 1st time he had been observed feeding her.

3 Aug 1993 Code: Reproductive behavior
Secured inside nesting chamber. She is continue to mud nest box hole.

17 Oct 1993 Code: Reproductive behavior
Female was inside smaller nestbox throwing out mulch. Male brought her clay.

27 Nov 1993 Code: Reproductive behavior
Was in lower nest box in afternoon. Later observed bringing the male a grape.

220201 Male
HN:
TB: C70,AP8-01
TT:
SN:
TR:
BI: UNK Birth 01/01/1988
RR: Unknown

7 Jun 1993 Code: Reproductive behavior
Has been playing with clay and mulch. More added to the exhibit.

24 Jul 1993 Code: Reproductive behavior
1.1 has been experimenting with the clay. There was a little fresh clay plastered on side of nestbox opening. Took mouse to nestbox and fed 0.1.

25 Jul 1993 Code: Reproductive behavior
Was observed taking a mouse to nestbox and feeding the 0.1. This was the 1st time this was observed.

3 Aug 1993 Code: Reproductive behavior
Continuing to mud nest box hole. Female is secured inside box.

6 Aug 1993 Code: Reproductive behavior
Male observed feeding female a mouse.

17 Oct 1993 Code: Reproductive behavior
Male brought clay to female who was in the smaller nestbox.

241011 Unknown
HN:
BI: Captive Born 11/10/1994
RR: Parent Reared

18 Oct 1994 Code: Neonatal behavior
Could be heard begging for food at both feedings.

IZY Census of Rare Animals in Captivity
International Species Information Syst

Page 1
Report Date:
1 Jan 1995

Identification	Status 01/01/1995	Bred Here	Bred Elsewhere	Wild Born
CROCODYLIA				
CROCODYLIDAE CROCODYLINAE				
CROCODYLUS MORELETII morelet's crocodile	2. 1	0	1. 1	1. 0
FALCONIFORMES				
ACCIPITRIDAE				
HALIAEETUS LEUCOCEPHALUS LEUCOCEPH+ southern bald eagle	1. 2	0	0	1. 2
PSITTACIFORMES				
PSITTACIDAE				
AMAZONA LEUCOCEPHALA LEUCOCEPHALA cuban amazon	1. 1	0	1. 1	0
ARA RUBROGENYS red-fronted macaw	2. 0	0	2. 0	0
ARATINGA GUAROUBA golden conure	1. 2	0. 1	1. 1	0
RHYNCHOPSITTA PACHYRHYNCHA PACHYRH+ thick-billed parrot	3. 1	1. 0	0. 1	0
PASSERIFORMES				
STURNIDAE				
LEUCOPSAR ROTHSCHILDI bali/rothschild's mynah	1. 4	0. 1	1. 3	0
PRIMATES				
LEMURIDAE				
LEMUR CATTALIA ring-tailed lemur	5. 0	2. 0	3. 0	0
LEMUR MACACO COLLARIS black lemur	3. 1	2. 0	1. 1	0
CALLITHRICIDAE				
LEONTOPITHECUS ROSALIA ROSALIA golden lion tamarin	2. 2	0	2. 2	0

*Note: Specimens of Unknown birth type are included in the Status figures only.

Report Start Date:
1 Jan 1992

Enclosure Report
International Species Information Syst

Report End Date
31 Dec 1992

Enclosure: HOLDING

Description: LORY EXHIBIT/HOLDING

Taxon Screen: None
Sort Order: Specimen ID

ID, Identifiers, and Taxon	Sex Age	Date In Reason	Date Out	Enclosure Exhibit	Out To Number of Spec.
Spec.ID : 2564 <i>Amazona ochrocephala ochrocephala</i> Comm. Nm: yellow-crowned amazon House Nm: JULIE	Unknown ~14Y,9M,14D (Unk)	19/05/1992	27/11/1992	HOLDING AREA V	ACC 1
		15/12/1992	12/03/1993	HOLDING AREA V	ACC 1
Spec.ID : 3513 <i>Potos flavus</i> (no subsp) Comm. Nm: kinkajou House Nm: YODA	Female ~11Y,3M,15D (Unk)	21/06/1992	/ /	HOLDING AREA V	Still In 1
Spec.ID : 4060 <i>Cacatua moluccensis</i> Comm. Nm: salmon-crested cockatoo House Nm: SAM	Female ~9Y,7M,11D (Unk)	14/06/1992	/ /	HOLDING AREA V	Still In 1
Spec.ID : 4823 <i>Potos flavus</i> (no subsp) Comm. Nm: kinkajou House Nm: MICA	Female ~6Y,8M,9D (Unk)	21/06/1992	/ /	HOLDING AREA V	Still In 1
Spec.ID : 4954 <i>Potos flavus</i> (no subsp) Comm. Nm: kinkajou	Male 6Y,0M,6D	14/06/1992	/ /	HOLDING AREA V	Still In 1
		educ lory holding			
Spec.ID : 5592 <i>Charmosyna papou stellae</i> Comm. Nm: stella's lory	Male ~3Y,7M,15D (Unk)	18/05/1989	15/02/1992	HOLDING AREA V	PROP II 1
		exhibit			
Spec.ID : 5594 <i>Charmosyna papou stellae</i> Comm. Nm: stella's lory Tag/Band: MA 84-7 (LEFT)	Male ~3Y,7M,15D (Unk)	18/05/1989	15/02/1992	HOLDING AREA V	PROP II 1
		temporary			
Spec.ID : 5595 <i>Chalcopsitta sintillata sintillata</i> Comm. Nm: yellow-streaked lory	Male ~3Y,7M,15D (Unk)	18/05/1989	27/05/1992	HOLDING AREA V	PROP II 1
		temporary			
Spec.ID : 5596 <i>Chalcopsitta sintillata sintillata</i> Comm. Nm: yellow-streaked lory	Female ~3Y,7M,15D (Unk)	18/05/1989	27/05/1992	HOLDING AREA V	PROP II 1
		temporary			
Spec.ID : 5597 <i>Eos reticulata</i> Comm. Nm: blue-streaked lory	Male ~3Y,7M,15D (Unk)	18/05/1989	28/05/1992	HOLDING AREA V	PROP II 1
		temporary			
Spec.ID : 5598 <i>Eos reticulata</i> Comm. Nm: blue-streaked lory	Female ~3Y,7M,15D (Unk)	18/05/1989	28/05/1992	HOLDING AREA V	PROP II 1
		temporary			
Spec.ID : 5602 <i>Eos bornea</i> (no subsp) Comm. Nm: red lory	Female ~3Y,7M,15D (Unk)	18/05/1989	15/02/1992	HOLDING AREA V	PROP II 1
		temporary			
Spec.ID : 5605 <i>Lorius lory</i> (no subsp) Comm. Nm: black-capped lory	Male ~2Y,11M,27D (Unk)	18/05/1989	15/02/1992	HOLDING AREA V	PROP II 1
		temporary			
Spec.ID : 5606 <i>Lorius lory</i> (no subsp) Comm. Nm: black-capped lory	Female ~2Y,11M,27D (Unk)	18/05/1989	15/02/1992	HOLDING AREA V	PROP II 1
		temporary			
Spec.ID : 5614 <i>Platycercus elegans</i> (no subsp) Comm. Nm: crimson rosella	Male ~2Y,11M,18D (Unk)	10/06/1991	14/02/1992	HOLDING AREA V	CZ SET 4 1
Spec.ID : 6022 <i>Atelerix albiventris</i> Comm. Nm: hedgehog	Male 2Y,1M,6D	14/06/1992	/ /	HOLDING AREA V	Still In 1
Spec.ID : 6230 <i>Didelphis virginiana</i> Comm. Nm: opossum	Female 1Y,7M,18D	01/06/1992	30/03/1993	HOLDING AREA V	ACC 1

Pedigree Report
International Species Information Syst

Report Date:
10 Aug 1995

Taxon Name: LITOCRANIUS WALLERI (no subsp)
Common Name: gerenuk

Accession Number: 90325
Acq. Date: 24 Jul 1990

Current Status >>>

Age: 5Y,0M,18D
On Inventory: 5Y,0M,18D
Birth Date: 24 Jul 1990
Birth Type: Captive Born

Sex: Female
Enclosure: H19
Birth Location: ISIS TEST
Rearing: Parent Reared

House Name:
Tattoo:
Tag/Band/Ring: G#30 L_EAR
Transponder:
Studbook #s:

Location:
Location:
Location:

217 (UNKNOWN STUDBOOK)

* = ID duplicated in pedigree
W = obtained from the wild
> = pedigree continues

+--- Sire: -----
No more information available.

+---* Sire: 86102 YULEE -----
LITOCRANIUS WALLERI (no subsp)
Birth Date: 13/05/1984
Sex: Male Not a Hybrid

House Name: ROY
Tattoo :
Tag/Band : EAR NOTCH 40
Transpond : 000020C409

+--- Dam : -----
No more information available.

+--- Dam : 8742 YULEE -----
LITOCRANIUS WALLERI (no subsp)
Birth Date: 19/06/1987
Sex: Female Not a Hybrid

House Name:
Tattoo : 8742 R_EAR
Tag/Band : Y#12 L_EAR
Transpond : 0000213622

+---* Sire: 86102 YULEE -----
LITOCRANIUS WALLERI (no subsp)
Birth Date: 13/05/1984
Sex: Male Not a Hybrid

+--- Dam : 8742 YULEE -----
House Name: ROY
Tattoo :
Tag/Band : EAR NOTCH 40
Transpond : 000020C409

+--- Dam : 85112 YULEE -----
LITOCRANIUS WALLERI (no subsp)
Birth Date: 10/06/1982
Sex: Female Not a Hybrid

House Name:
Tattoo :
Tag/Band : Y#18
Transpond :

Sibling Report
FOR ISIS TEST USE ONLY

Report Date:
22 Aug 1995

Taxon Name: LITOCRANIUS WALLERI (no subsp)
Common Name: gerenuk

Accession Number: 90325
Acq. Date: 24 Jul 1990

* = ID requested

Full siblings grouped by date >>>

Siblings	Dam	Dam Inst	Sire	Sire Inst	Birth Date	Sex
8901	8742	ISIS TEST	86102	ISIS TEST	4 Jan 1989	Male
8987	8742	ISIS TEST	86102	ISIS TEST	9 Dec 1989	Male
* 90325	8742	ISIS TEST	86102	ISIS TEST	24 Jul 1990	Female

Half siblings grouped by date >>>

Siblings	Dam	Dam Inst	Sire	Sire Inst	Birth Date	Sex
8742	85112	ISIS TEST	86102	ISIS TEST	19 Jun 1987	Female
87132	85113	ISIS TEST	86102	ISIS TEST	12 Dec 1987	Female
8812	85112	ISIS TEST	86102	ISIS TEST	10 Feb 1988	Male
88315	87103	ISIS TEST	86102	ISIS TEST	5 Jun 1988	Female
8850	8687	ISIS TEST	86102	ISIS TEST	16 Jul 1988	Female
8852	85113	ISIS TEST	86102	ISIS TEST	22 Jul 1988	Female
8919	8687	ISIS TEST	86102	ISIS TEST	26 Feb 1989	Female
8925	85113	ISIS TEST	86102	ISIS TEST	21 Mar 1989	Male
89310	87103	ISIS TEST	86102	ISIS TEST	16 Jun 1989	Male
8986	85113	ISIS TEST	86102	ISIS TEST	9 Dec 1989	Female
8992	8687	ISIS TEST	86102	ISIS TEST	29 Dec 1989	Male
9008	87103	ISIS TEST	86102	ISIS TEST	30 Jan 1990	Female
90326	85113	ISIS TEST	86102	ISIS TEST	9 Aug 1990	Male
90332	8687	ISIS TEST	86102	ISIS TEST	11 Nov 1990	Male
90333	87103	ISIS TEST	86102	ISIS TEST	28 Nov 1990	Female
91322	8742	ISIS TEST	90213	ISIS TEST	21 Jul 1991	Female
930037	8687	ISIS TEST	86102	ISIS TEST	3 Jun 1993	Female
930039	85113	ISIS TEST	86102	ISIS TEST	9 Jun 1993	Male
930041	90325	ISIS TEST	86102	ISIS TEST	26 Jun 1993	Female
940001	92410	ISIS TEST	86102	ISIS TEST	16 Jan 1994	Female
940013	85113	ISIS TEST	86102	ISIS TEST	15 Mar 1994	Female
940016	8687	ISIS TEST	86102	ISIS TEST	26 Mar 1994	Female
940061	92410	ISIS TEST	86102	ISIS TEST	18 Sep 1994	Female
940077	8687	ISIS TEST	86102	ISIS TEST	2 Dec 1994	Female

Reproductive History Report
FOR ISIS TEST USE ONLY

Report Date:
22 Aug 1995

Taxon Name: LITOCRANIUS WALLERI (no subsp)
Common Name: gerenuk

Accession Number: 86102
Acq. Date: 20 Jan 1986

* = (age of 86102 at time of birth)

Descendants grouped by birth date >>>

Descendant	Dam	Dam Inst	Sire	Sire Inst	Birth Date	Sex
					Parent Age	
8742	85112	ISIS TEST	86102	ISIS TEST	19 Jun 1987	Female
					* (3Y,1M,6D)	
87132	85113	ISIS TEST	86102	ISIS TEST	12 Dec 1987	Female
					* (3Y,7M,0D)	
8812	85112	ISIS TEST	86102	ISIS TEST	10 Feb 1988	Male
					* (3Y,8M,29D)	
88315	87103	ISIS TEST	86102	ISIS TEST	5 Jun 1988	Female
					* (4Y,0M,24D)	
8850	8687	ISIS TEST	86102	ISIS TEST	16 Jul 1988	Female
					* (4Y,2M,4D)	
8852	85113	ISIS TEST	86102	ISIS TEST	22 Jul 1988	Female
					* (4Y,2M,10D)	
8901	8742	ISIS TEST	86102	ISIS TEST	4 Jan 1989	Male
					* (4Y,7M,24D)	
8919	8687	ISIS TEST	86102	ISIS TEST	26 Feb 1989	Female
					* (4Y,9M,16D)	
8925	85113	ISIS TEST	86102	ISIS TEST	21 Mar 1989	Male
					* (4Y,10M,8D)	
89310	87103	ISIS TEST	86102	ISIS TEST	16 Jun 1989	Male
					* (5Y,1M,4D)	
8986	85113	ISIS TEST	86102	ISIS TEST	9 Dec 1989	Female
					* (5Y,6M,28D)	
9008	87103	ISIS TEST	86102	ISIS TEST	30 Jan 1990	Female
					* (5Y,8M,19D)	
90325	8742	ISIS TEST	86102	ISIS TEST	24 Jul 1990	Female
					* (6Y,2M,12D)	
90326	85113	ISIS TEST	86102	ISIS TEST	9 Aug 1990	Male
					* (6Y,2M,28D)	
90332	8687	ISIS TEST	86102	ISIS TEST	11 Nov 1990	Male
					* (6Y,6M,0D)	
90333	87103	ISIS TEST	86102	ISIS TEST	28 Nov 1990	Female
					* (6Y,6M,17D)	
91322	8742	ISIS TEST	90213	ISIS TEST	21 Jul 1991	Female
91323	8919	ISIS TEST	90213	ISIS TEST	2 Aug 1991	Male
92405	90325	ISIS TEST	90213	ISIS TEST	7 Jun 1992	Female
930037	8687	ISIS TEST	86102	ISIS TEST	3 Jun 1993	Female
					* (9Y,0M,23D)	
930039	85113	ISIS TEST	86102	ISIS TEST	9 Jun 1993	Male
					* (9Y,0M,29D)	
930041	90325	ISIS TEST	86102	ISIS TEST	26 Jun 1993	Female
					* (9Y,1M,15D)	

Report Start Date:
initiation

Fecundity & Mortality Report
FOR ISIS TEST USE ONLY

Report End Date:
10 Aug 1995

Taxon Name: ACINONYX JUBATUS

Common Name: CHEETAH

Fecundity Schedule [Mx]...

Age Class	Female	N	Male	N
0- 1	0.000	17.1	0.000	18.9
1- 2	0.000	15.5	0.000	19.6
2- 3	0.000	11.7	0.120	18.1
3- 4	0.650	8.5	0.260	10.1
4- 5	0.430	7.0	0.890	7.6
5- 6	0.350	7.2	0.330	8.0
6- 7	0.730	7.6	0.540	6.8
7- 8	0.780	5.8	0.870	3.6
8- 9	0.310	4.9	0.000	3.0
9-10	0.100	4.8	0.400	5.2
10-11	0.000	5.8	0.000	3.7
11-12	0.000	5.0	0.000	2.9
12-13	0.000	4.4	0.250	2.1
13-14	0.000	2.9	0.000	1.4
14-15	0.000	1.2	0.000	1.0
15-16	0.000	1.0	0.000	1.0
16-17	0.000	1.0	0.000	1.0
17-18	0.000	0.5	0.000	0.3

Gestation Period: 120 days

1 births to sires of unknown age have been factored in...

Report Start Date:
initiation

Fecundity & Mortality Report
FOR ISIS TEST USE ONLY

Report End Date:
10 Aug 1995

Taxon Name: ACINONYX JUBATUS

Page 2

Common Name: CHEETAH

Mortality Rate [Qx]...

Age Class	Female	N	Male	N
0- 1	0.180	20.0	0.230	24.3
1- 2	0.000	15.5	0.000	19.6
2- 3	0.000	12.7	0.000	18.1
3- 4	0.120	8.5	0.000	10.1
4- 5	0.000	7.0	0.000	7.6
5- 6	0.000	7.2	0.000	8.0
6- 7	0.000	7.6	0.000	6.8
7- 8	0.000	5.8	0.000	3.6
8- 9	0.000	4.9	0.000	3.0
9-10	0.000	4.8	0.000	5.2
10-11	0.000	5.8	0.240	4.1
11-12	0.000	5.0	0.000	2.9
12-13	0.190	5.4	0.000	2.1
13-14	0.500	4.0	0.500	2.0
14-15	0.000	1.2	0.000	1.0
15-16	0.000	1.0	0.000	1.0
16-17	0.000	1.0	0.000	1.0
17-18	1.000	1.0	1.000	1.0

WARNING: Values with small sample sizes (N) warrant less confidence...

ISIS/ARKS
10 Aug 1995

Local Inbreeding Coefficient Report
FOR ISIS TEST USE ONLY

Report Date:
22 Aug 1995

=====
Taxon Name: LITOCRANIUS WALLERI (no subsp) Taxonomic Level: Species
Common Name: gerenuk

Dam and Sire IDs ending with a ? are pseudo IDs.

SpecID	House Nm	Sex	Dam	Dam Inst	Sire	Sire Inst	Out/ Dead	Local Inbreeding
8612		Male	85112	ISIS TEST	1?		DEAD	0
8687		Female	85112	ISIS TEST	85110	ISIS TEST		0
8726		Male	85113	ISIS TEST	85110	ISIS TEST	DEAD	0
8742		Female	85112	ISIS TEST	86102	ISIS TEST	DEAD	0
8812	ELLIOT	Male	85112	ISIS TEST	86102	ISIS TEST	DEAD	0
8850	RAINEY	Female	8687	ISIS TEST	86102	ISIS TEST	DEAD	0
8852	ALMITRA	Female	85113	ISIS TEST	86102	ISIS TEST	DEAD	0
8901	WILT	Male	8742	ISIS TEST	86102	ISIS TEST	OUT	0.2500
8919		Female	8687	ISIS TEST	86102	ISIS TEST	DEAD	0
8925		Male	85113	ISIS TEST	86102	ISIS TEST	DEAD	0
8986	MARY	Female	85113	ISIS TEST	86102	ISIS TEST	DEAD	0
8987	JOSEPH	Male	8742	ISIS TEST	86102	ISIS TEST	DEAD	0.2500
8992		Male	8687	ISIS TEST	86102	ISIS TEST	OUT	0
9008		Female	87103	ISIS TEST	86102	ISIS TEST	DEAD	0
85110		Male	2?		3?		OUT	0
85111		Male	4?		5?		OUT	0
85112		Female	6?		7?		DEAD	0
85113		Female	8?		9?		DEAD	0
86102	ROY	Male	10?		11?		DEAD	0
86103		Male	12?		13?		DEAD	0
87001		Male	14?		15?		DEAD	0
87103		Female	16?		17?		DEAD	0
87132		Female	85113	ISIS TEST	86102	ISIS TEST	DEAD	0
88315		Female	87103	ISIS TEST	86102	ISIS TEST	DEAD	0
89310	KARIM	Male	87103	ISIS TEST	86102	ISIS TEST	DEAD	0
90213	SPUD	Male	18?		19?		DEAD	0
90325		Female	8742	ISIS TEST	86102	ISIS TEST		0.2500
90326		Male	85113	ISIS TEST	86102	ISIS TEST	DEAD	0
90332		Male	8687	ISIS TEST	86102	ISIS TEST	DEAD	0
90333	T.W.	Female	87103	ISIS TEST	86102	ISIS TEST	DEAD	0
91322	HONEY	Female	8742	ISIS TEST	90213	ISIS TEST	DEAD	0
91323		Male	8919	ISIS TEST	90213	ISIS TEST	OUT	0
91325		Female	8687	ISIS TEST	90213	ISIS TEST	DEAD	0
91326		Male	85113	ISIS TEST	90213	ISIS TEST	DEAD	0
92405		Female	90325	ISIS TEST	90213	ISIS TEST		0
92410		Female	85113	ISIS TEST	90213	ISIS TEST		0
930037		Female	8687	ISIS TEST	86102	ISIS TEST		0
930039		Male	85113	ISIS TEST	86102	ISIS TEST	OUT	0
930041		Female	90325	ISIS TEST	86102	ISIS TEST	DEAD	0.3750
930333	DAMIEN	Male	20?		21?		DEAD	0
930340	LITTLE R	Male	22?		23?			0
940001		Female	92410	ISIS TEST	86102	ISIS TEST		0
940013		Female	85113	ISIS TEST	86102	ISIS TEST	DEAD	0
940016		Female	8687	ISIS TEST	86102	ISIS TEST		0
940061		Female	92410	ISIS TEST	86102	ISIS TEST		0
940062		Female	90325	ISIS TEST	930340	ISIS TEST		0
940070		Female	92405	ISIS TEST	930340	ISIS TEST		0



ARKS 2.05 / 3.00

Order/Registration Form



Please use this form to request your ARKS software system. The information provided will help us in servicing your request. If you previously participated in ISIS with paper data forms, all data that you have sent to ISIS through the date you place this order (below) will be installed in ARKS. You should receive your ARKS system within one month from the time ISIS receives this Order/Registration Form. Note that if your ISIS data is up to date, your new ARKS system will come with current data already installed.

ARKS is available to all ISIS members in good standing at no additional charge. Contact ISIS for membership applications, fees, and requirements.

Date: _____

Institution Name: _____

Institution Code #: _____

Primary ARKS user: _____

Address: _____

City, State: _____

Country, Mail Code: _____

E-mail address: _____

Phone Number: _____ FAX Number: _____

HARDWARE:

Please check the answer where appropriate, otherwise write the answer in the blank provided.

Computer Brand and Model: _____

CPU: _____ Total RAM: _____ Hard Disk Size: _____ CD-ROM: Yes No

Color Monitor: Yes No Mouse: Yes No Floppy Drives: 5 1/4" 3 1/2"

Printer Brand and Model: _____

Operating System and version: _____

ARKS SOFTWARE:

Please check **OPTION 1** or **OPTION 2** below, as appropriate.

If your institution has never used ARKS before, please specify below which version of ARKS you would like.

If your institution is currently using ARKS and would like to upgrade to ARKS 3.0, please specify below that you would like to upgrade to ARKS 3.0.

ARKS 2.05 minimum hardware requirements: any IBM compatible computer with 640K of conventional memory and 20 MB of free disk space.

ARKS 3.00 minimum hardware requirements: an IBM compatible computer, 386 (or greater) CPU, 4 MB (or more) of RAM, and at least 20 MB of free disk space.

NOTE: The computer listed above must meet the ARKS 3.0 minimum hardware requirements before ISIS will ship you a copy of ARKS 3.0.

OPTION 1: This is a new ARKS installation, please send me (*check one*): ARKS 2.05 ARKS 3.00

OR

OPTION 2: My institution has ARKS and would like to upgrade, please send me ARKS 3.00.

Authorizing Signature: _____

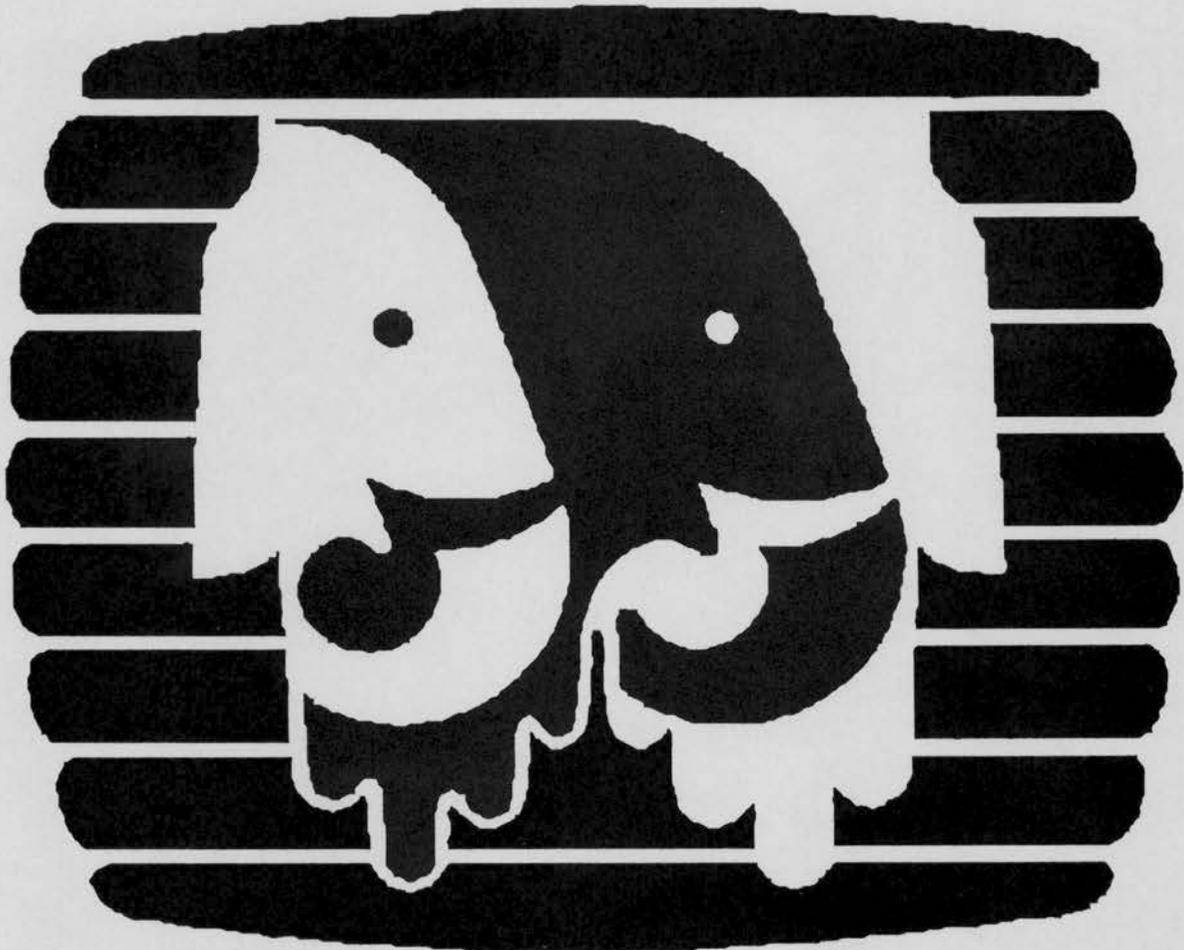
Return to:
Int'l Species Information System, 12101 Johnny Cake Road, Building A Room 6, Apple Valley, MN 55124-8151 U.S.A. 612/431-9295

Disclaimer: ISIS will make a good-faith effort to deal with any ARKS problems identified to ISIS in writing. ISIS can accept no consequential liability for ARKS use. Any modifications to ARKS performed by the user, or any direct access to ARKS files without using ARKS, are at the user's own risk.

ISIS

*Single Population Analysis
& Records Keeping System*

SPARKS





SPARKS



Single Population Analysis & Records Keeping System

A software tool from the makers of ARKS for creating and maintaining studbooks, performing demographic and genetic analysis, and supporting population management. Allows easy access and use of the 2400 partial studbooks maintained by ISIS.

Highlights:

- ◇ Second generation species manger/studbook software, with professional support from ISIS.
- ◇ Simple "look and Feel" make SPARKS easy to use, especially for anyone who has used ARKS.
- ◇ Powerful internal editing improves data quality.
- ◇ Online help system at the touch of a key.
- ◇ Supports temporary studbook numbering and re-numbering while assembling a new studbook.
- ◇ Flexible studbook print formats and sort order printing.
- ◇ Ability to easily set view criteria to allow printing or analyzing numerous data subsets.
- ◇ User-Defined-Fields allow custom tailoring of data collection.
- ◇ Quick screen view of a facilities current specimens.
- ◇ Ability to maintain names of contact persons and print mailing labels.
- ◇ Works with ISIS' partial studbooks on 2400 species available from ISIS in SPARKS file format.
- ◇ Demographic analysis including life tables, age pyramid, growth rate (λ), generation (F).
- ◇ Genetic analysis including pedigree diagrams, descendant listings, inbreeding coefficients, and founder representation.
- ◇ Graphs for census, fecundity, mortality, and founder representation.
- ◇ Data can be exported to external extended analysis programs, GENES and DEMOG, which are included.

User Power

Extremely powerful views of the data. All reports and analysis can be restricted to user chosen subsets of the available information, such as specimens within a country, continent, a cooperative breeding program, a time period, wild or captive born, hand or parent reared, age, inbreeding coefficient, etc. and many combinations of the above views. For example, you could print a studbook or perform a demographic analysis on just the U.S.A. population between 1979 and 1989. Or on the Australian hand-reared females over the age of six years. You can select views based on your own User-Defined-Fields, or even read in a list of selected studbook ID's.

Extensive effort has been invested in careful handling of incomplete data, such as the treatment of births to parents of unknown age or unknown ID. The user can choose to include such births in fecundity calculations to remove much of the bias caused by their exclusion. When excluded, the fecundity tables are biased low; if included, such births are credited to parent-age-class proportionately to the distribution of known age births.

Ordering SPARKS

Sample reports are attached on the following pages, an Order/Registration Form is provided as the last page of this pamphlet. SPARKS is available to all ISIS members in good standing at no additional charge. For non-ISIS members the user license fee is US \$250 plus a required US \$200 annual support/development fee for subsequent years. Contact ISIS for membership applications, fees, and requirements.

Acknowledgements

In alphabetical order, Jon Ballou, Tom Foose, Laurie Bingaman-Lackey, Bob Lacy, R. Andrew Odum, Frank Princeé, Randy Rockwell, and J. Andrew Teare all contributed in different and substantial ways to the design and development of SPARKS. SPARKS has benefitted directly from their pioneering, volunteer efforts in supporting species managers with software tools. We hope they and others will continue to identify needs and add tools which improve everyone's management science and efficiency.

The development of SPARKS, like most other development projects at ISIS, was funded by outside grant sources. Over \$100,000 has been invested so far, primarily in staff time. The major contributions were from the U.S. Institute of Museum Services and the J.N. Pew Jr. Charitable Trust.

