OMB Control No. 1018-0093
Expires 08/31/2023

IMPORT/EXPORT/RE-EXPORT OF LIVE ANIMALS (CITES/ESA)

■New ☐Reissue/Renew ☐Amendment

Complete Sections **A or B**, and C, D, and E of this application. U.S. address may be required in Section C.**

A. Complete if applying as an individual

1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix

2 Date of birth (mm/dd/yyyy)	5.a. Telephone number	5.b. Alternate telephone number	6. E-mail address

B. Complete if applying on behalf of a business, corporation, public agency, Tribe, or institution

1.a. Name of business, agency, Tribe, or institution	1.b. Doing business as (dba)
Fresno Chaffee Zoo Corporation	Zoo

2. Tax identification no.	3.a. Description of business, agency, Tribe, or institution	3.b. Website URL (if applicable)
42-1661145	Zoo	www.fresnochaffeezoo.org

4.a. Principal officer (P.O.) last name	4.b. P.O. first name	4.c. P.O. middle initial	4.b. P.O. Title
Dohlin	Jon	Forrest	CEO & Zoo Director

5. Primary contact name	6. Primary e-mail address
Katharine Alexander	kalexander@fresnochaffeezoo.org

7.a. Business telephone number	7.b. Alternate phone no.	8.a. Primary contact telephone no.
559-498-5910	559-498-5938	559-498-5912

C. All applicants complete address information

1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes)
894 W. Belmont

1.b. City	1.c. State	1.d. Zip code/Postal code	1.e. County/Province	1.f. Country
Fresno	CA	93728	Fresno	United States of America

2.a. Mailing Address (include if different than physical address; include name of contact person if applicable)
1250 W. Olive; C/O: Katharine Alexander

2.b. City	2.c. State	2.d. Zip code/Postal code	2.e. County/Province	2.f. Country
Fresno	CA	93728	Fresno	United States of America

D. All applicants MUST complete

1. Include a check or money order, payable to the U.S. FISH AND WILDLIFE SERVICE, **a nonrefundable processing fee** [50 CFR 13.11(d)(4)]. Federal, Tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – ***attach documentation of fee exempt status as outlined in instructions.*** (50 CFR 13.11(d))

2. If you are requesting a reissue/renew/amendment, what is your permit/file number? N/A

3. Certification: I hereby certify that I have read and am familiar with the regulations contained in Title 50, Part 13 of the Code of Federal Regulations and the other applicable parts in subchapter B of Chapter I of Title 50, and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

The individual/principal officer of the business must print and sign the application. (No photocopied or stamped signatures) Date (mm/dd/yyyy)

** Further instructions for the above application may be found on our ePermits website. See the last page for information on the Privacy Act, Paperwork Reduction Act, Estimated Burden, and Freedom of Information Act aspects of this application form.

Mail your application(s) to Division of Management Authority, Branch of Permits, MS:IA 5275 Leesburg Pike, Falls Church, VA 22041-3803.

OMB Control No. 1018-0093
Expires 08/31/2023

E. IMPORT/EXPORT/RE-EXPORT OF LIVE ANIMALS (CITES/ESA)

General Information

This application covers activities involving LIVE CITES and ESA listed animals.

Review this application carefully and **provide complete answers to all of the questions**. If you are applying for multiple species, be sure to indicate which species you are addressing in each response. **If more space is needed, attach a separate sheet with your responses, numbered according to the questions.**

Please allow at least 90 days for the application to be processed.

How do I determine whether the species is protected under CITES and/or the ESA?

CITES	ESA
To determine whether an animal species is protected under CITES, when the species was listed, or whether exemptions apply to your requested activity, see the list of CITES species	To determine whether an animal species is protected under the ESA, please review the list of ESA-listed species in the Code of Federal Regulations. Please be aware that any permit request involving an **ESA endangered species** must be published in the Federal Register for a required 30-day public comment period.

Questions
If you have any questions regarding an action you are requesting authorization for please contact the Division of Management Authority at managementauthority@fws.gov.

Please note: for renewal or amendment of a multi-use permit being requested **within the 5-year** Federal Register public notice period, use application 3-200-52

This form should NOT be used for:

- Pre-Convention, Pre-Act, or antique (antique exemption criteria) specimens (use application 3-200-23)
- Captive Bred Wildlife Registration (use application form 3-200-41)
- ESA Plants (use application form 3-200-36)
- Import of LIVE African Elephants from Botswana, Namibia, South Africa, and Zimbabwe and Southern White Rhinoceros from eSwatini and South Africa (use application form 3-200-37f)

Electronic Information Submission

Electronic submission of inventories, photographs, and receipts: For hard copy applications, if you wish to provide information electronically, please include a flash drive containing this information with your physical application.

1. Name and address where you wish the permit to be mailed, **if different from physical address**. If you would like expedited shipping, please enclose a self-addressed, pre-paid, computer-generated, courier service airway bill. If unspecified, all documents will be mailed via regular mail through the U.S. Postal Service.

   Fresno Chaffee Zoo, C/O Katharine Alexander
   1250 W. Olive Ave., Fresno, CA 93728

2. Point of contact if we have questions about the application (name, phone number, and email).

   Katharine Alexander, 559-498-5912, kalexander@fresnochaffeezoo.org

3. Have you or any of the owners of the business (if applying as a business, corporation, or institution), been assessed a civil penalty or convicted of any criminal provision of any statute or regulation relating to the activity for which the application is filed; been convicted, or entered a plea of guilty or nolo contendere, for a felony violation of the Lacey Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act; forfeited collateral; OR are currently under charges for any violation of the laws mentioned above?

☑ No ☐ Yes

If you answered "Yes" to Question 3, provide: a) the individual's name; b) date of charge; c) charge(s); d) location of incident; e) court, and f) action taken for each violation. Please be aware that a "Yes" response does not automatically disqualify you from getting a permit.

4. Type of Activity:
   - ☒ Import
   - ☐ Export
   - ☐ Re-export (e.g. exporting a specimen that was previously imported into the United States)

5. The current location of the **animal(s) (if different from the physical address**):

Name:	Toronto Zoo
Address:	361A Old Finch Ave.
City:	Toronto, ON M1B 5k7
State/Province:	Canada
Postal Code:	
Country:	

6. Recipient/Sender:
   - If **export/re-export**, provide name and **physical address** of the recipient in the foreign country.
   - If **import**, provide name and **physical address** of the exporter/re-exporter in the foreign country.

Name:	Toronto Zoo
Address:	361A Old Finch Ave.
City:	Toronto, ON M1B 5k7
State/Province:	Canada
Postal Code:	
Country:	

7. For **each animal** involved in the import/export/re-export, provide (you may use the table below):
   a. Scientific name (genus, species, and *if applicable*, subspecies)
   b. Common name
   c. Approximate or actual birth/hatch date (mm/dd/yyyy)
   d. Wild or captive-born

e. Quantity

f. Sex (males.females.unknown sex, 10.2.3)

g. Permanent markings and/or identification information (microchip #, leg band #, tattoos, studbook #).

a. Scientific name (genus, species, and *if applicable*, subspecies)	b. Common Name	c. Approximate or Actual Birth/Hatch Date (mm/dd/yyyy)	d. Wild (W) or Captive-born (C)	e. Quantity	f. Sex (male. female. unknown sex, ex: 1.0.0)	g. Permanent markings/ID information (e.g., microchip #, leg band #, tattoo, studbook #, etc.)
EXAMPLE: *Pan troglodytes*	Chimpanzee	08/01/2006	C	1	1.0.0 OR male	Studbook# 152; Microchip# 00056321-00
See attachment 1						

Source of Specimen

8. For **each captive-born/captive-hatched animal(s),** provide a signed and dated statement from the breeder or other appropriate documentation (e.g. Species 360 report) that includes the following:

   a. Scientific name (genus, species, and *if applicable*, subspecies),

   b. Common name,

   c. Name and address of the facility where the animal was bred and born,

   d. Birth/hatch date (mm/dd/yyyy),

   e. Identification information (studbook, microchip, leg band, etc.),

   f. Name and address of the facility where the parental stock is located,

   g. A statement from the breeder that the animal was bred and born at the breeder's facility (including the facility's name and address), and

   h. If you are not the breeder, provide documentation demonstrating the history of transactions (e.g., chain of custody or ownership of the animal).

   See attachment 1, question 8

9. For **each animal(s) taken from the wild**, provide: N/A - this animal was not taken from the wild.

   a. Scientific name (genus, species, and *if applicable*, subspecies),

   b. Common name,

   c. Specific location (e.g. county, state, province, country) where the animal was removed from the wild;

   d. The name of the individual(s) who collected the animal(s) and their authorization to do so, including copies of foreign and domestic (Federal, State, and/or Tribal) government collecting permits, licenses, contracts and/or agreements;

e. Method of collection, including capture protocol and any injury and mortality experienced during collection, transport, and holding;

f. Information related to any remuneration, either financial or in-kind, provided for acquiring the animal(s);

g. Efforts to use captive specimens (e.g., captive-born, captive-held) in lieu of taking animals from the wild.

10. For **each animal being re-exported** (e.g., exporting animal(s) previously imported into the United States), provide: N/A

a. A copy of the CITES export or re-export document issued by the appropriate CITES office in the country from which the wildlife was imported (this document is **stamped cancelled** by USFWS Office of Law Enforcement upon import inspection); and

b. A copy of your Declaration for Importation or Exportation of Fish or Wildlife (Form 3-177) **cleared** by USFWS Office of Law Enforcement.

c. A copy of the ESA permit that authorized the original import.

d. If you did not make the original import, provide documentation outlining chain-of-ownership since import, including:

1. A copy of the importer's clearance documents (a, b & c above) and,
2. Subsequent invoices (or other documentation) showing the history of transactions leading to your ownership of the animals after import (chain of custody).

Description and Justification For Requested Activity

Describe the purpose of your proposed activity.

11. If **scientific research**, provide: N/A - This animal is not for scientific research

a. A copy of the research proposal (outlining the purpose, objectives, and methods),
b. Detailed information on capture methods including:
   i. who will be capturing the animals
   ii. equipment used
   iii. measures taken to prevent injury and mortality
c. An explanation of whether other similar work has already been conducted or is currently being conducted,
d. A copy of the study's Institutional Animal Care and Use Committee (IACUC) form (*if applicable*),
e. Peer-reviewed scientific papers published from this research (*if applicable*).

12. If **conservation education and/or zoological display**, provide: See attachment 1, question 12

a. Objectives of proposed activity in support of an education program,

b. Copies of educational materials (e.g., handouts, text of signage or public presentations), incorporating the following information:

   i. Status in the wild

   ii. Current threats

   iii. Conservation efforts

13. If **captive propagation for the conservation and survival of the species**, provide: See attachment 1, question 13.

a. A description of how the species will be propagated (e.g. artificial insemination, breeding pairs/groups),

b. Documentation showing your participation in an established breeding program (example: current breeding plan outlining your role in the program AND letter from the breeding coordinator confirming your participation in this breeding program.)

c. How your breeding stock is managed to maintain genetic vitality, including:

   i. avoidance of inbreeding,

ii. considerations of average kinship,

iii. differences in paternal and maternal average blood relationships/relatedness,

iv. carrying capacity of your facility,

v. disposition of progeny.

d. Plans and agreements for future re-introduction (*if applicable*).