MICRONESIAN KINGFISHER Studbook
(Halcyon cinnamomina)

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	Tag/Band	Breeder #
124	M	24 Jul 1989	11	12	PHILADELP	24 Jul 1989	UNK	Hatch	YELLOW #13	
					ORLANDO	4 Apr 1990	BI2501	Transfer		
					AGANA	????	UNK	Transfer		
					LAKEBUENA	30 Nov 1992	221116	Loan to		
					8 Jan 1993		Death			
(Death by: Infection Associated Bury Digestive Unknown (after autopsy))										
125	?	30 Jul 1989	13	36	PHILADELP	30 Jul 1989	204025	Hatch	PHIL 10	
						30 Jul 1989		Death		
(Death by: Unknown means)										
130	M	7 Sep 1989	882034	882033	NY BRONX	7 Sep 1989	892305	Hatch		
					ST LOUIS	16 Apr 1990	190059	Transfer		
131	M	9 Sep 1989	1	2	NY BRONX	9 Sep 1989	UNK	Hatch		
					AGANA	????	UNK	Transfer		
					PHILADELP	11 Jun 1990	204332	Loan to		
132	F	20 Sep 1989	842052	842053	NY BRONX	20 Sep 1989	892322	Hatch	/ORANGE 9	
					ST LOUIS	16 Apr 1990	190060	Transfer		
134	F	16 Feb 1990	50	56	SAN ANTON	16 Feb 1990	900219	Hatch	7097	
						30 Jun 1990		Death		
(Death by: Unknown means)										
135	M	12 Apr 1990	11	12	PHILADELP	12 Apr 1990	UNK	Hatch	4912	
					AGANA	????	UNK	Transfer		
					CHICAGOLP	8 Nov 1990	B9069	Loan to		
					AGANA	????	UNK	Transfer		
					COLUMBIA	20 Mar 1991	005450	Loan to		
136	M	20 Apr 1990	50	56	SAN ANTON	20 Apr 1990	900495	Hatch	7104	
						5 Apr 1991		Death		
(Death by: Unknown means)										
137	F	22 Apr 1990	UNK	UNK	SAN ANTON	22 Apr 1990	UNK	Hatch		
					AGANA	????	UNK	Transfer		
					PHILADELP	19 Jul 1990	204381	Loan to		
138	M	5 May 1990	96	99	AUDUBON	5 May 1990	UNK	Hatch	GREEN 75	
					MILWAUKEE	11 Apr 1991	B2442	Transfer		
					AGANA	????	UNK	Transfer		
					MILWAUKEE	13 Apr 1991	B2442	Loan to		
139	M	21 May 1990	3	44	NZP-CRC	21 May 1990	211321	Hatch		
					AUDUBON	20 Mar 1991	1461	Transfer		
140	M	22 May 1990	3	44	NZP-CRC	22 May 1990	UNK	Hatch	303	
					AGANA	????	UNK	Transfer		
					CHICAGOLP	20 Mar 1991	B91167	Loan to		
						30 Apr 1991		Death		
(Death by: Unknown means)										

Specimen Report
MICRONESIAN KINGFISHER Studbook

Page 1

Taxon Name: HALCYON CINNAMOMINA

Studbook Number: 13

Current Status >>>

Vital Statistics >>>

Sex: Male
Age: ~10Y at removal

Origin >>>

Birth Type: Wild born
Capture Location: GUAM
Hatch Date: ~ 1982 Est. to year
Sire Id: WILD
Dam Id: WILD
Rearing: Unknown

Identifiers >>>

House Name: HAWK

Tag/Band: DARK BLUE #3

Transaction History >>>

#	Event	Local ID	Date In-Date Out
1	Wild Caught GUAM Guam (u S)	UNK	~ 1982 Est. to year
2	Loan to PHILADELP Philadelphia Zoological Gardens	202914	30 Nov 1984 - 11 Jun 1990
3	Transfer to GUAM-DAWR GUAM-DAWR	UNK	Unknown - 11 Jun 1990
4	Loan to NY BRONX International Wildlife Conservation Pk	902189	11 Jun 1990 - 21 Jan 1993
5	Transfer to AGANA Aquatic and Wildlife Pres	UNK	Unknown - 21 Jan 1993
6	Loan to NZP-WASH National Zoological Park	212813	21 Jan 1993 - 21 Jan 1993
7	Death at age: ~10Y Est. by: Infection Associated Mounted or Preserved		21 Jan 1993 Generalized Viral

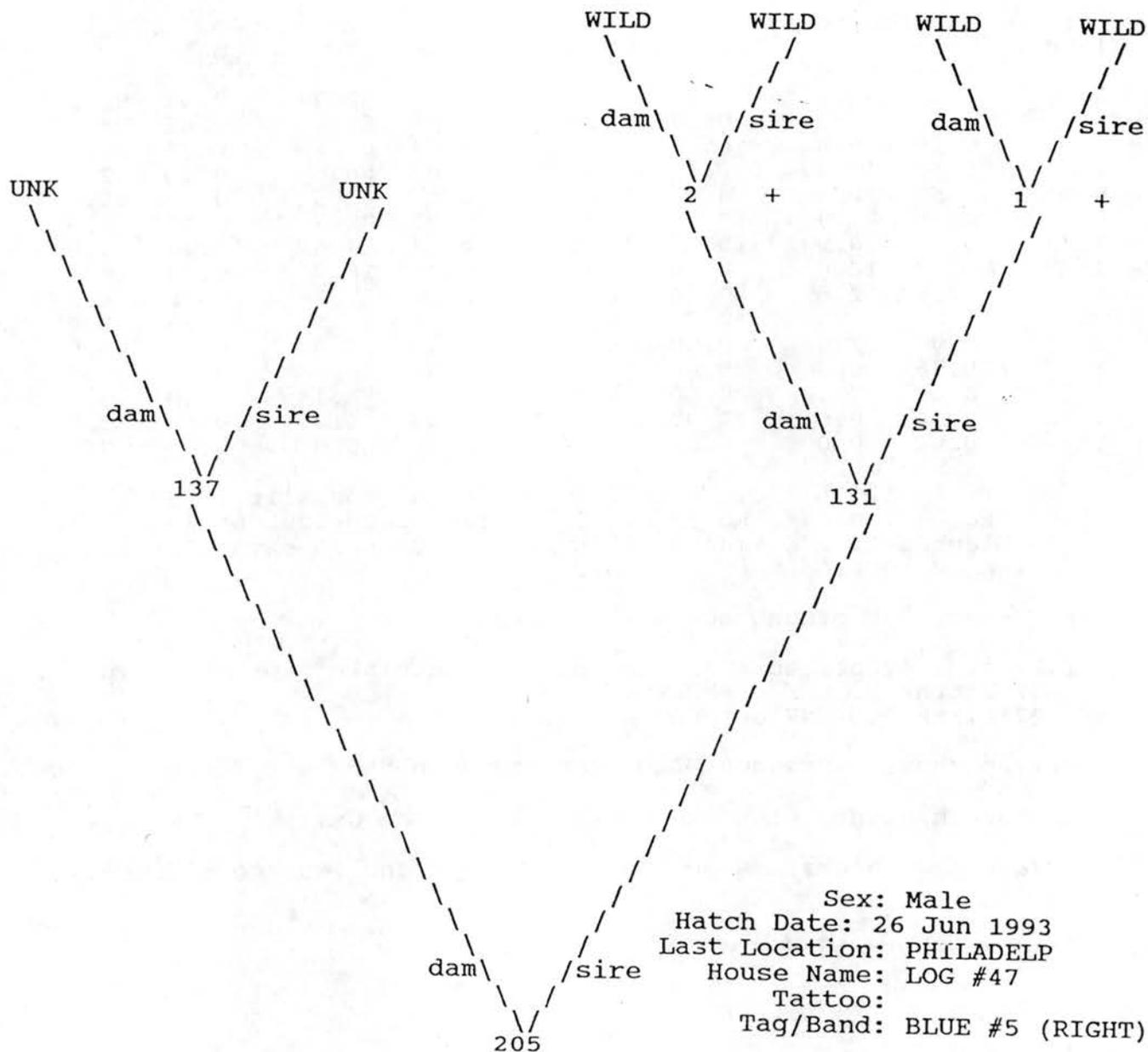
Special Data & Comments >>>

#	Code/Text	Date
1	House Name HAWK	30 Nov 1982
2	Weight/Length 0.055 KG M	26 Nov 1984
3	Tag/Band DARK BLUE #3 RIGHT	1 Jan 1987

Pedigree Chart Report
 MICRONESIAN KINGFISHER Studbook

Taxon Name: HALCYON CINNAMOMINA

Studbook Number: 205



Sex: Male
 Hatch Date: 26 Jun 1993
 Last Location: PHILADELPHIA
 House Name: LOG #47
 Tattoo:
 Tag/Band: BLUE #5 (RIGHT)

+ Specimens known to be obtained from the wild...

Fecundity and Mortality Report
MICRONESIAN KINGFISHER Studbook

Page 1

Taxon Name: HALCYON CINNAMOMINA

Age Class	Fecundity [Mx]...				Mortality [Qx]...			
	Male	N	Female	N	Male	N	Female	N
0- 1	0.00	44.2	0.00	44.1	0.51	92.7	0.52	91.2
1- 2	0.11	48.7	0.13	50.5	0.04	56.0	0.06	54.0
2- 3	0.19	55.0	0.13	53.9	0.04	68.2	0.05	74.2
3- 4	0.42	48.4	0.45	51.0	0.07	56.8	0.10	62.4
4- 5	0.50	40.1	0.63	41.5	0.07	42.6	0.10	49.7
5- 6	0.38	27.9	0.39	27.5	0.03	28.7	0.16	30.9
6- 7	0.34	20.9	0.38	17.1	0.04	24.8	0.17	23.8
7- 8	0.22	16.0	0.36	9.8	0.11	18.7	0.17	11.4
8- 9	0.28	12.5	0.14	8.2	0.08	13.2	0.00	8.2
9-10	0.06	9.5	0.00	6.1	0.10	10.5	0.38	8.0
10-11	0.08	7.4	0.00	4.4	0.14	14.0	0.20	5.0
11-12	0.38	6.3	0.00	2.9	0.00	6.3	0.27	3.6
12-13	0.00	1.1	0.00	0.3	0.49	2.1	0.00	0.3
13-14	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
14-15	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 5.176
Ro = 1.054
lambda=1.01
r = 0.010

T = 4.204
Ro = 0.813
lambda=0.95
r = -0.049

30 day mortality: 49%
(76 deaths out of 155 arriving
within 30 days of birth date)

3 specimens of unknown age ignored...

143 birth events to known age parents tabulated for Mx...plus...
27 births to UNK or MULT dams...
27 births to UNK or MULT sires...

[72 parents (includes WILD) not found in data set ignored...]

150 death events of known age tabulated for Qx...

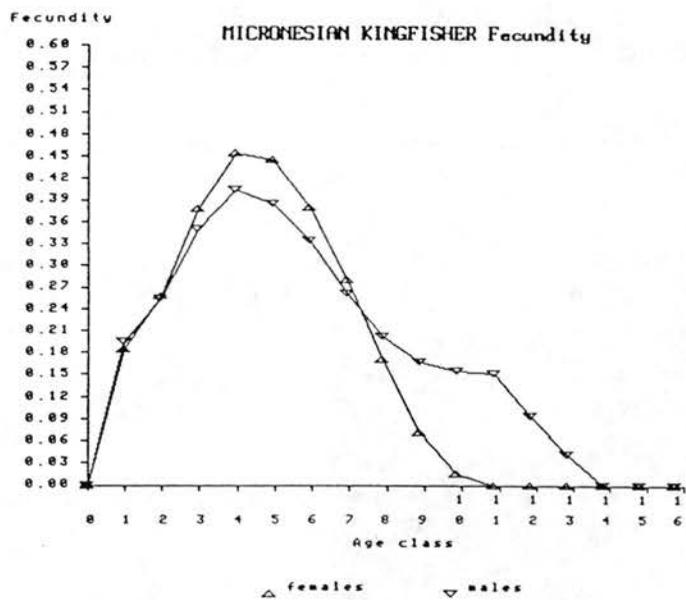
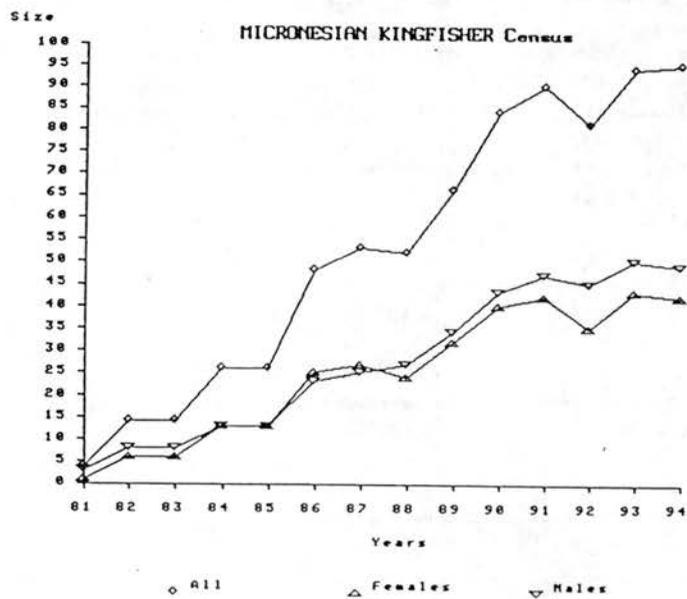
WARNING: Values with small sample sizes (N) warrant less confidence...

Masterplan Report
MICRONESIAN KINGFISHER Studbook
(Halcyon cinnamomina)

Living Population at: Philadelphia Zoological Gardens

PHILADELP

<< Global >>															
Stud #	Sex	Hatch Date	Sire	Loc ID	Genome	F	MK	KV	GU-All	GU-CB	Vx	Live Sibs	Live Offspr	Repro Offspr	Founder Representation
		Arrival	Dam	Social	Known	[unks = founders]	[unknowns removed]								
28	M	- 1983 31 Jan 1986	WILD	203180	1.0000	.0000	.0391	.0443	.		0.020	.	.	.	
			WILD			.	.	.	.			2.	0.	0.	
												2.	0.	0.	
61	F	31 Jul 1986 9 Dec 1986	842340	203374	0.0000	.0000	.0215	.0127	.		0.190	1.	0.	0.	
			842339			.	.	.	.			1.	0.	0.	
												.	.	.	
111	M	18 Apr 1989 11 Apr 1990		204094	0.0000	.0000	.0039	.0051	.		0.970	.	.	.	
						.	.	.	.			1.	0.	0.	
												.	.	.	
131	M	9 Sep 1989 11 Jun 1990	1	204332	1.0000	.0000	.0195	.0235	.		1.310	.	.	.	2=50% 1=50%
			2			.	.	.	.			2.	1.	0.	
												.	.	.	
137	F	22 Apr 1990 19 Jul 1990		204381	0.0000	.0000	.0117	.0165	.		1.110	.	.	.	
						.	.	.	.			2.	1.	0.	
												.	.	.	
174	M	30 Jul 1991 30 Jul 1991	111	204491	0.0000	.0000	.0166	.0140	.		1.920	.	.	.	
			61			.	.	.	.			.	.	.
												.	.	.	
205	M	26 Jun 1993 26 Jun 1993	131	204716	0.5000	.0000	.0195	.0255	.		2.070	1.	1.	0	2=25% 1=25%
			137			.	.	.	.			.	.	.
												.	.	.	
206	M	27 Jun 1993 27 Jun 1993	131	204717	0.5000	.0000	.0195	.0255	.		2.070	1.	1.	0	2=25% 1=25%
			137			.	.	.	.			.	.	.
												.	.	.	
11*2	M	- 1982 14 Feb 1988	WILD		1.0000	.0000	.0000	.0000	.		0.020	.	.	.	
			WILD			.	.	.	.			.	.	.
												.	.	.	
111*2	M	18 Apr 1989 11 Apr 1990	T1002		1.0000	.0000	.0508	.0476	.		0.970	0.	4.	0	T1003=50% T1002=50%
			T1003			.	.	.	.			.	.	.
												.	.	.	
137*2	F	22 Apr 1990 19 Jul 1990	50		0.5000	.0000	.0430	.0370	.		1.110	1.	1.	0	T1003=25% T1002=25%
			56			.	.	.	.			.	.	.
												.	.	.	
T1001	F	- 1982 14 Feb 1988	WILD		1.0000	.0000	.0000	.0000	.		0.000	.	.	.	
			WILD			.	.	.	.			.	.	.
												.	.	.	





SPARKS

Order/Registration Form



ISIS develops and distributes SPARKS to the captive breeding community in an effort to promote sound, consistent, and conservation oriented methods of animal population management. New and improved methods of analysis will be added to SPARKS as resources permit. As any bugs are found or speed improvements are made, we will distribute new releases to registered users.

SPARKS is available to all ISIS members in good standing, at no additional charge. For computer hardware, ISIS is currently recommending, at minimum, a 386 CPU, 4 MB of RAM, a 120 MB hard disk drive, a color monitor, and a mouse. Contact ISIS for membership applications, fees, and requirements. Fees for non-ISIS members are listed below.

Date: _____

Institution Name: _____

Institution Code #: _____

Principle user: _____

Address: _____

City, State: _____

Country, Mail Code: _____

Phone Number: _____

FAX Number: _____

HARDWARE/SOFTWARE:

Please circle the answer where appropriate, otherwise write the answer in the blank provided.

Computer Brand and Model: _____

CPU: _____

Total RAM: _____

Hard Disk Size: _____

Color Monitor: YES NO

Mouse: YES NO

Floppy Drives: 5 1/4" 3 1/2"

Printer Brand and Model: _____

Operating System version: _____

PAYMENT (NON-ISIS MEMBERS ONLY): \$250.00 U.S.

Check Enclosed: Check #: _____ Check Amount: **\$250.00 U.S.**

Purchase Order Number: _____

Send Invoice to: _____

ANNUAL SPARKS FEE (NON-ISIS MEMBERS ONLY): Purchase includes support/maintenance for the rest of the calendar year of purchase. Thereafter, the SPARKS user license fee will be \$200.00 U.S. per year to cover continuing development and user support.

Authorizing Signature: _____

Return to:

Int'l Species Information System, 12101 Johnny Cake Road, Building A Room 6, Apple Valley, MN 55124-8151 U.S.A. 612/431-9295

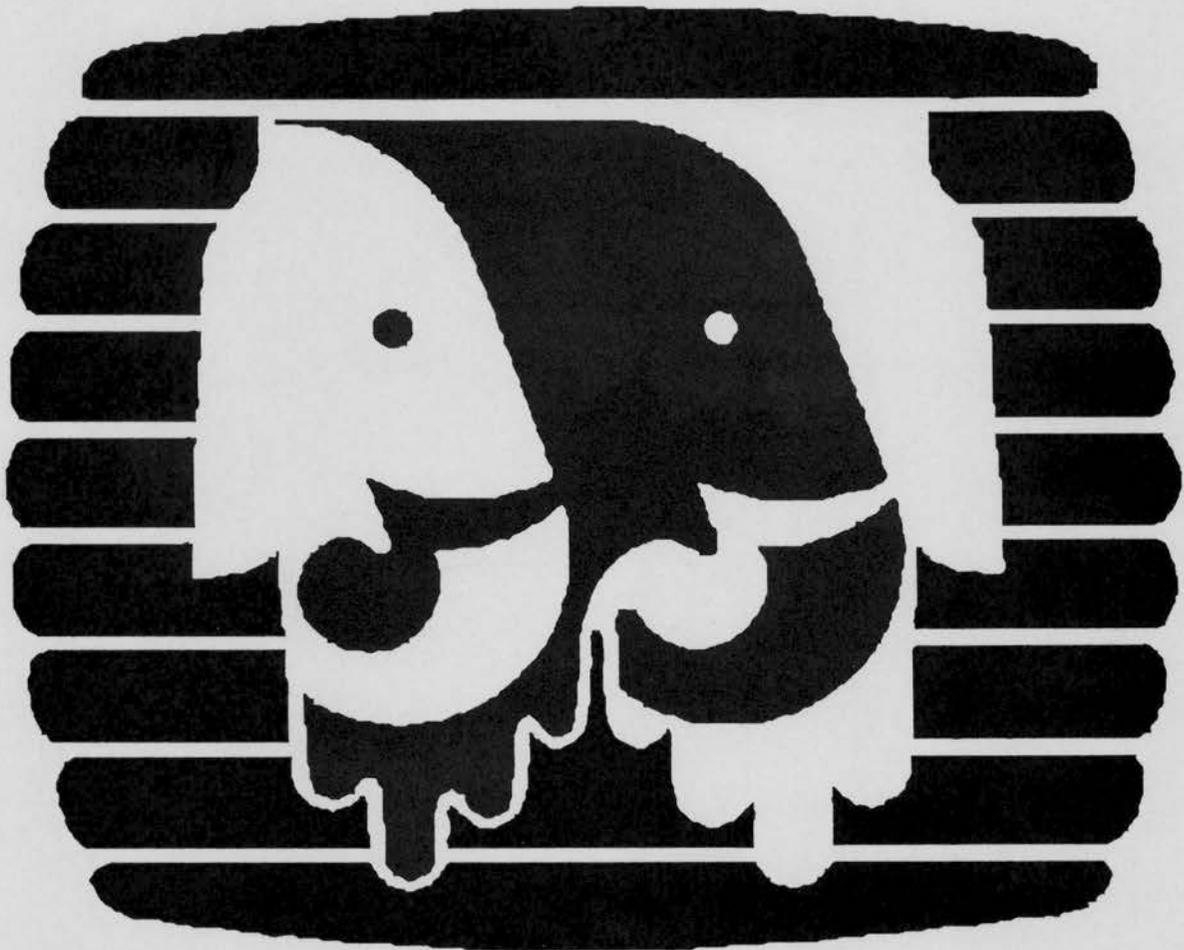
Disclaimer: ISIS will make a good-faith effort to deal with any SPARKS problems identified to ISIS in writing. ISIS can accept no consequential liability for SPARKS use. Any modifications to SPARKS performed by the user, or any direct access to SPARKS files without using SPARKS, are at the user's own risk.

September 1993:SPKSORDR.FRM

ISIS

*Single Population Analysis
& Records Keeping System*

SPARKS





SPARKS

Single Population Analysis & Records Keeping System



A software tool from the makers of ARKS for creating and maintaining studbooks, performing demographic and genetic analysis, and supporting population management. Allows easy access and use of the 2400 partial studbooks maintained by ISIS.

Highlights:

- ◇ Second generation species manger/studbook software, with professional support from ISIS.
- ◇ Simple "look and Feel" make SPARKS easy to use, especially for anyone who has used ARKS.
- ◇ Powerful internal editing improves data quality.
- ◇ Online help system at the touch of a key.
- ◇ Supports temporary studbook numbering and re-numbering while assembling a new studbook.
- ◇ Flexible studbook print formats and sort order printing.
- ◇ Ability to easily set view criteria to allow printing or analyzing numerous data subsets.
- ◇ User-Defined-Fields allow custom tailoring of data collection.
- ◇ Quick screen view of a facilities current specimens.
- ◇ Ability to maintain names of contact persons and print mailing labels.
- ◇ Works with ISIS' partial studbooks on 2400 species available from ISIS in SPARKS file format.
- ◇ Demographic analysis including life tables, age pyramid, growth rate (λ), generation (F).
- ◇ Genetic analysis including pedigree diagrams, descendant listings, inbreeding coefficients, and founder representation.
- ◇ Graphs for census, fecundity, mortality, and founder representation.
- ◇ Data can be exported to external extended analysis programs, GENES and DEMOG, which are included.

User Power

Extremely powerful views of the data. All reports and analysis can be restricted to user chosen subsets of the available information, such as specimens within a country, continent, a cooperative breeding program, a time period, wild or captive born, hand or parent reared, age, inbreeding coefficient, etc. and many combinations of the above views. For example, you could print a studbook or perform a demographic analysis on just the U.S.A. population between 1979 and 1989. Or on the Australian hand-reared females over the age of six years. You can select views based on your own User-Defined-Fields, or even read in a list of selected studbook ID's.

Extensive effort has been invested in careful handling of incomplete data, such as the treatment of births to parents of unknown age or unknown ID. The user can choose to include such births in fecundity calculations to remove much of the bias caused by their exclusion. When excluded, the fecundity tables are biased low; if included, such births are credited to parent-age-class proportionately to the distribution of known age births.

Ordering SPARKS

Sample reports are attached on the following pages, an Order/Registration Form is provided as the last page of this pamphlet. SPARKS is available to all ISIS members in good standing at no additional charge. For non-ISIS members the user license fee is US \$250 plus a required US \$200 annual support/development fee for subsequent years. Contact ISIS for membership applications, fees, and requirements.

Acknowledgements

In alphabetical order, Jon Ballou, Tom Foose, Laurie Bingaman-Lackey, Bob Lacy, R. Andrew Odum, Frank Princeé, Randy Rockwell, and J. Andrew Teare all contributed in different and substantial ways to the design and development of SPARKS. SPARKS has benefitted directly from their pioneering, volunteer efforts in supporting species managers with software tools. We hope they and others will continue to identify needs and add tools which improve everyone's management science and efficiency.

The development of SPARKS, like most other development projects at ISIS, was funded by outside grant sources. Over \$100,000 has been invested so far, primarily in staff time. The major contributions were from the U.S. Institute of Museum Services and the J.N. Pew Jr. Charitable Trust.

MICRONESIAN KINGFISHER Studbook
(Halcyon cinnamomina)

Stud #	Sex	Hatch Date	Sire	Dam	Location	Date	Local ID	Event	Tag/Band	Breeder #
124	M	24 Jul 1989	11	12	PHILADELP	24 Jul 1989	UNK	Hatch	YELLOW #13	
					ORLANDO	4 Apr 1990	BI2501	Transfer		
					AGANA	????	UNK	Transfer		
					LAKEBUENA	30 Nov 1992	221116	Loan to		
					8 Jan 1993		Death			
(Death by: Infection Associated Bury Digestive Unknown (after autopsy))										
125	?	30 Jul 1989	13	36	PHILADELP	30 Jul 1989	204025	Hatch		PHIL 10
						30 Jul 1989		Death		
(Death by: Unknown means)										
130	M	7 Sep 1989	882034	882033	NY BRONX	7 Sep 1989	892305	Hatch		
					ST LOUIS	16 Apr 1990	190059	Transfer		
131	M	9 Sep 1989	1	2	NY BRONX	9 Sep 1989	UNK	Hatch		
					AGANA	????	UNK	Transfer		
					PHILADELP	11 Jun 1990	204332	Loan to		
132	F	20 Sep 1989	842052	842053	NY BRONX	20 Sep 1989	892322	Hatch	/ORANGE 9	
					ST LOUIS	16 Apr 1990	190060	Transfer		
134	F	16 Feb 1990	50	56	SAN ANTON	16 Feb 1990	900219	Hatch	7097	
						30 Jun 1990		Death		
(Death by: Unknown means)										
135	M	12 Apr 1990	11	12	PHILADELP	12 Apr 1990	UNK	Hatch	4912	
					AGANA	????	UNK	Transfer		
					CHICAGOLP	8 Nov 1990	B9069	Loan to		
					AGANA	????	UNK	Transfer		
					COLUMBIA	20 Mar 1991	005450	Loan to		
136	M	20 Apr 1990	50	56	SAN ANTON	20 Apr 1990	900495	Hatch	7104	
						5 Apr 1991		Death		
(Death by: Unknown means)										
137	F	22 Apr 1990	UNK	UNK	SAN ANTON	22 Apr 1990	UNK	Hatch		
					AGANA	????	UNK	Transfer		
					PHILADELP	19 Jul 1990	204381	Loan to		
138	M	5 May 1990	96	99	AUDUBON	5 May 1990	UNK	Hatch	GREEN 75	
					MILWAUKEE	11 Apr 1991	B2442	Transfer		
					AGANA	????	UNK	Transfer		
					MILWAUKEE	13 Apr 1991	B2442	Loan to		
139	M	21 May 1990	3	44	NZP-CRC	21 May 1990	211321	Hatch		
					AUDUBON	20 Mar 1991	1461	Transfer		
140	M	22 May 1990	3	44	NZP-CRC	22 May 1990	UNK	Hatch	303	
					AGANA	????	UNK	Transfer		
					CHICAGOLP	20 Mar 1991	B91167	Loan to		
						30 Apr 1991		Death		
(Death by: Unknown means)										

Specimen Report
MICRONESIAN KINGFISHER Studbook

Page 1

Taxon Name: **HALCYON CINNAMOMINA**

Studbook Number: **13**

Current Status >>>

Vital Statistics >>>

Sex: Male
Age: ~10Y at removal

Origin >>>

Birth Type: Wild born
Capture Location: GUAM
Hatch Date: ~ 1982 Est. to year
Sire Id: WILD
Dam Id: WILD
Rearing: Unknown

Identifiers >>>

House Name: HAWK

Tag/Band: DARK BLUE #3

Transaction History >>>

#	Event	Local ID	Date In-Date Out
1	Wild Caught GUAM Guam (u S)	UNK	~ 1982 Est. to year
2	Loan to PHILADELP Philadelphia Zoological Gardens	202914	30 Nov 1984 - 11 Jun 1990
3	Transfer to GUAM-DAWR GUAM-DAWR	UNK	Unknown - 11 Jun 1990
4	Loan to NY BRONX International Wildlife Conservation Pk	902189	11 Jun 1990 - 21 Jan 1993
5	Transfer to AGANA Aquatic and Wildlife Pres	UNK	Unknown - 21 Jan 1993
6	Loan to NZP-WASH National Zoological Park	212813	21 Jan 1993 - 21 Jan 1993
7	Death at age: ~10Y Est. by: Infection Associated Mounted or Preserved		21 Jan 1993 Generalized Viral

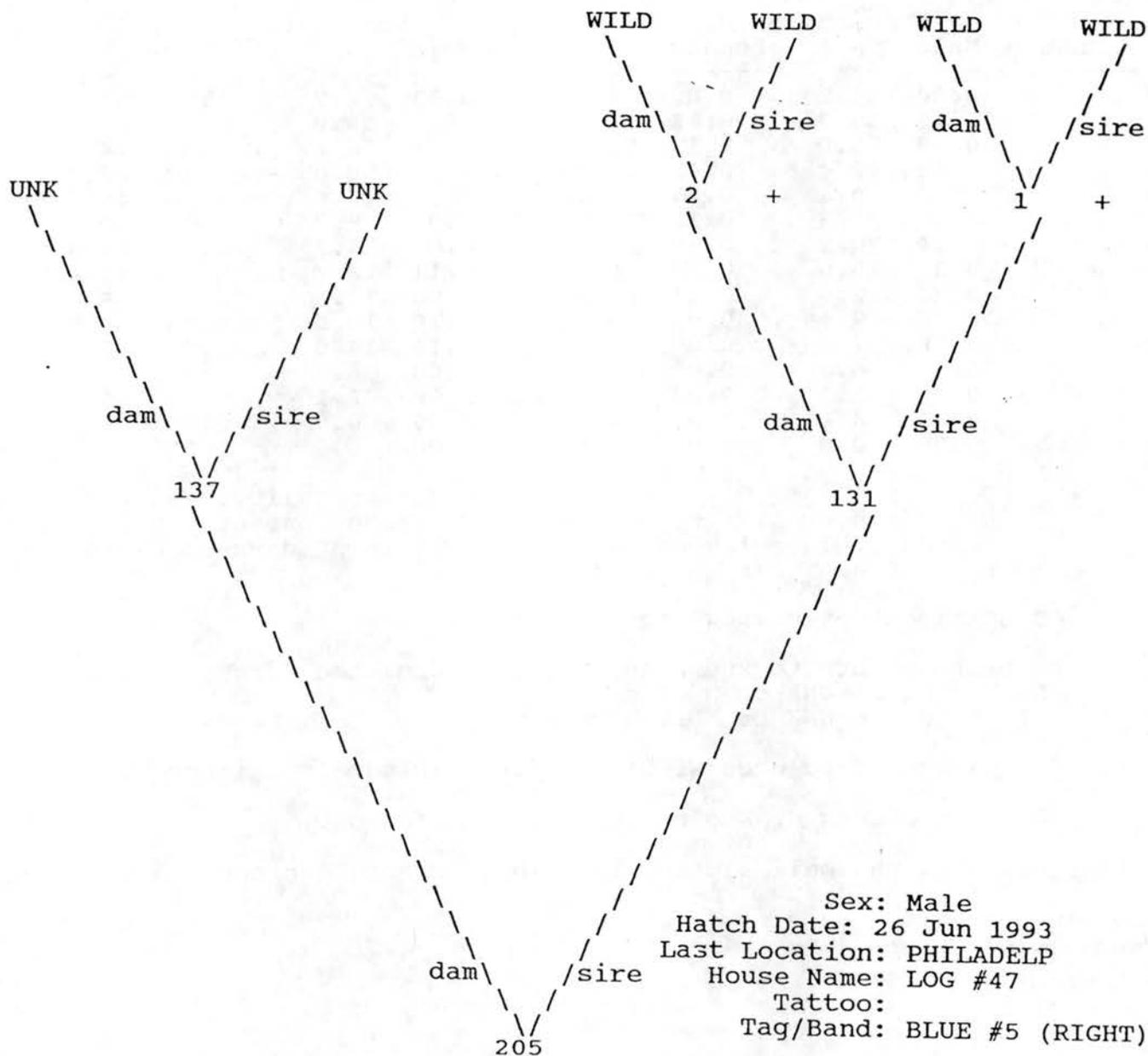
Special Data & Comments >>>

#	Code/Text	Date
1	House Name HAWK	30 Nov 1982
2	Weight/Length 0.055 KG M	26 Nov 1984
3	Tag/Band DARK BLUE #3 RIGHT	1 Jan 1987

Pedigree Chart Report
 MICRONESIAN KINGFISHER Studbook

Taxon Name: HALCYON CINNAMOMINA

Studbook Number: 205



Sex: Male
 Hatch Date: 26 Jun 1993
 Last Location: PHILADELPHIA
 House Name: LOG #47
 Tattoo:
 Tag/Band: BLUE #5 (RIGHT)

+ Specimens known to be obtained from the wild...

Fecundity and Mortality Report
MICRONESIAN KINGFISHER Studbook

Page 1

Taxon Name: HALCYON CINNAMOMINA

Age Class	Fecundity [Mx]...				Mortality [Qx]...			
	Male	N	Female	N	Male	N	Female	N
0- 1	0.00	44.2	0.00	44.1	0.51	92.7	0.52	91.2
1- 2	0.11	48.7	0.13	50.5	0.04	56.0	0.06	54.0
2- 3	0.19	55.0	0.13	53.9	0.04	68.2	0.05	74.2
3- 4	0.42	48.4	0.45	51.0	0.07	56.8	0.10	62.4
4- 5	0.50	40.1	0.63	41.5	0.07	42.6	0.10	49.7
5- 6	0.38	27.9	0.39	27.5	0.03	28.7	0.16	30.9
6- 7	0.34	20.9	0.38	17.1	0.04	24.8	0.17	23.8
7- 8	0.22	16.0	0.36	9.8	0.11	18.7	0.17	11.4
8- 9	0.28	12.5	0.14	8.2	0.08	13.2	0.00	8.2
9-10	0.06	9.5	0.00	6.1	0.10	10.5	0.38	8.0
10-11	0.08	7.4	0.00	4.4	0.14	14.0	0.20	5.0
11-12	0.38	6.3	0.00	2.9	0.00	6.3	0.27	3.6
12-13	0.00	1.1	0.00	0.3	0.49	2.1	0.00	0.3
13-14	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
14-15	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 5.176
Ro = 1.054
lambda=1.01
r = 0.010

T = 4.204
Ro = 0.813
lambda=0.95
r = -0.049

30 day mortality: 49%
(76 deaths out of 155 arriving
within 30 days of birth date)

3 specimens of unknown age ignored...

143 birth events to known age parents tabulated for Mx...plus...
27 births to UNK or MULT dams...
27 births to UNK or MULT sires...

[72 parents (includes WILD) not found in data set ignored...]

150 death events of known age tabulated for Qx...