14. Please provide a detailed description on how the proposed activities will **enhance or benefit the wild population within its native range** (e.g., direct or indirect conservation efforts) and provide documentation (e.g., **signed** memorandums of understanding) demonstrating your commitment to supporting the program and how the program contributes directly to the species identified in your application. See attachment 1, question 14.

Technical Expertise & Facilities

- For **export/re-export**, provide information for the **receiving institution.**
- For **import**, provide information for **your institution**.
- For **import to multiple facilities**, provide information for **all receiving institutions.**

15. CV or resume outlining the technical experience of each caretaker working with, maintaining, and/or propagating **each** species, as it relates to the proposed activities, including experience with similar species. See attachment 1, question 15 & Attachments 9-19.
16. Current inventory of the species at the facility (males.females.unknown sex, e.g., 10.2.3), See attachment 1, question 16)
17. Number of years the species has been maintained at the facility, 63
18. Number of births per species per year over the last 5 years, 1.0.0
19. Number of mortalities per species (or similar species) per year over the last 5 years and steps taken to avoid or decrease such mortalities, See attachment 1, question 19.
20. A detailed description, diagrams, and photos clearly depicting the existing facilities **where the wildlife will be maintained** including: dimensions, construction materials, and protection from the elements. Do not provide blueprints; See attachment 1, question 20.
21. Approximate carrying capacity for the species at the facility. 6 adults plus any young that they are raising under the age of 15.

Transport/Shipment of Live Animals

22. Transport conditions for live animals must comply with the CITES Guidelines for Transport of Live Animals. All air transport must also comply with the International Air Transport Association (IATA) live animal regulations (contact airline for information). As such, provide: See attachment 1, question 22 & attachment 20.

a. The type, size, and construction of any shipping container and,
b. The arrangements for watering or otherwise caring for the wildlife during transport.

All international shipment(s) must be through a designated port. A list of designated ports (where an inspector is posted) is available. If you wish to use a port not listed, please contact the Office of Law Enforcement for a Designated Port Exemption Permit (form 3-200-2).

CITES Appendix I & Marine Mammal Species

- For **export** of a **CITES Appendix I-listed species**, provide a copy of the CITES import permit, or evidence one will be issued by the Management Authority of the country to which you plan to export the specimen(s). In accordance with Article III of the CITES treaty, it is required that import permits are issued before the

corresponding export permit.

- For **import** of **CITES Appendix-I listed species**, provide information to show the import is not primarily for commercial purposes as outlined in Resolution Conf. 5.10 (Rev. CoP 15).
- For **import** of **live CITES Appendix-I marine mammals**, provide a copy of your FWS or NMFS Marine Mammal Protection Act (MMPA) permit or authorization.

FWS Form 3-200-37a (Rev. 01/2020)
U.S. Department of the Interior

OMB Control No. 1018-0093
Expires 08/31/2023

IMPORT/EXPORT/RE-EXPORT OF LIVE ANIMALS (CITES/ESA)

■New ☐Reissue/Renew ☐Amendment

Complete Sections **A or B**, and C, D, and E of this application. U.S. address may be required in Section C.**

A. Complete if applying as an individual			
1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix

2 Date of birth (mm/dd/yyyy)	5.a. Telephone number	5.b. Alternate telephone number	6. E-mail address
			MAY 17 PM12:04

B. Complete if applying on behalf of a business, corporation, public agency, Tribe, or institution			
1.a. Name of business, agency, Tribe, or institution: Fresno Chaffee Zoo Corporation		1.b. Doing business as (dba): Zoo	
2. Tax identification no.: 42-1661145	3.a. Description of business, agency, Tribe, or institution: Zoo		3.b. Website URL (if applicable): www.fresnochaffeezoo.org
4.a. Principal officer (P.O.) last name: Dohlin	4.b. P.O. first name: Jon	4.c. P.O. middle initial: Forrest	4.b. P.O. Title: CEO & Zoo Director
5. Primary contact name: Katharine Alexander		6. Primary e-mail address: kalexander@fresnochaffeezoo.org	

7.a. Business telephone number	7.b. Alternate phone no.	8.a. Primary contact telephone no.
559-498-5910	559-498-5938	559-498-5912

C. All applicants complete address information				
1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes): 894 W. Belmont				
1.b. City: Fresno	1.c. State: CA	1.d. Zip code/Postal code: 93728	1.e. County/Province: Fresno	1.f. Country: United States of America
2.a. Mailing Address (include if different than physical address; include name of contact person if applicable): 1250 W. Olive; C/O: Katharine Alexander				
2.b. City: Fresno	2.c. State: CA	2.d. Zip code/Postal code: 93728	2.e. County/Province: Fresno	2.f. Country: United States of America

D. All applicants MUST complete

1. Include a check or money order, payable to the U.S. FISH AND WILDLIFE SERVICE, **a nonrefundable processing fee** [50 CFR 13.11(d)(4)]. Federal, Tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – ***attach documentation of fee exempt status as outlined in instructions.*** (50 CFR 13.11(d))

2. If you are requesting a reissue/renew/amendment, what is your permit/file number? N/A

3. Certification: I hereby certify that I have read and am familiar with the regulations contained in Title 50, Part 13 of the Code of Federal Regulations and the other applicable parts in subchapter B of Chapter I of Title 50, and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

The individual/principal officer of the business must print and sign the application. (No photocopied or stamped signatures) — Date (mm/dd/yyyy): 05/04/22

** Further instructions for the above application may be found on our ePermits website. See the last page for information on the Privacy Act, Paperwork Reduction Act, Estimated Burden, and Freedom of Information Act aspects of this application form.

Mail your application(s) to Division of Management Authority, Branch of Permits, MS:IA 5275 Leesburg Pike, Falls Church, VA 22041-3803.

E. IMPORT/EXPORT/RE-EXPORT OF LIVE ANIMALS (CITES/ESA)

General Information

This application covers activities involving LIVE CITES and ESA listed animals.

Review this application carefully and **provide complete answers to all of the questions**. If you are applying for multiple species, be sure to indicate which species you are addressing in each response. **If more space is needed, attach a separate sheet with your responses, numbered according to the questions.**

Please allow at least 90 days for the application to be processed.

How do I determine whether the species is protected under CITES and/or the ESA?

CITES	ESA
To determine whether an animal species is protected under CITES, when the species was listed, or whether exemptions apply to your requested activity, see the list of CITES species	To determine whether an animal species is protected under the ESA, please review the list of ESA-listed species in the Code of Federal Regulations. Please be aware that any permit request involving an **ESA endangered species** must be published in the Federal Register for a required 30-day public comment period.

Questions
If you have any questions regarding an action you are requesting authorization for please contact the Division of Management Authority at managementauthority@fws.gov.

Please note: for renewal or amendment of a multi-use permit being requested **within the 5-year** Federal Register public notice period, use application 3-200-52

This form should NOT be used for:

- Pre-Convention, Pre-Act, or antique (antique exemption criteria) specimens (use application 3-200-23)
- Captive Bred Wildlife Registration (use application form 3-200-41)
- ESA Plants (use application form 3-200-36)
- Import of LIVE African Elephants from Botswana, Namibia, South Africa, and Zimbabwe and Southern White Rhinoceros from eSwatini and South Africa (use application form 3-200-37f)

Electronic Information Submission

Electronic submission of inventories, photographs, and receipts: For hard copy applications, if you wish to provide information electronically, please include a flash drive containing this information with your physical application.

1. Name and address where you wish the permit to be mailed, **if different from physical address**. If you would like expedited shipping, please enclose a self-addressed, pre-paid, computer-generated, courier service airway bill. If unspecified, all documents will be mailed via regular mail through the U.S. Postal Service.

   Fresno Chaffee Zoo, C/O Katharine Alexander
   1250 W. Olive Ave., Fresno, CA 93728

2. Point of contact if we have questions about the application (name, phone number, and email).

   Katharine Alexander, 559-498-5912, kalexander@fresnochaffeezoo.org

3. Have you or any of the owners of the business (if applying as a business, corporation, or institution), been assessed a civil penalty or convicted of any criminal provision of any statute or regulation relating to the activity for which the application is filed; been convicted, or entered a plea of guilty or nolo contendere, for a felony violation of the Lacey Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act; forfeited collateral; OR are currently under charges for any violation of the laws mentioned above?

☑ No ☐ Yes

If you answered "Yes" to Question 3, provide: a) the individual's name; b) date of charge; c) charge(s); d) location of incident; e) court, and f) action taken for each violation. Please be aware that a "Yes" response does not automatically disqualify you from getting a permit.

4. Type of Activity:
   - ☒ Import
   - ☐ Export
   - ☐ Re-export (e.g. exporting a specimen that was previously imported into the United States)

5. The current location of the **animal(s) (if different from the physical address)**:

Name:	Toronto Zoo
Address:	361A Old Finch Ave.
City:	Toronto, ON M1B 5k7
State/Province:	Canada
Postal Code:	
Country:	

6. Recipient/Sender:
   - If **export/re-export**, provide name and **physical address** of the recipient in the foreign country.
   - If **import**, provide name and **physical address** of the exporter/re-exporter in the foreign country.

Name:	Toronto Zoo
Address:	361A Old Finch Ave.
City:	Toronto, ON M1B 5k7
State/Province:	Canada
Postal Code:	
Country:	

7. For **each animal** involved in the import/export/re-export, provide (you may use the table below):
   a. Scientific name (genus, species, and *if applicable*, subspecies)
   b. Common name
   c. Approximate or actual birth/hatch date (mm/dd/yyyy)
   d. Wild or captive-born

e. Quantity

f. Sex (males.females.unknown sex, 10.2.3)

g. Permanent markings and/or identification information (microchip #, leg band #, tattoos, studbook #).

a. Scientific name (genus, species, and *if applicable*, subspecies)	b. Common Name	c. Approximate or Actual Birth/Hatch Date (mm/dd/yyyy)	d. Wild (W) or Captive-born (C)	e. Quantity	f. Sex (male. female. unknown sex, ex: 1.0.0)	g. Permanent markings/ID information (e.g., microchip #, leg band #, tattoo, studbook #, etc.)
EXAMPLE: *Pan troglodytes*	Chimpanzee	08/01/2006	C	1	1.0.0 OR male	Studbook# 152; Microchip# 00056321-00
See attachment 1						

Source of Specimen

8. For **each captive-born/captive-hatched animal(s),** provide a signed and dated statement from the breeder or other appropriate documentation (e.g. Species 360 report) that includes the following:
   a. Scientific name (genus, species, and *if applicable*, subspecies),
   b. Common name,
   c. Name and address of the facility where the animal was bred and born,
   d. Birth/hatch date (mm/dd/yyyy),
   e. Identification information (studbook, microchip, leg band, etc.),
   f. Name and address of the facility where the parental stock is located,
   g. A statement from the breeder that the animal was bred and born at the breeder's facility (including the facility's name and address), and
   h. If you are not the breeder, provide documentation demonstrating the history of transactions (e.g., chain of custody or ownership of the animal).
   See attachment 1, question 8

9. For **each animal(s) taken from the wild**, provide: N/A - this animal was not taken from the wild.
   a. Scientific name (genus, species, and *if applicable*, subspecies),
   b. Common name,
   c. Specific location (e.g. county, state, province, country) where the animal was removed from the wild;
   d. The name of the individual(s) who collected the animal(s) and their authorization to do so, including copies of foreign and domestic (Federal, State, and/or Tribal) government collecting permits, licenses, contracts and/or agreements;

e. Method of collection, including capture protocol and any injury and mortality experienced during collection, transport, and holding;

f. Information related to any remuneration, either financial or in-kind, provided for acquiring the animal(s);

g. Efforts to use captive specimens (e.g., captive-born, captive-held) in lieu of taking animals from the wild.