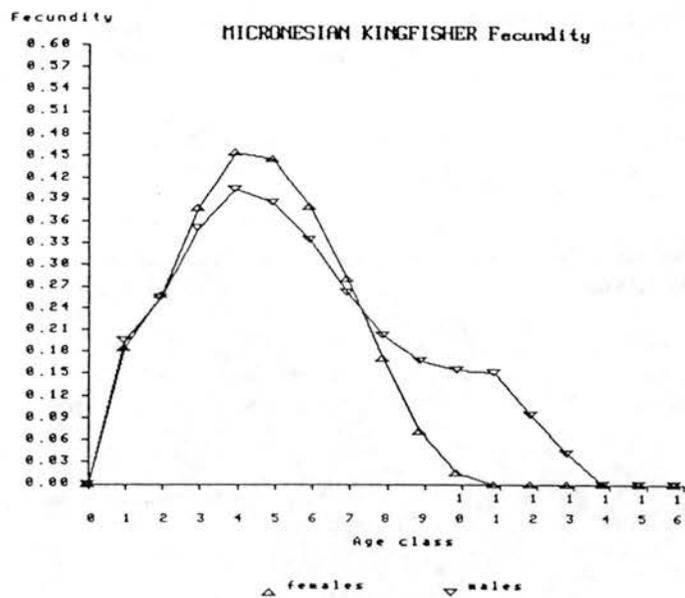
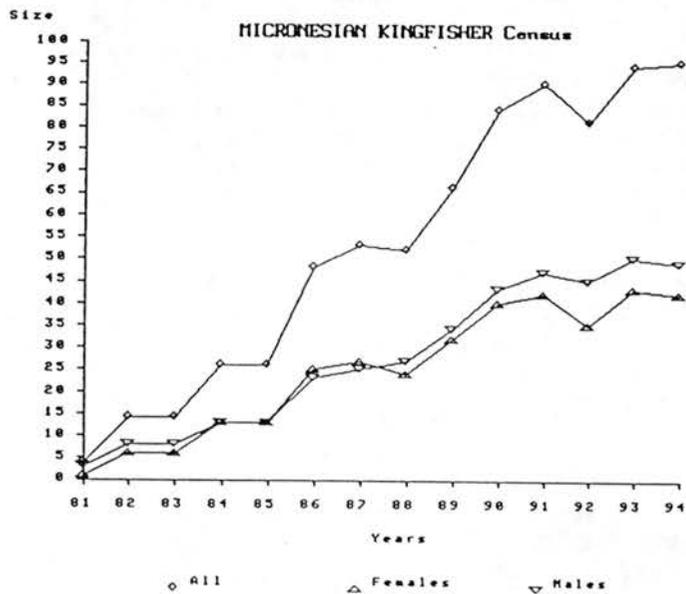
WARNING: Values with small sample sizes (N) warrant less confidence...

Masterplan Report
MICRONESIAN KINGFISHER Studbook
(Halcyon cinnamomina)

Living Population at: Philadelphia Zoological Gardens

PHILADELPH

<< G l o b a l >>															
Stud #	Sex	Hatch Date	Sire	Loc ID	Genome	F	MK	KV	GU-All	GU-CB	Vx	Live Offspr	Live Offspr	Repro Offspr	Founder Representation
#		Arrival	Dam	Social	Known	[unks = founders]	[unknowns removed]								
28	M	- 1983 31 Jan 1986	WILD	203180	1.0000	.0000	.0391	.0443	.		0.020	.	.	.	
			WILD			.	.	.	.			2.	0.	0.	
												2.	0.	0.	
61	F	31 Jul 1986 9 Dec 1986	842340	203374	0.0000	.0000	.0215	.0127	.		0.190	1.	0.	0.	
			842339			.	.	.	.			1.	0.	0.	
												.	.	.	
111	M	18 Apr 1989 11 Apr 1990	_____	204094	0.0000	.0000	.0039	.0051	.		0.970	.	.	.	
			_____			.	.	.	.			1.	0.	0.	
												.	.	.	
131	M	9 Sep 1989 11 Jun 1990	1	204332	1.0000	.0000	.0195	.0235	.		1.310	.	.	.	2=50% 1=50%
			2			.	.	.	.			2.	1.	0.	
												.	.	.	
137	F	22 Apr 1990 19 Jul 1990	_____	204381	0.0000	.0000	.0117	.0165	.		1.110	.	.	.	
			_____			.	.	.	.			2.	1.	0.	
												.	.	.	
174	M	30 Jul 1991 30 Jul 1991	111	204491	0.0000	.0000	.0166	.0140	.		1.920	.	.	.	
			61			.	.	.	.			.	.	.
												.	.	.	
205	M	26 Jun 1993 26 Jun 1993	131	204716	0.5000	.0000	.0195	.0255	.		2.070	1.	1.	0	2=25% 1=25%
			137			.	.	.	.			.	.	.
												.	.	.	
206	M	27 Jun 1993 27 Jun 1993	131	204717	0.5000	.0000	.0195	.0255	.		2.070	1.	1.	0	2=25% 1=25%
			137			.	.	.	.			.	.	.
												.	.	.	
11*2	M	- 1982 14 Feb 1988	WILD	_____	1.0000	.0000	.0000	.0000	.		0.020	.	.	.	
			WILD			.	.	.	.			.	.	.
												.	.	.	
111*2	M	18 Apr 1989 11 Apr 1990	T1002	_____	1.0000	.0000	.0508	.0476	.		0.970	0.	4.	0	T1003=50% T1002=50%
			T1003			.	.	.	.			.	.	.
												.	.	.	
137*2	F	22 Apr 1990 19 Jul 1990	50	_____	0.5000	.0000	.0430	.0370	.		1.110	1.	1.	0	T1003=25% T1002=25%
			56			
												.	.	.	
T1001	F	- 1982 14 Feb 1988	WILD	_____	1.0000	.0000	.0000	.0000	.		0.000	.	.	.	
			WILD			
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SPARKS

Order/Registration Form



ISIS develops and distributes SPARKS to the captive breeding community in an effort to promote sound, consistent, and conservation oriented methods of animal population management. New and improved methods of analysis will be added to SPARKS as resources permit. As any bugs are found or speed improvements are made, we will distribute new releases to registered users.

SPARKS is available to all ISIS members in good standing, at no additional charge. For computer hardware, ISIS is currently recommending, at minimum, a 386 CPU, 4 MB of RAM, a 120 MB hard disk drive, a color monitor, and a mouse. Contact ISIS for membership applications, fees, and requirements. Fees for non-ISIS members are listed below.

Date: _____

Institution Name: _____

Institution Code #: _____

Principle user: _____

Address: _____

City, State: _____

Country, Mail Code: _____

Phone Number: _____ FAX Number: _____

HARDWARE/SOFTWARE:

Please circle the answer where appropriate, otherwise write the answer in the blank provided.

Computer Brand and Model: _____

CPU: _____ Total RAM: _____ Hard Disk Size: _____

Color Monitor: YES NO Mouse: YES NO Floppy Drives: 5 1/4" 3 1/2"

Printer Brand and Model: _____

Operating System version: _____

PAYMENT (NON-ISIS MEMBERS ONLY): \$250.00 U.S.

Check Enclosed: Check #: _____ Check Amount: \$250.00 U.S.

Purchase Order Number: _____

Send Invoice to: _____

ANNUAL SPARKS FEE (NON-ISIS MEMBERS ONLY): Purchase includes support/maintenance for the rest of the calendar year of purchase. Thereafter, the SPARKS user license fee will be \$200.00 U.S. per year to cover continuing development and user support.

Authorizing Signature: _____

Return to:
Int'l Species Information System, 12101 Johnny Cake Road, Building A Room 6, Apple Valley, MN 55124-8151 U.S.A. 612/431-9295

Disclaimer: ISIS will make a good-faith effort to deal with any SPARKS problems identified to ISIS in writing. ISIS can accept no consequential liability for SPARKS use. Any modifications to SPARKS performed by the user, or any direct access to SPARKS files without using SPARKS, are at the user's own risk. September 1993:SPKSORDR.FRM

ISIS BOARD OF TRUSTEES 1995

(sorted by term of office)

ELECTED:

Mr. Bernard Harrison (TRUSTEE) Singapore Zoological Gardens 80 Mandai Lake Road Singapore, 2572 Singapore	TERM: 1 Jan 93 - 31 Dec 95 INSTCODE: 452501002 PHONE: 65 269 3411 FAX: 65 367 2974
Mr. John Knowles (CHAIRMAN) Marwell Zoological Park Colden Common Nr. Winchester, Hampshire S021 1JH England (U.K.)	TERM: 1 Jan 93 - 31 Dec 95 INSTCODE: 120214001 PHONE: 44 1 962 777 407 FAX: 44 1 962 777 511
Mr. William Labuschagne (TRUSTEE) Pretoria Nat. Zoo Gardens So. Africa P.O. Box 754, Boom Street Pretoria 0001, South Africa	TERM: 1 Jan 93 - 31 Dec 95 INSTCODE: 250604003 PHONE: 27 12 28 3265 FAX: 27 12 323 4540
Mr. John DeJose (TRUSTEE) Perth Zoological Society P.O. Box 879 South Perth 6151, W. Australia	TERM: 1 Jan 94 - 31 Dec 96 PHONE: 61 9 474 4166 FAX: 61 9 474 4113
Mr. Charles Hoessle (TRUSTEE) St. Louis Zoological Park Forest Park St. Louis, MO 63110	TERM: 1 Jan 94 - 31 Dec 96 INSTCODE: 310526006 PHONE: (314)781-0900 FAX: (314)781-6086
Prof. Dr. Gunther Nogge (TRUSTEE) Koln Zoo Riehler Strasse 173 50735 Koln Germany	TERM: 1 Jan 94 - 31 Dec 96 INSTCODE: 113023002 PHONE: 49 221 778 5101 FAX: 49 221 778 5111
Ms. Karen Sausman (SECRETARY) Living Desert Reserve 47-900 Portola Ave. Palm Desert, CA 92260	TERM: 1 Jan 94 - 31 Dec 96 INSTCODE: 310505027 PHONE: (619)346-5694 FAX: (619)568-9685
Dr. Anton Dorresteyn (TRUSTEE) Rotterdam Zoo P.O. Box 532 Van Aerssenlaan 49 3039 KE Rotterdam The Netherlands	TERM: 1 Jan 95 - 31 Dec 97 INSTCODE: 112009001 PHONE: 31 10 443 1431 FAX: 31 10 467 7811

Mr. Jim Jackson (TRUSTEE)
Fossil Rim Wildlife Center
P.O. Box 2189
Rt 1 Box 210 Cr 2008
Glen Rose, TX 76043

TERM: 1 Jan 95 - 31 Dec 97
INSTCODE: 310544710
PHONE: (817)897-2960
FAX: (817)897-3785

Dr. George Rabb (TRUSTEE)
Chicago Zoological Park
3300 Golf Road
Brookfield, IL 60513

TERM: 1 Jan 95 - 31 Dec 97
INSTCODE: 310514004
PHONE: (708)485-0263
FAX: (708)485-3532

Dr. Christian Schmidt (TRUSTEE)
Frankfurt Zoo
Alfred-Brehm-Platz 16
D-60316 Frankfurt am Main
Germany

TERM: 1 Jan 95 - 31 Dec 97
INSTCODE: 113021003
PHONE: 49 69 2123 3727
FAX: 49 69 2123 7855

APPOINTED:

Dr. Kathryn Roberts (TREASURER)
Minnesota Zoological Garden
13000 Zoo Blvd.
Apple Valley, MN 55124-8199

TERM: 1 Jan 93 - 31 Dec 95
INSTCODE: 310524007
PHONE: (612)431-9299
FAX: (612)431-9336

Dr. Ulie Seal (TRUSTEE)
Captive Breeding Specialist Group
12101 Johnny Cake Ridge Road
Bldg. A, Room 10
Apple Valley, MN 55124-8151

TERM: 1 Jan 93 - 31 Dec 95
INSTCODE: 310524998
PHONE: (612)431-9325
FAX: (612)432-2757

EX OFFICIO:

Mr. Nathan R. Flesness
Executive Director, ISIS
12101 Johnny Cake Ridge Road
Bldg. A, Room 6
Apple Valley, MN 55124-8151

TERM: Serves by virtue of office
PHONE: (612)431-9295
FAX: (612)432-2757

NEWLY APPOINTED:

Mr. Steve McCusker
San Antonio Zoo
3903 N. St. Mary's St.
San Antonio, TX 78212-3199

TERM: 1 Jan 95 - 31 Dec 97
INSTCODE: 310544025
PHONE: (210)734-7184
FAX: (210)734-7291

Amy Camacho - Mexico

Amy Camacho was born in Los Angeles, California and has lived in Puebla, Mexico since 1969. In 1980, Camacho became Director of Africam Safari. Camacho studied business administration at the University of the Americas, in Puebla. She studied ecology at the University Ibero Americana, also in Puebla, and in 1992 attended summer school at the Jersey Wildlife Preservation Trust. Camacho has served two terms as President of the Mexican Zoo Association (AZCARM) from 1992 to-date. Camacho is currently vice-president of the Latin American Zoo Association (ALPZA) and a member of CBSG.

William Conway - USA

William Conway became the Director of the Bronx Zoo/Wildlife Conservation Park in 1962, he is also the General Director and President of the Wildlife Conservation Society. The Society administers New York's Bronx Zoo, Central Park, Queens and Prospect Park Wildlife Centers, the Aquarium, the St. Catherines Wildlife Survival Center, and "in situ" projects in fifty nations. Conway has served AZA as president and board member, led the development of its Accreditation and Species Survival Programs, written its first Animal Acquisition and Disposition Policy, chaired its Conservation and SSP Committees, served on the Gorilla SSP and currently chairs AZA's Field Conservation Committee. He provided early support for the development of ISIS and has played a leading role in the redeployment of zoos and aquariums as environmental science and proactive conservation centers. Conway personally oversees WCS field programs in South America's "Southern Cone". Conway has authored several articles and reports in wildlife conservation, wild animal care and propagation and serves on the boards of several conservation organizations including CBSG's Steering Committee. He has received honorary degrees from three universities and many awards, including AZA's Marlin Perkins award.

Bernard Harrison - Singapore

Bernard Ming-Deh Harrison was born in Kuala Lumpur, Malaysia. His primary education was completed at various schools in Malaysia, England, Australia and Singapore. Harrison completed his secondary education at Grammar School in Midhurst, Sussex, England. He then attended the Victoria University of Manchester and obtained a BSc Joint Honours in Zoology and Psychology, graduating in 1973. Harrison holds a MSc in Zoo Exhibit Planning from the National University of Singapore, obtained in 1986. Harrison is presently the Executive Director of the Singapore Zoological Gardens which he joined in 1973, having also held the posts of Assistant Administrative Officer, Curator of Zoology and Assistant Director and Curator.

Bengt Holst - Denmark

Bengt Holst was educated as an ethologist from Copenhagen University in 1983. Also in 1983, Holst was employed by the Copenhagen Zoo as a scientific assistant and curator, later as general curator, and since 1994 as Vice Director. Since 1983 he has been responsible for scientific work and for animal registration at the Copenhagen Zoo. Since 1988 he has been chief of the Animal Department and responsible for international zoo cooperation. Since 1985 Holst has been the International Studbook keeper for Musk Ox (*Ovibos moschatus*) and since 1990 the species coordinator for Golden Conures in Europe (EEP). Holst is a member of the EAZA Research Committee and co-chair of the EAZA Behaviour and Ecology Group since 1991. Holst has been a member of the EEP Council since 1994. He is editor of the publication: "Behavioural Ecology - a Catalogue of Ideas" (1990).

Willie Labuschagne - South Africa

In 1977, Willie Labuschagne became the Director of the Johannesburg Zoological Gardens, then in 1985 he became the Director of the National Zoological Gardens of South Africa and presently serves both positions. Labuschagne became a member of IUDZG - World Zoo Organization in 1981, a member of the Membership Committee of IUDZG - World Zoo Organization in 1992. He became a member of the ISIS Board of Trustees in 1992, and a member of the CBSG Steering Committee in 1993. Labuschagne also serves as the Second Secretary of IUDZG - World Zoo Organization (1993-1995), and Chairman of CIRCC (1995). In 1989, Labuschagne initiated the Pan African Association of Zoological Gardens, Aquaria and Botanical Gardens and serves as Chairman. Labuschagne serves as a member on the Council/Steering Committee of various National Conservation Organizations, among others the Mammal Research Institute of South Africa, and Chairman of the Management Committee of the same Society, and Chairman of the Endangered Species Subcommittee. Labuschagne is the recipient of various awards; vocational awards in Excellent Pursuit of a Chosen Career, Pre-eminent Achiever in Excellence Award (Conservation) - awarded by the City Council of Pretoria, nominee for Outstanding Young South Africans, and has received two merit awards by the Council for Scientific and Industrial Research.

Rainer Revers - Austria

Rainer Revers was born in Wurzburg, Germany, he moved to Salzburg, Austria in 1965. Revers studied psychology and zoology from 1970 to 1975, then was awarded a scientific scholarship to the University of Salzburg, Institute of Zoology, for two years. In 1977, Rainer started work in the Zoological Garden Hellbrunn as an assistant, then became Director in 1990. Revers has been an appointed professor for zoo biology and for ethology at the University of Salzburg.

ISIS NEWS



Newsletter of the International Species Information System

July 1995

New ISIS Services (CD-ROM & REGASP), Commitment to Windows Development, and Increased Member Fees.

At the May meeting of the ISIS Board of Trustees, four important decisions were made regarding new member services; release of ISIS data on CD-ROM, new planning software from Australia (REGASP), development of ISIS Windows software, and how to pay for these improvements. Letters have been sent to all members explaining the new services and fees, which are also reviewed below:

• CD-ROM - New ISIS Specimen Reference Service:

ISIS has just distributed the first copy of a powerful new service - a Specimen Reference tool on CD-ROM. This product will assist collection managers by making ISIS information on specimens and species conveniently available from within an ISIS-member institution. Information reported to ISIS regarding a specimen's history or pedigree can be checked by a member institution before acquisition of a specimen. Other needs can also be met directly from this CD-ROM - a partial-studbook examined, a TAG (Taxon Advisory Group) report run on the spot, etc.

This new service also offers an important tool for improving ISIS' data quality. Up to this point, records staff had very limited ability to see how the information they contribute did, or did not, integrate with information reported by other facilities for the same specimen. With the new CD-ROM, records staff can check the history reported to ISIS for any specimen, or run a report listing discrepancies between their data and that reported by others ("Link Discrepancy Report"). With this increased access should also come increased understanding and insight into how these important records can be improved for both local and community needs.

This new CD-ROM Specimen Reference product is just one of several specialized CD-ROM disks which will likely be available to zoological institutions over the next year or two. It is important that each facility acquire the equipment needed to use CD-ROM disks. Local prices for a 4X (four-speed) CD-ROM drive have fallen to \$179 U.S. See *Buying a Computer*, on page 3 for a discussion of CD-ROM drive and computer specifications.

The CD-ROM product is provided to members only. In discussions about a product like this at various meetings over the last several years, a small number of institutions have expressed concern that increased access to specimen information might cause embarrassment to some members. The ISIS Board of Trustees has twice discussed this issue

Routing List

- ISIS Rep
- Director
- Veterinarian
- Curatorial Staff
- Other

- continued on page 4, New Services... -



Use / Misuse of "Raw" ISIS SPARKS datasets

We have recently seen some studbook petitions where "raw" ISIS SPARKS datasets - datasets as they are *directly* extracted from the ISIS pool of records - were genetically analyzed and the results (number of founders, etc.) were presented as if they were meaningful. **This is a very bad idea**, and is discussed below.

ISIS provides a convenient starting place for information on any of 6,000 species, with data contributed by over 500 past and present member institutions. For 95% of these species, there is no studbook and ISIS data are the only immediately available compiled information. "Raw" ISIS data has many uses: it can be a valuable foundation for starting a studbook, a way to see what's going on with a species, can be used to check which members have done most of the breeding, can often provide a rough check of whether or not a specimen is closely related to stock you already have, etc.

At present, however, "raw" ISIS data typically have too many holes (incompletely reported specimen histories) in it to give reliable answers to questions that require analyzing a full and complete pedigree back to the wild (such as the number of founders). The holes likely to be in a raw SPARKS dataset cause the pedigree analysis programs to report too many founders and give erroneously low values for kinship and inbreeding. Pedigree analysis works only with the pedigrees available, and using the "raw" data often means short pedigrees which stop at the holes. The datasets should not be used for these intensive genetics analysis purposes until it has been "cleaned up". (There are plans to bring "cleaned up" studbook information back into ISIS - see ISIS NEWS, Vol.5, No.1)

The holes in ISIS data come from transfers of specimens through non-member facilities, transfers between members where neither member reports the Specimen ID used by the other, or where one hasn't reported the specimen at all (usually because it predates their joining ISIS, and they have not entered all of their historical records yet). ISIS continues to recruit more members, and encourage the recording and reporting of full specimen information as well as the entry of historical data. We expect that the quality and

completeness of data available from ISIS will continue to improve. We anticipate that the new CD-ROM Specimen Reference service will help records staff find and fix problems.

Conflicting Studbook Numbers:

"Studbook number" was once a unique lifetime number identifying a specimen. For quite a few species, this situation has changed - specimens now receive two or more different studbook numbers from different studbook keepers. This has happened because of the recent rapid proliferation of regional studbooks (ISIS knows of nearly 500), and the fact that some regional studbooks assign totally different studbook numbers than are assigned by the international studbook for the same species. ISIS software was designed at a simpler time when a studbook number was supposed to be unique, so considerable confusion has been created by single specimens being assigned multiple studbook numbers.

To assess the magnitude of the problem, we recently conducted a quick check of the 71 species we know have two or more different studbooks. For 28 of these species, the studbooks had been sent to the ISIS studbook archive and could be readily checked. Of these 28, 19 species were found to have more than one studbook number assigned to individual specimens. In the other 9 cases, the regional studbook coordinated with the international studbook and used exactly the same numbering system. With multiple studbook numbers in about 2/3 of the cases examined, we conclude that the problem has become significant.

ISIS 3, and the forthcoming ARKS 3, will now recognize a large number of different studbook numbers for a single specimen. Each number can be recorded, along with its assigning authority. It will no longer be adequate to say "the studbook number is ___", one must now identify which studbook has assigned which number. Also, the 80,000 individual studbook numbers already entered into zoo records systems will have to be gone over by records staff and labeled (in ARKS 3) as to which studbook they are from. SPARKS, designed 8 years ago based on the concept of unique studbook number, has to be redesigned for



this and other reasons.

We are strongly encouraging the various regional zoo associations which authorize regional studbooks, to recognize the problem that has arisen, and work out coordinated studbook number policies before this problem becomes even larger.

Buying a Computer?

The price of computers continues to drop, while the speed and storage capacity continues to rise. A good quality 75 MHz "Pentium" based machine with a large fast hard disk drive, 8 megabytes of RAM, a mouse, and a color VGA monitor, is now much cheaper (approximately \$2000 US) than the original PCs of ten years ago. Be sure to purchase at least a 4X (four speed) CD-ROM player as well, as ISIS is delivering new CD-ROM services. Built-in high-speed modems will allow you to access ISIS' Bulletin Board, and various internet services.

Suggested system:

- CPU:** Pentium
- Hard Drive:** 800 Megabytes (or more)
- RAM:** 8 Meg. (or more)
- Mouse:** Any pointing device
- Monitor:** Color VGA, or SVGA
- CD-ROM:** 4X Reader
- Modem:** 14.4 baud (or faster)

ISIS' new software, such as ARKS 3, takes full advantage of the improvements which speed, color, and a mouse make possible, and ISIS' future Windows products will require a powerful modern machine.

ISIS NEWS is produced quarterly by the International Species Information System
12101 Johnny Cake Ridge Rd, Apple Valley, MN USA 55124
Phone: 612-431-9295 FAX: 612-432-2757 BBS: 612-432-9292
E-mail: ISIS@epx.cis.umn.edu
Editor: Nathan Flesness Asst. Editor: Jim Johnston



Viruses!

Is your computer acting strangely? Mysteriously rebooting? Strange messages appearing from nowhere? It could be your machine has a virus. Viruses received a lot of attention two years ago with the rapid spread of the Michelangelo virus, but since then have not had much media exposure. This is not to say viruses are any less of a problem, rather there are now more than 2000 known computer viruses, and **hundreds** more are being developed yearly. Virus protection is *essential* to any business that relies upon computers to store records. As many of you already know, it doesn't take much to bring your computer and all your hard work to a complete standstill, or worse, to lose valuable information.

ISIS has been regularly scanning its own computers for virus infections for years now. Since about the beginning of this year we have been automatically scanning each monthly data disk as it is received. Not surprising with nearly 500 members, some incoming disks are found to carry viruses, posing a serious risk. An in-house protocol for dealing with intercepted viruses has been successful in preventing the transmission of these viruses to our computers, and we are confident that our data are safe, and that we are not a source for spreading viruses. When a virus is intercepted we try to "disinfect" the disk and, if safe, use the data. If we cannot deactivate the virus safely, the disk is not used and the data are not accepted. The disk is returned to the user, after either removing the virus or deleting the file that contains it, along with a letter warning the user and documentation (if available) describing the virus. ISIS attempts to contact users promptly when viruses are found on their disk.

There are many high quality virus detection/disinfection programs available. **ISIS strongly recommends regular use of some sort of virus protection.** One good product available on many Internet sites is called F-PROT. This product will detect and disinfect most viruses, is updated every other month, and has the ability to remain active, but hidden in the background, checking each file and disk as you access it. It can be found on the Internet at OAK.OAKLAND.EDU, and comes with complete documentation and registration information.



- continued from page 1, New Services... -

at length, and concluded that the wisest course is to build on the scientific and cooperative base of collection management by increasing member access to relevant and necessary information. A more restrictive policy would deny members the information needed for improving their collection management, and also risks creating the appearance that there is something to hide.

• **REGASP - New Collection Planning Tool:**

Thanks to a cooperative agreement between the Australasian Species Management Program (ASMP, Sydney) and the ISIS Board of Trustees, in early 1996 ISIS will be offering all members the chance to use a powerful collection planning software tool developed by ASMP, called REGASP (REGional Animal Species Collection Plan). This system has been very successful in Australia and New Zealand, is currently being tried by the South-East Asian Zoo Association (SEAZA), and has been the focus of considerable interest in other regions. REGASP was developed to be compatible with ARKS and ISIS, and will now be offered as a routine benefit of membership in ISIS.

REGASP reads your ARKS records to learn your current inventory, and allows you to enter your preferred holdings by species. It also provides a convenient place to store and access important reference information, such as the holdings of other institutions (like the ISIS Abstracts), available regional plans, global status and species recommendations, and studbook keeper and species coordinator information. Institutions which create and record collection plans through REGASP, and send this information to ISIS, will receive the plans of the others. This makes it very easy to directly coordinate breeding, stock transfer, etc.

• **Windows Software:**

ISIS is beginning development of Windows-based software, and plans to deliver ARKS and REGASP for Windows by 31 Dec 1996, and MedARKS for Windows by 31 Dec. 1998.

ISIS' in-house software (ARKS, MedARKS, SPARKS) was developed, over a 10 year period, for the DOS operating system. It has been obvious for several years that Windows products are needed - Windows has rapidly replaced DOS and most commercial software developers have now focused exclusively on Windows. Windows products are widely seen as easier to learn and use, and will also permit the needed translation of ISIS software into Japanese, Chinese, and other character sets. When available, ISIS' Windows software should also lower staff training time and costs.

ISIS has not had the resources to initiate Windows development. Since ISIS began in 1973, outside grants have paid for most of ISIS' software development. However, the ISIS Board of Trustees feels strongly that we cannot further delay development for Windows, hoping that someone else will pay for it. Instead, members must invest in cost-effective joint development of modernized Windows versions of these products which almost all members use for routine collection management.

• **Fee Increase:**

To meet these challenges, the ISIS Board of Trustees has voted unanimously to raise membership dues by 25%, effective 1 January 1996. While recognizing that this increase will significantly impact many members, the Trustees note that zoological institutions, like other organizations, are finding it cost-effective to invest more heavily in information systems for various aspects of their operation. Collection management is a critical function for any zoological institution. The fee increase, and the improved ISIS services it will pay for, are targeted at improving the quality and efficiency of collection management. ISIS is in fact owned by its members, who are jointly investing in vital community services.

This fee increase will support an ISIS software development/maintenance staff of four people (up from 2.5) supporting and improving four products (ARKS, SPARKS, MedARKS, ISIS), and a half-time position at ASMP (Sydney) supporting REGASP - together serving a world-wide network of nearly 500 institutions.

Institutions which are too far along in their 1996 budgeting process to be able to cope with the increase at this point in time can ask to have the amount of the increase carried until 1997.

FAX MEMORANDUM

To: John Knowles
Marwell Zoological Park

Fax: ⁴⁴⁻¹⁻⁹⁶²⁻~~44-962-~~777511

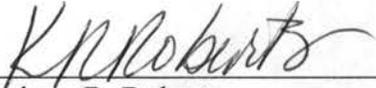
From: Kathryn Roberts
MN Zoo

Fax: 612 431-9336

Re: ISIS Board Meeting at Cologne, 11 May 1995

John, I regret that I cannot be at the scheduled ISIS Board meeting in Cologne on 11 May. However, I am again asking you to vote my proxy. I'm sorry to miss the meeting but I will see you in Dublin for sure.

This is to authorize **JOHN KNOWLES** to serve as my proxy for the May 11, 1995 ISIS board meeting in Cologne, Germany.



Kathryn R. Roberts



ISIS
12101 Johnny Cake Ridge Road
Apple Valley, MN USA 55124-8151
Telephone: (612) 431-9295
FAX: (612) 432-2757
BBS: (612) 432-9292
U.S. Country Code = (1)
INTERNET: ISIS@epx.cis.umn.edu

**DRAFT AGENDA:
ISIS BOARD OF TRUSTEES MEETING:
11 May 1995, 1300 Hrs., Cologne**

- I. Election of Officers**
- II. Previous Minutes.**
- III. Matters Arising Not Covered By Following Items.**
- IV. Membership:**
 - A. Provisional New Members for Approval
 - B. Suspended/terminated Members
 - C. Membership graph
 - D. Recruiting targets:
- V. Finance:**
 - A. Grants Update
 - B. 1994 Audit Results
 - C. 1995 to date
 - D. 1996 Budget for approval
 - E. Resources for priority needs/challenges - see below.
- VI. Service Review:**
 - A. Coverage Graph
 - B. Central Services
 - C. In-house Software
 - D. New Initiatives:
 - 1. Data Quality - Studbooks & ISIS
 - 2. Egg Log
 - 3. Nutrition
- VII. Needs/Challenges:**
 - A. Windows versions of ISIS software
 - B. INTERNET/ World Wide Web
 - C. REGASP
 - D. CMS - integrated Collection Management Software tool
- VIII. Election:**
 - A. Nominating Committee Report
 - B. Appointments
- IX. Executive Director Review:**
- X. Other Business**
- XI. Date and Place of Next Meeting**

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1. The meeting was held on [illegible] at [illegible] time.

2. The minutes of the previous meeting were read and approved.

3. The Treasurer reported that the financial statements for the year are in order.

4. The Secretary reported that the membership list is up to date.

5. The Chairman proposed a motion of thanks to the staff for their services.

6. The meeting closed at [illegible] time.

7. The next meeting will be held on [illegible] at [illegible] time.

8. The meeting was adjourned.

1. The meeting was held on [illegible] at [illegible] time.

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7. The next meeting will be held on [illegible] at [illegible] time.

8. The meeting was adjourned.

Draft Minutes

ISIS Board of Trustees Meeting

19 May 1994

Cologne, Germany

The meeting was called to order at 1330 by Chairman John Knowles. In attendance were Knowles, Roberts, Nogge, Dorrestyn, DeJose, Labuschagne, Seal, and Flesness - these eight constituting a quorum. Jim Jackson was present and volunteered to help record minutes.

Apologies were received from Sausman, Farst, Harrison, Hoessle, Rabb, Uchida, and Wylie. John DeJose was welcomed as an incoming Board Member.

Minutes from the 20 October 1993 conference call and the 7 Sept 1993 discussions at Antwerp were approved.

CBSG separation as of 31 December 1993 was discussed, with the consensus that if the year went well financially, ISIS would like to forgive part of the \$19,000 debt owed, but that we were not now in a position to commit to this.

Provisional new subscribing and non-subscribing members were approved on a motion by Roberts, second Dorrestyn (list attached). The list of members whose services have been suspended (due to no submitted data in the last year and no membership fees paid in the last year) was reviewed (list attached). Flesness was authorized (motion Roberts., second Labuschagne, unanimous) to terminate their membership, but encouraged to stay flexible in resolving problems, and to discuss European and African memberships at the upcoming meetings of these regions before final action. It was noted that the number of suspended members (34) plus the 6 who have dropped out roughly equalled the number approved (45) - i.e. that membership growth will appear to have slowed as a result of enforcing membership standards.

Current services were reviewed. Special note was made of the recent rapid rise in live specimens registered, and of the potential of MedARKS records for pooling across many institutions and providing the first reasonable-size scientific data set for research on medical problems.

Two significant new initiatives were discussed. One would offer studbook keepers much more direct support from ISIS. ISIS would enhance software systems so that cooperating studbook keepers would hopefully only have to "polish" the data ISIS already collects - eliminating the current redundant data-assembly efforts. This would save them much time, and their returning the improved data to ISIS is expected to make the studbooks much more current and more readily available - also potentially saving some publication/distribution costs. If current grant initiatives are successful, this might be implemented during 1996. This was enthusiastically received. Flesness noted that the lack of coordination among regions in assigning regional studbook numbers and sometimes international studbook numbers was causing and would continue to cause confusion, and that in September, 1991 he had raised this issue with the

regional coordinators - without result so far.

The second initiative involves expanding ISIS' services beyond specimen information systems, to include planning information systems. ISIS software, and the Australasian REGASP system, would both be expanded and improved to offer a world-wide network which would make planning information available from within each facility. Planning information would include specimen plans, collection plans, regional plans, and global recommendations. Excellent cooperation with the Australasian ASMP office already exists, but no budget, timelines, or funding source has yet been identified. This prospect was also received with enthusiasm.

ISIS' finances were reviewed, noting that the current year and 1995 have better prospects than the last two years. The proposed 1995 budget, with a range of projections, was approved by consensus. The 1993 audit and management letter were reviewed, and it was noted that Flesness was responsible for carrying out the recommended improvements in time-allocation tracking and grant reporting. A letter from the U.S. Public Health Service regarding the 1992 audit and findings was distributed, along with an explanatory note from Flesness. Knowles noted the impenetrable language of the letter, and the Board accepted by consensus that Flesness would resolve such matters.

The nominating committee (Roberts, Labuschagne, Mallinson and Flesness) reported that candidates for the 4 elected positions open for 1995 were to be:

Ton Dorrestyn Rotterdam (incumbent)
 George Rabb, Chicago, Brookfield (incumbent)
 Itaru Uchida, Nagoya Aquarium (incumbent)
 Jim Jackson, Fossil Rim
 Christian Schmidt, Frankfurt
 See-Wu Chu, Taipei

The Board noted with regret that Dr. Don Farst chose not to stand for re-election, due to other commitments. Flesness brought up a request from Steve Wylie, whose appointed term expires 31 Dec 1994, that Steve McCusker be appointed to the ISIS Board. After discussion noted that this was an unusual request, special one-time circumstances were identified, and the appointment was made unanimously, for a three year term 1995-1997.

The next ISIS Board of Trustees meeting was set for Cologne, 26 or 27 April, 1995, in conjunction with IUDZG Council and CBSG Steering committee meetings planned for that venue as well.

Flesness was excused and the Board reviewed performance and salary guidelines. Flesness was granted a 5% raise for 1995, and directed that staff salary increases should be appropriate and reasonable, but not to exceed 5%.

Karen Guoman, Secretary

... ..

The board meeting minutes for the year 2011 were reviewed and approved. The minutes were presented by the Secretary and the Treasurer. The minutes were read and approved by the board. The minutes were then filed in the minutes book.

The board meeting minutes for the year 2012 were reviewed and approved. The minutes were presented by the Secretary and the Treasurer. The minutes were read and approved by the board. The minutes were then filed in the minutes book.

The board meeting minutes for the year 2013 were reviewed and approved. The minutes were presented by the Secretary and the Treasurer. The minutes were read and approved by the board. The minutes were then filed in the minutes book.

The Secretary
Treasurer
President
Vice President
Member

The board meeting minutes for the year 2014 were reviewed and approved. The minutes were presented by the Secretary and the Treasurer. The minutes were read and approved by the board. The minutes were then filed in the minutes book.

The board meeting minutes for the year 2015 were reviewed and approved. The minutes were presented by the Secretary and the Treasurer. The minutes were read and approved by the board. The minutes were then filed in the minutes book.

The board meeting minutes for the year 2016 were reviewed and approved. The minutes were presented by the Secretary and the Treasurer. The minutes were read and approved by the board. The minutes were then filed in the minutes book.

[Handwritten signature]

MEMBERSHIP

1994 was a very busy year for membership change. We were somewhat surprised to determine that about one percent of the total of last year's work, but this was due to several "leakage" who either did not show up for the meeting or did not show up for the meeting but were dropped due to the INTERNATIONAL SPECIES INFORMATION SYSTEM (ISIS) in last year's Annual Report, and last year's meeting was held in a different location. The result of 1994 was to have only one membership. This was a mistake. The 1995 Annual Report regarding this will be corrected in the year 2000 meeting with a building of interest and beyond.

PROXY

The undersigned hereby appoints and authorizes the person or persons named below as my proxy to vote on my behalf at the Cologne, Germany meeting of the Board of Trustees of the above-named Corporation hereby appoint John Knowles as my proxy to vote on my behalf at the Cologne, Germany meeting of the Board of Trustees to be held on the 11 (eleventh) day of May, 1995, and at any adjournment thereof.

Dated this 2nd day of May, 19 95.

Signed by the above-named:

Kathryn R. Roberts

MEMBERSHIP

1994 was a unique year for membership change. We were somewhat surprised to continue to recruit new members at the rate of one a week, but also took action to remove "members" who neither paid fees nor sent in data in a year or more's time. Most members that were dropped had in fact never really started. Most of these were listed as "suspended" in last year's Board Report, and have since been formally terminated, as no response was received after multiple letters of encouragement and warning. The result for 1994 was to break even on membership. This was a one-time "cleanup" event. ISIS Board policy requiring data and fees current to the year will hereafter avoid such a buildup of inactive and unpaid members.

We nonetheless anticipate somewhat slower net growth of membership for the next period, than in recent years. There are only so many zoos, and there are particular economic and language problems to overcome in order to attract members in some regions. Taxonomic expansion to include Fish, scheduled to happen late this year or very early next year, after we are shipping ARKS 3 in volume, may attract additional aquarium members.

Potential membership growth opportunities are now concentrated in:

- Europe
- The emerging economy countries (South East Asia, Latin America)

In 1997, when we expect to be able to have volunteers translate ARKS for Windows into appropriate character sets, considerable membership growth potential will exist in:

- Japan
- China

SPONSORSHIP PROGRAM. During 1994, 5 members were sponsored by other institutions. We are encouraging these relationships, have publicized these through the ISIS Newsletter, and would like the Boards' help in developing more.

SPONSORED:

BY:

Tygerberg ZooPark, S. Africa
Chippangali, Zimbabwe

Fossil Rim
Fossil Rim

Parc Tsimbzaza, Madagascar

San Francisco Zoo, for the AZA Madagascar FIG

Hanoi Zoo
Saigon Zoo

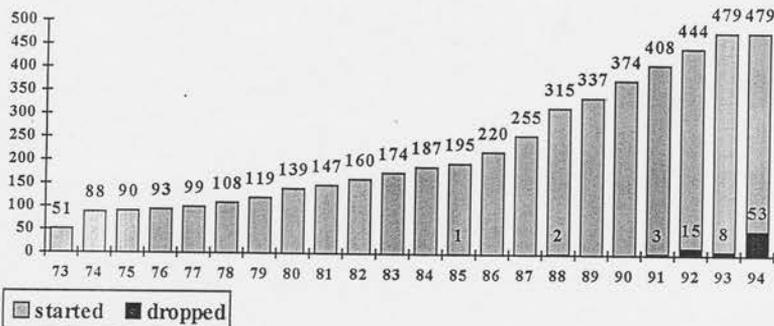
World Pheasant Association
World Pheasant Association

Institutions which have resigned:

Mnemonic	Institution	Country
BUENOSAIR	Buenos Aires Zoo	Argentina
SOROCABA	Parque Zool.Mun.Quinzinho de Barros	Brazil
ST JOHN	Cherry Brook Zoo Inc	Canada
MNPWD	Malawi Nat'l Prks & Wildf Dept	Central Africa
BLANTYRE	City of Blantyre Zoo	Central Africa
NANJING U	Nanjing Normal Univ -Dept Biology	China
WOLONG	Wolong Nature Reserve, Giant Panda	China
MEDELLIN	Medellin-Parque Zool. Sante Fe	Colombia
WLDLFRESC	Wildlife Rescue	French Guiana
GUAT CITY	La Aurora Zoologico Parque	Guatemala
DEBRECEN	Zool. & Botanical Garden of Debrecen	Hungary
PATNA	Sanjay Gandhi Biol.Park-Forest Off.	India
DELHI	Delhi National Zoological Park	India
BARODA	Shri Sayaji Baug Zoo	India
JUNAGADH	Sakkarbaug Zoo	India
SHIMLA	Himalayan Zoological Park	India
KUFRI	Kufri Musk Deer Breed Center	India
TRICHUR	Trichur Zoo	India
VANVIHAR	Vanvihar National Park	India
MYSORE	Mysore Zoo	India
NANDANKAN	Nandankanan Biological Park	India
COIMBATOR	Coimbatore Zoological Park Society	India
CROCBANK	Madras Crocodile Bank	India
LUCKNOW	Prince Of Wales Zool. Gardens Trust	India
KANPUR	Kanpur Zoological Park	India
DEHRA DUN	Wildlife Institute of India	India
CALCUTTA	Calcutta/Alipore Zool. Garden	India
TATA	Tata Steel Zoological Park	India
HALDWANI	Forest Training Institute	India
RANCHI	Ranchi Biological Park	India
TUXTLA	Miguel Alvarez Del Toro Zoo	Mexico
MORELIA	Benito Juarez Zoologico Parque	Mexico
RABAT	Parc Zoologique Natl. De Rabat-Morocco	Morocco
KRAKOW	Krakow Miejski Ogród Zoologiczny	Poland
WROCLAW	Miejski Ogród Zoologiczny	Poland
WUHAN	Wuhan Zoo	Rep. Of China
XINING	Xining People's Park	Rep. Of China
RIYADH	Riyadh Zoological Gardens	Saudi Arabia
ALMERIA	Sahariana La Fauna Parque	Spain
MONK JUNG	Monkey Jungle Inc	USA
NEW AGE	Life Fellowship Bird Sanctuary	USA
CHATHAM	Grindstone Valley Zoological	USA
THURMONT	Catoctin Mountain Zoological Park	USA
WHITE SAND	White Sands Research Center	USA
KINGS ISL	Paramount's King's Isl Wild Anim Hab	USA
ENDGCATS	Int'l Soc for Endangered Cats	USA
DOSWELL	Paramount's Kings Dominion	USA
CAMDEN	Thomas H Kean New Jersey State	USA
FINSER	Finser Exotics	USA
GOLD ST R	Golden State Ostrich Ranch	USA
PARCPPM	Mobutu / N'sele	Zaire

51 Institutions resigned in the last year.

ISIS Membership



6



1979 Membership List

MEMBERSHIP LIST

1979

MEMBERSHIP LIST

1979

GRANTS UPDATE:

For 1996, ISIS has grants pending for:

- \$39,025 Partial funding to develop ARKS for Windows (IMS).
- \$100,00 NIH grant (renewal expected).
- \$12,500 Egg Log
- uncertain Nutrition (depends on whether ISIS programmers do the work, or someone else does)

For 1995, ISIS has grants for:

- \$42,504 Comparing ISIS data to studbook data - reporting discrepancies to zoo and studbook (IMS).
- \$16,000 Additional Veterinary Services: Vet conference on ISIS Bulletin Board, and Flexible Clinical Norms Calculation on Bulletin Board.
- \$12,500 Egg Log addition to ARKS 3 (2 year half-time grant, IMS through U.S. National Aviary in Pittsburgh).
- \$116,125 NIH Chimpanzee population monitoring and analysis.

International Species Information System
March 23, 1995

Page Two

March 23, 1995

Certified Public Accountants

Carpenter Evert 6800 France Avenue South, #450

Edina, Minnesota 55435-2010

(612) 831-0085 FAX (612) 831-0792

Board of Directors
International Species Information System
Apple Valley, Minnesota

Dear Board of Directors:

We have audited the financial statements of International Species Information System for the year ended December 31, 1994, and have issued our report thereon dated March 23, 1995. As part of our audit, we reviewed accounting and operating procedures to the extent we considered necessary to determine the scope of audit procedures to employ. The report which follows contains our observations incidental to the audit and is not the result of an in-depth study of the areas discussed. Accordingly, this report is intended solely for the use of management and the Board of Directors and is not to be distributed external to International Species Information System.

Reportable Conditions

In performing our audit of the financial statements of International Species Information System for the year ended December 31, 1994, we considered its internal control structure in order to determine our auditing procedures for the purpose of expressing our opinion on the financial statements and not to provide assurance on the internal control structure. However, we noted certain matters involving the internal control structure and its operation that we consider to be reportable conditions under standards established by the American Institute of Certified Public Accountants. Reportable conditions involve matters coming to our attention relating to the design or operation of the internal control structure that, in our judgement, could affect the organization's ability to record, process, summarize and report financial data consistent with the assertions of management in the financial statements.

Internal control policies and procedures are normally organized around accounting system activities. These activities include:

- Fundraising and the receiving of pledges and/or payments.
- Providing of services and the receipt of payment for services.
- Purchasing of goods and services and incurring program expenses and making payment for same.
- Hiring and paying staff.
- Safeguard and control of assets owned.
- Monitoring of grant performance and reporting.
- Accounting system functions which record and modify the above transactions.
- Preparation of financial statements and reports.

International Species Information System
March 23, 1995

Page two

International Species Information System
Apple Valley, Minnesota

An essential part of an internal control structure is that procedures be properly segregated and the results of their performance adequately reviewed. This is normally accomplished by assigning duties so that 1) no one person handles a transaction from beginning to end, and 2) incompatible duties between functions are not handled by the same person. In addition, a review of these completed duties should be performed by an individual independent of that (those) function(s). While this structure is good in theory, the number of people required to staff such a system is normally beyond the means of most organizations, including International Species Information System. We have discussed this situation with you in prior years but our professional responsibilities require us to again call this to your attention. Under these conditions the most effective control lies in a good working relationship between the Board of Directors and management in monitoring the operations of the organization.

Management Comments

Federal Grant Allocation

Over the past several years the organization has been assembling a system to allocate payroll costs to federal grants. This began with time studies and evolved into tracking time by program all year. While either method is acceptable at the federal level, the results are not yet being used in the allocation of these and related costs to federal grants.

We suggest that you reach a conclusion as to which method is the best fit for your organization and integrate it into the federal allocation system in 1995.

Our observations and suggestions included in this report are intended to be constructive and are not a reflection on any individual. Furthermore, these recommendations do not modify or alter our opinion issued on the financial statements. We would be pleased to discuss these or any other questions with you.

Carpenter, Evert and Associates, Ltd.
Certified Public Accountants

Carpenter Evert
Certified Public Accountants

International Species Information System

Apple Valley, Minnesota

Financial Statements
Auditors' Report
For the Year Ended
December 31, 1994

Carpenter Evert
Certified Public Accountants

Carpenter Quest

Independent Auditors' Report

Board of Directors

Instructional Species Information for CONTENTS

Apple Valley, Minnesota

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Minneapolis, Minnesota
March 15, 1995

Carpenter, Frank and Associates, Ltd.
Certified Public Accountants

Certified Public Accountants

Carpenter Evert

6800 France Avenue South, #450

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Independent Auditors' Report

Board of Directors
International Species Information System
Apple Valley, Minnesota

We have audited the accompanying balance sheet of International Species Information System as of December 31, 1994, and the related statements of support, revenue and expense and changes in fund balances, functional expense and cash flows for the year then ended. These financial statements are the responsibility of the Organization's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the aforementioned financial statements present fairly in all material respects, the financial position of International Species Information System as of December 31, 1994, and the results of its operations and its cash flows for the year then ended, in conformity with generally accepted accounting principles.

Carpenter, Evert and Associates, Ltd.
Certified Public Accountants

Minneapolis, Minnesota
March 23, 1995

INTERNATIONAL SPECIES INFORMATION SYSTEM
STATEMENT OF SUPPORT, REVENUE AND EXPENSE
AND CHANGES IN FUND BALANCES
FOR THE YEAR ENDED DECEMBER 31, 1994

	1994			Total All Funds
	Current Funds		Equipment Fund	
	Unrestricted	Restricted		
Support and Revenue:				
Support:				
Grants and Contributions	\$ 7,633			\$ 7,633
Grants from Governmental Agencies		\$158,584		158,584
Revenue:				
Memberships and Other Fees	422,694			422,694
Investment Income	8,079			8,079
Miscellaneous Income	3,356			3,356
Total Revenue	<u>434,129</u>			<u>434,129</u>
Total Support and Revenue	<u>441,762</u>	<u>158,584</u>		<u>600,346</u>
Expense:				
Program Services:				
Pooled Data Services	166,438	158,584	\$ 12,221	337,243
Distributed Systems	204,240		7,259	211,499
Total Program Services	<u>370,678</u>	<u>158,584</u>	<u>19,480</u>	<u>548,742</u>
Support Services:				
Management and General	78,867		2,476	81,343
Fundraising	10,543		404	10,947
Total Support Services	<u>89,410</u>		<u>2,880</u>	<u>92,290</u>
Total Expense	<u>460,088</u>	<u>158,584</u>	<u>22,360</u>	<u>641,032</u>
(Deficiency) of Support and Revenue over Expense	(18,326)		(22,360)	(40,686)
Other Changes in Fund Balances:				
Fund Transfers For:				
Equipment Purchases	(21,800)		21,800	
CBSG Separation	60,700		(36,226)	24,474
Fund Balances - Beginning of Year	<u>124,295</u>		<u>87,643</u>	<u>211,938</u>
Fund Balances - End of Year	<u>\$144,869</u>	<u>\$ -</u>	<u>\$ 50,857</u>	<u>\$195,726</u>

The accompanying Notes to Financial Statements
are an integral part of this statement.

EXHIBIT B

INTERNATIONAL SPECIES INFORMATION SYSTEM
STATEMENT OF FUNCTIONAL EXPENSE
FOR THE YEAR ENDED DECEMBER 31, 1994

	1994						
	Program Services			Support Services			
	Pooled Data Services	Distributed Systems	Total Program Services	Management & General	Fund- raising	Total Support Services	Total All Services
Salaries	\$196,481	\$116,702	\$313,183	\$ 39,809	\$ 6,504	\$ 46,313	\$359,496
Payroll Taxes	15,921	9,456	25,377	3,226	527	3,753	29,130
Employee Benefits	25,079	14,896	39,975	5,081	831	5,912	45,887
Total Personnel Costs	237,481	141,054	378,535	48,116	7,862	55,978	434,513
Professional Fees				12,799		12,799	12,799
Contract Service		11,191	11,191				11,191
Computer Expense	5,731	3,404	9,135	1,161	190	1,351	10,486
Travel	17,284	10,266	27,550	3,502	572	4,074	31,624
Supplies	7,181	4,265	11,446	1,455	238	1,693	13,139
Telephone	5,757	3,419	9,176	1,166	191	1,357	10,533
Postage and Shipping	15,274	9,072	24,346	3,095	505	3,600	27,946
Occupancy	5,655	3,359	9,014	1,146	186	1,332	10,346
Printing and Publications	13,183	7,830	21,013	2,671	436	3,107	24,120
Repairs and Maintenance	2,598	1,543	4,141	526	87	613	4,754
Insurance	2,727	1,620	4,347	552	90	642	4,989
Conferences, Conventions and Meetings	1,571	933	2,504	318	53	371	2,875
Memberships and Dues	2,066	1,227	3,293	419	68	487	3,780
Bad Debts	6,517	3,871	10,388	1,536		1,536	11,924
Miscellaneous	1,997	1,186	3,183	405	65	470	3,653
Total Expense before Depreciation	325,022	204,240	529,262	78,867	10,543	89,410	618,672
Depreciation	12,221	7,259	19,480	2,476	404	2,880	22,360
Total Expense	\$337,243	\$211,499	\$548,742	\$ 81,343	\$ 10,947	\$ 92,290	\$641,032

The accompanying Notes to Financial Statements
are an integral part of this statement.

INTERNATIONAL SPECIES INFORMATION SYSTEM
BALANCE SHEET
DECEMBER 31, 1994

EXHIBIT C

	1994			Total All Funds
	Current Funds		Equipment Fund	
	Unrestricted	Restricted		
<u>ASSETS</u>				
Current Assets:				
Cash	\$132,937			\$132,937
Accounts Receivable (Less Allowance for Doubtful Accounts of \$2,000)	33,439			33,439
Grants Receivable		\$ 9,375		9,375
Prepaid Expense	6,241			6,241
Due from Restricted Fund	6,727			6,727
Total Current Assets	<u>179,344</u>	<u>9,375</u>		<u>188,719</u>
Equipment and Furniture - Net			\$ 50,857	50,857
TOTAL ASSETS	<u>\$179,344</u>	<u>\$ 9,375</u>	<u>\$ 50,857</u>	<u>\$239,576</u>
<u>LIABILITIES AND FUND BALANCES</u>				
Current Liabilities:				
Accounts Payable	\$ 1,213			\$ 1,213
Accrued Salaries and Vacation Payable	27,362			27,362
Deferred Revenue	5,900	\$ 2,648		8,548
Due to Unrestricted Fund		<u>6,727</u>		<u>6,727</u>
Total Current Liabilities	<u>34,475</u>	<u>9,375</u>		<u>43,850</u>
Fund Balances	<u>144,869</u>		\$ 50,857	<u>195,726</u>
TOTAL LIABILITIES AND FUND BALANCES	<u>\$179,344</u>	<u>\$ 9,375</u>	<u>\$ 50,857</u>	<u>\$239,576</u>

The accompanying Notes to Financial Statements
are an integral part of this statement.

**INTERNATIONAL SPECIES INFORMATION SYSTEM
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED DECEMBER 31, 1994**

	1994		Total All Funds
	Current Fund Unrestricted	Equipment Fund	
Increase (Decrease) in Cash			
Cash Flows from Operating Activities:			
(Deficiency) of Support and Revenue over Expense	\$ (18,326)	\$ (22,360)	\$ (40,686)
Total Adjustments	<u>(776)</u>	<u>22,360</u>	<u>21,584</u>
Net Cash Provided (Used) by Operating Activities	(19,102)		(19,102)
Cash Flows from Investing Activities:			
Purchase of Equipment		(21,800)	(21,800)
Cash Flows from Financing Activities:			
None			
Net (Decrease) in Cash	(40,902)		(40,902)
Cash - Beginning of Year	<u>173,839</u>		<u>173,839</u>
Cash - End of Year	<u>\$132,937</u>	<u>\$ -</u>	<u>\$132,937</u>

The accompanying Notes to Financial Statements are an integral part of this statement.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1994

1. Summary of Significant Accounting Policies

Organization Purpose

International Species Information System (ISIS) is an international information service organization collecting, pooling, and disseminating specimen information on intensively managed populations, such as those in zoological gardens and related facilities. In addition to data on hundreds of thousands of specimens of over 4,000 vertebrate species, ISIS develops specimen and population management software for use by member facilities.

Under the ISIS umbrella was the Captive Breeding Specialist Group (CBSG). Its purpose is the conservation or establishment of viable populations of endangered species. On January 1, 1994, CBSG became an independent organization.

The Organization's programs are as follows:

Pooled Data Services - International data archive and default "studbook" keeper for approximately ninety-seven percent (97%) of species held in captivity by zoological institutions worldwide.

Distributed Systems - Cooperative development center for software which is used internally by member institutions. It has been critical in developing widely-used international data standards as well as maintaining compatibility.

Fund Accounting

In order to observe the limitation and restrictions placed on resources available to ISIS, the accounts are maintained in accordance with the principles of fund accounting. This is the procedure whereby resources are classified for accounting and reporting purposes into funds established according to their nature and restriction. A description of the funds is as follows:

Current Unrestricted Fund - Accounts for resources over which the Board of Directors has discretionary control and which are used in carrying out the operations of the organizations.

Current Restricted Fund - Accounts for those resources currently available for use but only in accordance with the instructions of the donor.

Equipment Fund - Accounts for the investment in furniture and equipment used in the Organization's operations.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1994

1. Summary of Significant Accounting Policies (continued)

Allowance for Doubtful Accounts

Bad debts are provided on the reserve method based on historical experience and management's evaluation of outstanding accounts, contracts, grants and pledges receivable at the end of each year.

Land, Buildings and Equipment

All major expenditures for land, buildings and equipment are capitalized at cost. Contributed items are recorded at fair market value at date of donation. Depreciation is provided through the use of the straight-line method.

Contributions

All contributions are considered to be available for unrestricted use unless specifically restricted by the donor. Amounts received which are designated for future periods or restricted by donor are recorded as deferred revenue until the appropriate future period or the donor restriction is satisfied, respectively.

Government Grants and Contracts

Government grants and contract funds are recorded as revenue when earned. Revenue is earned when eligible expenditures, as defined in each grant or contract, are made. Funds received but not yet earned are shown as deferred revenue. Expenditures under government contracts are subject to review by the granting authority. To the extent, if any, that such a review reduces expenditures allowable under these contracts, International Species Information System will record such disallowance at the time the final assessment is made.

Functional Allocation of Expense

Salaries and related expenses are allocated based on job descriptions and the best estimates of management. Expenses, other than salaries and related expenses, which are not directly identifiable by program or supporting service are allocated based on the best estimates of management.

Income Tax

International Species Information System has a tax exempt status under Section 501(c)(3) of the Internal Revenue Code and Minnesota Statute 290.05. It has been classified as an organization that is not a private foundation under the Internal Revenue Code and charitable contributions by donors are tax deductible.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1994

2. Significant Concentrations of Credit Risk

ISIS provides services around the world. The amounts due for services provided are from individuals or organizations. In addition, grants receivable are from the federal government.

3. Equipment and Furniture

ISIS owns the following assets as of December 31, 1994:

Computer Equipment	\$118,324	Estimated Useful Lives
Furniture and Other Equipment	<u>31,816</u>	3 years
	150,140	4 - 10 years
Accumulated Depreciation	<u>99,283</u>	
	<u>\$ 50,857</u>	

Depreciation expense of \$22,360 was recorded for the year ended December 31, 1994.

4. Pension Plan

The Organization maintains a tax-sheltered retirement plan for its employees. A percentage of salary based on years of service is paid into the plan annually. For the year ended December 31, 1994, the Organization's contribution totaled \$22,500.

5. Deferred Revenue

Deferred revenue consists of amounts related to the following as of December 31, 1994:

Grants and Contributions	\$ 2,648
Membership and Other Fees	<u>5,900</u>
	<u>\$ 8,548</u>

6. Leased Facilities and Equipment

Rental commitments under noncancelable leases for office space in effect at December 31, 1994, total \$10,346. The future annual rental commitments are as follows:

<u>Due in the Year Ending December 31,</u>	
1995	<u>\$ 10,346</u>

The rental expense for the year ending December 31, 1994, was \$10,346.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1994

7. Cash Flow Operating Adjustments

Adjustments to Reconcile Excess (Deficiency) of Support and Revenue over Expense to Net Cash Provided (Used) by Operating Activities are as follows:

	1994		Equipment Fund	Total All Funds
	<u>Current Funds</u>			
	<u>Unrestricted</u>	<u>Restricted</u>		
Depreciation			\$ 22,360	\$ 22,360
CBSG Separation	\$ 60,700			60,700
Allowance for Doubtful Accounts	(8,000)			(8,000)
Increases (Decreases) in Current Liabilities:				
Accounts Payable	(76,623)			(76,623)
Accrued Salaries & Vacation Payable	187			187
Deferred Revenue	(58,068)	\$ 265		(57,803)
Due to Unrestricted Fund		(1,390)		(1,390)
(Increases) Decreases in Current Assets:				
Accounts Receivable	25,351			25,351
Pledges Receivable	32,375			32,375
Grant Receivable	7,615	1,125		8,740
Other Receivables	9,350			9,350
Prepaid Expenses	4,947			4,947
Due from Restricted Fund	1,390			1,390
Total Adjustments	<u>\$ (776)</u>	<u>\$ -</u>	<u>\$ 22,360</u>	<u>\$ 21,584</u>

Minutes

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International Species Information System

Apple Valley, Minnesota

Single Audit Compliance Report
For the Year Ended
December 31, 1994

Carpenter Evert
Certified Public Accountants

.....

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INDEPENDENT AUDITORS' REPORT ON SCHEDULE OF FEDERAL AWARDS

Board of Directors
International Species Information System
Apple Valley, Minnesota

INDEPENDENT AUDITORS' REPORT

We have audited the basic financial statements of International Species Information System for the year ended December 31, 1994, and have issued our report thereon dated March 23, 1995. These basic financial statements are the responsibility of International Species Information System management. Our responsibility is to express an opinion on these basic financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards; Government Auditing Standards, issued by the Comptroller General of the United States; and the provisions of Office of Management and Budget (OMB) Circular A-133, "Audits of Institutions of Higher Education and Other Nonprofit Institutions." Those standards and OMB Circular A-133 require that we plan and perform the audit to obtain reasonable assurance about whether the basic financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the basic financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

Our audit was made for the purpose of forming an opinion on the basic financial statements of International Species Information System taken as a whole. The accompanying Schedule of Federal Awards is presented for purposes of additional analysis and is not a required part of the basic financial statements. The information in that schedule has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion, is fairly presented in all material respects in relation to the basic financial statements taken as a whole.

Carpenter, Evert and Associates, Ltd.
Certified Public Accountants

Minneapolis, Minnesota
March 23, 1995

INTERNATIONAL SPECIES INFORMATION SYSTEM
SCHEDULE OF FEDERAL AWARDS
FOR THE YEAR ENDED DECEMBER 31, 1994

<u>Federal Grantor/ Pass-Through Grantor/ Program Title</u>	<u>Federal CFDA Number</u>	<u>Program or Award Amount</u>	<u>Grant (Receivable) or Underspent January 1, 1994</u>	<u>Cash Receipts</u>	<u>Expendi- tures</u>	<u>Grant (Receivable) or Underspent December 31, 1994</u>
<u>Other Federal Assistance</u>						
Institute of Museum Services:						
Direct Program:						
Professional Service Program	45.301	\$ 44,589	\$ 2,383	\$ 29,726	\$ 32,109	
Sedgwick County Zoo:						
Conservation Project Support	45.301	\$ 75,000	(7,563)	28,125	29,937	\$ (9,375)
			(5,180)	57,851	62,046	(9,375)
U.S. Department of Health and Human Services:						
Direct Program:						
Population Monitoring and Analysis:	93.306					
09/30/94 - 09/29/95		\$116,953		29,238	26,590	2,648
09/30/93 - 09/29/94		\$ 95,885	(52)	71,968	71,916	2,648
			(52)	101,206	98,506	2,648
			<u>\$ (5,232)</u>	<u>\$159,057</u>	<u>\$160,552</u>	<u>\$ (6,727)</u>

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INDEPENDENT AUDITORS' REPORT ON COMPLIANCE WITH LAWS AND REGULATIONS BASED ON AN AUDIT OF BASIC FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS

Board of Directors
International Species Information System
Apple Valley, Minnesota

We have audited the basic financial statements of International Species Information System as of and for the year ended December 31, 1994, and have issued our report thereon dated March 23, 1995.

We conducted our audit in accordance with generally accepted auditing standards and Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the general purpose financial statements are free of material misstatement.

Compliance with laws, regulations, contracts and grants applicable to International Species Information System, is the responsibility of International Species Information System management. As part of obtaining reasonable assurance about whether the basic financial statements are free of material misstatement, we performed tests of the Organization's compliance with certain provisions of laws, regulations, contracts and grants. However, our objective was not to provide an opinion on overall compliance with such provisions. Accordingly, we do not express such an opinion.

The results of our tests indicate that, with respect to the items tested, International Species Information System complied, in all material respects, with the provisions referred to in the preceding paragraph. With respect to items not tested, nothing came to our attention that caused us to believe that the Organization had not complied, in all material respects, with those provisions.

We noted certain immaterial instances of noncompliance that we have reported to the management of International Species Information System in a separate letter.

This report is intended for the information of the audit committee, management and grantor agencies. However, this report is a matter of public record, and its distribution is not limited.

Carpenter, Evert and Associates, Ltd.
Certified Public Accountants

Minneapolis, Minnesota
March 23, 1995

Certified Public Accountants

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INDEPENDENT AUDITORS' REPORT ON COMPLIANCE
WITH GENERAL REQUIREMENTS APPLICABLE TO
FEDERAL FINANCIAL ASSISTANCE PROGRAMSBoard of Directors
International Species Information System
Apple Valley, Minnesota

We have audited the financial statements of International Species Information System as of and for the year ended December 31, 1994, and have issued our report thereon dated March 23, 1995.

We have applied procedures to test International Species Information System compliance with the following requirements applicable to its nonmajor federal financial assistance programs, which are identified in the Schedule of Federal Awards, for the year ended December 31, 1994:

- Political Activity in Funded Personnel Positions
- Appropriate Civil Rights Policies
- Appropriate Cash Management Policies
- Appropriate Federal Financial Reporting Procedures
- Allowable Costs/Cost Principles
- Drug-Free Workplace
- Administrative Requirements

Our procedures were limited to the applicable procedures described in the Office of Management and Budget's "Compliance Supplement for Audits of Institutions of Higher Education and Other Nonprofit Institutions." Our procedures were substantially less in scope than an audit, the objective of which is the expression of an opinion of International Species Information System compliance with the requirements listed in the preceding paragraph. Accordingly, we do not express such an opinion.

With respect to the items tested, the results of these procedures disclosed no material instances of noncompliance with the requirements listed in the second paragraph of this report. With respect to items not tested, nothing came to our attention that caused us to believe that International Species Information System had not complied, in all material respects, with those requirements. However, the results of our procedures disclosed immaterial instances of noncompliance with those requirements, which are described in a separate letter to the management of International Species Information System.

INDEPENDENT AUDITORS' REPORT ON COMPLIANCE
WITH GENERAL REQUIREMENTS APPLICABLE TO
FEDERAL FINANCIAL ASSISTANCE PROGRAMS

Page two

This report is intended for the information of the audit committee, management and grantor agencies. However, this report is a matter of public record, and its distribution is not limited.

Carpenter, Ewert and Associates, Ltd.
Certified Public Accountants

Minneapolis, Minnesota
March 23, 1995

Certified Public Accountants

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INDEPENDENT AUDITORS' REPORT ON COMPLIANCE WITH
SPECIFIC REQUIREMENTS APPLICABLE TO NONMAJOR
FEDERAL FINANCIAL ASSISTANCE PROGRAM TRANSACTIONS

Board of Directors
International Species Information System
Apple Valley, Minnesota

We have audited the financial statements of International Species Information System as of and for the year ended December 31, 1994, and have issued our report thereon dated March 23, 1995.

In connection with our audit of the basic financial statements of International Species Information System, and with our consideration of the Organization's control structure used in administering federal financial assistance programs, as required by Office of Management and Budget Circular A-133, "Audits of Institutions of Higher Education and Other Nonprofit Institutions," we selected certain transactions applicable to certain nonmajor programs for the year ended December 31, 1994. As required by OMB Circular A-133, we have performed auditing procedures to test compliance with the requirements governing types of services allowed or unallowed and eligibility that are applicable to those transactions. Our procedures were substantially less in scope than an audit, the objective of which is the expression of an opinion on the Organization's compliance with these requirements. Accordingly, we do not express such an opinion.

With respect to the items tested, the results of those procedures disclosed no material instances of noncompliance with the requirements listed in the preceding paragraph. With respect to items not tested, nothing came to our attention that caused us to believe that International Species Information System had not complied, in all material respects, with those requirements. However, the results of our procedures disclosed immaterial instances of noncompliance with those requirements, which are described in a separate letter to the management of International Species Information System.