10. For **each animal being re-exported** (e.g., exporting animal(s) previously imported into the United States), provide: N/A

a. A copy of the CITES export or re-export document issued by the appropriate CITES office in the country from which the wildlife was imported (this document is **stamped cancelled** by USFWS Office of Law Enforcement upon import inspection); and

b. A copy of your Declaration for Importation or Exportation of Fish or Wildlife (Form 3-177) **cleared** by USFWS Office of Law Enforcement.

c. A copy of the ESA permit that authorized the original import.

d. If you did not make the original import, provide documentation outlining chain-of-ownership since import, including:

1. A copy of the importer's clearance documents (a, b & c above) and,
2. Subsequent invoices (or other documentation) showing the history of transactions leading to your ownership of the animals after import (chain of custody).

Description and Justification For Requested Activity

Describe the purpose of your proposed activity.

11. If **scientific research**, provide: N/A - This animal is not for scientific research

a. A copy of the research proposal (outlining the purpose, objectives, and methods),
b. Detailed information on capture methods including:
   i. who will be capturing the animals
   ii. equipment used
   iii. measures taken to prevent injury and mortality
c. An explanation of whether other similar work has already been conducted or is currently being conducted,
d. A copy of the study's Institutional Animal Care and Use Committee (IACUC) form (*if applicable*),
e. Peer-reviewed scientific papers published from this research (*if applicable*).

12. If **conservation education and/or zoological display**, provide: See attachment 1, question 12

a. Objectives of proposed activity in support of an education program,

b. Copies of educational materials (e.g., handouts, text of signage or public presentations), incorporating the following information:

i. Status in the wild

ii. Current threats

iii. Conservation efforts

13. If **captive propagation for the conservation and survival of the species**, provide: See attachment 1, question 13.

a. A description of how the species will be propagated (e.g. artificial insemination, breeding pairs/groups),

b. Documentation showing your participation in an established breeding program (example: current breeding plan outlining your role in the program AND letter from the breeding coordinator confirming your participation in this breeding program.)

c. How your breeding stock is managed to maintain genetic vitality, including:

i. avoidance of inbreeding,

ii. considerations of average kinship,

iii. differences in paternal and maternal average blood relationships/relatedness,

iv. carrying capacity of your facility,

v. disposition of progeny.

d. Plans and agreements for future re-introduction (*if applicable*).

14. Please provide a detailed description on how the proposed activities will **enhance or benefit the wild population within its native range** (e.g., direct or indirect conservation efforts) and provide documentation (e.g., **signed** memorandums of understanding) demonstrating your commitment to supporting the program and how the program contributes directly to the species identified in your application. See attachment 1, question 14.

Technical Expertise & Facilities

- For **export/re-export**, provide information for the **receiving institution.**
- For **import**, provide information for **your institution**.
- For **import to multiple facilities**, provide information for **all receiving institutions.**

15. CV or resume outlining the technical experience of each caretaker working with, maintaining, and/or propagating **each** species, as it relates to the proposed activities, including experience with similar species. See attachment 1, question 15 & Attachments 9-19.
16. Current inventory of the species at the facility (males.females.unknown sex, e.g., 10.2.3). See attachment 1, question 16)
17. Number of years the species has been maintained at the facility, 63
18. Number of births per species per year over the last 5 years, 1.0.0
19. Number of mortalities per species (or similar species) per year over the last 5 years and steps taken to avoid or decrease such mortalities, See attachment 1, question 19.
20. A detailed description, diagrams, and photos clearly depicting the existing facilities **where the wildlife will be maintained** including: dimensions, construction materials, and protection from the elements. Do not provide blueprints; See attachment 1, question 20.
21. Approximate carrying capacity for the species at the facility. 6 adults plus any young that they are raising under the age of 15.

Transport/Shipment of Live Animals

22. Transport conditions for live animals must comply with the CITES Guidelines for Transport of Live Animals. All air transport must also comply with the International Air Transport Association (IATA) live animal regulations (contact airline for information). As such, provide: See attachment 1, question 22 & attachment 20.

    a. The type, size, and construction of any shipping container and,
    b. The arrangements for watering or otherwise caring for the wildlife during transport.

All international shipment(s) must be through a designated port. A list of designated ports (where an inspector is posted) is available. If you wish to use a port not listed, please contact the Office of Law Enforcement for a Designated Port Exemption Permit (form 3-200-2).

CITES Appendix I & Marine Mammal Species

- For **export** of a **CITES Appendix I-listed species**, provide a copy of the CITES import permit, or evidence one will be issued by the Management Authority of the country to which you plan to export the specimen(s). In accordance with Article III of the CITES treaty, it is required that import permits are issued before the

corresponding export permit.

- For **import** of **CITES Appendix-I listed species**, provide information to show the import is not primarily for commercial purposes as outlined in Resolution Conf. 5.10 (Rev. CoP 15).
- For **import** of **live CITES Appendix-I marine mammals**, provide a copy of your FWS or NMFS Marine Mammal Protection Act (MMPA) permit or authorization.

Import/Export/Re-Export of Live Animals (CITES/ESA)
Application Form (3-200-37a)
Fresno Chaffee Zoo Application
0.1.0 Orangutan from the Toronto Zoo
Attachment 1

Section E

1) Name and address where you wish the permit to be mailed, if different from physical address. If you would like expedited shipping, please enclose a self-addressed, pre-paid, computer-generated, courier service airway bill. If unspecified, all documents will be mailed via regular mail through the U.S. Postal Service.
   a) Fresno Chaffee Zoo
      Attn. Katharine Alexander
      1250 W. Olive Ave.
      Fresno, CA 93728

2) Point of contact if we have questions about the application (name, phone number, and email).
   a) Katharine Alexander
      559-498-5912
      kalexander@fresnochaffeezoo.org

3) Have you or any of the owners of the business (if applying as a business, corporation, or institution), been assessed a civil penalty or convicted of any criminal provision of any statute or regulation relating to the activity for which the application is filed; been convicted, or entered a plea of guilty or nolo contendere, for a felony violation of the Lacey Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act; forfeited collateral; OR are currently under charges for any violation of the laws mentioned above?
   a) No

4) Type of Activity: Import, Export, or Re-Export (e.g. exporting a specimen that was previously imported into the United States.
   a) Import

5) The current location of the animal(s) (if different from the physical address):
   a) Toronto Zoo
      361A Old Finch Avenue
      Toronto, ON M1B 5k7
      Canada

6) Recipient/Sender: If export/reimport, provide name and physical address of the recipient in the foreign country. If import, provide name and physical address of the exporter/re-exporter in the foreign country.
   a) Import.
   b) Toronto Zoo
      361A Old Finch Avenue
      Toronto, ON M1B 5k7
      Canada

7) For EACH animal/specimen involved in the import/export/re-export, provide (you may use the table below):

Scientific Name (Genus, species, and if applicable, subspecies)	**Common Name**	**Birth/Hatch Date** (MM/DD/YYYY) (Approximate of actual unknown)	**Wild or Captive Born**	**Quantity**	**Sex** (Males.females. unknown sex, 10.2.3)	**Permanent Markings** &/or identification information (e.g. microchip #, leg band #, tattoo, studbook #, etc.)
Pongo abelii	Sumatran orangutan	12/15/2006	C	0.1.0	Female	Transponder: 00-0695-91ED House Name: Jingga Studbook #: 3270 Local ID:41339

Source of Specimen

8) For each captive-born/captive-hatched animal(s), provide a signed and dated statement from the breeder or other appropriate documentation (e.g. Species 360 report) that includes the following:
   a) Scientific name (genus, species, and if applicable, subspecies): (See table)
   b) Common name: (See table)
   c) Name and address of the facility where the animal was bred and born (See table)
   d) Birth/hatch date (mm/dd/yyyy): (See table)
   e) Identification information (studbook, microchip, leg band, etc.): (See table)
   f) Name & address of the facility where the parental stock is located: (See table)
   g) A statement from the breeder that the animal was bred and born at the breeder's facility (including the facility's name and address), and if you are not the breeder, provide documentation demonstrating the history of transactions (e.g., chain of custody or ownership of the animal).
      (1) Attachment 2 – Letter of Origin from Toronto Zoo
      (2) Attachment3 – Specimen Report

Scientific Name (8a) Common Name (8b)	**Name & Address of the Facility where the animal was bred & born (8c)**	**Birth/Hatch Date (8d)**	**Identification Information (studbook, microchip, leg band, etc.) (8e)**	**Name & Address of the Facility where the Parental Stock is Located (8f)**
Pongo abelii Sumatran orangutan	Toronto Zoo 361A Old Finch Ave. Toronto, ON M1B 5k7 Canada	12/15/2006	Transponder: 00-0695-91ED House Name: Jingga Studbook #: 3270 Local ID:41339	Toronto Zoo 361A Old Finch Avenue Toronto, ON M1B 5k7 Canada Dam: Alive Sire: Deceased

9) For each animal/specimen taken from the wild, provide:
   a) N/A – This animal was bred in captivity.

10) For each animal being re-exported (e.g. exporting animal(s) previously imported into the United States) provide:
   a) N/A – This animal has never been previously exported.

Description and Justification for Requested Activity

Describe the purpose of your proposed activity.

11) If scientific research, provide:
   a) This animal is not for scientific research.

12) If conservation education and/or zoological display, provide:
   a) Objectives of proposed activity in support of an education program & (b) copies of educational materials (e.g., handouts, text of signage or public presentations, incorporating the following information: Status in the wild, current threats, and conservation efforts.

i) Fresno Chaffee Zoo is in the process of building new exhibit space, Kingdoms of Asia, which will house orangutans, tigers, sloth bears, tomistoma, as well as a variety of fish and songbirds. Along with the construction, we will be focusing on new interpretation throughout the exhibit.
   (1) Kingdoms of Asia Exhibit Goals:
      (a) 1. To provide spacious, naturalistic habitats that enrich animals' daily lives, offer opportunities for choice, and stimulate natural behaviors
      (b) 2. To create an exciting journey to tropical Southeast Asia where visitors discover its rich diversity of animals, plants and human cultures
      (c) 3. To offer memorable experiences for visitors of all ages through up-close animal viewing, detailed exhibit features that reward exploration, interaction with staff, and intimate spaces for observation
      (d) 4. To connect the Zoo with Fresno's Southeast Asian communities and enable the broader visitor population to discover both the ancient and modern cultures represented in Kingdoms of Asia
      (e) 5. To engage our visitors in taking conservation actions to protect threatened and endangered Southeast Asian species
   (2) Kingdoms of Asia Interpretive Goals:
      (a) 1. To facilitate close connections between visitors and animals that inspire wonder, caring and empathy
      (b) 2. To encourage family/social interaction in fun, thought-provoking experiences that engage multiple learning styles
      (c) 3. To enable visitors to gain awareness of ancient and modern Southeast Asian cultures
      (d) 4. To demonstrate the Zoo's commitment to animal care and welfare
      (e) 5. To connect our visitors to the field conservation projects the zoo supports by illustrating positive stories of how dedicated Southeast Asian conservationists are working to protect animals and habitats
      (f) 6. To empower visitors to join the Zoo in taking conservation action by donating to field conservation projects, making informed consumer choices, and supporting community actions that help protect species and habitats
   (3) Kingdoms of Asia audiences:
      (a) Like other AZA-accredited institutions, Fresno Chaffee Zoo's most frequent visitors are families with younger children.
      (b) Forty-nine percent of Fresno residents are white, non-Hispanic; 42% are Mexican. Other major groups are Asian. The last visitor survey in 2008 showed that the visitation to Fresno Chaffee Zoo is reflective of the community; however, some noted that the Zoo has disproportionately fewer Asian visitors. Those not visiting the Zoo also include adults whose children are grown and who do not have grandchildren; millennials without children (yet they do attend Zoo events); and those who perceive the area where the zoo is located to be unsafe. In 2017 people visited from all 50 states and 27 different countries. The Zoo gets fewer visitors from those tourists going to national parks.
      (c) Kingdoms of Asia is designed to appeal to all audiences, yet the focus of the exhibit provides a wonderful opportunity to welcome Fresno's Southeast Asian communities of Cambodian, Lao and Hmong people.
   (4) Kingdoms of Asia Outcomes:
      (a) Animal Connection:
         (i) Goal 1: To facilitate close connections between visitors and animals that inspire wonder, caring and empathy
            1. Report that they experienced an animal encounter, observed behavior, and/or learned something about animals that amazed them
            2. Feel a closer connection to one or more Kingdoms of Asia species than they did before their visit
            3. Express concern about animals whose survival is threatened

4. Value the importance of animals to maintaining healthy ecosystems more than they did before their Kingdoms of Asia visit
5. Be inspired to help protect wild animals and habitats.

(b) Social Interaction:
   (i) Goal 2: To encourage family/social interaction in fun, thought-provoking experiences that engage multiple learning styles
      1. Report that exhibit experiences engaged them in fun interactions with family members or others in their social group
      2. Describe how children's experiences at the exhibit sparked their curiosity
      3. Relate something that they saw, heard or did at the exhibit that was a new experience for them
      4. Describe how using the question prompts enhanced their social experience at the exhibit
      5. Indicate their intention to recommend the exhibit to family and friends
      6. Indicate that they plan to return

(c) Cultural Awareness:
   (i) Goal 3: To enable visitors to gain awareness of ancient and modern Southeast Asian cultures
      1. Feel awed by their experience of Southeast Asian traditions and culture
      2. Recognize that Kingdoms of Asia illustrates both historic and contemporary Southeast Asian cultures
      3. Appreciate the resilience of Southeast Asian peoples as they overcame extreme hardship to migrate and keep their cultural traditions alive
      4. Indicate they now have a greater awareness of/appreciation for the distinctive Cambodian, Lao

(d) Animal Welfare:
   (i) Goal 4: To demonstrate the Zoo's commitment to animal care and welfare
      1. Agree that Fresno Chaffee Zoo provides the highest quality care for animals
      2. Recognize that zoo animal habitats are designed to meet animals' physical, emotional and social needs: some live in social groups; others are naturally solitary
      3. Appreciate the close bond that exists between keepers and animals in their care
      4. Value that zoo staff provide enrichment to stimulate animals' natural behaviors
      5. Recognize that voluntary training reduces stress by enabling animals to participate in their own health care

(e) Field Conservation:
   (i) Goal 5: To connect our visitors to the field conservation projects the zoo supports by illustrating positive stories of how dedicated Southeast Asian conservationists are working to protect animals and habitats
      1. Value the efforts of field scientists working to conserve Southeast Asian wildlife and habitats
      2. Feel pride in the zoo's support for conservation
      3. Feel inspired by and hopeful about the work of field conservationists
      4. Donate money at the zoo to conservation projects

(f) Conservation Action:
   (i) Goal 6: To empower visitors to join the Zoo in taking conservation action by donating to field conservation projects, making informed consumer choices, and supporting community actions that help protect species and habitats
      1. Recognize that habitat loss and wildlife trade are major threats to animal survival
      2. Name two actions they can take to help wildlife (don't buy wild animals as pets or products made from wild animals; purchase products with sustainably harvested palm oil)
      3. Demonstrate that they know how to take action
      4. Believe that their actions make a difference for wildlife

5. Take action at the zoo
6. Declare intent to take consumer actions such as purchasing only sustainable palm oil products and FSC-certified hardwoods, and being a responsible pet owner
7. Declare intent to take broader community actions such as writing to companies regarding use of sustainable palm oil

ii) Conservation Interpreter Presentation:

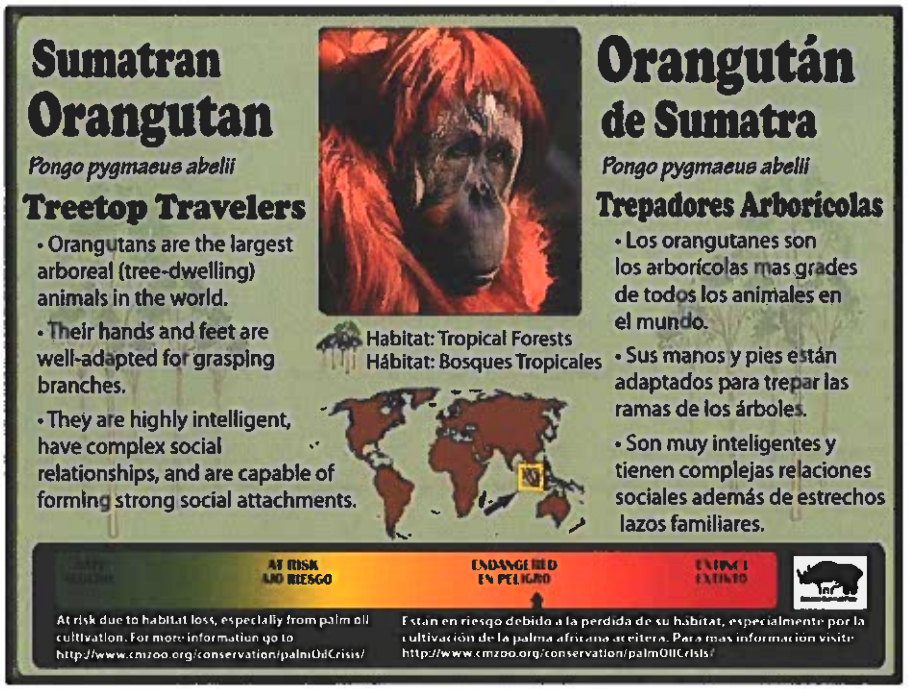
(1) FCZ's planned interpretive signage for orangutan focuses on the threats of unsustainable palm oil production and the ways in which guests can support sustainable production. An interactive component of this messaging includes a staff facilitated activity in which guests can use a smartphone and the Sustainable Palm Oil Shopping app by Cheyenne Mountain Zoo to scan a variety of items and check their sustainable status. The goal of this interaction is to showcase the variety of items that contain palm oil while familiarizing guests with the idea of sustainable palm oil and providing them with the tools to take action on their own.

iii) Orangutans are critically endangered in the wild. Our identification signage and keeper/conservation presentations highlight this.

(1) Since our exhibit is currently under construction and we are working on our new signage design, below is an example our new signage, which does not have information on it yet, and our old sign whose information will go on the new signage.

(a)

(b)



iv) The below slides focus on our orangutan species and are taken from our interpretive plan for the Kingdoms of Asia exhibit.

(1)

Bonner Station Lower Level: Orangutans and Siamangs

We will interpret orangutans and siamangs on the lower level. The upper level will focus on conservation.

Story/Concept Signs

KA-1-20 Differences between monkeys and apes; great apes and lesser apes (This lends itself to a lift-panel interactive quiz or a touch screen interactive instead of a panel sign—how many great apes can you name?) Humans are primates, too! Guess how much DNA humans have in common with orangutans and chimpanzees?

KA-1-21 Communication: touch in primates, body language, vocalizations: they have distinct calls for different individuals; siamangs have a unique song they sing and practice together (duet). Songbirds do this, too!

KA-1-22 Compare social organization of orangutans and siamangs. Orangutans: maternal care (solitary species; offspring stay with mother six years or longer; maternal care is unique, long-lasting; young are dependent on mothers for longest period of any animal. Siamangs: pair bonding. How FCZ meets animals' needs (e.g., appropriate social groups)

Themes

Connection
Both people and animals need to communicate with others and raise our families—our behaviors may be similar or very different. (Animals compared to me—to promote empathy)

(2)

Animal ID Signs

1. Sumatran orangutan ID: Long hair, differences between males and females
2. Siamang ID: Throat sac to amplify calls
3. Small tiles to identify our individual orangutans and siamangs

Tactile/Interactive

- Bronze orangutan and siamang hand casts
- Optional for universal design: Bronze cast or male and female orangutan faces
- Optional: Interactive OR touch screen: differences between monkeys/apes; great apes, lesser apes

Signs can be placed on the doors to the storage closet because it will always be closed. Interactives will work best on the left hand side.

Technology

- Touch screen OR interactive for differences between monkeys and apes; greater and lesser apes; great apes and humans

Live Interpretation

- Training demonstrations: Include in presentation the topics of great ape intelligence, tool use, emotion and personality
- Focus on family life; similarities and differences between humans and apes

Cultural Elements

- Malay translation of orangutan: Person of the forest

Bonner Station Upper Level: Conservation

Threats to Wildlife Survival

Interpretation at the upper level of Bonner Station communicates the impact of oil palm plantations on orangutans and other Southeast Asian forest species, the devastating effects of wildlife trafficking, and the drastic decrease in the numbers of Sumatran orangutans due to deforestation (habitat loss) for oil palm plantations. Siamangs are threatened by habitat loss, especially elimination of corridors by roads.

Conservation Signs

KA-1-23 Palm oil info graphic:

- Impact of deforestation (habitat loss) from unsustainable palm oil on orangutans and other species; elimination of corridors. Use the term "deforestation-free" palm oil.
- Sustainable palm oil: describe causal chain of sustainable palm oil harvesting and purchasing
- Roundtable on Sustainable Palm Oil (RSPO)
- Why boycotting is not the right solution: other crops are less efficient, causing more environmental damage; people's livelihoods depend on palm oil—compassionate conservation
- Sustainable palm oil is now a fraction of the total market—increasing demand for sustainable palm oil will increase its production

Themes

Connection
The lives of people, plants and animals are interconnected.

Caring/Compassion
Protection of wildlife begins with our caring and compassion for animals and the local people whose lives are affected.

Commitment
Sustainable practices enable wildlife and communities to thrive

The future of SE Asian wildlife depends on everyone's commitment to take positive action—here is how you can help.

(3)

- **Actions:**
  - Download and use the palm oil app developed by Cheyenne Mountain Zoo to scan products when shopping to ensure that palm oil contents were sustainably harvested.
  - Support companies that are members of the Roundtable on Sustainable Palm Oil (RSPO).