This report is intended for the information of the audit committee, management and grantor agencies. However, this report is a matter of public record, and its distribution is not limited.

Carpenter, Evert and Associates, Ltd.
Certified Public Accountants

Minneapolis, Minnesota
March 23, 1995

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INDEPENDENT AUDITORS' REPORT ON THE INTERNAL CONTROL STRUCTURE IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS

Board of Directors
International Species Information System
Apple Valley, Minnesota

We have audited the financial statements of International Species Information System as of and for the year ended December 31, 1994, and have issued our report thereon dated March 23, 1995.

We conducted our audit in accordance with generally accepted auditing standards and Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the general purpose financial statements are free of material misstatement.

In planning and performing our audit of the basic financial statements of International Species Information System for the year ended December 31, 1994, we considered its internal control structure in order to determine our auditing procedures for the purpose of expressing our opinion on the basic financial statements and not to provide assurance on the internal control structure.

The management of International Species Information System is responsible for establishing and maintaining an internal control structure. In fulfilling this responsibility, estimates and judgements by management are required to assess the expected benefits and related costs of internal control structure policies and procedures. The objectives of an internal control structure are to provide management with reasonable, but not absolute, assurance that assets are safeguarded against loss from unauthorized use or dispositions, and that transactions are executed in accordance with management's authorization and recorded properly to permit the preparation of financial statements in accordance with generally accepted accounting principles. Because of inherent limitations in any internal control structure, errors or irregularities may nevertheless occur and not be detected. Also, projection of any evaluation of the structure to future periods is subject to the risk that procedures may become inadequate because of changes in conditions or that the effectiveness of the design and operation of policies and procedures may deteriorate.

INDEPENDENT AUDITORS' REPORT ON THE
INTERNAL CONTROL STRUCTURE IN ACCORDANCE
WITH GOVERNMENT AUDITING STANDARDS

Page two

For the purpose of this report, we have classified the significant internal control structure policies and procedures in the following categories:

- Cash
- Support, Receivables and Receipts
- Program Service Fees, Revenue and Receivables
- Expenses for Program and Support Services and Accounts Payable
- Payroll and Related Liabilities
- Property and Equipment
- Other Liabilities
- Fund Balances
- Governmental Financial Assistance Programs
 - General Requirements
 - Political Activity in Funded Personnel Positions
 - Appropriate Civil Rights Policies
 - Appropriate Cash Management Policies
 - Appropriate Federal Financial Reporting Procedures
 - Allowable Costs/Cost Principles
 - Drug-Free Workplace
 - Administrative Requirements
 - Specific Requirements
 - Types of Services Allowed or Not Allowed
 - Federal Financial Reports and Claims for Advances and Reimbursements
 - Cost Allocation
 - Special Requirements

For all of the control categories listed above, we obtained an understanding of the design of relevant policies and procedures and whether they have been placed in operation, and we assessed control risk.

We noted certain matters involving the internal control structure and its operation that we consider to be reportable conditions under standards established by the American Institute of Certified Public Accountants. Reportable conditions involve matters coming to our attention relating to significant deficiencies in the design or operation of the internal control structure that, in our judgement, could adversely affect the entity's ability to record, process, summarize and report financial data consistent with the assertions of management in the general purpose financial statements.

INDEPENDENT AUDITORS' REPORT ON THE
INTERNAL CONTROL STRUCTURE IN ACCORDANCE
WITH GOVERNMENT AUDITING STANDARDS

Page three

The limited number of office personnel prevents a proper segregation of accounting functions necessary to assure adequate internal control. A good system of internal accounting control contemplates an adequate segregation of duties so that no one individual handles a transaction from its inception to its completion. We recognize that your organization is not large enough to make the employment of additional persons for the purpose of segregating duties practicable from a financial standpoint but we are required, under our professional responsibilities, to call the situation to your attention. Under these conditions, the most effective controls lie in management's knowledge of matters relating to the organization's operations.

A material weakness is a reportable condition in which the design or operation of the specific internal control structure elements does not reduce to a relatively low level the risk that errors or irregularities in amounts that would be material in relation to the financial statements being audited may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions.

Our consideration of the internal control structure would not necessarily disclose all matters in the internal control structure that might be reportable conditions and, accordingly, would not necessarily disclose all reportable conditions that are also considered to be material weaknesses as defined above. However, we believe none of the reportable conditions described above are material weaknesses.

We also noted other matters involving the internal control structure and its operation that we have reported to the management of International Species Information System in a separate letter.

This report is intended for the information of the audit committee, management and grantor agencies. However, this report is a matter of public record, and distribution is not limited.

Carpenter, Ewert and Associates, Ltd.
Certified Public Accountants

Minneapolis, Minnesota
March 23, 1995

Certified Public Accountants

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SINGLE AUDIT REPORT ON THE INTERNAL CONTROL
STRUCTURE USED IN ADMINISTERING FEDERAL AWARDSBoard of Directors
International Species Information System
Apple Valley, Minnesota

We have audited the basic financial statements of International Species Information System for the year ended December 31, 1994, and have issued our report thereon dated March 23, 1995. We have also audited the Organization's compliance with requirements applicable to nonmajor programs and have issued our report thereon dated March 23, 1995.

We conducted our audit in accordance with generally accepted auditing standards; Government Auditing Standards, issued by the Comptroller General of the United States; and Office of Management and Budget (OMB) Circular A-133, "Audits of Institutions of Higher Education and Other Nonprofit Institutions." Those standards and OMB Circular A-133 require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether the Organization complied with laws and regulations, noncompliance with which would be material to a nonmajor program.

In planning and performing our audits of International Species Information System for the year ended December 31, 1994, we considered its internal control structure in order to determine our auditing procedures for the purpose of expressing our opinion on the financial statements and on its compliance with requirements applicable to nonmajor programs and not to provide assurance on the internal control structure. This report addresses our consideration of the internal control structure and policies and procedures relevant to compliance with requirements applicable to federal awards. We have addressed policies and procedures relevant to our audit of the financial statements in a separate report dated March 23, 1995.

The management of International Species Information System is responsible for establishing and maintaining an internal control structure. In fulfilling this responsibility, estimates and judgements by management are required to assess the expected benefits and related costs of internal control structure policies and procedures. The objectives of an internal control structure are to provide management with reasonable, but not absolute, assurance that assets are safeguarded against loss from unauthorized use or disposition, that transactions are executed in accordance with management's authorization and recorded properly to permit the preparation of financial statements in accordance with generally accepted accounting principles, and that federal financial assistance programs are managed in compliance with applicable laws and regulations. Because of inherent limitations in any internal control structure, errors, irregularities or instances of noncompliance may nevertheless occur and not be detected.

SINGLE AUDIT REPORT ON THE INTERNAL CONTROL
STRUCTURE USED IN ADMINISTERING FEDERAL AWARDS

Page two

Also, projection of any evaluation of the structure to future periods is subject to the risk that procedures may become inadequate because of changes in conditions or that the effectiveness of the design and operation of policies and procedures may deteriorate.

For the purpose of this report, we have classified the significant internal control structure policies and procedures in the following categories:

- Cash
- Support, Receivables and Receipts
- Program Service Fees, Revenue and Receivables
- Expenses for Program and Support Services and Accounts Payable
- Payroll and Related Liabilities
- Property and Equipment
- Other Liabilities
- Fund Balances
- Governmental Financial Assistance Programs
 - General Requirements
 - Political Activity in Funded Personnel Positions
 - Appropriate Civil Rights Policies
 - Appropriate Cash Management Policies
 - Appropriate Federal Financial Reporting Procedures
 - Allowable Costs/Cost Principles
 - Drug-Free Workplace
 - Administrative Requirements
 - Specific Requirements
 - Types of Services Allowed or Not Allowed
 - Federal Financial Reports and Claims for Advances and Reimbursements
 - Cost Allocation
 - Special Requirements

For all of the internal control structure categories listed above, we obtained an understanding of the design of relevant policies and procedures and determined whether they have been placed in operation, and we assessed control risk.

During the year ended December 31, 1994, International Species Information System had no major federal financial assistance programs and expended 61 percent of its total federal financial assistance under the following nonmajor federal financial assistance programs: Population Monitoring and Analysis.

SINGLE AUDIT REPORT ON THE INTERNAL CONTROL
STRUCTURE USED IN ADMINISTERING FEDERAL AWARDS

Page three

We have performed tests of controls, as required by OMB Circular A-133 to evaluate the effectiveness of the design and operation of internal control structure policies and procedures that we considered relevant to preventing or detecting material noncompliance with specific requirements, general requirements, and requirements governing claims for advances and reimbursements and amounts claimed or used for matching that are applicable to the aforementioned nonmajor programs. Our procedures were less in scope than would be necessary to render an opinion on these internal control structure policies and procedures. Accordingly, we do not express such an opinion.

We noted certain matters involving the internal control structure and its operation that we consider to be reportable conditions under standards established by the American Institute of Certified Public Accountants. Reportable conditions involve matters coming to our attention relating to significant deficiencies in the design or operation of the internal control structure that, in our judgment, could adversely affect the entity's ability to record, process, summarize and report financial data consistent with the assertions of management in the financial statements or to administer federal financial assistance programs in accordance with applicable laws and regulations.

The limited number of office personnel prevents a proper segregation of accounting functions necessary to assure adequate internal control. A good system of internal accounting control contemplates an adequate segregation of duties so that no one individual handles a transaction from its inception to its completion. We recognize that your organization is not large enough to make the employment of additional persons for the purpose of segregating duties practicable from a financial standpoint but we are required, under our professional responsibilities, to call the situation to your attention. Under these conditions, the most effective controls lie in management's knowledge of matters relating to the organization's operations.

A material weakness is a reportable condition in which the design or operation of one or more of the internal control structure elements does not reduce to a relatively low level the risk that noncompliance with laws and regulations that would be material to a federal award program may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions.

Our consideration of the internal control structure would not necessarily disclose all matters in the internal control structure that might be reportable conditions and, accordingly, would not necessarily disclose all reportable conditions that are also considered to be material weaknesses as defined above. However, we believe none of the reportable conditions described above are material weaknesses.

SINGLE AUDIT REPORT ON THE INTERNAL CONTROL
STRUCTURE USED IN ADMINISTERING FEDERAL AWARDS

Page four

We also noted other matters involving the internal control structure and its operation that we have reported to the management of International Species Information System organization in a separate letter.

This report is intended for the information of the audit committee, management and grantor agencies. However, this report is a matter of public record, and its distribution is not limited.

Carpenter, Evert and Associates, Ltd.
Certified Public Accountants

Minneapolis, Minnesota
March 23, 1995

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INTERNATIONAL SPECIES INFORMATION SYSTEM
SCHEDULE OF FINDINGS AND QUESTIONED COSTS
FOR THE YEAR ENDED DECEMBER 31, 1994

	<u>Federal</u>	<u>Questioned</u>
	<u>CFDA</u>	<u>Costs</u>
1. NONE		

Status of Prior Year Findings: Resolved

Finance - 1995 to date

1995 thus far is about as projected. Expenses through the first three months (1/4 of the year) are \$178,439.58. This is 25.2% of the "realist" budget approved for 1995, after adding in the \$36,000 IUDZG Secretariat income.

Income is also about as forecast, with \$364,737.45 in Members Fees already collected. We have to collect \$129,000 more to reach the "realist" forecast. Our current Accounts Receivable is \$147,000; allowing for doubtful accounts and zoos whose 1994 attendance fell or whose invoice exceeded 0.1% of their budget, and an active collection effort, we believe the realist budget projection is attainable. On the following page is a copy of the current year's budget - following that is the first quarter's Profit and Loss statement, providing revenue and expense details.

A major financial activity during the first few months of 1995 was setting up a new accounting system. Our previous by-the-hour outside accountant resigned near the end of 1994. On review of our options we decided to set up a new modern system using Quickbooks for Windows software, and do most of the accounting work with current office staff (Kim Hastings, Office Manager).

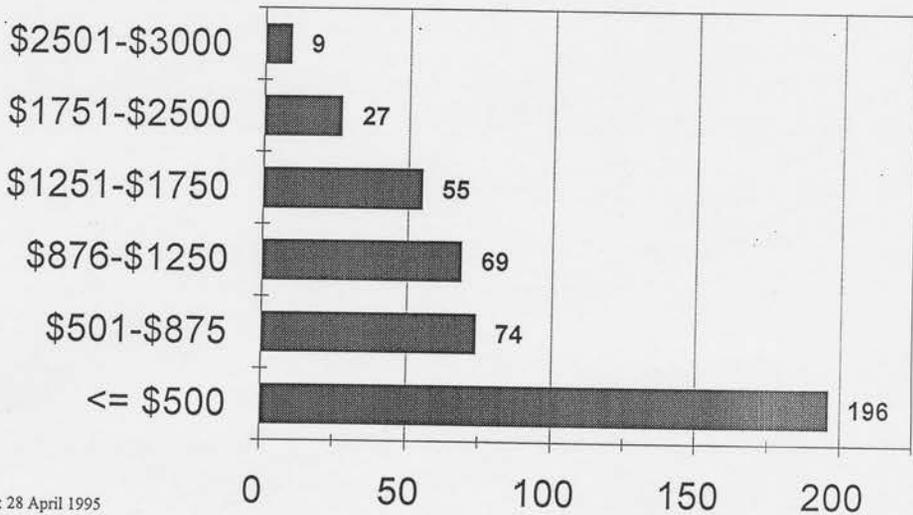
We are using a consultant (a Certified Public Accountant with Quickbooks expertise) to help us in setting up this new system. We are also arranging for brief quarterly visits by our audit firm to keep things on track and resolve any problems that may arise, before they can grow. This new system is currently in use but we are still finalizing some details of the transition and opening balances. We will produce a 30 June set of financial reports, including a Balance Sheet, as has been routine. The new system looks very good and we are already benefitting from adopting it.

Finance - 1995 Approved Budget

<u>REVENUE</u>			
	Optimist Revenue	Realist Revenue	Pessimist Revenue
SERVICES & SOFTWARE			
Membership Fees	\$525,000	\$493,932	\$450,000
Grants	\$185,000	\$170,000	\$140,000
Other	\$22,500	\$20,450	\$17,500
Total Revenue	\$732,500	\$684,382	\$607,500
<u>EXPENSES (ADJUSTED IN RESPONSE TO REVENUE)</u>			
SERVICES & SOFTWARE			
Data Collection	\$105,000	\$103,261	\$100,000
Communications	\$12,000	\$11,000	\$10,000
Information Distribution	\$52,000	\$50,774	\$49,000
User Support	\$41,000	\$41,000	\$38,000
Travel	\$30,000	\$25,000	\$18,000
SUBTOTAL SERVICES	\$240,000	\$231,035	\$215,000
RESEARCH & DEVELOPMENT			
ISIS 3 Development	\$125,371	\$125,371	\$120,000
SPARKS Development	\$40,000	\$35,085	\$30,000
ARKS Development	\$60,000	\$56,518	\$50,000
MedARKS Development	\$40,000	\$33,000	\$30,000
SUBTOTAL R&D	\$265,371	\$249,974	\$230,000
NONFUNDED SERVICES & SOFTWARE			
Egg Log Data Systems	\$0	\$0	\$0
Genome Bank Software	\$0	\$0	\$0
New Lab Database	\$0	\$0	\$0
Taxon Tree Tool Library	\$0	\$0	\$0
Windows Product Developm	\$0	\$0	\$0
Taxonomic List Maintenance	\$0	\$0	\$0
Paper Records Improvement	\$0	\$0	\$0
MARKETING & MEMBERSHIP			
Membership Administration	\$9,000	\$8,000	\$7,000
Brochures & Mailing	\$2,500	\$2,000	\$1,500
Newsletter & Mailing	\$12,000	\$11,000	\$7,000
SUBTOTAL M&M	\$23,500	\$21,000	\$15,500
ADMINISTRATION & FINANCE			
Other Fund Raising	\$4,500	\$3,500	\$2,500
Accounting & Auditing Servic	\$14,000	\$13,000	\$12,000
Grant & Financial Admin.	\$44,000	\$42,000	\$40,000
Overhead	\$15,000	\$15,000	\$15,000
SUBTOTAL A&F	\$77,500	\$73,500	\$69,500
N I H	\$94,329	\$94,329	\$94,329
Total Expenses	\$700,700	\$669,838	\$624,329
Net Excess / (Deficit)	\$31,800	\$14,544	(\$16,829)

The above shows best-case, expected, and worst-case scenarios.
It does NOT show adaptive management - i.e., if revenues decrease we will cut costs

1994 Membership Fees (by category)



ISIS: 28 April 1995



2007 Membership Fees

IUDZG Secretariat - Short Update:

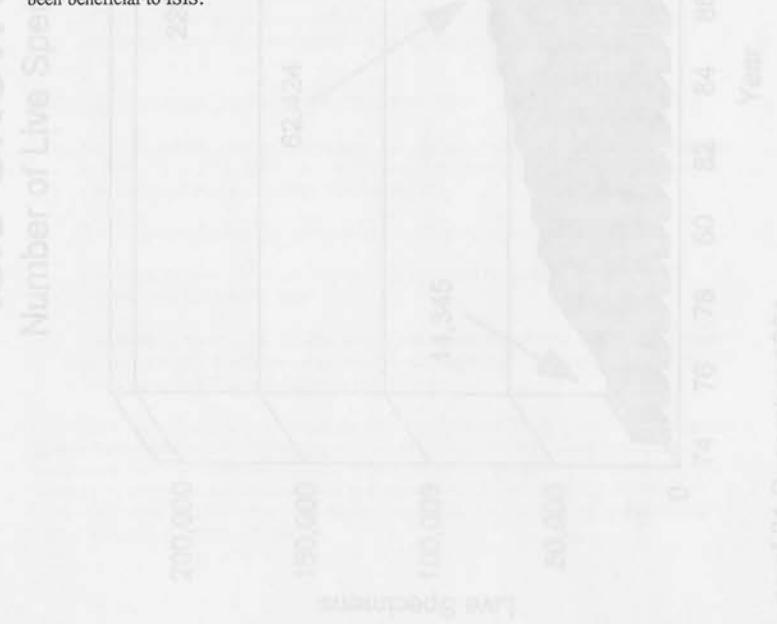
Since 1 January 1995, ISIS has been acting as the Secretariat for IUDZG. Thus far this has meant assembling and circulating materials monthly to the 23 offices on the CIRCC mailing list.

An attempt has been made to include information and highlight problems which should be brought to the attention of CIRCC, such as problems in coordination of studbook work among regions, multiple studbook numbers assigned to one animal, etc. We intend to assist CIRCC in its effort to develop more effective regionally-coordinated breeding programs, based on shared knowledge globally. These programs will cooperate and can inter-link as this makes biological and management sense.

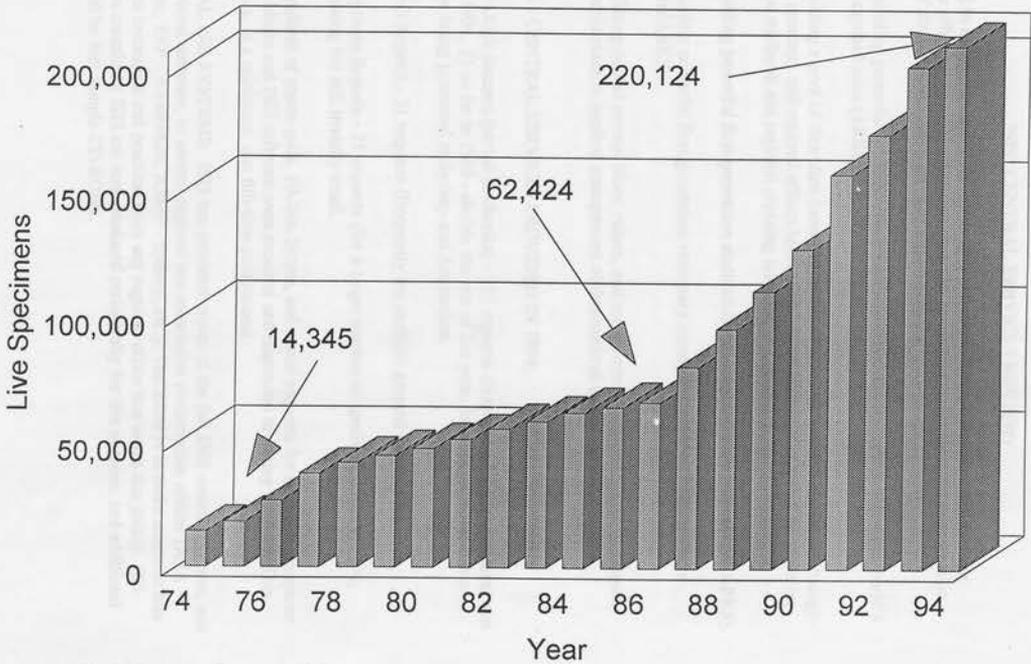
Other IUDZG services are just now beginning, such as producing minutes from the IUDZG Council meetings, and producing a new twice-each-year IUDZG Newsletter.

These tasks have seemingly gone well thus far, and involvement in some of these issues has been beneficial to ISIS.

ISIS GROWTH:

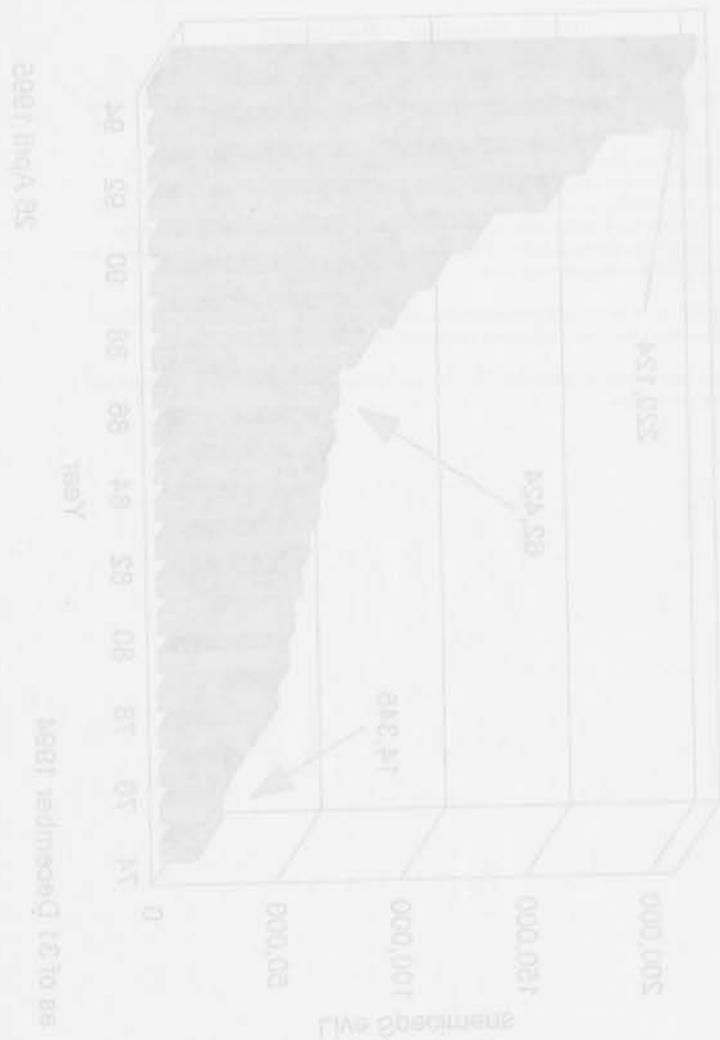


ISIS GROWTH: Number of Live Specimens



as of 31 December 1994

26 April 1995



ISIS' CENTRAL SERVICES REVIEW:

Zoos need to do sophisticated and cooperative collection management to maintain their collections efficiently over the long run, and also to use their collections for conservation. During its' first 20 years, ISIS has contributed to this by:

Providing powerful but basic specimen records systems for nearly 1/2 of the world's recognized zoos (ARKS).

Building a pool of their data (now 876,000 specimens, of which 220,000 are living) - so members and regional offices know who-has-what, and have a starting place for new studbook and regional planning information ("ISIS 3").

Building powerful first-generation studbook/species management software (SPARKS).

Building powerful first-generation veterinary management and records software (MedARKS).

Offering pooled normal blood values, and some normal anesthesia data, to support veterinarians in medical management of thousands of exotic species.

DETAILS - CENTRAL SERVICES PROVIDED IN 1994:

SPARKS datasets (partial studbooks) - 123 requests (frequently for multiple taxa) met in 1994, 71 so far in 1995 - double the rate of last year. In addition, some sets are now being generated in Sydney and Amsterdam.

TAG Reports - 31 requests (frequently for multiple groups) met in 1994.

Specimen Reports - 21 requests (for a larger number of specimens) met in 1994, growing but still trivially small.

Hundreds of phone calls, FAXes, letters, and e-mail requests for help with computer problems and ISIS software were received and responded to during the year. This takes, at a minimum, one full-time professional.

REGIONAL ISIS SYSTEMS: ISIS has provided copies of the full ISIS central database, and report/retrieval software, to several regional zoo association conservation offices (AZA - Washington, EEP - Amsterdam, ASMP - Sydney, etc.). The intent is to make access to this information immediate and practical from any regional office that wants this ability. CD-ROM disks containing ISIS are now produced periodically for this purpose, and additional regions will be sent sample CD-ROMs.

REVIEW: IN-HOUSE SOFTWARE SERVICES

ARKS. ARKS 2 is now used by 447 institutions worldwide. The totally new version 3, still nearing completion, now looks solid. Five primate facilities and two zoos are now using ARKS 3 for their records, full-time. We are finishing debugging some secondary reports and completing the User Manual. We expect to ship, starting with small numbers, this Summer, and gradually increase the number released through the end of the year. However, ARKS 3 needs to be made multi-user accessible on networks, and it needs porting to Windows. We have a grant submitted for half of the necessary funding to support this work during 1996.

MedARKS. MedARKS has been shipped to 312 institutions worldwide, and most are using it actively. The current version including clinical notes is being very well received - clinical notes are what many vets have been waiting for. The DOS version of MedARKS we have been developing for 10 years (!) will have its last planned major module added during 1996 - Pathology. Two remaining modules have yet to be converted to FOXPRO - so users have to run both the old and newer versions to use all MedARKS capabilities. Porting MedARKS to Windows is important, and a huge project, estimated at three person-years. Developing a Windows product would allow improving the data-entry parts of MedARKS, which is the area that needs real enhancement. The data structures and reports have proven to be very sound. The present development team is two people evenings and weekends, both have demanding full-time jobs, and we are paying them for only 10% time.

SPARKS - 274 institutions worldwide use SPARKS. We are waiting - making small enhancements and fixing rare bugs while - seeking the time/money/staff to build a new species management / studbook package in collaboration with regional conservation offices. Lack of global/regional studbook numbering standards is rapidly making SPARKS obsolete, as it was built on the assumption of only one per specimen. Also, species management has evolved rapidly, and the data structures in SPARKS have been outgrown. We propose to start the design of a replacement system at least part-time during 1996. This effort will be collaborative with regional conservation offices and others. Progress will depend in part on available resources.

A total of 1033 PC software packages are being supported in members zoos by ISIS' small technical staff. It is important to acknowledge that the EEP and ASMP offices provide enormous help in supporting users in their regions.

ISIS 3 - already operating in Windows! This is our most simple system to port, so we did it for practice and to learn the best ways to accomplish the transition.

NEW INITIATIVES

DATA QUALITY - ISIS and Studbooks. The explosion of regional studbooks around the world (there are some 500 in addition to the 120 global studbooks) has shown the perceived need for studbook-based species management. Given the cost and labor of studbooks, many have asked "why can't ISIS just do this task?"

There are three steps which must be taken to position ISIS to be of real service in this regard:

1. Develop more data-quality-checking tools to help members improve / correct / complete the information submitted to ISIS. Quality of submitted information is getting better but has some ways to go. During 1994, our first Link Discrepancy Report mailing went out to all members, identifying data problems regarding linking specimen information, during the prior 6 month period. This will now be a routine service - but additional services (such as reports encouraging entry of historical data) are needed.
2. Develop ways to compare the zoo data on ISIS with the published studbook data. This is being done during 1995 thanks to an IMS grant.
3. Develop ways to enter/accept information from non-member sources (i.e. studbook keepers), and to be able to trace this information back to its source. A beginning on this is being made in 1995 under the IMS grant.

EGG LOG. Through an IMS grant awarded to the U.S. National Aviary in Pittsburgh, ISIS is receiving \$12,000 per year for two years to add an egg-log module to ARKS. Laurie Bingaman Lackey, who had previously written a prototype but working system, is doing this programming for ISIS.

NUTRITION. Through an IMS grant awarded to the New York Wildlife Conservation Society, ISIS will receive some funding over two years to add nutrition records to ARKS.

NEW INITIATIVES

STATS QUALITY - This was the first time in the history of the organization that the quality of the work was being monitored. The organization is now monitoring the quality of the work through the use of the Quality of Work Life (QWL) survey. This survey is a self-administered questionnaire that asks members to rate their satisfaction with various aspects of their work. The survey results will be used to identify areas for improvement and to develop strategies to enhance the quality of the work.

There are three main areas that need to be addressed in order to improve the quality of the work. These are: (1) the work environment, (2) the work itself, and (3) the work-life balance. Each of these areas will be discussed in more detail below.

1. Work Environment - The work environment is the physical and social context in which the work is performed. It includes factors such as the physical workspace, the work schedule, and the relationships between coworkers. A positive work environment can lead to increased productivity and job satisfaction, while a negative work environment can lead to decreased productivity and job satisfaction. The organization will be implementing several initiatives to improve the work environment, including: (1) providing ergonomic workstations, (2) offering flexible work schedules, and (3) promoting a culture of respect and collaboration.

2. Work Itself - The work itself is the primary source of meaning and satisfaction for most people. It is important that the work is challenging, meaningful, and provides opportunities for growth and development. The organization will be implementing several initiatives to improve the work itself, including: (1) providing training and development opportunities, (2) offering a variety of job assignments, and (3) recognizing and rewarding high performance.

3. Work-Life Balance - Work-life balance is the ability to balance the demands of work with the demands of family and personal life. A good work-life balance is essential for overall well-being and job satisfaction. The organization will be implementing several initiatives to improve work-life balance, including: (1) offering flexible work schedules, (2) providing employee assistance programs, and (3) promoting a culture of work-life balance.

It is important to note that these initiatives are not mutually exclusive and will be implemented in a coordinated manner. The organization is committed to creating a positive work environment, providing meaningful work, and promoting a healthy work-life balance for all members.

MEMBERSHIP - Through the efforts of the new York World Community, the organization has been able to attract a large number of new members. This has resulted in a significant increase in the organization's resources and has allowed us to expand our services to a larger number of people. We are grateful to all of our members for their support and commitment to the organization.

The organization is currently in the process of reviewing our membership structure and will be implementing several changes to make it more effective. These changes will include: (1) revising our membership categories, (2) updating our membership fees, and (3) improving our membership services.

We are committed to providing a high-quality membership experience for all of our members and will continue to work hard to improve our services and support our members in all ways possible.

NEEDS/ CHALLENGES

To remain relevant (avoid obsolescence/extinction) in a world of rapidly changing information technology, ISIS must:

- Upgrade all software to Windows SOON.
- Upgrade ARKS to multi-user on a network

To meet increasing zoo expectations for **software** quality and reliability, we must:

- Staff at **least** one full-time system developer per product (ARKS, SPARKS, MedARKS, ISIS products - present ratio is 2/3 programmer per product). Even at 1 person per product we are now where near commercial levels, or those called for by quality standards such as ISO 9000.

To meet increasing expectations for **data** quality and reliability we must:

- Develop additional data-quality support reports and services for zoo records staff.
- Develop ways to incorporate studbook data into the ISIS database.

To take advantage of powerful, convenient, and economical new ways to deliver information, we must:

- Develop and publish CD-ROM products
- Develop INTERNET / World-Wide-Web based information services.

AT A MINIMUM, MOVING FORWARD WITH THESE OBJECTIVES REQUIRES ADDING 1.5 TECHNICAL POSITIONS TO ISIS' PERMANENT STAFF. THIS MEANS \$90,000 PER YEAR (per technical position: \$40,000 salary, \$10,000 benefits, \$5,000 equipment and travel, \$5,000 communications and overhead).

MEMBERSHIP CHALLENGES

to have a list of (names) of all members who have not been contacted in the last year.

* Update all software to Windows 3.11
* Update ARKS to Windows 3.11

To meet membership and retention for software quality and reliability we must:

* Shift to Java - the full-time system developer for ARKS, SPARKS, MedARKS, and other products - present time is 2.5
* Improve software quality - 1 person per year for the first year when new commercial levels of development are required for quality standards such as ISO 9000.

To meet increasing requirements for data quality and reliability we must:

* Develop additional data-entry systems and software for zoo
* Develop ways to improve existing data entry systems

To improve the quality of our data, we must:

* Develop ways to improve existing data entry systems

* Develop and publish CD-ROM products

* Develop INTERNET World Wide Web information services

TO A MEMBERSHIP AND SERVICE CHALLENGE WITH THE FOLLOWING GOALS:
TO IMPROVE THE QUALITY OF OUR DATA, WE MUST:
TO MEET INCREASING REQUIREMENTS FOR DATA QUALITY AND RELIABILITY WE MUST:
TO MEET INCREASING REQUIREMENTS FOR DATA QUALITY AND RELIABILITY WE MUST:

IMMEDIATE CHALLENGE: WINDOWS

Problem: After 10 years of successfully developing/distributing zoo software based on the "DOS" operating system to more than 450 zoos worldwide, the ground beneath our feet is finally shifting (we have been lucky to have had 10 years of stability). The major part of the PC world is shifting to the Windows environment and software designed to work under Windows. Windows is more graphical, more colorful, and widely seen as "friendlier". More than 80% of all new computers now ship with Windows already installed, and most major commercial software developers have Windows products as their priority - many have abandoned production of further DOS versions of their products. Business offices hiring computer-literate staff now routinely specify Windows knowledge. Zoos buying new computers, and zoo staff learning about computers for the first time, are learning Windows - and only Windows. They are increasingly asking ISIS for Windows versions of ARKS, MedARKS, and SPARKS, which we do not now have.