Note: Formative evaluation will help define the most effective messaging for visitors

KA-1-24 Wildlife trafficking affects multiple Kingdoms of Asia species

- Demand for tiger skins and for other tiger body parts, rhino horn and bear bile used in traditional Asian medicines
- Impact on wild animal populations
- Protective international legislation, policies: CITES, the Endangered Species Act
- **Actions:**
  - Do not buy products made from wild animals
  - Support the FCZ conservation fund for rhinos, sloth bears, tigers and hornbill (although this one is less affected by trafficking)

References

https://www.smithsonianmag.com/science-nature/rhino-horn-and-tiger-wine-how-illegal-wildlife-trade-growing-bolder-180970382/
https://knowledge.wharton.upenn.edu/article/how-tech-companies-are-helping-to-curb-wildlife-trafficking/

(4)

Tactile/Interactive

- Pledge to use sustainable palm oil
- Shopping app at table
- Loss of habitat interactive
- Donation Plinko station to support the FCZ conservation fund
- The back of the Plinko board is a mural that shows the different layers of the forest, illustrating who lives there and interpreting that your money saves these species.

Add interactive elements to appeal to young children in this area in order to keep them engaged while their parents or other caregivers read/interact with conservation interpretation, such as:

- Orangutan costume to try on to see how long their arms are, or one affixed to the wall so that kids can wrap themselves in an orangutan hug
- Match your arm span to an orangutan's (image and photo op)
- Cable with brass or resin figures of orangutans/siamangs that young children can move along
- Lift panel matching game

Technology

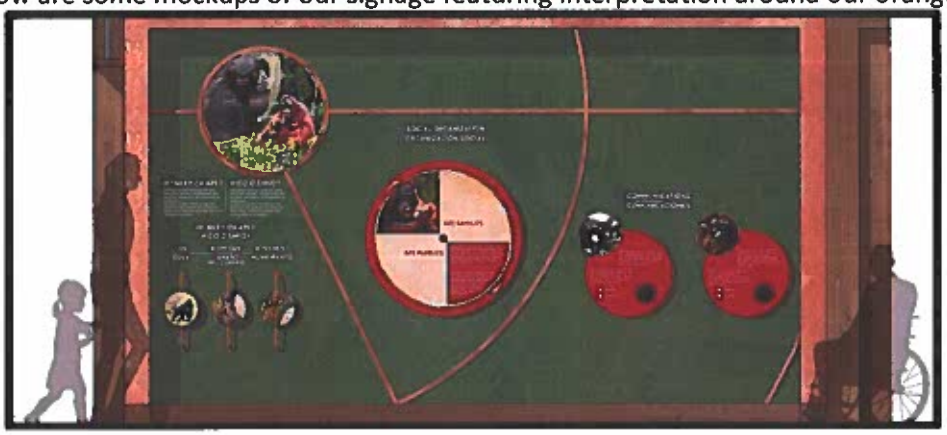
- Video monitor: video depicting palm oil effects; use of app
- Touch screen interactive in lieu of/or in addition to the palm oil infographic
- Den cam

Live Interpretation

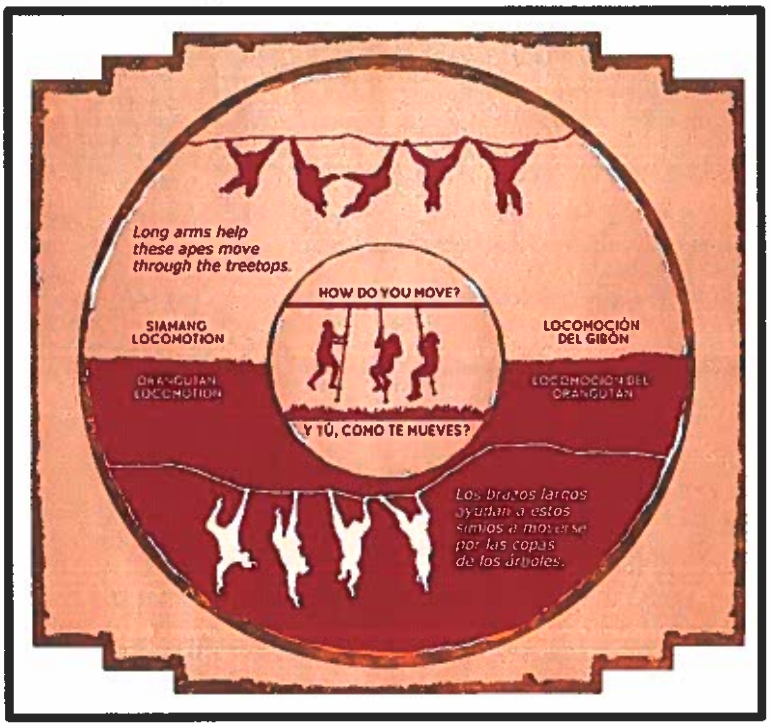
- Palm oil—being an informed consumer, demonstrating how to use the app
- Volunteer to engage young children while adults read/listen to conservation interpreter

(5)

v) Below are some mockups of our signage featuring interpretation around our orangutans.

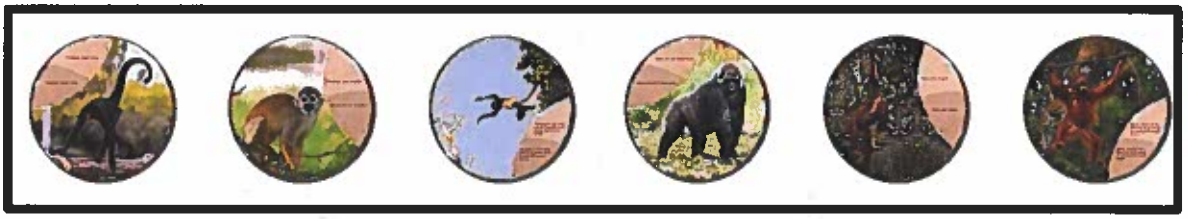


(1)

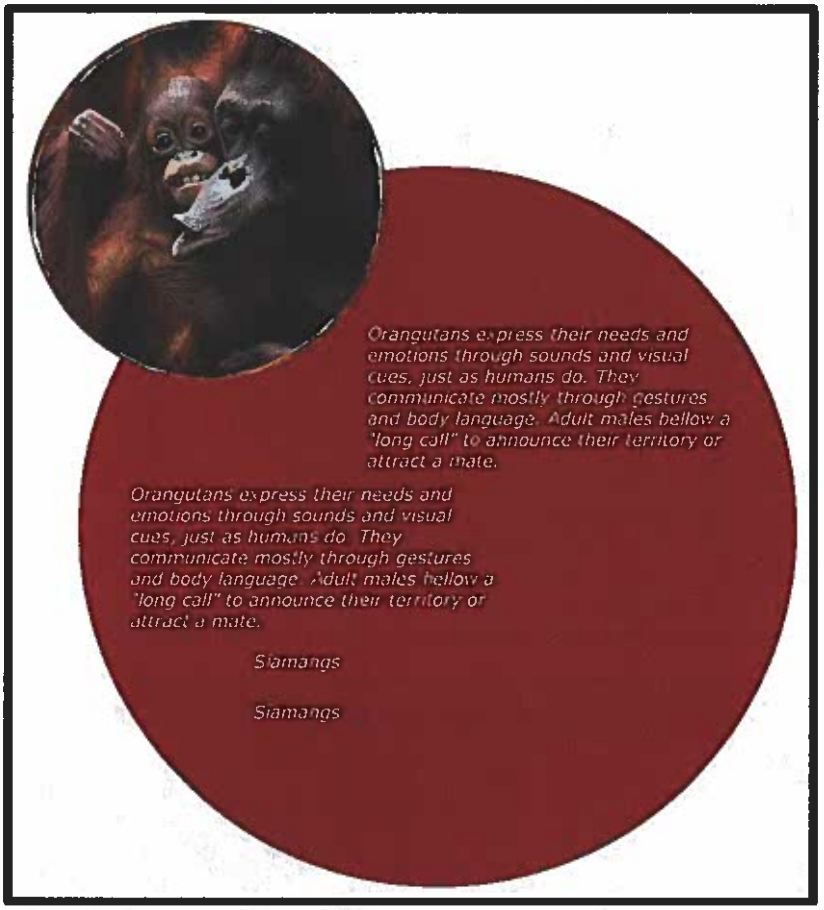


(2)

(3)



(4)


Orangutans express their needs and emotions through sounds and visual cues, just as humans do. They communicate mostly through gestures and body language. Adult males bellow a "long call" to announce their territory or attract a mate.
Orangutans express their needs and emotions through sounds and visual cues, just as humans do. They communicate mostly through gestures and body language. Adult males bellow a "long call" to announce their territory or attract a mate.
Siamangs
Siamangs

(5)


APE FAMILIES
APE FAMILIES
MONKEY OR APE?
MICO O SIMIO?
COMMUNICATIONS
COMUNICACIÓN
MONKEY OR APE?
MICO O SIMIO?
TAIL
COLA
BODY SIZE
TAMAÑO DEL CUERPO
MOVEMENT
MOVIMIENTO


Orangutans are semi-solitary, yet they have strong social bonds. Mothers and young form short-term groups, as do juvenile males and females. With so much to learn, a single infant is dependent on its mother for up to seven years—the longest childhood of any ape except humans.
Siamang pairs mate for life. The father assumes daily care of the young after its first year. Families include the adults and a few juveniles, who stay with the group for five to seven years.
Siamang pairs mate for life. The father assumes daily care of the young after its first year. Families include the adults and a few juveniles, who stay with the group for five to seven years.