We saw this shift coming, and have had a Windows development item in our budget for the last few years. Unfortunately, thus far it has been a "zero" item - meaning no funds were available to spend on developing Windows products. If we continue this approach, ISIS software will rapidly become irrelevant!

Solution: Develop Windows versions of ISIS software. To do this at all will require finding resources to expand ISIS' technical system development staff - presently 2- 3/4 people. Even if we can find a way to expand to the critical minimum of 4 positions, bringing out Windows products will take years.

ARKS for Windows - 1 year, 1.5 people. Est. \$90,000 including user manual, computer, etc. (grant proposal in for \$39,000).

SPARKS for Windows- 1 year, 1.5 people (Est. \$90,000 including user manual ...but see following, redesign preferable)

MedARKS for Windows - 3 years, 1 person. (Est. \$180,000 total, including user manual, computer, etc.).

Opportunities:

Improved Software. Redesigning for Windows will allow us to further improve the ease-of-use of our software, and to implement new technology which should be easier to maintain. It also allows us to take some preparatory steps toward eventual integration of ISIS in-house software - towards a longer-term Zoo Collection Management System goal.

Expanded ISIS Membership. Windows products are also more potentially translatable. This should mean expanding ISIS' membership - and income. We have volunteers in Japanese and Chinese zoos waiting for a Windows ARKS to translate. As there are 85 zoos and 55 aquariums in Japan, this could mean a considerable

IMMEDIATE CHALLENGES: WINDMILLS

Following the 10 years of successful development, we will now have to... (text is mirrored and difficult to read)

We see that the... (text is mirrored and difficult to read)

Following the... (text is mirrored and difficult to read)

WINDMILLS for Windmills - 1 person... (text is mirrored and difficult to read)

Following the... (text is mirrored and difficult to read)

Following the... (text is mirrored and difficult to read)

expansion of ISIS. There are an equally large number of Chinese zoos, but most have very limited resources. However, at their economies' current rate of economic growth, a number will be ready to join as fee-paying members soon.

WINDMILLS for Windmills - 1 person... (text is mirrored and difficult to read)

WINDMILLS for Windmills - 1 person... (text is mirrored and difficult to read)

WINDMILLS for Windmills - 1 person... (text is mirrored and difficult to read)

- 1. Develop... 2. Develop... 3. Develop... 4. Develop... (list of points)

DISCUSSIBLE TOPICS - When Could We Have Windmills Products?

WINDMILLS for Windmills - 1 person... (text is mirrored and difficult to read)

WINDMILLS for Windmills - 1 person... (text is mirrored and difficult to read)

WINDMILLS for Windmills - 1 person... (text is mirrored and difficult to read)

RESOURCE OPTIONS:1. Develop and sell **new products** at an add-on cost:

Vet Reference CD-ROM - normal blood and anesthesia values for many exotic species readily accessible from the veterinarian's desktop. Proposed cost \$200 per annual issue.

ISIS CD-ROM - multiple options:

- Specimen Reference (History, Pedigree) - proposed cost \$200 per annual issue.
- World Studbook Library Product with partners?
- Full ISIS Product?

REGASP global products?

2. Generate some additional revenues from **old products** - authorize sale of ARKS 2 to private non-member individuals only (not institutions).

3. One-time capital levy on membership. \$3,000 was volunteered in one week last year, on very short notice, when we needed matching funds for the egg log grant.

5. Raise annual fees.

6. Generate corporate / grant income.

Microsoft approach by zoos worldwide.

SCHEDULE OPTIONS - When Could ISIS Deliver Windows Products?:

ARKS for Windows - 1 person year estimated - release in 1997.

MedARKS for Windows - 3 person years estimated if full time work were possible - 1997 before current team could start, if we could pay 1 person full-time then, it would be the year 2000 before it comes out! Windows itself may be obsolete by then. Alternatively, if we can find the resources to start a programmer now - it should be ready by the end of 1998.

SPARKS for Windows - 1 person year to convert. However, SPARKS is aging rapidly (also, the new situation of multiple studbook numbers for many specimens is incompatible with SPARKS' design). We would much prefer to start developing a brand-new generation of potential world-standard studbook/species management software now - "SPARKS 2" or whatever name is selected, in cooperation with the EEP and other interested offices. We estimate this to be a 3 year project, so if we could start a full-time effort by mid-1996, we would deliver in mid-1999! Absent increased resources, we propose to start part-time during 1996 (which means stopping all improvements / bug fixes to the present SPARKS then).

INTERNET / WORLD-WIDE WEB

The Internet is a global network of computers that are linked together. It allows people to communicate and share information from all over the world. The Internet is used for many things, such as sending emails, downloading files, and watching videos. It is also used for business and education.

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PLANNING PROCESS OF INTERNATIONAL DISTRICTS

REGASP - PLANNING INFORMATION AT ALL LEVELS:

The Australasian region has taken the lead in recognizing that sound collection management requires organizing information on **plans**, as well as on specimens. Their ASMP office in Sydney has built a very functional software package called REGASP (REGIONAL Animal Survival Plan). REGASP relates closely to specimen data and ISIS, and has been carefully designed to be quite compatible.

REGASP is intended to be operated at three levels:

ZOO - it organizes the institution's own collection plan (reading ARKS data on inventory directly), and acts as a source of information on census and plans of other zoos (somewhat similar to surplus/wanted lists), regional TAG recommendations, any relevant global information, and contact information for studbook keepers, TAG leaders, etc.

REGION - here it organizes the region's own recommendations/plans, and can be used to assemble (for distribution) the zoo-by-zoo collection plan information loaded into ZOO systems.

GLOBAL - here it holds submitted Zoo collection planning information, submitted regional plans, and can be used to assemble (for distribution) global overview planning information.

Because the mix of specimen data and planning information is the essential raw materials for cooperative programs at all levels, we anticipate closer and tighter linkages between REGASP and ISIS' software, notably ARKS 3, SPARKS, and ISIS 3.

ASMP has expressed interest in offering REGASP services through the ISIS network, and raising the ISIS fees to cover the costs of ISIS providing the additional global information to members, as well as ASMP's increased development/support costs.

A conceptual-level draft agreement on ISIS and REGASP is on the following page. Details of this proposal remain to be worked out.

PROPOSED PROCESS OF INTERNATIONAL DISTRIBUTION OF REGASP - IN ASSOCIATION WITH ISIS

Aims 1. To make REGASP available to regional associations and zoos outside of Australia and New Zealand in a way that associates its use with ISIS membership but does not exclude non-ISIS members from collaborating on collection planning at regional level.

2. To use this process as a step toward a single, fully integrated, zoo collection management system incorporating, in the first instance, animals records and collection planning.

3. To achieve this without further cost to Australasian zoos.

Process 1. ASMP collaborates with regional centres/representatives to customise REGASP-Link for their region and to provide full training.

2. Regional centres distribute REGASP to their participating zoos, regardless of their standing as ISIS members.

3. The component of ISIS software which deals with data submission is altered to ask zoos now using REGASP whether or not they want their zoo plan data to go to ISIS. Those that say yes get international zoo plan data back in return.

4. Regional centres are also given the option of sending regional plan data to ISIS. Regions that say yes, get in return data from all the other regions that are using REGASP-Link scheme.

5. ISIS makes the additional offer to regions, not able or wanting to establish a regional centre, to handle much of the data transfer within their region for them.

Funding 1. Development funds are needed as follows:

- AUSS20,000 for the professional production of a detailed User Manual. A foxpro expert interested in the job has been found and examples of his work have been viewed. The User Manual will go, with the name of the funding organisation on the cover, to potentially 500 zoos worldwide.
- AUSS15-25,000 for programming time allowing a re-write of those components of REGASP-Link that are hard-coded for Australasia and need to be made more flexible for the international market. A firm cost figure will be determine after discussions with South-east Asia.

2. Establishment funds are needed as follows:

- Each new region that takes REGASP-Link on will need support and training. It is proposed that the regions meet costs associated with this, although developing regions may need assistance.

3. On-going support funds are needed as follows:

- Some component of the Database Manager's time will always be spent on improving the REGASP or REGASP-Link software, or adding features at the request of international users. To ensure Australasian zoos are not burdened with this cost, we propose an increase in ISIS fees which is passed on to the ASMP and ASMP participating zoos ARAZPA contributions are reduced accordingly.

FORWARD PROCESS OF INTERNATIONAL DISTRIBUTION ON REGASP - IN ASSOCIATION WITH ISIS

1. To review the current status of the project and to discuss the progress made since the last meeting.
2. To discuss the progress of the project and to discuss the progress made since the last meeting.
3. To discuss the progress of the project and to discuss the progress made since the last meeting.
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10. To discuss the progress of the project and to discuss the progress made since the last meeting.

LONG TERM VIEW - Integrated Collection Management Software ("CMS??")

We are developing a clearer vision of the future direction for long-term development of services and software.

Three days of strategic planning at ISIS in February produced a practical and powerful internal vision of the 5-10 year target for in-house software development. Quite simply, this is to build **one** integrated system to support both local and cooperative collection management within zoos and aquariums. This one system would incorporate the separate functions now located within ARKS, MedARKS, and SPARKS, and incorporate parts of REGASP as well. It would allow appropriate staff to readily access local collection information including inventory, husbandry, veterinary, and planning information - including egg log, nutrition, and other special topics. It would also readily support accessing information from outside the local collection (from ISIS, studbooks, or regional or global REGASP) from a CD-ROM or via an INTERNET connection.

Over the longer run this would be a more powerful and logical system for zoos to operate. It would also be less costly for ISIS to develop and support, as it would "reuse" many

Done correctly, different groups from different organizations could build different parts of this in accordance with their interest, expertise, and resources - it would not all have to be done at or by ISIS central office staff.

Important volumes of reference materials and pooled information from many zoos would reside on multiple CD-ROM disks, readily accessible, useable, and inexpensive to update.

Very current information on the zoo community, its collections, and its plans would be readily available via the Internet. Also discussion on technical points in animal management would be facilitated through an electronic forum. ISIS has started one for zoo veterinarians on the present ISIS Bulletin Board and it is off to a good start with 30 vets discussing problematic cases. With a few mouse-clicks, one could log on and get the latest information on other collections, a specimen pedigree, whether or not another zoo has found the extra male they were looking for, and whether you can breed your zebras this year to meet the needs of a new exhibit opening next year at the other facility.

HOW ARE WE GOING TO GET THERE?

Most of ISIS' software products have been built with individually separate grants. They were initially designed for a world in which Zoos had one or many separate PCs. Increasingly many zoos are installing networks, and there will be many benefits from a local system where keepers, curators, registrars, veterinarians, and managers all have appropriate access to an in-house information system with functions supporting their individual needs.

1995 TERM VIEW - Integrated Collection Management Software (ICMS)

ICMS is a software package that will be developed by the Library Association for long-term development by...

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HOW ARE WE GOING TO GET THERE

ICMS is a software package that will be developed by the Library Association for long-term development by...

The process of modifying ISIS ARKS, SPARKS, and MedARKS software to become Windows products is a substantial re-design, especially of the screens seen by users. To be as efficient with scarce resources as possible, we plan to do more than just modify for Windows, but will start laying the groundwork for convergence of ISIS' in-house software towards one integrated collection management system, as we convert to Windows.

Assign specific responsibilities to staff members, with greater responsibility placed on those with the most experience in the area.

Establish a steering committee to oversee the development process.

Develop a project plan with milestones, which allows all users using ISIS services.

It would be a CD-ROM software package which would allow members to look up their own holdings, the library holdings of any of the nearly 1,000,000 libraries in the world. Information could be accessed by entering a search term such as the library name or the user's name.

Before beginning this new business, a new search tool is available which allows users to search for other people's records with the great ability to find.

On completion, the search tool would have direct access to the previous information recorded in ISIS, so that local records can be searched and updated as possible.

This CD-ROM software would support only users in the same information system area, at a time. One would have to have some identification for the software, as well as there would be the only option for the CD-ROM's software users, and the data would be managed in that format of other types of information from the CD-ROM.

This product could serve as an excellent, large database to use a CD-ROM drive, to have more of them on the value of these are some of the kind of information, and to make them work for other kinds of access to the data. Some users of the software in a computer with low hardware, should help with a type of information for future, more powerful, services.

Appropriate rights depend on the data.

Representative history for the software.

A special utility program to allow the user to search for the software in their own and library's operating system through the use of a search tool which is needed by the user to access the data which will be further details of the CD-ROM software package. CD-ROM data from various to all users.

ISIS Specimen Reference CD-ROM

PROSPECTUS

This is to propose development of a new ISIS service. It is intended to improve member's ability to:

Acquire suitable specimens from others, with greater knowledge about captive holdings, their origins, history, and pedigree.

Keep more accurate and consistent records for collection management.

Clean up past problems in their records, which affect all others using ISIS services.

It would be a CD-ROM reference disk which would allow members to look up, from their desktop, the history/pedigree of any of the nearly 1,000,000 ISIS-registered specimens. Specimens could be located by running a who-has-what species Abstract report on the spot.

Before acquiring that new breeding male, a zoo could check its available history to see if there was evidence for close genetic relationship with the group already held.

On acquisition, the records staff would have direct access to the previous information recorded on ISIS - so that local records can be as accurate and consistent as possible.

This initial CD-ROM would support only access to specimen information, one specimen at a time. One would have to know some identification for the specimen, to find it. These would be the only options on the CD-ROM's software menu, and the data would be encrypted to block retrieval of other kinds of information from this CD-ROM.

This product could serve as an ice-breaker, to get members to buy a CD-ROM drive, to have more of them see the value of direct zoo access to this kind of information, and to make them wish for more kinds of access to the data. Seeing some of the rewards in a product with few liabilities, should help build a base of understanding for future, more powerful, services.

Later versions might improve to include:

Reproductive history for any specimen

A special utility program to allow the zoo records staff to scan the Specimen Reference Disk and identify specimens where records cleanup / completion work is needed by this zoo - action on these would make further editions of the ISIS Specimen Reference CD-ROM more valuable to all users.

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FAX: 31 10 467 7811

Minutes

Membership

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Mr. Jim Jackson (TRUSTEE)
 Fossil Rim Wildlife Center
 P.O. Box 2189
 Rt 1 Box 210 Cr 2008
 Glen Rose, TX 76043

TERM: 1 Jan 95 - 31 Dec 97
 INSTCODE: 310544710
 PHONE: (817)897-2960
 FAX: (817)897-3785

Dr. George Rabb (TRUSTEE)
 Chicago Zoological Park
 3300 Golf Road
 Chicago, IL 60513

TERM: 1 Jan 95 - 31 Dec 97
 INSTCODE: 310514004
 PHONE: (708)485-0263
 FAX: (708)485-3532

Dr. Christian Schmidt (TRUSTEE)
 Frankfurt Zoo
 Alfred-Brehm-Platz 16
 D-60316 Frankfurt am Main
 Germany

TERM: 1 Jan 95 - 31 Dec 97
 INSTCODE: 113021003
 PHONE: 49 69 2123 3727
 FAX: 49 69 2123 7855

APPOINTED:

Dr. Kathryn Roberts (TREASURER)
 Minnesota Zoological Garden
 13000 Zoo Blvd.
 Apple Valley, MN 55124-8199

TERM: 1 Jan 93 - 31 Dec 95
 INSTCODE: 310524007
 PHONE: (612)431-9299
 FAX: (612)431-9336

Dr. Ulie Seal (TRUSTEE)
 Captive Breeding Specialist Group
 12101 Johnny Cake Ridge Road
 Bldg. A, Room 10
 Apple Valley, MN 55124-8151

TERM: 1 Jan 93 - 31 Dec 95
 INSTCODE: 310524998
 PHONE: (612)431-9325
 FAX: (612)432-2757

EX OFFICIO:

Mr. Nathan R. Flesness
 Executive Director, ISIS
 12101 Johnny Cake Ridge Road
 Bldg. A, Room 6
 Apple Valley, MN 55124-8151

TERM: Serves by virtue of office
 PHONE: (612)431-9295
 FAX: (612)432-2757

NEWLY APPOINTED:

Mr. Steve McCusker
 San Antonio Zoo
 3903 N. St. Mary's St.
 San Antonio, TX 78212-3199

TERM: 1 Jan 95 - 31 Dec 97
 INSTCODE: 310544025
 PHONE: (210)734-7184
 FAX: (210)734-7291

**BYLAWS
OF THE
INTERNATIONAL SPECIES INFORMATION SYSTEM**

- Article 1 - Members
 - Article 2 - Meetings of Members
 - Article 3 - Trustees
 - Article 4 - Officers
 - Article 5 - Committees
 - Article 6 - Fiscal Year
 - Article 7 - Contracts
 - Article 8 - Indemnification
 - Article 9 - Loans
 - Article 10 - Amendments
-

ARTICLE 1 - MEMBERS

1.1) Membership. The membership shall consist of organizations and persons who are devoted to the conservation and propagation of the world's wildlife and who meet the conditions of membership. Members must provide species management data in appropriate form to the corporation, subscribe to the purposes set forth in the Articles of Incorporation, pay annual dues, as from time to time determined by the board, and pay assessments, if any, for expenses and other costs of the corporation. Members shall adhere to the standards for data quantity and quality as shall be established from time to time by the board of trustees.

1.2) Classes of Members. There shall be two classes of members:

(a) Subscribing Members. Subscribing members are biological institutions that pay the dues and assessments of subscription membership as are from time to time established by the board of trustees. No other persons or organizations may qualify as subscribing members. Subscribing members have the right to vote in the election of trustees and in other matters properly coming before the members.

(b) Non-subscribing Members. Non-subscribing members are organizations and persons who do not qualify as subscribing members, but who meet the other conditions of membership. Non-subscribing members shall also include biological institutions which do not regularly pay the dues and assessment of membership, or in whose behalf the dues and assessments are waived by the corporation or paid by a third party, such as a sponsoring organization. Non-subscribing members have no voting rights.

1.3) Election of Members. The corporation may invite new members to join, or prospective members may apply to the corporation for membership. The board shall determine whether the applicant meets the requirements of either subscription or non-subscription membership. Members shall be admitted by majority vote of the board.

1.4) Provisional Appointment of Members. In the interim between meetings of the board, the executive director may, in accordance with such criteria as shall be established by the board from time to time, grant provisional subscribing or non-subscribing membership to applicants. The board shall consider whether to grant full membership at its next meeting. Provisional members shall have all the rights and obligations of full members.

1.5) Membership Records. The corporation shall keep accurate membership records including the name and address of each member.

1.6) Termination of Membership. If a member fails to continue to meet the conditions and requirements of membership, its membership may be terminated by the board. Termination shall be effective upon mailing of a written notice to the member whose membership is so terminated. Termination shall not relieve the member so terminated of the obligation to pay dues, assessments, or other charges accrued and unpaid at the time the termination becomes effective. At the option of the board, a subscribing member who otherwise qualifies as a member, but who is in arrears on membership dues and assessments, or on whose behalf the dues and assessments of membership are waived or paid by a third party, may, by majority vote of the board, be moved from subscription to non-subscription membership.

1.7) Resignation. A member may resign from membership at any time. Resignation shall not relieve the member so resigning of the obligation to pay dues, assessments, or other charges accrued and unpaid at the time the resignation becomes effective.

1.8) Residual Rights. A member that is terminated or resigns shall have no residual rights to data or services.

1.9) Transferability. A member may not voluntarily or involuntarily transfer or assign its membership or any right arising therefrom.

1.10) Dues. Dues or other assessments to members shall be as from time to time established by the board of trustees.

ARTICLE 2. - MEETINGS OF MEMBERS

2.1) Meetings of Members. An annual meeting of the members is not required. Special meetings of the members may be called for any purpose at any time by resolution of the board of trustees requesting such a meeting or by written request of not less than ten percent (10%) of all voting members. The executive director or secretary shall call the meeting by giving notice, as hereinafter provided, of the meeting within thirty (30) days after receiving the request. If the officer fails to give such notice within thirty (30) days, then the board of members who requested the meeting may fix the time and place of the meeting and give notice in the manner hereinafter provided.

2.2) Purpose of Meeting. At any meeting of members, the members shall transact any business that properly comes before them, excluding, however, the election of trustees, who shall be elected in accordance with the procedures set forth in Article 3 of these Bylaws.

2.3) Place of Meeting. Meetings of the members shall be held at such place as may be designated by the board of trustees.

2.4) Notice of Meeting. The executive director or secretary shall give to each member, at his or her address as shown on the books of the corporation, advance written notice of each meeting of members, and of a membership vote by mail on any issue, at least sixty days prior to the date thereof. A second official notice shall be given at least five but not more than thirty days prior to the meeting or the vote by mail. Such notices shall state the time and place of the meeting and the purpose of purposes thereof. Notice of any meeting of members may be waived in writing by members either before, during or after such meeting.

2.5) Waiver of Notice. A member may waive notice of any meeting before, at or after the meeting, in writing, orally or by attendance. Attendance at a meeting by a member is a waiver of notice of that meeting unless the member attends the meeting solely for the purpose of objecting to the transaction of business because the meeting is not lawfully called or convened. Attendance at and participation in a meeting by a member is not a waiver of notice of a particular item of business if the member objects before a vote on an item of business on the grounds that the item may not be lawfully considered at such meeting, provided that the member does not participate in the consideration of the item at such meeting.

ARTICLE 1 - MEETINGS OF MEMBERS

2.6) **Quorum.** Ten percent (10%) of the total number of voting members, present in person or by proxy, shall constitute a quorum for the transaction of business at any meeting of members. To establish a quorum in a vote by mail, a minimum of ten percent (10%) of the member ballots must be returned by the deadline stated in the ballot. If a quorum is not present at a meeting, those members present may adjourn the meeting until such time as a quorum is present.

At the reconvened meeting, once a quorum is present, any business may be transacted which might have been transacted at the meeting that was adjourned. When a quorum has been present at a meeting and members have withdrawn from the meeting so that less than a quorum remains, the members still present may continue to transact business until adjournment.

2.7) **Voting.** Voting rights in elections of trustees shall be as stated in Article 3 of these Bylaws. For all other questions, the following provisions shall govern: At each meeting of members, each voting member may vote in person or by written proxy. All proxies shall be filed with the secretary of the meeting at or before the meeting. Each voting member shall have one vote on any matter on which voting members have the right to vote. Members may vote by voice or by ballot or by other means permitted by these Bylaws. Except as otherwise required by law, the Articles of Incorporation, or these Bylaws, all questions shall be decided by a majority vote of the voting members present in person or by proxy at any meeting at which a quorum is present. There shall be no cumulative voting by the members of the corporation.

2.8) **Electronic Conference Meetings.** A conference among voting members, or among members of any committee designated by the voting members, by any means of communication through which the participants may simultaneously communicate with each other during the conference, constitutes a meeting of the voting members, or the committee, if the same notice is given of the conference as would be required for a meeting, and if the number of persons participating in the conference would be sufficient to constitute a quorum at the meeting. Participation in a meeting by said means constitutes personal presence at the meeting.

2.9) **Voting by Mail.** Voting for the election of trustees shall be by mail, as provided in Article 3. When determined to be advisable by the board of trustees, the entire vote on any other issue may also be by mail. In such case the notice shall state each issue to be voted on by mail and, in accordance with the notice requirements of these Bylaws, shall further state the date by which the ballot must be returned to the corporation to be a valid vote for such issues. The notice shall be accompanied by a written form of ballot covering each issue on which a mail vote is to be had. Such a vote shall have all the effects of a vote taken at a meeting duly called and held, provided that at least ten percent (10%) of those members entitled to vote have cast ballots.

2.10) **Authorization Without a Meeting.** Any action which may be taken at a meeting of the members may be validly taken without a meeting if a consent in writing, setting forth the actions so taken, is signed by all of the members entitled to vote with respect to the subject matter thereof. Any such consent shall be filed with the secretary of the corporation.

ARTICLE 3. - TRUSTEES

3.1) **General Powers.** The business and affairs of the corporation shall be managed by or under the direction of the board of trustees.

3.2) **Number, Term and Qualifications.** The board of trustees shall consist of six to eleven elected trustees, plus the executive director, who shall serve as a voting trustee by virtue of office. In addition, the board may appoint, on its own initiative, up to five additional voting trustees for such purposes and terms as they may decide. The terms of office for the trustees names in the Articles of Incorporation shall be three years. Thereafter, the term of office for each trustee elected or reelected shall also be three years. No trustee may serve more than two three-year terms consecutively. Each trustee (other than the trustees names in the Articles of Incorporation or trustees elected to fill a vacancy) shall serve for a three year term that expires at the trustees' annual meeting occurring at the end of such term, and until his or her successor is elected and qualified or until his or her earlier death, resignation, disqualification or removal.

3.3) Election of Trustees. Trustees shall be elected as follows:

(a) Nominations. Nominations for trustee shall be made by the nominating committee not less than ninety (90) days prior to the annual meeting of trustees. The nominating committee is responsible for placing in nomination a number of candidates sufficient to fill all openings on the board. The nominees should be representative of as many constituencies of the corporation's membership as possible, although nominees may come from outside the corporation membership. The chair of the nominating committee shall notify each candidate of his or her selection and shall secure, in writing, consent from such person to have his or her name placed in nomination. In addition to its own selections, the nominating committee shall place in nomination for election as trustee any person whose name has been submitted to the committee, not less than ninety (90) days prior to the annual meeting, by a petition of nomination containing the signatures of at least ten percent (10%) of the number of voting members in good standing on December 31 of the preceding year.

(b) Election. The election of trustees shall be by secret ballot. The executive director shall prepare and mail the official ballots to all eligible voting members not later than sixty (60) days prior to the annual meeting. Each voting member shall mark his or her official ballot and return it in the official envelope provided, and no other, and postmarked no later than thirty (30) days prior to the annual meeting.

(c) Restrictions. There shall be no cumulative voting in the election of trustees, and no member may vote by proxy. Election results shall become official when announced by the board of trustees at the annual meeting, provided that at least ten percent (10%) of members entitled to vote have cast ballots. If fewer than ten percent (10%) of the voting members have cast ballots, a new election shall be held by again submitting the same ballot to all voting members in the manner provided in subsection 3.3(b) above. No new nominations will be accepted, and trustees whose terms would have expired shall continue to serve until their successors have been elected and qualified. If the follow up election fails again to produce a return of at least ten percent (10%) of the voting membership, then the board of trustees shall elect or reelect trustees from those candidates nominated on the ballot that was submitted to the members. In such cases, the selections of the board of trustees shall be final.

3.4) First Trustee Election. At the first trustee election following the expiration of the terms of the initial board of trustees, the board shall designate by lot for each elected trustee a term of between one and three years, so that at approximately one-third of the board comes up for election each year thereafter.

3.5) Resignation. Any trustee may resign at any time by giving written notice to the secretary or the executive director. Such resignation shall take effect at the time specified therein, but in no event earlier than the date of receipt by the secretary.

3.6) Removal. Any trustee may be removed, with or without cause, by a vote of at least two-thirds of the total membership of the board. Such a vote may be taken at any meeting for which notice of the removal has been provided at least thirty (30) days prior to the meeting.

3.7) Vacancies. Vacancies on the board of trustees may be filled by the affirmative vote of a majority of the remaining members of the board, even if less than a quorum. A person so elected to fill a vacancy shall serve as a trustee for the remainder of the term of office of the trustee who vacancies is being filled. No vacancy need to be filled by the board of trustees unless necessary to maintain the minimum number of trustees required by these Bylaws. A partial term served by a trustee elected by the board to fill a vacancy shall not be counted against the limit on number of terms that a trustee may serve.

3.8) Alternate Trustees. For any meeting a Trustee may designate an alternate who may represent the trustee and vote in his or her absence. Such designation shall be made by a written proxy, in a form substantially similar to that attached as Exhibit A hereto. A separate proxy shall be required for each meeting.

3.9) Quorum and Voting. Fifty percent (50%) of the trustees currently holding office shall constitute a quorum for the transaction of business. Alternate Trustees shall not be counted towards a quorum. In the absence

of a quorum, a majority of the trustees present may adjourn a meeting from time to time until a quorum is present. At the reconvened meeting, once a quorum is present, any business may be transacted which might have been transacted at the meeting that was adjourned. If a quorum is present when a duly called or held meeting is convened, the trustees present may continue to transact business until adjournment even through the withdrawal of a number of trustees originally present leaves less than the proportion or number otherwise required for a quorum. Except as otherwise required by law or the Articles of Incorporation, the acts of a majority of that number of trustees present at the convening of a meeting at which a quorum was present shall be the acts of the board of trustees.

3.10) Board Meetings; Place and Notice. The annual meeting shall be held when determined by the board for the purpose of election of officers and the transaction of any other business properly coming before it. There may be such other meetings of the board as may be held from time to time at any place that the board may designate. In the absence of designation by the board, board meetings shall be held at the principal executive office of the corporation, except as may be otherwise agreed by at least seventy-five percent (75%) of the membership of the board, either orally, in writing, or by attendance.

The executive committee or a majority of the board may call a board meeting by giving sixty (60) days notice to all trustees of the date and time of the meeting. Except as provided herein, the notice need not state the purpose of the meeting, and may be given by mail, telephone, or in person. If a meeting schedule is adopted by the board, or if the date and time of a board meeting has been agreed to at a previous meeting, no notice is required.

3.11) Waiver of Notice. A trustee may waive notice of any meeting before, at or after the meeting, in writing, orally or by attendance. Attendance at a meeting by a trustee is a waiver of notice of that meeting unless the trustee attends the meeting solely for the purpose of objecting to the transaction of business because the meeting is not lawfully called or convened. Attendance at and participation in a meeting by a trustee is not waiver of notice of a particular item of business if the member objects before a vote on an item of business on the grounds that the item may not be lawfully considered at such meeting, provided that the trustee does not participate in the consideration of the item at such meeting.

3.12) Electronic Conference Meetings. A conference among trustees, or among members of any committee designated by the board of trustees, by any means of communication through which all of the participants may simultaneously communicate with each other during the conference, constitutes a meeting of the board of the committee, if the same notice is given of the conference as would be required for a meeting, and if the number of persons participating in the conference would be sufficient to constitute a quorum at the meeting. Participation in a meeting by such means constitutes personal presence at the meeting.

3.13) Action Without Meeting. An action required or permitted to be taken at a board meeting may be taken by written action signed by the number of trustees that would be required to take the same action at a meeting of the board at which all trustees were present; provided that all trustees must be notified of the text of the written action prior to the signing by any of the trustees.

3.14) Compensation. No trustee shall receive any compensation for his or her services as a trustee unless such compensation is authorized by resolution of the board of trustees. Trustees may be reimbursed for any expenses of attendance at meetings of the board, if reimbursement is authorized by resolution of the board. These expenses may include travel expenses, lodging, or telephone charges, if for a meeting by electronic conference. Nothing herein contained shall be construed to preclude any trustee from serving the corporation in any other capacity and receiving compensation therefor.

3.15) Advisory Groups. The board may (a) appoint advisory panels for such areas as conservation, development, technology, etc., and members of the advisory panels may be invited to attend board meetings; and (b) create an International Species Information System (ISIS) user group which may include members of liaison committees appointed by professional associations of member institutions.

ARTICLE 4 - OFFICERS

4.1) **Number.** The elected officers of the corporation shall be a chair, a vice-chair, a secretary, and such other officers as may from time to time be elected by the board of trustees. Any of the offices or functions of the officers may be held or exercised by the same person. In addition, an executive director shall be appointed by the board and shall serve as a voting trustee of indefinite term by virtue of office, and shall serve at the board's pleasure.

4.2) **Election, Term of Office, and Qualifications.** Following the first election of officers, the board shall elect the officers at the annual meeting. Each such officer shall hold office for one year and until his or her successor is elected and has qualified, or until he or she has been removed in the manner hereinafter provided. The officers may hold the same office only for three terms consecutively and are ineligible for that position until they have not held it for one term.

4.3) **Removal.** Any officer may be removed, with or without cause, by vote of not less than two-thirds of the full board of trustees whenever in its judgment the best interests of the corporation would be served thereby. Such removal shall be without prejudice to the contract rights, if any, of such officer.

4.4) **Resignation.** Any officer may resign at any time by giving written notice to the corporation. The resignation is effective when notice is given to the corporation, unless a later date is specified in the notice, and acceptance of the resignation shall not be necessary to make it effective.

4.5) **Vacancies.** If there be a vacancy in any office of the corporation, by reason of death, resignation, removal or otherwise, such vacancy may be filled for the unexpired term by vote of the board of trustees.

4.6) **Chair.** The chair shall (a) preside at all meetings of the members and of the trustees; (b) see that all orders and resolutions of the board are carried into effect; (c) sign and deliver in the name of the corporation any deeds, mortgages, bonds, contracts or other instruments pertaining to the business of the corporation, except in cases in which the authority to sign and deliver is required by law to be exercised by another person or is expressly delegated by the Articles, these Bylaws, or the board to some other officer or agent of the corporation; (d) appoint members and chairs to committees established by the board; and (e) perform all duties incident to the office of chair, and such other duties as may from time to time be prescribed by the board.

4.7) **Vice-Chair.** The vice-chair shall act as chair in the absence of the chair and shall perform such other duties as may from time to time be prescribed by the board or delegated by the chair.

4.8) **Secretary.** The secretary shall (a) attend all meetings of the members and the board of trustees; (b) keep in the minute book proper minutes of the proceedings; (c) give all required notices; (d) have responsibility for the corporate records, which shall be maintained in a safe and secure manner in the corporation offices; and (e) perform such other duties as may from time to time be prescribed by the board.

4.9) **Executive Director.** The executive director shall (a) be the chief executive officer and registered agent of the corporation; (b) have general active management of the business of the corporation; (c) be a voting member of the board of trustees; (d) be a voting member of all committees except when his/her employment, job performance or compensation is being discussed; (e) shall administer and be responsible for the day-to-day financial affairs of the corporation and shall render financial reports, at least annually, to the Chair, Treasurer, and full Board of Trustees; (f) perform such other duties that fulfill the purposes of the corporation as may be prescribed by the board of trustees or the chair from time to time. The executive director shall be responsible to the full board of trustees through its executive committee and not to individual board members.

4.10) **Treasurer.** In recognition of its fiduciary responsibilities, the Board of Trustees shall annually name one of its members as Treasurer. The Treasurer shall oversee the financial integrity of ISIS operations and shall

ARTICLE 4 - OFFICERS

Faint, mostly illegible text for Article 4 - Officers, including sections 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29, 4.30, 4.31, 4.32, 4.33, 4.34, 4.35, 4.36, 4.37, 4.38, 4.39, 4.40, 4.41, 4.42, 4.43, 4.44, 4.45, 4.46, 4.47, 4.48, 4.49, 4.50, 4.51, 4.52, 4.53, 4.54, 4.55, 4.56, 4.57, 4.58, 4.59, 4.60, 4.61, 4.62, 4.63, 4.64, 4.65, 4.66, 4.67, 4.68, 4.69, 4.70, 4.71, 4.72, 4.73, 4.74, 4.75, 4.76, 4.77, 4.78, 4.79, 4.80, 4.81, 4.82, 4.83, 4.84, 4.85, 4.86, 4.87, 4.88, 4.89, 4.90, 4.91, 4.92, 4.93, 4.94, 4.95, 4.96, 4.97, 4.98, 4.99, 4.100.

make an annual report on the corporation's financial status based on a certified audit. The Treasurer shall assist the Executive Director to assure sound accounting and monitoring standards for financial administration. The Treasurer shall perform such other related duties, including presentation of the budget, as the Board of Trustees may deem appropriate.

4.11) Other Officers and Agents. Any other officers and agents appointed by the board of trustees shall perform such duties and be responsible for such functions as the board of trustees may prescribe.

ARTICLE 5 - COMMITTEES

5.1) Executive Committee. The board shall, by resolution, designate a committee of four trustees, to serve as an executive committee which shall have and exercise the authority of the board in the management of the business of the corporation. The committee shall consist of the chair, the vice-chair, the executive director and one other trustee, three of whom shall constitute a quorum. The executive committee shall act only in the intervals between meetings of the board. Its actions must be ratified at the next meeting of the board.

5.2) Nominating Committee. The chair shall annually designate three individuals who, together with the executive director, shall serve as the nominating committee. At least one of the members must not be a trustee, but he or she shall be a representative of a member institution. The nominating committee shall nominate candidates for election to the board of trustees in accordance with Article 3. The nominating committee members shall represent as many of the geographical and professional constituencies of the membership as possible.

5.3) Other Committees. The board of trustees may from time to time establish such other committees as it may deem proper, and may prescribe the functions and duties of such committees and the terms of membership of committee members. The chair shall, subject to ratification by the board, appoint all committee members and designate all committee chairpersons.

ARTICLE 6 - FISCAL YEAR

6.1) Fiscal Year. The fiscal year of the corporation shall be established by the board of trustees.

ARTICLE 7 - EXECUTION OF CONTRACTS

7.1) Contracts. The board of trustees may authorize any officer or officers, or agent or agents, to enter into any contract, or execute and deliver any instrument in the name of and on behalf of the corporation. Such authority may be general or confined to specific instances. Except as otherwise provided in these Bylaws and except as from time to time authorized by the board of trustees, no officer, agent, or employee shall have any power or authority to bind the corporation by any contract or engagement, or to pledge its credit, or to render it liable pecuniarily for any purpose or in any amount.

ARTICLE 8 - INDEMNIFICATION

8.1) Indemnification. The corporation shall indemnify such persons, including, but not limited to, officers, trustees and employees of corporation, for such expenses and liabilities, in such manner, under such circumstances, and to such extent, as permitted by Minnesota Statutes, Section 317.16, Subd. 2(15), as now enacted or hereafter amended.

ARTICLE 9 - LOANS TO OFFICERS OR TRUSTEES

9.1) Loans to Officers or Trustees. In accordance with the provisions of Minnesota statutes, Section 317.18, the corporation shall not lend any of its assets to an officer or trustee of the corporation. If it does make such a loan, the officers and trustees who make the loan, or assent to it, are jointly and severally liable for its repayment.

ARTICLE 10 - AMENDMENTS

10.1) Amendments. These Bylaws may be amended or repealed and new Bylaws may be adopted by either of the following methods:

- (a) Upon adoption or ratification of these Bylaws by the members, these Bylaws may be altered, amended, added to or repealed by a two-thirds (2/3) vote of all the members of the board of trustees. This authority in the board of trustees is subject to the power of the members either to change or repeal the Bylaws or, by a majority vote of the members voting at a meeting duly called for that purpose, prospectively to revoke the authority of the board to exercise the power to amend the Bylaws; or
- (b) The board of trustees may propose the amendment of the Bylaws by resolution setting forth the proposed amendment and directing that it be submitted for adoption at a meeting of the members, or 50 members or 10% of the membership, whichever is the lesser, may set forth a proposed amendment by petition, which shall be signed by them and filed with the secretary of the corporation. Notice of the meeting of the members, stating the purpose including the proposed amendment, shall be given to each member entitled to vote on the proposed amendment, and to each officer and trustee regardless of his or her voting rights. If notice required by this clause has been given, the proposed amendment may be adopted at any meeting of members. Adoption of a proposed amendment shall be by two-thirds (2/3) vote of all members with voting rights.

ARTICLE 8 - LOANS TO OFFICERS OR TRUSTEES

8.01 The Board of Directors shall have the authority to make loans to officers or trustees of the Association for the purpose of financing the purchase of a residence in the Association. The Board shall have the authority to make such loans on such terms and conditions as it may deem appropriate.

ARTICLE 10 - AMENDMENTS

10.01 Any provision of these Bylaws may be amended or repealed by a majority vote of the Board of Directors.

10.02 Any provision of these Bylaws may be amended or repealed by a majority vote of the Board of Directors if the amendment or repeal is approved by a majority of the members of the Association at a meeting called for that purpose by the Board of Directors.

10.03 Any provision of these Bylaws may be amended or repealed by a majority vote of the Board of Directors if the amendment or repeal is approved by a majority of the members of the Association at a meeting called for that purpose by the Board of Directors and the amendment or repeal is approved by a majority of the members of the Association at a meeting called for that purpose by the Board of Directors.

ISIS MEMBERS (482)



Minutes

Membership

Election

Services

Challenges



ISIS
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INTERNET: ISIS@maroon.tc.umn.edu

6 September 1994

TO: ISIS Board of Trustees (Chairman John Knowles [Marwell], Members John DeJose [Perth], Ton Dorrestyn [Rotterdam], Don Farst [Brownsville], Bernard Harrison [Singapore], Charles Hoessle [St. Louis], Willie Labuschagne [Pretoria], Gunther Nogge [Cologne], George Rabb [Chicago-Brookfield], Kathryn Roberts [Minnesota], Karen Sausman [Palm Desert], Ulie Seal [CBSG], Itaru Uchida [Nagoya], Steve Wylie [Oklahoma City]) and appointed member for 1995-1997 Steve McCusker [Tucson].

FM: Nate Flesness, Executive Director

RE: ISIS Mid-year Report

Finance: Enclosed is a mid-year cash-based report on budget results for the first half of the year, along with Income and Balance Statements for the mid-year. As of 30 June ISIS had received 74% of the projected annual revenue for 1994, including 86% of member fee revenue. Now that we bill members at the beginning of each year, membership revenue is earlier, more timely and more predictable. We are continuing to follow up and pursue late membership fees. Expenses for the first half-year were precisely 50% of the "realist" budget forecast for 1994. This is encouraging, and also slightly coincidental (expense categories varied from 47% - 50%, NIH grant expense [and grant income] were an offsetting 53%).

The projected 1994 results are thus generally holding up well. Final financial results will of course depend on revenue during the rest of the year. However, our projected "realist" surplus of about \$14,000 included CBSG paying back their nearly \$19,000 obligation during 1994. As CBSG is having some cash flow difficulties due to a few pledges not being met, they are not expected to be able to repay \$16,000 of the debt this year, which changes ISIS' expected results to approximately break-even on a cash basis.

Membership: A total of 50 new facilities have applied for membership during the first half of 1994 (31 subscribing members approved at the May Board meeting plus 4 new applicants; 14 non-subscribing members approved in May plus one new applicant - see lists enclosed). 17 of the new members are in Europe. This is a record recruitment rate (and 7 more have applied since 30 June).

However, net membership growth so far for 1994 is only 15, because we have implemented the Board-set policy requiring fees and data current to one year. We have suspended, and then ended, services and membership status for 35 institutions which met neither criteria, and which neither replied nor responded within 90 days to the suspension letter. More than half of these were Indian zoos. We have worked through regional zoo organizations where possible to solve problems and restart active participation. Cooperation from several regional centers cleared up some misunderstandings and "saved" several members. All suspension and termination communications encouraged their participation now or in the future, and explained that "for now" we regretted that we could not continue to provide services, but looked forward to the time when they were ready and able to begin active membership. In several cases (Rabat, Blantyre, Hyderabad, etc.) we have reason to think that active membership may start in the next year or two.

Programs: A new SPARKS (version 1.3) has been distributed to over 260 facilities, with many enhancements for studbook work. A new MedARKS, containing the long-awaited Clinical Notes feature, is being distributed in stages (42 zoos thus far). Testing of ARKS 3 continues, and work on the User Manual has begun. New ISIS 3 central database services now in development are focused on issues of data quality - assisting records staff in improved records quality, and better-checking ISIS' own systems for handling data.

Developing Activities: We continue to collaborate closely with the Australasian ASMP office and the programs developing in their region, notably REGASP - a computerized planning system and tool. We are assisting in efforts by other zoos and regions to explore the potential usefulness of this system, which links with ARKS and ISIS.

We are engaged in active and creative discussions with various AZA Task Forces and sub-committees on ways ISIS might better support the studbook system, with the aim of increasing overall efficiency and reducing the drain studbooks can place on limited zoo resources. Related to this theme, we have just received word of a successful grant award of \$38,000 for 1995, from the U.S. Institute of Museum Services, to write software to allow willing studbook keepers to send data to ISIS. Such data would be compared by to-be-written computer programs, against data already submitted by member zoos. This would allow identification of discrepancies, which could then be pointed out to both the studbook-keeper and the zoo records staff. Problems of how to further utilize information which may be submitted are under study. This is another step in our planned expansion of services supporting studbooks.

17/August/94

ISPRG94

ISIS Program Budget:
Period Covered: January - June 1994

REVENUE

SERVICES & SOFTWARE	Original	Revised	ACTUAL		Percentage
	BUDGET	BUDGET	Year-To-Date	Remainder	To Date
Membership Fees	442,219	440,000	379,987	60,013	86%
Grants	173,134	169,081	69,520	99,561	41%
Other	40,117	17,385	12,871	4,514	74%
Total Revenue	655,470	626,466	462,378	164,088	74%

EXPENSES

SERVICES & SOFTWARE	Original	Revised	ACTUAL	Percentage
Data Collection	100,000	98,000	43,727	45%
Communications	7,835	7,000	4,787	68%
Information Distribution	42,325	48,589	23,938	49%
User Support	35,000	37,000	18,500	50%
Travel	20,000	20,000	9,178	46%
Subtotal Services	205,160	210,589	100,130	48%

RESEARCH & DEVELOPMENT	Original	Revised	ACTUAL	Percentage
ISIS 3 Development	124,168	102,803	50,550	49%
SPARKS Development	33,116	34,586	15,460	45%
ARKS Development	54,511	53,755	25,818	48%
MedARKS Development	40,458	43,855	26,212	60%
Subtotal R&D	252,253	234,999	118,040	50%

NONFUNDED SERVICES & SOFTWARE	Original	Revised	ACTUAL	Percentage
Egg Log Data Sytems	0	0	0	0%
Genome Bank Software	0	0	0	0%
New Lab Database	0	0	0	0%
Taxon Tree Tool Library	0	0	0	0%
Windows Product Development	0	0	0	0%
Taxonomic List Maintenance	0	0	0	0%
Paper Records Improvements	0	0	0	0%

MARKETING & MEMBERSHIP	Original	Revised	ACTUAL	Percentage
Membership Administration	7,000	7,800	3,800	49%
Brochures & Mailing	2,000	2,000	1,100	55%
Newsletter & Mailing	10,000	10,000	4,500	45%
Subtotal M&M	19,000	19,800	9,400	47%

ADMINISTRATION & FINANCE	Original	Revised	ACTUAL	Percentage
Other Fund Raising	3,000	3,000	1,400	47%
Accounting & Auditing Services	12,000	12,000	9,000	75%
Grant & Financial Admin.	41,161	36,000	15,177	42%
Overhead	13,000	13,000	6,500	50%
Subtotal A&F	69,161	64,000	32,077	50%

NIH	85,172	95,141	50,338	53%
CBSG	10,238	10,238	4,800	47%
Total Expenses	640,984	634,767	314,785	50%
Net Excess / (Deficit)	14,486	(8,301)	147,593	

Note: Decrease in "Other" assumes no payments from CBSG for remainder of 1994.
NIH budget increased to reflect direct & indirect costs.

**ISIS
BALANCE SHEET
PERIOD ENDING: June 30, 1994**

ASSETS

ISIS Checking & Savings	287,315.03	
Prepaid Expense	0.00	
Institutions Accts. Receivable	18,324.26	
Less Allow. Bad Debt	(4,551.00)	
Net Institutions Receivable	13,773.26	
CBSG	19,516.22	
Grants	7,614.88	
EE Office Equip.	3,783.50	
Other	0.00	
Total Net Receivables	345,776.15	
Equipment & Furniture	129,045.21	
Accum. Depreciation	(86,047.58)	
Total Furn. & Equip.	42,997.63	
TOTAL ASSETS		\$375,000.52

LIABILITIES

Accounts Payable	2,123.31	
Accrued Salary/Vacation	23619.58	
Deferred Grants	0.00	
Deferred Revenue	2,382.61	
Total Liabilities	28,125.50	

FUND BALANCE

Fund Balance	236,411.81	
Changes to Fund Balance	110,463.21	
Current Fund Balance	346,875.02	
TOTAL LIABILITIES & FUND		\$375,000.52

**ISIS
ACCRUAL
INCOME STATEMENT
JANUARY - JUNE 1994**

REVENUE

OPERATIONS:

ISIS Fees	356,652.82
Grants (NIH)	45,258.26
ISIS Pubs. & Reports	0.00
Other	972.43

Less Budget Caps

Total from Operations	402,883.51
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R & D:

Development Grants	22,494.50
Other	1,000.00

Total from R & D	23,494.50
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Endowment Fund	0.00
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Investment Income	3,486.28
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TOTAL REVENUE	429,864.29
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EXPENSES

OPERATIONS:

Personnel	109,249.69
Computer	4,476.00
Printing	20,270.01
Other	66,178.98

Total Operating Expenses	200,174.68
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R & D:

ISIS3	11,003.99
ISIS3 (CD-ROM) 93-94	40,721.87
ARKS	25,822.82
SPARKS	15,463.11
MedARKS	26,214.61

Total R & D Expenses	119,226.40
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Total Expenses	319,401.08
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Changes to Fund Balance	\$110,463.21
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Institutions Which Have Been Dropped or Resigned From ISIS: January - June 1994

120213350	Cotswold Llama Farm	England (U.K.)
210306001	Cairo Zoological Gardens	Arab Rep. Egypt
310501004	Safari Land USA	USA
111409001	Zool. & Botanical Garden of Debrecen	Hungary
112107001	Krakow Miejski Ogród Zoologiczny	Poland
112117001	Miejski Ogród Zoologiczny	Poland
210616001	Parc Zool. Nat'l. De Rabat	Morocco
230908002	Mobutu / N'sele	Zaire
250301001	City of Blantyre Zoo	Central Africa
250311400	Malawi Nat'l Prks & Wildlf Dept.	Central Africa
321407001	La Aurora Zoologico Parque	Guatamela
321905001	Miguel Alvarez Del Toro Zoo	Mexico
321916001	Benito Juarez Zoologico Parque	Mexico
330325008	Sorocaba - Zoologico De	Brazil
330502001	Medellin - Parque Zool. Santa Fe	Colombia
430804001	Sanjay Gandhi Biol. Park	India
430804002	Ranchi Biological Park	India
430807001	Delhi National Zoological Park	India
430809003	Shri Sayaji Baug Zoo	India
430809005	Sakkarbaug Zoo	India
430811001	Himalayan Zoological Park	India
430811002	Kufri Musk Deer Breeding Center	India
430813001	Trichur Zoo	India
430815002	Vanvihar National Park	India
430819001	Mysore Zoo	India
430821001	Nandankanan Biological Park	India
430825003	Coimbatore Zoological Park	India
430825004	Madras Crocodile Bank	India
430827001	Prince of Wales Zool. Gardens Trust	India
430827002	Kanpur Zoological Park	India
430827400	Forest Training Institute	India
430827900	Wildlife Institute of India	India
430828001	Calcutta/Alipore Zoological Garden	India
440108001	Wuhan Zoo	Rep. of China
440125001	Xining People's Park	Rep. of China

Total: 35

New Provisional Members, Candidates for Subscribing (voting) Membership:

Thirty-one institutions joining in 1994 as subscribing members were previously approved at the May Board Meeting. In addition, the following five facilities joined in May and June 1994:

PASTRENGO	Parco Natura Viva	Italy
PT SPAIN	Zool. Soc. of Trinidad and Tobago	West Indies
AMERICANA	Parque Ecol. Municipal de Americana	Brazil
DUNDEE	Camperdown Wildlife Centre	Scotland (U.K.)
TANANARIV	Park Tsimbasasa (sponsored by San Francisco Zoo)	Madagascar

Proposed for Non-Subscribing (non-voting) Membership:

Fourteen such institutions were previously approved in the May Board report. In addition, the following facility joined in May 1994:

WHYALLA	Whyalla Wildlife & Reptile Sanctuary	Australia
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Draft Minutes

ISIS Board of Trustees Meeting

19 May 1994

Cologne, Germany

The meeting was called to order at 1330 by Chairman John Knowles. In attendance were Knowles, Roberts, Nogge, Dorrestyn, DeJose, Labuschagne, Seal, and Flesness - these eight constituting a quorum. Jim Jackson was present and volunteered to help record minutes.

Apologies were received from Sausman, Farst, Harrison, Hoessle, Rabb, Uchida, and Wylie. John DeJose was welcomed as an incoming Board Member.

Minutes from the 20 October 1993 conference call and the 7 Sept 1993 discussions at Antwerp were approved.

CBSG separation as of 31 December 1993 was discussed, with the consensus that if the year went well financially, ISIS would like to forgive part of the \$19,000 debt owed, but that we were not now in a position to commit to this.

Provisional new subscribing and non-subscribing members were approved on a motion by Roberts, second Dorrestyn (list attached). The list of members whose services have been suspended (due to no submitted data in the last year and no membership fees paid in the last year) was reviewed (list attached). Flesness was authorized (motion Roberts., second Labuschagne, unanimous) to terminate their membership, but encouraged to stay flexible in resolving problems, and to discuss European and African memberships at the upcoming meetings of these regions before final action. It was noted that the number of suspended members (34) plus the 6 who have dropped out roughly equalled the number approved (45) - i.e. that membership growth will appear to have slowed as a result of enforcing membership standards.

Current services were reviewed. Special note was made of the recent rapid rise in live specimens registered, and of the potential of MedARKS records for pooling across many institutions and providing the first reasonable-size scientific data set for research on medical problems.

Two significant new initiatives were discussed. One would offer studbook keepers much more direct support from ISIS. ISIS would enhance software systems so that cooperating studbook keepers would hopefully only have to "polish" the data ISIS already collects - eliminating the current redundant data-assembly efforts. This would save them much time, and their returning the improved data to ISIS is expected to make the studbooks much more current and more readily available - also potentially saving some publication/distribution costs. If current grant initiatives are successful, this might be implemented during 1996. This was enthusiastically received. Flesness noted that the lack of coordination among regions in assigning regional studbook numbers and sometimes international studbook numbers was causing and would continue to cause confusion, and that in September, 1991 he had raised this issue with the

regional coordinators - without result so far.

The second initiative involves expanding ISIS' services beyond specimen information systems, to include planning information systems. ISIS software, and the Australasian REGASP system, would both be expanded and improved to offer a world-wide network which would make planning information available from within each facility. Planning information would include specimen plans, collection plans, regional plans, and global recommendations. Excellent cooperation with the Australasian ASMP office already exists, but no budget, timelines, or funding source has yet been identified. This prospect was also received with enthusiasm.

ISIS' finances were reviewed, noting that the current year and 1995 have better prospects than the last two years. The proposed 1995 budget, with a range of projections, was approved by consensus. The 1993 audit and management letter were reviewed, and it was noted that Flesness was responsible for carrying out the recommended improvements in time-allocation tracking and grant reporting. A letter from the U.S. Public Health Service regarding the 1992 audit and findings was distributed, along with an explanatory note from Flesness. Knowles noted the impenetrable language of the letter, and the Board accepted by consensus that Flesness would resolve such matters..

The nominating committee (Roberts, Labuschagne, Mallinson and Flesness) reported that candidates for the 4 elected positions open for 1995 were to be:

Ton Dorrestyn Rotterdam (incumbent)
George Rabb, Chicago, Brookfield (incumbent)
Itaru Uchida, Nagoya Aquarium (incumbent)
Jim Jackson, Fossil Rim
Christian Schmidt, Frankfurt
See-Wu Chu, Taipei

The Board noted with regret that Dr. Don Farst chose not to stand for re-election, due to other commitments. Flesness brought up a request from Steve Wylie, whose appointed term expires 31 Dec 1994, that Steve McCusker be appointed to the ISIS Board. After discussion noted that this was an unusual request, special one-time circumstances were identified, and the appointment was made unanimously, for a three year term 1995-1997.

The next ISIS Board of Trustees meeting was set for Cologne, 26 or 27 April, 1995, in conjunction with IUDZG Council and CBSG Steering committee meetings planned for that venue as well.

Flesness was excused and the Board reviewed performance and salary guidelines. Flesness was granted a 5% raise for 1995, and directed that staff salary increases should be appropriate and reasonable, but not to exceed 5%.

Brief ISIS Annual Report for 1993

Nathan R. Flesness, ISIS Executive Director
22 February 1994

New Central Database Services: ISIS added a new TAG Report during 1993. This greatly facilitates review of the status of a taxonomic group in captive collections globally and/or by requested region. Thirty requests for TAG Reports were filled during 1993, aiding many TAG groups. At year's end, ISIS was testing a new **Studbook Keeper Report**, which will be used to automatically and periodically update all known International and Regional studbook keepers with information sent to ISIS.

Increased PC Software Power: ISIS' SPARKS software was converted to a more modern and powerful programming language (FOXPRO), and an improved version (1.2) distributed in the Spring. As the year ended, we are testing version 1.3, with improvements in studbook-keeper tasks (mailing labels, printing options, etc.), capacity to record specimen-level plans/decisions, and improved demographic analyses. Over 250 institutions use SPARKS. ISIS' MedARKS was also largely converted to FOXPRO, and a new Clinical Notes module, tested at a dozen zoos, is near release. This offers great potential for future combining of veterinary experience/problems for chosen species for management/research - a task presently requiring superhuman effort. Additionally, a new 30,000+ sample pooled Clinical Chemistry / Hematology Norms was distributed to MedARKS users. Over 250 institutions use MedARKS. Development of ARKS 3 continued, with 15 institutions testing several successive trial versions. Over 400 institutions presently use ARKS version 2.

Growth: Membership grew to 465 institutions, a net gain of 39 during the year. **Registered Specimens** (living and dead) grew by 90,000 during the year, to a total of 750,000, of which 200,000 are alive. Over 5,700 species are registered. As these numbers indicate, new **specimen information** has recently come to ISIS in surprising volume; it took 18 years to assemble the first 4/5 of the present database ... the newest 1/5 has arrived in the last 18 months! This expansion of registered specimens improves the comprehensiveness of all ISIS information services. The parallel growth in institutional members improves ISIS coverage, and additional membership fees help cover ISIS' largely fixed costs of operation and software development.

Finance: ISIS' 1993 budget of \$660,000 was spent on (1) routine operations and membership services (50%), software development and maintenance (ISIS, ARKS, SPARKS, and MedARKS, totalling 37%) and grant-funded work for the U.S. National Institutes of Health (13%). Revenue consisted of: ISIS membership fees (63%), IMS grants (14%), NIH grant (13%), AZA CEF grant (2%), IUDZG grant (1%), and miscellaneous (7%).

ISIS member institutions' dues now cover ISIS' basic operating costs, and contribute 37% of the funding for improvement of in-house and central database software. ISIS' in-house software (ARKS, SPARKS, MedARKS) has become a critical collection management tool at many member facilities; many are asking for more capabilities, such as multi-user networking, etc. The fee increase scheduled for 1995 will offset four years of inflation (current fees were set in 1991) and is expected to raise member support for software development and maintenance to about one-half of the minimum necessary budget. This means member facilities will be supporting two of the four ISIS staff programming positions, with the remainder being generated from outside the zoo community.

ISIS Board Election: Four Board positions were open, and seven candidates were on the ballot. Gunther Nogge (Cologne) and Karen Sausman (Palm Desert) were re-elected to three-year terms. Charles Hoessle (St. Louis) and John DeJose (Perth) were also elected. Palmer Krantz (Columbia) and Paul Garland (Christchurch) concluded their valuable terms of service on the ISIS Board.

Future: We are exploring use of powerful and fast-changing information technology such as CD-ROM, and the INTERNET, to deliver more and better cost-effective information services, focusing on putting more needed and useful information in the hands of keepers, curators, registrars, studbook keepers, and regional program coordinators.

JAN 31 1994

**ISIS Board of Trustees meeting, Antwerp Zoo,
7 Sept 1993**

Called to order at 18:30

Attendees: chair, John Knowles, George Rabb, Gunther Nogge, U. S. Seal, Ton Dorrestyn, Willie Labuschagne, and ISIS Director Nate Flesness (who serves on the Board by virtue of office). Paul Scobie (taking notes) was also in attendance.

Steve Wylie, Karen Sausman, Palmer Krantz, Don Farst, Paul Garland, Bernard Harrison, Itaru Uchida and Kathryn Roberts sent apologies that they were unable to attend. With seven Trustees present, but **eight required for a quorum**, it was decided to proceed with discussions among members present, and try for a quorum through a telephone conference call later this Fall.

Vancouver minutes acknowledged and approved.

Draft Agenda approved.

Executive Directors report by Flesness: ARKS, SPARKS, MedARKS and ISIS 3 software continue to be developed and maintained primarily by use of grants...member fee income has not been adequate to support these services. Member fees now pay for about 1/3 of our \$200 - \$240K software development and maintenance effort. This is better than before, but still marginal. Partly as a result, ISIS is short on software staff for its' products, and finds it challenging to plan, fund, and staff for these important responsibilities. Short review of MedARKS, SPARKS, and ARKS.

Extensive discussion of ARKS3 release, especially as it relates to the upcoming discussion on the ISIS 1994-5 budget. Knowles suggests that ISIS accept continued deficit spending for 1994 (i.e. hire a replacement programmer for our ARKS 3 effort when the current programmer departs of his own volition), but that we recognize that these are essential services and plan to raise revenue to avoid continuing the deficit into 1995.

ISIS3 operating smoothly and now given as a test to ARAZPA region, with the hoped exchange of REGASP to other zoos. Liability issues regarding pooled data, MedARKS, etc., have been discussed with a lawyer and an improved short 'disclaimer / contract' is being developed.

Discussion of the status of various members ensued - including new members, dropped members, and problem members. The Planckendael issue, as part of Antwerp Zoo, was brought up. The one physical site/one fee policy was re-confirmed, at this time, by members present.

Past due membership fees: ISIS board members present found the letter from Busch Gardens insulting. Flesness was advised to communicate that members must pay fees or be suspended from membership. A similar policy must apply to all other past due fee members,

such as Frankfurt. Flesness was advised to be strict but allow for some flexibility in scheduling payments where necessary.

Suggested by Labuschagne that a training program and a little more start-up time be allowed for new members and potential new members, especially from developing nations.

Those seeking "sponsored" (i.e. free) ISIS membership will be told that funding must be found - ISIS cannot afford to accept non-paying members, however legitimate their situation. New provisional members approved as subscribing members. Those proposed for non-subscribing membership approved. Those seeking free membership will be informed that sponsoring funding must first be found by them or ISIS. Members present approved the list of 40 new members (below), who have joined provisionally since the last Board meeting at Vancouver.

Approved members now upgrading to Subscribing Member status (paying their own fees):

DRESDEN, Germany
 HALLE, Germany
 LEIPZIG, Germany
 MAGDEBURG, Germany
 ROSTOCK, Germany

Approved New Subscribing Members (biological institutions paying their own fees):

ALPHEN	Birdpark Avifauna		Netherlands
ATTLEBORO	Capron Park Zoo	MA	USA
BANGKOK	Dusit Zoo		Thailand
BOISE	Boise City Zoo	ID	USA
CHIANGMAI	Chiangmai Zoological Garden		Thailand
DUBAI	Dubai Zoo		U.A. Emirates
FLUSHINGP	Queens Zoo	NY	USA -
FONTAINE	Zoo de Doue		France
GREENBAY	New Zoo	WI	USA
JOHANSBRG	Johannesburg Zoological Gardens	Johannesburg	South Africa
KHAOKHEOW	Khao Kheow Open Zoo		Thailand
KHORAT	Nakhon Ratchasima Zool. Park		Thailand
LA FRONTI	Zoo-Jerez	Cadiz	Spain
LIMA	Patronato Parque Las Leyendas		Peru
LISBON	Jardim Zoologico De Lisboa		Portugal
MOOSE JAW	Moose Jaw Zoo & Recreational Park	Saskatchewan	Canada
NEUWIED	Zoo Neuwied		Germany
PRET POT	Natl.Zool.Grdns of SA (Potgietersrus)		S. Africa
PROSPECTP	Prospect Park Zoo	NY	USA
RIGA	Riga Zoo		Latvia
ROCKLEDGE	Brevard Zoo	FL	USA
SAN JOSEZ	Zoologico Nacional Simon Bolivar	San Jose	Costa Rica
SONGKHLAZ	Songkhla Zoo		Thailand
USTI	Zoologicka Zahrada		Czech Rep.
VESZPREM	Kittenberger Zoo		Hungary
WILLOW PK	Willow Park Zoo	UT	USA

ACCEPTED FOR NON-SUBSCRIBING MEMBERSHIP (Not "biological institutions", but paying their own fees)

ALLENWOOD	Clyde Peeling's Reptiland	PA	USA
COCHRANE	Cochrane Wildlife Reserve	Alberta	Canada
COTSWOLD	Cotswold Llama Farm		U.K.
FINSER	Finser Exotics	FL	USA
GRAY PARR	Vasa Parrot Research Center	GA	USA
LANGLEY	Mountain View Farms Breeding Ctr	Brit Columbia	Canada
MURRELSIN	Brookgreen Gardens	SC	USA
PERRIS	Have Trunk Will Travel	CA	USA
RAYMONDVL	Hacienda Campo Alegre (HCA)	NY	USA
SILVER SP	Silver Springs Attraction	FL	USA
SOCSCICAR	Society of Scientific Care Inc.	CA	USA
SPRINGHIL	Weeki Wachee Springs	FL	USA
ST AUG GA	St. Augustine Alligator Farm	FL	USA
TIPP STAT	Tipperary Sanc for Endang Wildlife	North Territory	Australia
WORLDBIRD	World of Birds Show	MN	USA

Applying to ISIS seeking Sponsorship or Assistance (decision - not to be admitted unless sponsoring funding is found; Flesness will inform)

ARCAS	Wildlife Rescue & Conservation Assoc		Guatemala
CARICUAO	Parque Zoologico Caricuaao Caracas		Venezuela
DARJEELIN	Padmaja Naidu Himalayan Zool. Park	West Bengal	India
HALDWANI	Forest Training Institute	Uttar Predesh	India
NANJING U	Nanjing Normal Univ -Dept Biology	Fujian	China
TATA	Tata Steel Zoological Park	Bihar	India

Short and positive discussion on recruitment. An actual ISIS presence at the various regional meetings is important. A list of priority recruiting targets r in each region will be forwarded by ISIS to board members to serve as a target list for ISIS Board members recruiting new ISIS members.

Development and Finance. ISIS 1992 Audit report presented. Note that the CBSG finances are still combined in the audit with that of ISIS for this year and next. Since the audit report arrived very late from the audit firm, the management letter had not yet arrived, and the Board felt a need to see a Cash-based statement as well as the Accrual-based audit reports. The financial review and acceptance of the audit was deferred until the telephone Board Meeting.

Proposed sale of MedARKS to non-ISIS members at \$2000, as well as charging for any upgrades, approved by members present. Proposed sale of PhysNorms, as a book mentioned. Proposed use of ISIS Abstract data re-published in a new Beacham Publ. "Endangered Species" CD-ROM mentioned, also. MicroSoft advertising use of ISIS mentioned - the board considered the offer of \$1000 from Microsoft an insult.

1995 fees: proposal by Flesness to raise all fees by about 15% for 1995, except the lowest category of 0.1% budget at \$250. This was proposed as an inflation adjust (15% for the period 1991-1995). Members present approve the general concept of something like a 15% increase, ask Flesness to prepare and distribute for Board consideration some rounded fee category figures, and recommend that the lowest category be raised to \$300.

Board members are all requested to help in the recruitment of funding of various ISIS programs. Zoo-to-zoo sponsorship proposal highly recommended, wherein individual zoos would sponsor active members presently unable to pay dues in US dollars. Dorresteyn mentioned that Rotterdam already plans to sponsor Darjeeling Zoo.

1994 Budget: optimist, realist, and pessimist budget presented. Discussion developed a consensus position that the full travel budget proposed (\$24,000) was really a necessity. Projected 1993 budget presented last year was too optimistic in part due to the 'bubble' of the ISIS fee structure change. Members present approved the modified "realist" budget for 1994 which would result in a projected deficit of ~\$32,000 (i.e. closing 1994 cash balance of \$125,000). A 1995 advance budget was requested, to show the effects of the proposed 1995 ISIS fee changes as above.