(6)

(7)

(8)

(9)


Fresno Chaffee Zoo Wildlife Conservation Fund
Highlighted Program: Sumatran Orangutan Conservation Program (SOCP)
The Sumatran Orangutan Conservation Program (SOCP) rescues, rehabilitates and releases Sumatran orangutans impacted by palm oil and wildlife trafficking to establish a new, self-sustaining population in the Jantho Nature Reserve. They also teach and empower local people to act as advocates and protectors of orangutans and the forest.
Fresno Chaffee Zoo Wildlife Conservation Fund
Highlighted Program: Sumatran Orangutan Conservation Program (SOCP)
The Sumatran Orangutan Conservation Program (SOCP) rescues, rehabilitates and releases Sumatran orangutans impacted by palm oil and wildlife trafficking to establish a new, self-sustaining population in the Jantho Nature Reserve. They also teach and empower local people to act as advocates and protectors of orangutans and the forest.
$5
Tap to give

(10)


WHY NOT BOYCOTT PALM OIL OR USE SOMETHING ELSE?
¿POR QUÉ NO BOICOTEAR EL ACEITE DE PALMA O UTILIZAR OTRA COSA?
SOLUTION: SUSTAINABLY GROWN AND HARVESTED OIL PALM
SOLUCIÓN: SUSTENTABLEMENTE CULTIVADO Y COSECHADO ACEITE DE PALMA
1
2
3
4
5

(11)

13) If captive propagation for the conservation and survival of the species, provide:
   a) A description of how the species will be propagated (e.g. artificial insemination, breeding pairs/groups),
      i) Our breeding program at the Fresno Chaffee Zoo is all natural. Males are paired with genetically appropriate females as recommended by the Association of Zoos & Aquariums Species Survival Program for Sumatran Orangutan after studying each individual ape's genetics. See attachment #4 for the orangutan species survival plan. FCZ will then introduce the pair to each other through a series of steps until we have successful bonding and natural breeding.
   b) Documentation showing your participation in an established breeding program (example: current breeding plan outlining your role in the program & letter from the breeding coordinator confirming your participation in this breeding program.)
      i) See attachment #5 – Breeding Plan & Recommendation letter for SSP.
   c) How your breeding stock is managed to maintain genetic vitality, including:
      (1) Avoidance of inbreeding, considerations of average kinship, and differences in paternal and maternal average blood relationships/relatedness:
         (a) The orangutan population is managed as part of a Species Survival Program (SSP) under the Association of Zoos and Aquariums (AZA). As such, the population is rigorously managed (with assistance from AZA's Population Management Center; PMC) to avoid inbreeding and maximize retention of genetic diversity. A studbook (pedigree database) is maintained for the species and from that, the demographic and genetic health of the population is monitored and managed. PMC scientists use state of the art programs (ZIMS, PMx, SPARKS) to develop and review breeding plans. These programs use the pedigree data base to calculate several genetic parameters, including retention of genetic diversity, inbreeding, and mean kinship which is a measure of relatedness for an individual to that of the entire population. Within the existing demographic and spatial limits, the SSP identifies breeding pairings for individuals based on mean kinship (ideal of pairing individuals with equal/similar and low mean kinships), avoidance of inbreeding, demographic, and logistical concerns.
      (2) Carry capacity of your facility:
         (a) Our facility can hold up to six adults and young under fifteen years of age.
      (3) Disposition of progeny:
         (a) FCZ follows the recommendations of the Sumatran Orangutan SSP for the disposition of progeny to be placed in other AZA SSP institutions to maximize the genetic diversity of the North American population.
   d) Plans & agreements for future re-introduction (if applicable):
      i) N/A

14) Please provide a detailed description on how the proposed activities will enhance or benefit the wild population within its native range (e.g., direct or indirect conservation efforts) and provide documentation (e.g. signed memorandums of understanding) demonstrating your commitment to supporting the program and how the program contributes directly to the species identified in your application.
   a) Sumatran orangutans are specimens maintained at Fresno Chaffee Zoo for the purpose of conservation education and zoological display. The habitat is themed to show how animals live in their natural environment, while depicting Asian culture and history to immerse guests into a part of the world they may never see otherwise, inspiring them to conserve orangutan rainforest habitat.

b) Furthermore, Sumatran orangutans are endangered and by educating guests through our interpretive signage and keeper chats we hope to connect guests with conservation actions for wild orangutans and their habitat. Our conservation message focuses on habitat loss due to palm oil plantations, giving guests real world actions to help wild Orangutans by purchasing products that use sustainable palm oil.

c) In addition, FCZ directly supports Sumatran Orangutans *in situ* through our Conservation Fund which has committed to donating $15,000 US dollars annually for the next five years to Sumatran Orangutan Conservation Program (SOCP). SOCP is saving and protecting captive and wild Sumatran orangutans and their rainforest habitat, through science-based conservation, establishing new wild populations, advocacy, education and awareness building. FCZ funds are used to track recently rehabilitated orangutans confiscated from the pet trade as they are released into the Jantho Pine Forest Nature Reserve which is a protected area maintained by SOCP. The purpose of the SOCP's Jantho Pine Forest Nature Reserve Reintroduction program is to successfully establish a self-sustaining Sumatran orangutan population within the Jantho Nature Reserve in Aceh province, Indonesia, serving as a safety net population for the survival of the species. The contribution of FCZ to this program allows for the release and tracking of over 30 Orangutans spanning 5 years, as well as monitoring for previously released Orangutans that have widely dispersed into the reserve. SOCP involves local communities in their education programs and employs locals as monitoring rangers
   i) Please see attachment #6.

d) Lastly, we are a partner with the AZA Orangutan SAFE Program, attachment 7, and as such fully support their goals and objectives which can be found in their 2020-2022 plan as a part of our attached documents, attachment 8.

Technical Expertise & Facilities

- For export/re-export, provide information for the receiving institution.
- For import, provide information on your institution.
- For import to multiple facilities, provide information for all receiving institutions.

15) CV or resume outlining the technical expertise of each caretaker working with, maintaining, and/or propagating each species, as it relates to the proposed activities, including experience with similar species:

a) The Asia Central team consists of seven full-time keepers, one Zoological Animal Manager, and Curator. This team has varying degrees of experience working with large ape species, including orangutans. Please refer to the attached CV's/Resumes. This team is committed to excellent animal care and prides itself on training animals for voluntary husbandry and medical behaviors. Daily enrichment activities focus on goals to promote natural behaviors. The team is supported by the nutrition and veterinary departments to provide complete animal welfare. Team members have experience with Orangutan introductions, breeding activities, and infant raising.
   i) Attachment #9 – Shannon B. Nodolf, DVM – Chief Veterinary Officer
   ii) Attachment #10 – Michael Wenninger, DVM – Associate Veterinarian
   iii) Attachment #11 – Nicole Presley – Curator of Sea Lion Cove/Asia Central
   iv) Attachment #12 – Sarah Shearer – Zoo Area Manager of Asia Central
   v) Attachment #13 – Erica Weibe – Zookeeper Asia Central
   vi) Attachment #14 – Amelia Lautenberg – Zookeeper Asia Central
   vii) Attachment #15 – Heather Chance – Zookeeper Asia Central
   viii) Attachment #16 – Kimberly Sharp – Zookeeper Asia Central
   ix) Attachment #17 – Dallas LaDucer – Zookeeper Asia Central
   x) Attachment #18 – Lawrence Rea – Zookeeper Asia Central
   xi) Attachment #19 – Anthony Stenger – Zookeeper

16) Current inventory of the species at the facility (males.females.unknown sex, e.g. 10.2.3)
   a) 3.1.0

Scientific Name (Genus, species, and if applicable, subspecies)	**Common Name**	**Birth/Hatch Date** (MM/DD/YYYY) (Approximate of actual unknown)	**Wild or Captive Born**	**Sex** (Males.females.unknown sex, 10.2.3)	**Permanent Markings** &/or identification information (e.g. microchip #, leg band #, tattoo, studbook #, etc.)
Pongo abelii	Sumatran orangutan	4/28/1984	C	M	GAN: MIG12-30073696 Local ID: 970156 House Name: Busar Studbook #: 1971 Tattoo: 101 on chest
Pongo abelii	Sumatran orangutan	12/18/2010	C	F	GAN: MIG12-28927017 Local ID: 201195 House Name: Ndari Studbook #: 3403
Pongo abelii	Sumatran orangutan	10/31/2010	C	M	GAN: MIG12-28745552 Local ID: 201185 House Name: Labu Studbook #: 3397
Pongo abelii	Sumatran orangutan	11/3/2018	C	M	GAN: SMT18-01601 Local ID: 209148 House Name: Hantu Studbook: 3722

17) Number of years the species has been maintained at the facility:
   a) Orangutans were first maintained at Fresno Chaffee Zoo beginning in 1959.
      (1) Approximately 63 years.
         (a) 10.13.0
            (i) Births: 5.7.0
            (ii) Acquisitions: 7.7.0
            (iii) Deaths: 2.7.0
            (iv) Dispositions: 7.6.0

18) Number of births per species per year over the last 5 years:
   a) Since 2017, there has been one birth; a male.

19) Number of mortalities per species (or similar species) per year over the last 5 years and steps taken to avoid or decrease such mortalities:
   a) Since 2017, there have been two deaths; both females.
      i) Local ID: 210014, Sara, 49 years at time of death.
      ii) Local ID: 210015, Siabu, 31 years at time of death.
   b) Steps taken to avoid or decrease such mortalities:
      i) Both animals were humanely euthanized due to quality-of-life concerns secondary to cancer. There are no further steps to avoid such occurrences that we could have taken.

20) A detailed description, diagrams, and photos clearly depicting the existing facilities where the wildlife will be maintained including dimensions, construction materials, and protection from the elements. Do not provide blueprints.
   a) Habitat:
      i) Note that the orangutan habitat is under renovation to provide upgraded elements and as such our photos do not depict the final product. Some pre-construction photos have been submitted to show our natural substrate, vines, and mesh barrier that will be in place when finished.
      ii) The orangutan habitat is a large oval enclosure measuring approximately 30 ft high, 100' long, and 50' wide. The primary barrier, including the roof, is 3" woven stainless-steel mesh. See diagram under mesh

materials. The guest viewing area is currently being upgraded from mesh to glass (photo below). There is a shallow pool for cooling and trees that provide shade. The substrate is natural soil and grass mixture. A large artificial banyon tree provides multiple climbing, foraging, and resting opportunities for all the apes. In front of the banyon tree is a deck that is shaded by the viewing structure with heating and cooling on its surface via inline water tubing that is heated or cooled by condenser units. This area will provide relief from the heat in summer and allow for warm surfaces in our cooler temperatures of winter. Throughout the habitat are artificial vines to allow for natural brachiation as a means of locomotion. Two Lixit drinkers provide a constant flow of fresh drinking water.

iii) Below is the current habitat under construction showing vines and natural substrate, prior to artificial tree installation and guest viewing upgrade to glass.

(1) 