Ad Hoc Cash Management Committee Recommendation (Wylie, Harrison, Flesness, plus non-Trustee Jim Jackson): ISIS will invest current cash reserves in a very low risk and highly liquid fund - as they may be needed on relatively short notice. Any surplus or gifts may be placed in a new endowment fund, which can be managed more aggressively, taking more short-term risks to grow over the long term. Also, starting with 1994, we will require payment within 60 days to reduce the cash on hand problems (i.e. improve cash flow).

ISIS and CBSG Separation: this will be accomplished as of the end of 1993, when CBSG has agreed to separate itself and operate for 1994 and thereafter as a fully independent entity. This means that ISIS (and CBSG) will receive their first totally separate audit statements in 1995, for the 1994 year.

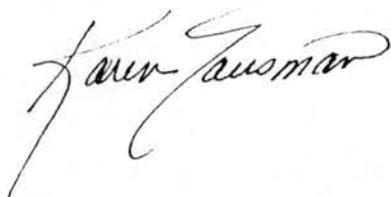
The nominating committee (ISIS Board members Dorresteyn, Labuschagne, and Flesness, plus Peter Karsten) report recommended that: Jon DeJose, Charles Hoessle, and Enric Mas be added to the names of the four incumbent members whose first terms are expiring (Krantz, Nogge, Garland, Sausman) on the Fall ballot.

1994 Trustees meeting schedule: discussion led to a proposal for a mid-year meeting, the afternoon of 19 May in K^{ln} Germany, to be held there in conjunction with the IUDZG Council and the CBSG Steering Committee.

ISIS board member officers were proposed to be re-elected, by members present.

Flesness and Scobie left the room, and the Board met in Executive Session. The Board decided on a 4.5% raise for Flesness, and gave him authority to raise ISIS staff salaries for 1994 as necessary and appropriate, with a maximum ceiling of 5% for any one staff member.

Adjourned, 22:00.



INTERNET: ISIS@staff.tc.umn.edu



ISIS
12101 Johnny Cake Ridge Road
Apple Valley, MN USA 55124-8151
Telephone: (612) 431-9295
FAX: (612) 432-2757
BBS: (612) 432-9292
U.S. Country Code = (1)

7 January 1994

Fred Daman,
Director
Royal Zoological Society of Antwerp

Dear Fred,

At the ISIS Board meeting in Antwerp which you kindly hosted, and in a subsequent international conference call Board Meeting, the ISIS Board of Trustees reviewed again the request that ISIS treat Antwerp and Planckandael as a single ISIS member institution. Due consideration was given to the arguments that both properties are managed as a single organization by a single Society, that records are kept at just one location, etc.

However, the Trustees have determined unanimously that ISIS' policy requires separate memberships for physically separate, non-contiguous animal collection sites. Each ISIS membership entitles the physical collection site to full member services, including licensed use of our in-house software, full member rights such as voting for the ISIS Board, and obligates the physical collection site to ISIS membership dues assessed separately.

A number of other Societies operate more than one physical site. Each maintains multiple ISIS memberships, one for each site. This policy must be applied consistently. The policy allows ISIS to assemble information consistent with the formal studbooks, in which all moves between distinct physical sites are recorded, and are treated as if they were moves between separate collections. Thus in the studbooks and in ISIS, specimen moves between Antwerp and Planckandael should be listed as moves, whereas internal movements at either site, changing enclosures, are not listed.

I know from our conversations that you are not in agreement with this decision, but hope that you will understand and accept it.

Most sincerely,

A handwritten signature in cursive script that reads "Nate Flesness".

Nate Flesness
Executive Director, ISIS
cc: ISIS Board of Trustees



International Species Information System

Apple Valley, Minnesota

Kathryn
Roberts

Financial Statements
Accountants' Report
For the Year Ended
December 31, 1992

Fraser, Carpenter
AND ASSOCIATES, LIMITED

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Fraser Carpenter
AND ASSOCIATES, LIMITED

TERRY M. FRASER, CPA
J. DONOVAN CARPENTER, CPA
WILLIAM M. FRASER, CPA

Independent Auditors' Report

Board of Directors
International Species Information System
Apple Valley, Minnesota

We have audited the accompanying balance sheet of International Species Information System as of December 31, 1992 and the related statements of support, revenue and expense and changes in fund balances, functional expense and cash flows for the year then ended. These financial statements are the responsibility of the Organization's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the aforementioned financial statements present fairly in all material respects, the financial position of International Species Information System as of December 31, 1992, and the results of its operations and its cash flows for the for the year then ended, in conformity with generally accepted accounting principles.

Fraser Carpenter & Associates, Attol

Certified Public Accountants

Minneapolis, Minnesota
May 14, 1993

Project Coordinator

INTERNATIONAL SPECIES INFORMATION SYSTEM
STATEMENT OF SUPPORT, REVENUE AND EXPENSE
AND CHANGES IN FUND BALANCES
FOR THE YEAR ENDED DECEMBER 31, 1992
WITH COMPARATIVE TOTALS FOR 1991

EXHIBIT A

	1992			Total All Funds	1991 Total All Funds
	Current Funds		Equipment Fund		
	Unrestricted	Restricted			
Support and Revenue:					
Support:					
Grants and Contributions	\$325,386	\$ 67,201		\$ 392,587	\$400,973
Grants from Governmental Agencies	75,563	171,245		246,808	94,962
Revenue:					
Memberships and Other Fees	395,852			395,852	409,034
Contracts	78,618			78,618	
Investment Income	9,054			9,054	10,619
Miscellaneous Income	<u>11,759</u>			<u>11,759</u>	<u>3,018</u>
Total Revenue	<u>495,283</u>			<u>495,283</u>	<u>422,671</u>
Total Support and Revenue	896,232	238,446		1,134,678	918,606
Expense:					
Program Services:					
Pooled Data Services	244,484	118,315	\$ 13,689	376,488	329,060
Distributed Systems	96,239	87,998	5,209	189,446	175,138
Species Conservation Action	<u>354,250</u>	<u>32,133</u>	<u>12,543</u>	<u>398,926</u>	<u>288,476</u>
Total Program Services	694,973	238,446	31,441	964,860	792,674
Support Services:					
Management and General	155,167		13,775	168,942	122,144
Fundraising	<u>31,419</u>		<u>1,676</u>	<u>33,095</u>	<u>22,873</u>
Total Support Services	<u>186,586</u>		<u>15,451</u>	<u>202,037</u>	<u>145,017</u>
Total Expense	<u>881,559</u>	<u>238,446</u>	<u>46,892</u>	<u>1,166,897</u>	<u>937,691</u>
Excess (Deficiency) of Support and Revenue over Expense	14,673		(46,892)	(32,219)	(19,085)
Other Changes in Fund Balances:					
Pension Cost - Note 5					(25,000)
Fund Transfers For:					
Equipment Purchases	(70,033)		70,033		
Fund Balances - Beginning of Year	<u>265,160</u>		<u>81,323</u>	<u>346,483</u>	<u>390,568</u>
Fund Balances - End of Year	<u>\$209,800</u>	\$ -	<u>\$104,464</u>	<u>\$ 314,264</u>	<u>\$346,483</u>

The accompanying Notes to Financial Statements are an integral part of this statement.

INTERNATIONAL SPECIES INFORMATION SYSTEM
STATEMENT OF FUNCTIONAL EXPENSE
FOR THE YEAR ENDED DECEMBER 31, 1992
WITH COMPARATIVE TOTALS FOR 1991

	1992						1991	
	Program Services			Support Services			Total All Services	Total All Services
	Pooled Data Services	Distributed Systems	Species Conservation Action	Total Program Services	Management and General	Fund-raising	Total Support Services	Total All Services
Salaries	\$198,029	\$ 75,356	\$107,258	\$380,643	\$ 62,389	\$ 11,450	\$ 73,839	\$ 454,482
Payroll Taxes	13,906	5,292	7,890	27,088	4,461	830	5,291	32,379
Employee Benefits	24,007	9,135	15,351	48,493	8,086	1,261	9,647	58,140
Total Personnel Costs	235,942	89,783	130,499	456,224	74,936	13,841	88,777	545,001
Professional Fees					22,306		22,306	22,306
Contract Service	5,904	53,141	15,626	74,671				74,671
Computer Expense	36,111	9,028	16,454	61,593				61,593
Travel	17,663	6,722	80,024	104,409	21,222	6,240	27,462	131,871
Supplies	7,126	2,712	6,029	15,867	2,726	573	3,299	19,166
Telephone	4,227	1,608	9,934	15,769	3,030	811	3,841	19,610
Postage and Shipping	15,314	5,827	23,915	45,056	8,295	2,043	10,338	55,394
Occupancy - Note 7	6,495	2,472		8,967	1,264	115	1,379	10,346
Printing and Publications	12,578	4,787	69,403	86,768	17,871	5,364	23,235	110,003
Repairs and Maintenance	3,760	1,431	2,209	7,400	1,223	230	1,453	8,853
Insurance	202	77	2,486	2,765	591	188	779	3,544
Conferences, Conventions and Meetings	2,231	848	5,091	8,170	1,566	417	1,983	10,153
Memberships and Dues	1,369	521	1,198	3,088	533	113	646	3,734
Bad Debts	9,924	3,776	15,429	29,129	5,360	1,319	6,679	35,808
Miscellaneous	3,953	1,504	1,277	6,734	1,053	165	1,218	7,952
Total Expense before Depreciation	362,799	184,237	379,574	926,610	161,976	31,619	193,395	1,120,005
Depreciation - Note 4	13,682	5,209	19,352	38,250	6,966	1,676	8,642	46,822
Total Expense	\$376,488	\$189,446	\$398,926	\$964,860	\$168,942	\$33,025	\$202,037	\$1,166,827

The accompanying Notes to Financial Statements
are an integral part of this statement.

INTERNATIONAL SPECIES INFORMATION SYSTEM
BALANCE SHEET
DECEMBER 31, 1992
WITH COMPARATIVE TOTALS FOR 1991

	1992		1991	
	Current Funds	Equipment	Total	Total
	Unrestricted	Restricted	Fund	All Funds
<u>ASSETS</u>				
Current Assets:				
Cash	\$198,115		\$198,115	\$269,016
Accounts Receivable (Less Allowance for Doubtful Accounts of \$20,000 in 1992 and \$24,000 in 1991)	75,184		75,184	86,267
Pledges Receivable - Note 3	25,102		25,102	50,651
Grants and Contracts Receivable	33,250	\$ 25,810	59,060	47,323
Prepaid Expense	8,664		8,664	5,581
Due from Restricted Fund	<u>25,610</u>		<u>25,610</u>	<u>6,655</u>
Total Current Assets	365,925	25,810	391,735	465,493
Equipment and Furniture - Net - Note 4			<u>\$104,464</u>	<u>104,464</u>
TOTAL ASSETS	<u>\$365,925</u>	<u>\$ 25,810</u>	<u>\$104,464</u>	<u>\$496,199</u>
<u>LIABILITIES AND FUND BALANCES</u>				
Current Liabilities:				
Accounts Payable	\$ 86,370		\$ 86,370	\$ 96,374
Accrued Salaries Payable	6,225		6,225	
Accrued Vacation Payable	24,257		24,257	16,052
Deferred Revenue - Note 6	39,273	\$ 200	39,473	81,252
Due to Unrestricted Fund		<u>25,610</u>	<u>25,610</u>	<u>6,655</u>
Total Current Liabilities	<u>156,125</u>	<u>25,810</u>	<u>181,935</u>	<u>200,333</u>
Fund Balances	<u>209,800</u>		<u>\$104,464</u>	<u>314,264</u>
TOTAL LIABILITIES AND FUND BALANCES	<u>\$365,925</u>	<u>\$ 25,810</u>	<u>\$104,464</u>	<u>\$496,199</u>

The accompanying Notes to Financial Statements
are an integral part of this statement.

INTERNATIONAL SPECIES INFORMATION SYSTEM
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED DECEMBER 31, 1992
WITH COMPARATIVE TOTALS FOR 1991

	1992			1991
	Current Fund Unrestricted	Equipment Fund	Total All Funds	Total All Funds
Increase (Decrease) in Cash				
Cash Flows from Operating Activities:				
Excess (Deficiency) of Support and Revenue over Expense	\$ 14,673	\$ (46,892)	\$ (32,219)	\$ (19,085)
Total Adjustments - Note 8	(15,541)	46,892	31,351	160,320
Net Cash Provided (Used) by Operating Activities	(868)		(868)	141,235
Cash Flows from Investing Activities:				
Purchase of Equipment	(70,033)		(70,033)	(45,299)
Cash Flows from Financing Activities:				
None				
Net Increase (Decrease) in Cash	(70,901)		(70,901)	95,936
Cash - Beginning of Year	269,016		269,016	173,080
Cash - End of Year	\$198,115	\$ -	\$198,115	\$269,016

The accompanying Notes to Financial Statements are an integral part of this statement.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1992

1. Summary of Significant Accounting Policies

Organization Purpose

International Species Information System (ISIS) is an international information service organization collecting, pooling, and disseminating specimen information on intensively managed populations, such as those in zoological gardens and related facilities. In addition to data on hundreds of thousands of specimens of over 4,000 vertebrate species, ISIS develops specimen and population management software for use by member facilities.

Currently, under the ISIS umbrella, is the Captive Breeding Specialist Group (CBSG). Its purpose is the conservation or establishment of viable populations of endangered species.

The Organization's programs are as follows:

Pooled Data Services - International data archive and default "studbook" keeper for approximately ninety-seven percent (97%) of species held in captivity by zoological institutions worldwide.

Distributed Systems - Cooperative development center for software which is used internally by member institutions. It has been critical in developing widely-used international data standards as well as maintaining compatibility.

Species Conservation Action - The generation of conservation strategies that integrate management programs for captive and wild populations.

Fund Accounting

In order to observe the limitation and restrictions placed on resources available to ISIS, the accounts are maintained in accordance with the principles of fund accounting. This is the procedure whereby resources are classified for accounting and reporting purposes into funds established according to their nature and restriction. A description of the funds is as follows:

Current Unrestricted Fund - Accounts for resources over which the Board of Directors has discretionary control and are used in carrying out the operations of the organizations.

Current Restricted Fund - Accounts for those resources currently available for use but only in accordance with the instructions of the donor.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1992

1. Summary of Significant Accounting Policies (continued)

Equipment Fund - Accounts for the investment in furniture and equipment used in the organization's operations.

Allowance for Doubtful Accounts

Bad debts are provided on the reserve method based on historical experience and management's evaluation of outstanding accounts, contracts, grants and pledges receivable at the end of each year.

Land, Buildings and Equipment

All major expenditures for land, buildings and equipment are capitalized at cost. Contributed items are recorded at fair market value at date of donation. Depreciation is provided through the use of the straight-line method.

Contributions

All contributions are considered to be available for unrestricted use unless specifically restricted by the donor. Amounts received which are designated for future periods or restricted by donor are recorded as deferred revenue until the appropriate future period or the donor restriction is satisfied, respectively.

Government Grants and Contracts

Government grants and contract funds are recorded as revenue when earned. Revenue is earned when eligible expenditures, as defined in each grant or contract, are made. Funds received but not yet earned are shown as deferred revenue. Expenditures under government contracts are subject to review by the granting authority. To the extent, if any, that such a review reduces expenditures allowable under these contracts, International Species Information System will record such disallowance at the time the final assessment is made.

Functional Allocation of Expense

Salaries and related expenses are allocated based on job descriptions and the best estimates of management. Expenses, other than salaries and related expenses, which are not directly identifiable by program or supporting service are allocated based on the best estimates of management.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1992

1. Summary of Significant Accounting Policies (continued)

Unemployment Compensation

The International Species Information System has elected to self-insure unemployment tax claims. Any amounts incurred will be recorded as expense when payable.

Income Tax

International Species Information System has a tax exempt status under Section 501(c)(3) of the Internal Revenue Code and Minnesota Statute 290.05. It has been classified under an advance letter ruling which ends December 31, 1992, that it is not a private foundation under the Internal Revenue Code and charitable contributions by donors are tax deductible.

2. Significant Concentrations of Credit Risk

ISIS provides services around the world. The amounts due for services provided are from individuals or organizations. In addition, grants and membership pledges receivable are from organizations or governments.

3. Pledges Receivable

The outstanding balance of pledges receivable at December 31, 1992 is expected to be collected in the following fiscal years:

Due in the Year Ending December 31,

1993	<u>\$ 25,102</u>
------	------------------

4. Equipment and Furniture

ISIS owns the following assets as of:

	<u>December 31,</u>		Estimated Useful Lives
	<u>1992</u>	<u>1991</u>	
Software	\$ 1,614		3 years
Computer Equipment	167,902	\$105,977	3 years
Furniture and Other Equipment	<u>43,160</u>	<u>36,665</u>	4-10 years
	212,676	142,642	
Accumulated Depreciation	<u>108,212</u>	<u>61,319</u>	
	<u>\$104,464</u>	<u>\$ 81,323</u>	

Depreciation expense of \$46,892 and \$36,764 was recorded for the year ended December 31, 1992 and 1991, respectively.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1992

5. Pension Plan

The Organization maintains a tax-sheltered retirement plan for its employees. A percentage of salary based on years of service is paid into the plan annually. For the year ended December 31, 1992 and 1991, the Organization contribution totaled \$34,055 and \$25,228, respectively. In addition, the Board of Trustees approved a \$25,000 contribution in 1991 on behalf of employees who lost accumulated retirement funds as a result of the transfer from the Minnesota Zoological Society.

6. Deferred Revenue

Deferred revenue consists of amounts related to the following:

	<u>December 31,</u>	
	<u>1992</u>	<u>1991</u>
Grants and Contributions	\$ 200	\$ 80,402
Membership and Other Fees	39,273	850
	\$ 39,473	\$ 81,252

7. Leased Facilities

Rental commitments under noncancelable leases for office space in effect at December 31, 1992 total \$10,346. The future annual rental commitments are as follows:

<u>Due in the Year Ending December 31,</u>	
1993	\$ 10,346

The rental expense for the years ending December 31, 1992 and 1991 was \$10,346 and \$14,330, respectively.

INTERNATIONAL SPECIES INFORMATION SYSTEM
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1992

8. Cash Flow Operating Activities

Adjustments to Reconcile Excess (Deficiency) of Support and Revenue over Expense to Net Cash Provided (Used) by Operating Activities are as follows:

	1992			1991	
	Current Funds		Equipment Fund	Total	Total
	Unrestricted	Restricted		All Funds	All Funds
Depreciation			\$ 46,892	\$ 46,892	\$ 36,764
Pension Cost					(25,000)
Allowance for Doubtful Accounts	\$ (4,000)			(4,000)	
Increases (Decreases) in Current Liabilities:					
Accounts Payable	(10,004)			(10,004)	52,958
Accrued Salaries Payable	6,225			6,225	(10,957)
Accrued Vacation Payable	8,205			8,205	6,031
Deferred Revenue Due to Unrestricted Fund	(9,411)	\$(32,368)		(41,779)	(34,713)
Fund			18,955	18,955	6,655
(Increases) Decreases in Current Assets:					
Accounts Receivable	15,083			15,083	144,407
Pledges Receivable	25,549			25,549	(3,348)
Grant and Contracts Receivable	(25,150)	13,413		(11,737)	(13,900)
Prepaid Expenses	(3,083)			(3,083)	8,078
Due from Restricted Fund	(18,955)			(18,955)	(6,655)
Fund	(18,955)			(18,955)	(6,655)
Total Adjustments	<u>\$(15,541)</u>	<u>\$ -</u>	<u>\$ 46,892</u>	<u>\$ 31,351</u>	<u>\$160,320</u>

Fraser Carpenter
AND ASSOCIATES, LIMITED

TERRY M. FRASER, CPA
J. DONOVAN CARPENTER, CPA
WILLIAM M. FRASER, CPA

Board of Directors
International Species Information System
Apple Valley, Minnesota

Our report on our audit of the basic financial statements of International Species Information System for December 31, 1992 appears on page one. That audit was made for the purpose of forming an opinion on the basic financial statements taken as a whole. The balance sheet-components and statement of support, revenue and expense and changes in fund balances-components for the year 1992 with comparative totals for 1991 are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

Fraser Carpenter & Associates, Ltd.

Certified Public Accountants

Minneapolis, Minnesota
May 14, 1993

INTERNATIONAL SPECIES INFORMATION SYSTEM
STATEMENT OF SUPPORT, REVENUE AND EXPENSE
AND CHANGES IN FUND BALANCES-COMPONENTS
FOR THE YEAR ENDED DECEMBER 31, 1992
WITH COMPARATIVE TOTALS FOR 1991

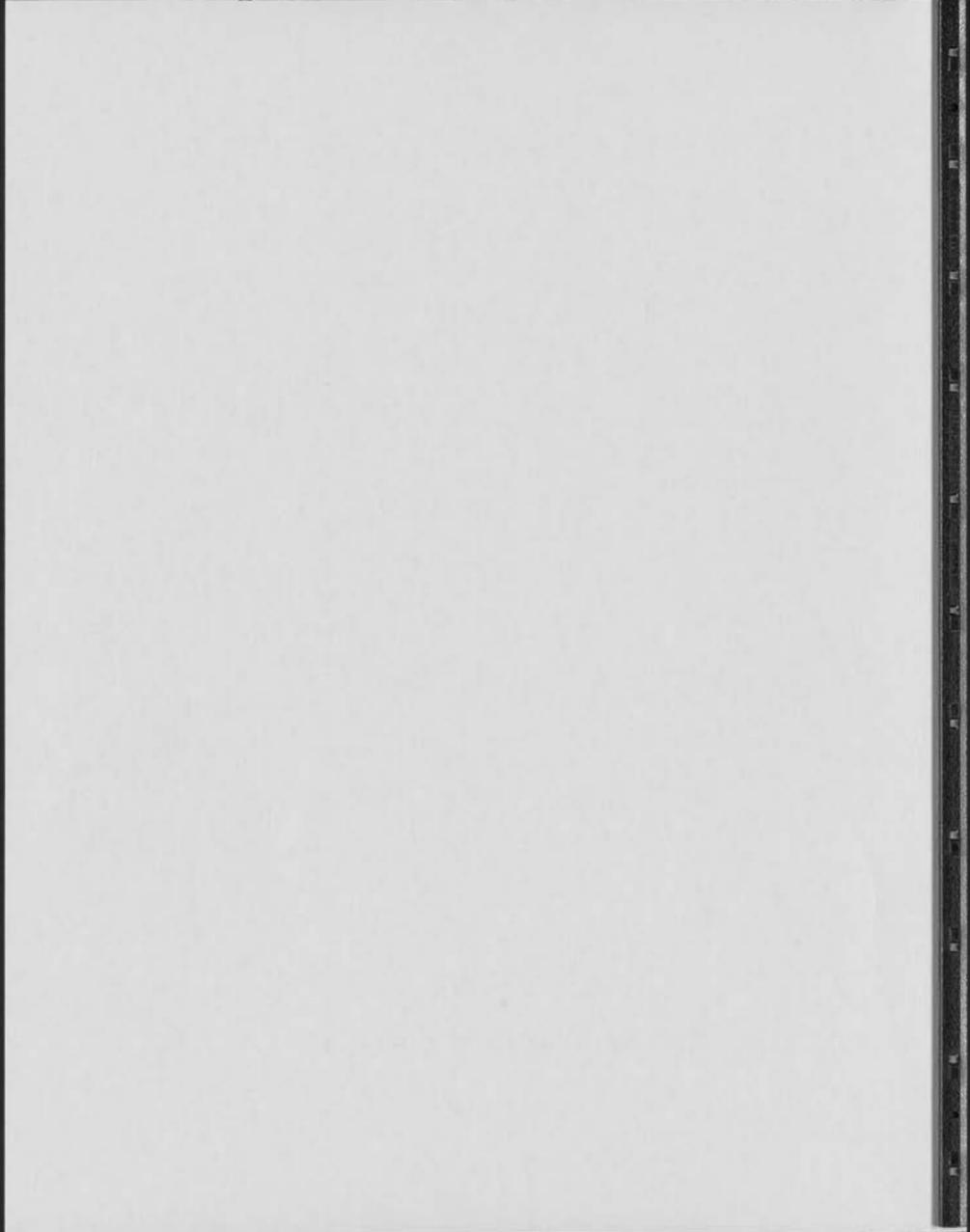
	<u>1992</u>		<u>1991</u>	
	<u>International Species Information System</u>	<u>Captive Breeding Specialist Group</u>	<u>Total All Funds</u>	<u>Total All Funds</u>
Support and Revenue:				
Support:				
Grants and Contributions	\$ 49,368	\$343,219	\$ 392,587	\$400,973
Grants from Governmental Agencies	171,245	75,563	246,808	94,962
Revenue:				
Memberships and Other Fees	376,958	18,894	395,852	409,034
Contracts		78,618	78,618	
Investment Income	7,822	1,232	9,054	10,619
Miscellaneous Income	<u>7,425</u>	<u>4,334</u>	<u>11,759</u>	<u>3,018</u>
Total Revenue	<u>392,205</u>	<u>103,078</u>	<u>495,283</u>	<u>422,671</u>
Total Support and Revenue	612,818	521,860	1,134,678	918,606
Expense:				
Program Services:				
Pooled Data Services	376,488		376,488	329,060
Distributed Systems	189,446		189,446	175,138
Species Conservation Action		<u>398,926</u>	<u>398,926</u>	<u>288,476</u>
Total Program Services	<u>565,934</u>	<u>398,926</u>	<u>964,860</u>	<u>792,674</u>
Support Services:				
Management and General	81,131	87,811	168,942	122,144
Fundraising	<u>5,920</u>	<u>27,175</u>	<u>33,095</u>	<u>22,873</u>
Total Support Services	<u>87,051</u>	<u>114,986</u>	<u>202,037</u>	<u>145,017</u>
Total Expense	<u>652,985</u>	<u>513,912</u>	<u>1,166,897</u>	<u>937,691</u>
Excess (Deficiency) of Support and Revenue over Expense	(40,167)	7,948	(32,219)	(19,085)
Other Changes in Fund Balances:				
Pension Cost				(25,000)
Fund Balances - Beginning of Year	<u>329,163</u>	<u>17,320</u>	<u>346,483</u>	<u>390,568</u>
Fund Balances - End of Year	<u>\$288,996</u>	<u>\$ 25,268</u>	<u>\$ 314,264</u>	<u>\$ 346,483</u>

See Statement of Accountants' Responsibility.

INTERNATIONAL SPECIES INFORMATION SYSTEM
BALANCE SHEET - COMPONENTS
DECEMBER 31, 1992
WITH COMPARATIVE TOTALS FOR 1991

	1992			1991
	International Species Information System	Captive Breeding Specialist Group	Eliminations	Total All Funds
ASSETS				
Current Assets:				
Cash	\$171,727	\$ 26,388		\$198,115
Accounts Receivable (Less Allowance for Doubtful Accounts of \$20,000 in 1992 and \$24,000 in 1991)	75,119	2,286	\$ 2,221	75,184
Pledges Receivable		25,102		25,102
Grants and Contracts Receivable	15,810	43,250		59,060
Prepaid Expense	6,734	1,930		8,664
Due from Restricted Fund	15,710	9,900		25,610
Total Current Assets	285,100	108,856	2,221	391,735
Equipment and Furniture - Net	60,920	43,544		104,464
TOTAL ASSETS	\$346,020	\$152,400	\$ 2,221	\$496,199
LIABILITIES AND FUND BALANCES				
Current Liabilities:				
Accounts Payable	\$ 13,178	\$ 75,413	\$ 2,221	\$ 86,370
Accrued Salaries Payable	3,702	2,523		6,225
Accrued Vacation Payable	16,559	7,698		24,257
Deferred Revenue	7,875	31,598		39,473
Due to Unrestricted	15,710	9,900		25,610
Total Current Liabilities	57,024	127,132	2,221	181,935
Fund Balances	288,996	25,268		314,264
TOTAL LIABILITIES AND FUND BALANCES	\$346,020	\$152,400	\$ 2,221	\$496,199

See Statement of Accountants' Responsibility.



MINNESOTA ZOO

13000 Zoo Boulevard, Apple Valley, MN 55124 612.431.9200

FAX MEMORANDUM

TO: John Knowles
Marwell Zoological Park
FAX: 44-962-777-511

FROM: Kathryn R. Roberts
Minnesota Zoological Garden
PHONE: 612/431-9333
FAX: 612/431-9336

RE: **ISIS BOARD MEETING, ANTWERP -- SEPTEMBER 6, 1993**

Due to the costs involved in flying to Europe in August, I will be unable to attend the meetings there.

Therefore I am designating you as my proxy for the ISIS Board meeting scheduled for September 6, 1993.

On another matter, I want to tell you we have been thrilled with our Dinamation exhibit this summer. Our costs of \$495,000 were paid by July 20 (one month and one day after the exhibit opened) through admissions, gift store proceeds, and \$40,000 from corporate sponsors -- and our attendance for general admission is also benefiting, although we can't attribute any particular dollar value for that. (We do know our gate through August 15 just for Dinosaur Park was over \$675,000.) Our exhibit will close September 6, and I'll send you the numbers from the entire exhibit period at after we close the books.

KRR/gb

*All my
best!*

AAZPA/MZG AGREEMENT

BACKGROUND

The International Species Inventory System (ISIS) was developed by Drs. U. S. Seal and D. G. Makey because of the immediate and long-term needs demonstrated from within the zoological community for reliable, accurate, comprehensive, and objective information on captive wildlife collections.

During 1973, the American Association of Zoological Parks and Aquariums (AAZPA) agreed to endorse ISIS and provide the System with some development monies. The AAZPA also agreed to urge its member institutions to actively participate in ISIS and to pay ISIS for the entry of data and production of reports. The Minnesota Zoological Garden (MZG), acting under the authority of the Zoological Board of the State of Minnesota, established the ISIS program on site; final operational authority for the program remains, for the present, vested with the Zoological Board.

Over the past several years, the AAZPA provided substantial funds to the MZG for the operation of ISIS to underscore its commitment that the System survive and to enable the System to expand its capabilities. The MZG provided office space, equipment and administrative overhead from 1975-1980 to ISIS without reimbursement from other sources. Several grants have been received by ISIS from foundations which were convinced that data storage and retrieval were essential to the long-term survival of wildlife in captivity. Other organizations and federal government agencies have also provided funds to ISIS, primarily for specific programs and services.

In 1980, the AAZPA Board of Directors voted unanimously that conservation become the Association's highest priority. In doing so, the Board committed substantial funds for a conservation program that included continued support for ISIS. It noted that the appropriate development of ISIS was an integral part of the Association's commitment to the long-term management of endangered, threatened, and other selected wildlife species in captivity. Additionally, the Association's Board of Directors began the development of the Species Survival Plan, which will require technical information from ISIS that is beyond that currently available; and it is therefore appropriate that the Association's increased interdependency with the MZG regarding the operation of ISIS be formalized by agreement.

AGREEMENT

This Agreement is made this 15th day of August by and between the American Association of Zoological Parks and Aquariums (AAZPA) and the Minnesota Zoological Garden (MZG) with reference to the operation of the International Species Inventory System (ISIS).

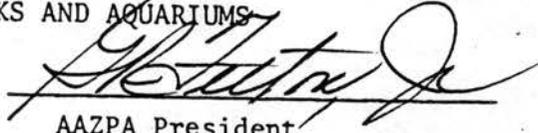
1. AAZPA and MZG will cooperate through the ISIS Policy Advisory Group to achieve the appropriate management policies and establish the physical location to assure the long-term success of ISIS. The Policy Advisory Group shall include representatives from AAZPA and MZG, in addition to representatives from other organizations and agencies which have demonstrated interest and participation in the growth of ISIS. The Policy Advisory Group will advise and recommend policies on the administration, physical shelter, access to and distribution of ISIS data, fees, and other matters concerning the operation of ISIS.

2. Policy decisions concerning ISIS operations/development and appropriate changes thereto will be made with opportunity for full and timely participation by the AAZPA.
3. AAZPA agrees to reimburse MZG for ISIS costs beyond those covered by participation fees when such costs are incurred on behalf of AAZPA and/or its membership and when such costs have been approved by the AAZPA in advance.
4. The ISIS Annual Report, including projected budgets, will be provided to the AAZPA. Quarterly updates on budgets, finances, operations, and development will also be distributed to AAZPA. Such updates will include estimates of the costs incurred by ISIS on behalf of AAZPA. ISIS will use the financial reporting format developed with AAZPA through the ISIS Policy Advisory Group.
5. AAZPA will be consulted prior to changes in the ISIS Program Directorship. The ISIS Program Director will be responsible for liaison to AAZPA for all ISIS operations and for the implementation of this Agreement.
6. All grant proposals submitted by the MZG on behalf of ISIS will be provided to AAZPA for its review, information, and consideration of endorsement.
7. AAZPA will be kept fully apprised of the impact on AAZPA/ISIS programs from grants received by ISIS from other agencies.

The terms of this Agreement shall remain in effect for 12 months from the date of this Agreement. This Agreement will automatically be renewed unless either party notifies the other in writing at least 60 days prior to the renewal date that the party chooses not to renew. Amendments to this Agreement shall be in writing and be signed by both parties.

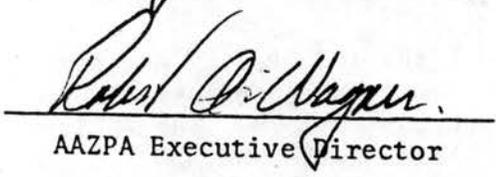
IN WITNESS WHEREOF, the parties hereto have set their hand on the dates indicated below:

AMERICAN ASSOCIATION OF ZOOLOGICAL
PARKS AND AQUARIUMS

BY: 

AAZPA President

DATE: 15 August 1986

BY: 

AAZPA Executive Director

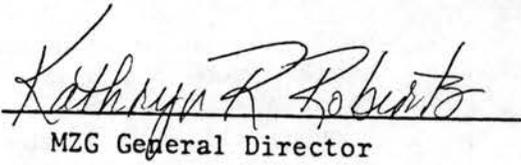
DATE: 15 August 1986

MINNESOTA ZOOLOGICAL GARDEN

BY: 

MZG Board Chairman

DATE: 9-8-86

BY: 

MZG General Director

DATE: 9-4-86