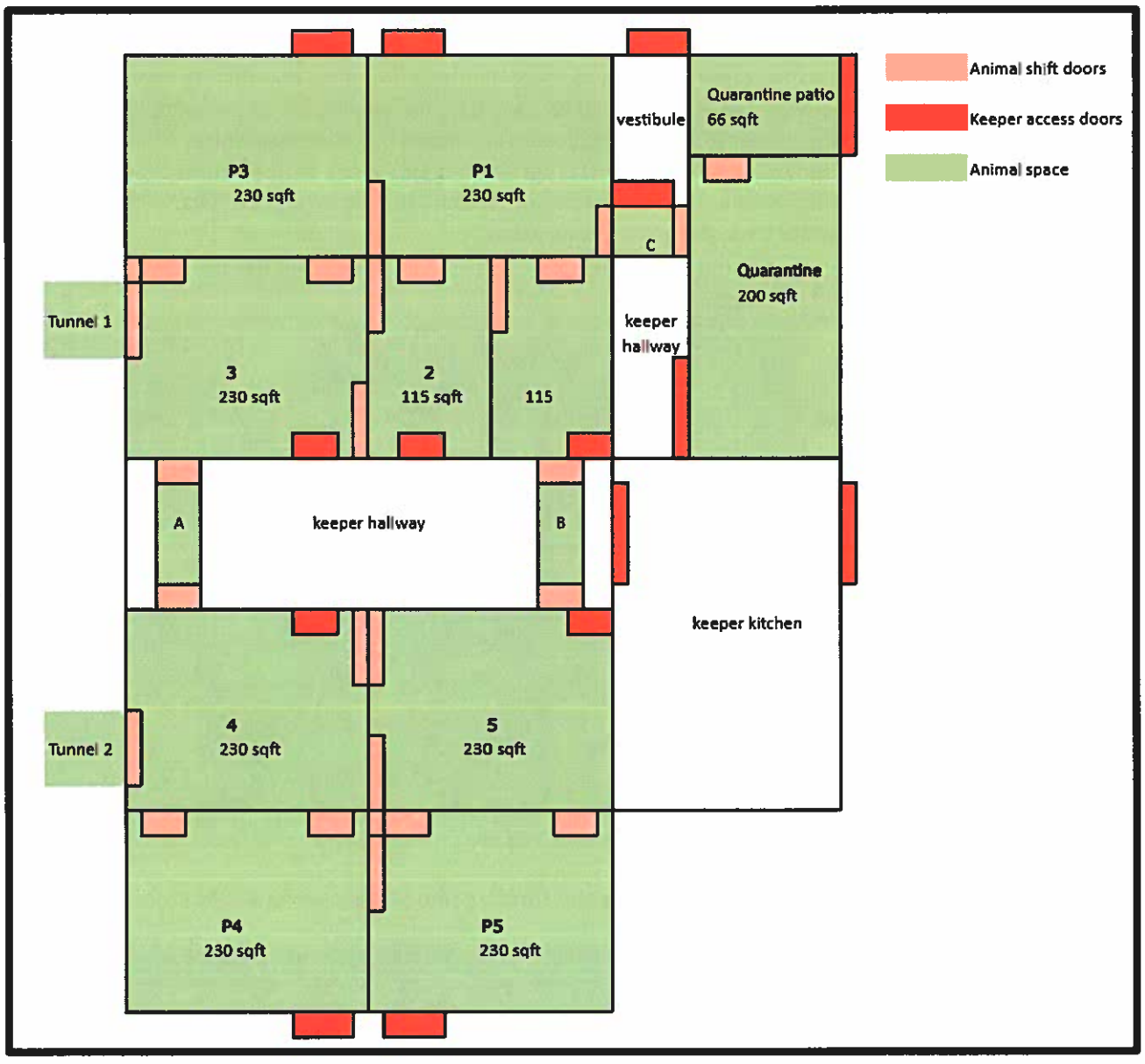
iv) Below is photo of new artificial tree and construction of glass viewing shelter for guests. Additional trees have been planted in habitat.

(1) 

b) Orangutan Building:

i) Below is a diagram of the orangutan building.

(1)



ii) The Orangutan Building is a totally enclosed indoor facility with heating and air conditioning comprised of 5 indoor spaces. Attached to each indoor space (1-5) is an outside fully roofed patio (P1-P5) for outdoor options. Each indoor space is furnished with vines, nesting platform, resting platform, an automatic Lixit drinker, and heated floors.

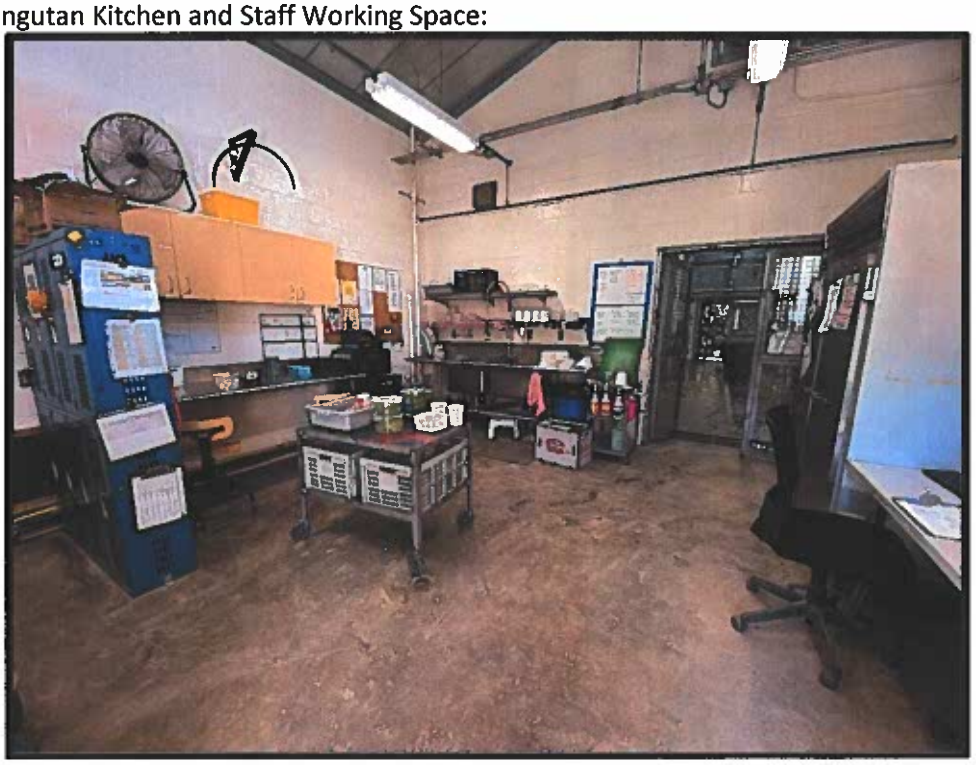
(1) Animal Care staff provide multiple enrichment activities throughout the day and over the evening, including foraging and bedding substrates for nest building.

iii) The primary barrier for every orangutan space is 2"x2" welded woven rigid mesh. Two mesh tunnels connect each end pen to the exhibit and are furnished with horizontal bars for brachiation through the tunnels.

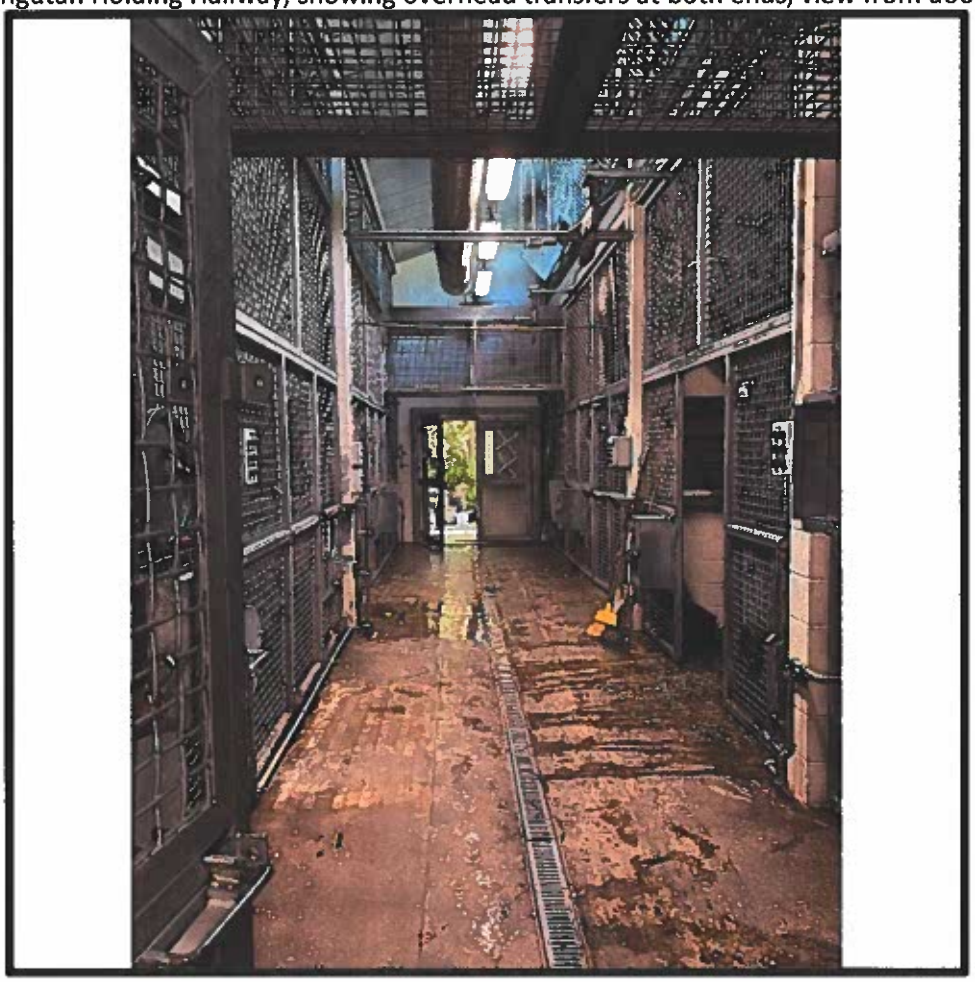
iv) Two indoor overhead tunnels (marked A and B on diagram) connect each side of the building to the other side to create multiple ways to move orangutans around the building. New LED lights hang in the hallway and reflect into the indoor spaces to properly illuminate.

v) Animal training ports and feeders are attached to front of the pens to be used as needed.

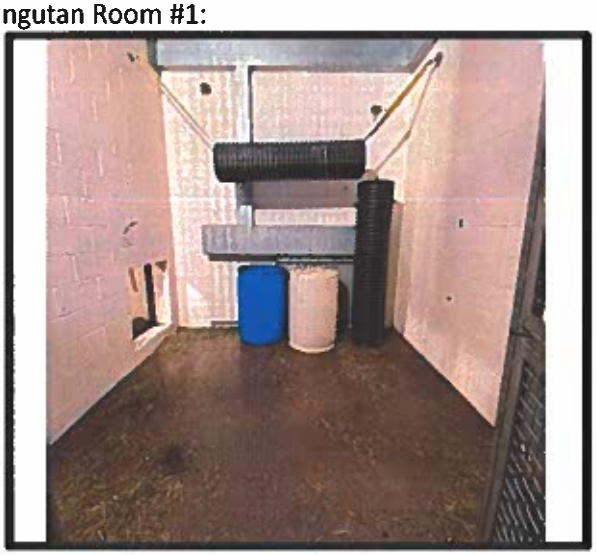
c) Orangutan Kitchen and Staff Working Space:

i) 

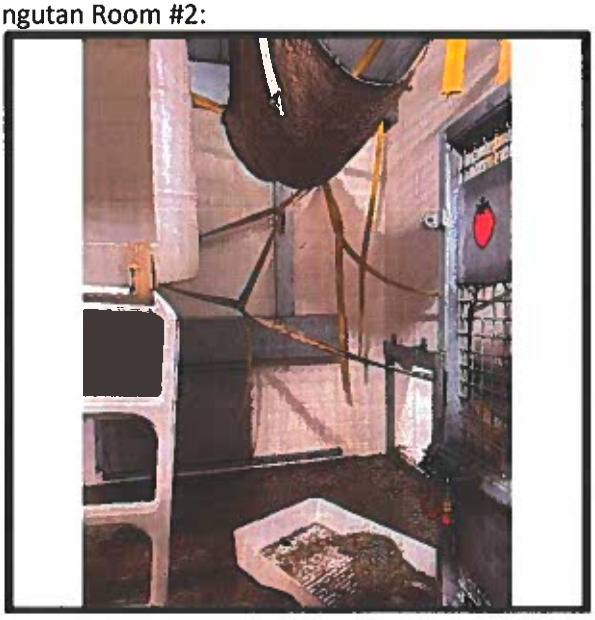
d) Orangutan Holding Hallway, showing overhead transfers at both ends, view from doors off the kitchen:

i) 

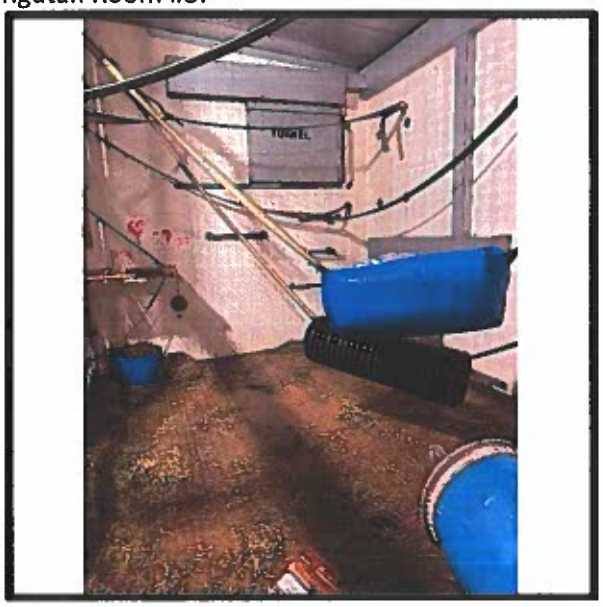
e) Orangutan Room #1:

i) 

f) Orangutan Room #2:

i) 

g) Orangutan Room #3:

i) 

h) Orangutan Room #4:

i) 

i) Orangutan Room #5:

i) 

j) Holding Lights:

i) 

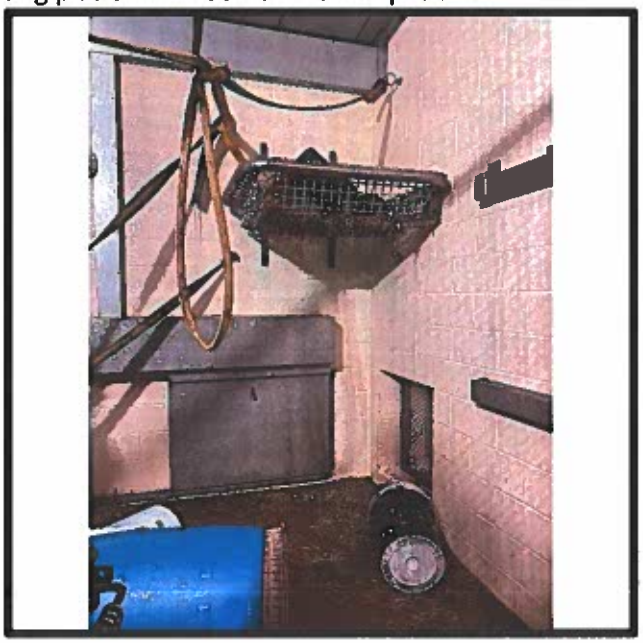
k) Feeder and training port for blood sleeve:

i) 

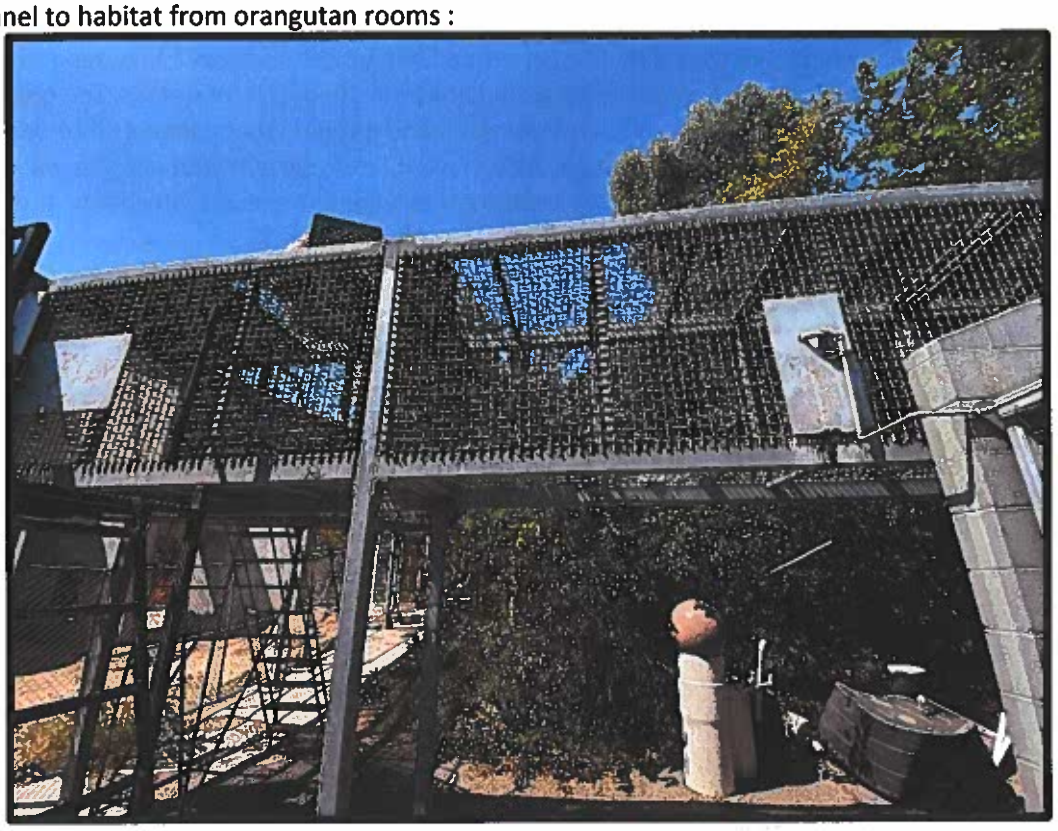
l) Ultrasound training port:

i) 

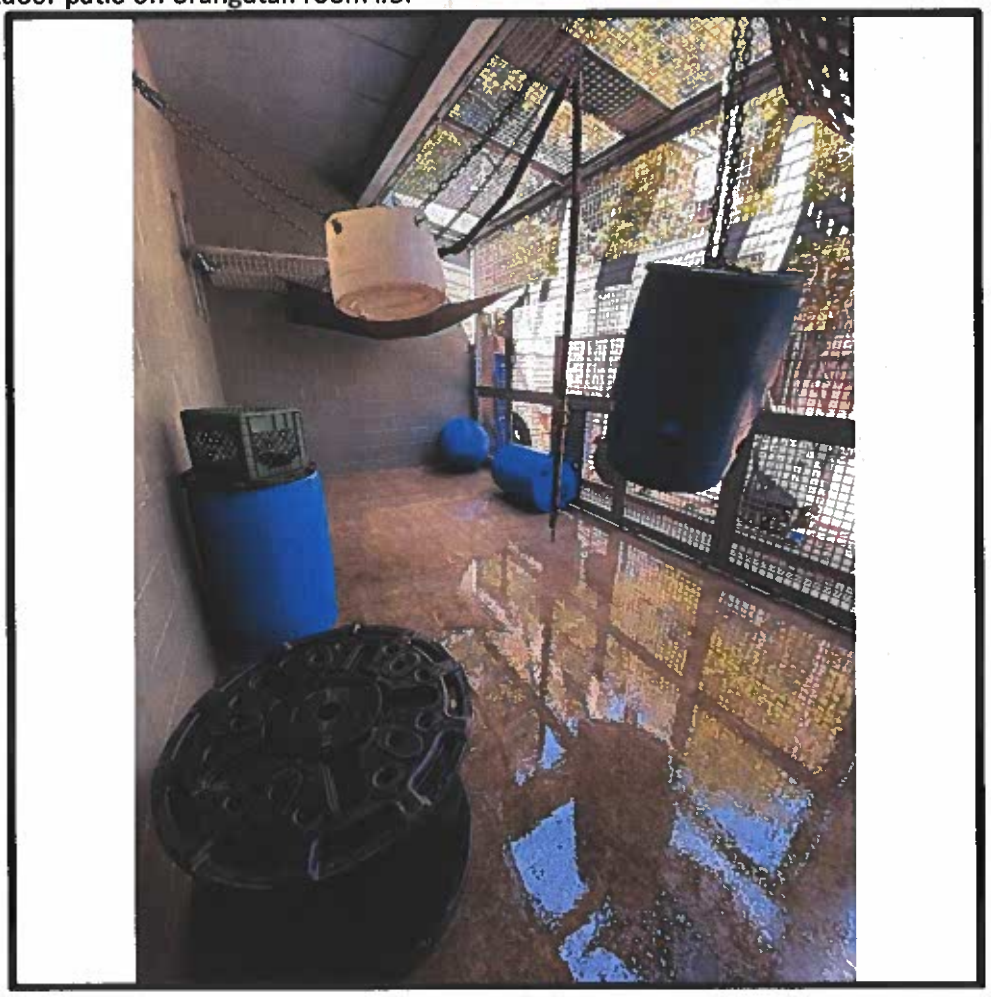
m) Nesting platform in rooms #2-5 and patio #3:

i) 

n) Tunnel to habitat from orangutan rooms :

i) 

o) Outdoor patio off orangutan room #3:

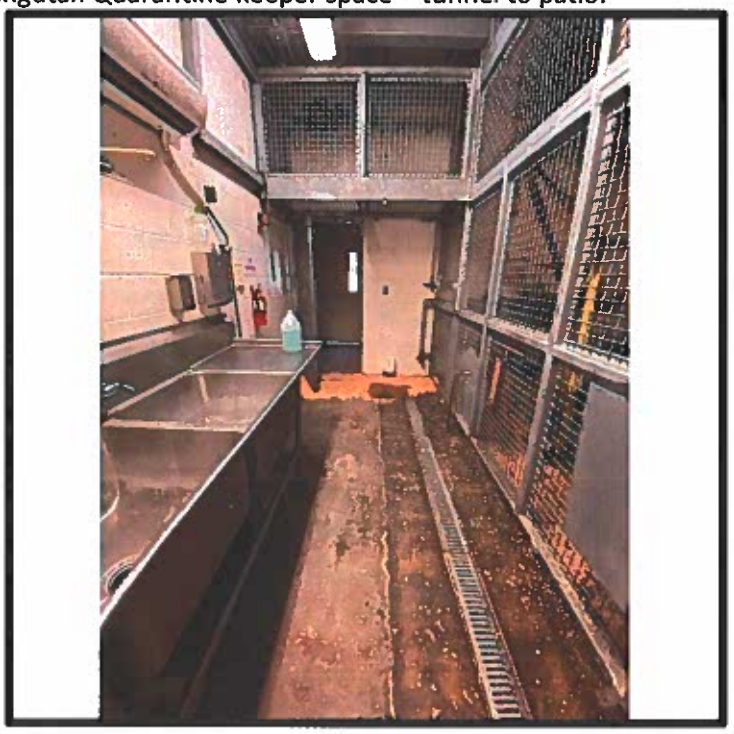
i) 

p) Orangutan Quarantine:

i) At Fresno Chaffee Zoo we have the capability to quarantine Orangutans onsite in a fully separate area attached to the Orangutan building. See above diagram (Question 20, b, (1)) for details. The quarantine space consists of a single large room with one outdoor patio and a tunnel that connects it to patio P1 when any quarantine restrictions are lifted. This area has its own ventilation system with heating and cooling. This area is equipped with vines, benches, and other furniture as required or needed. A window into the keeper kitchen area allows for close monitoring by staff of the animal in quarantine.

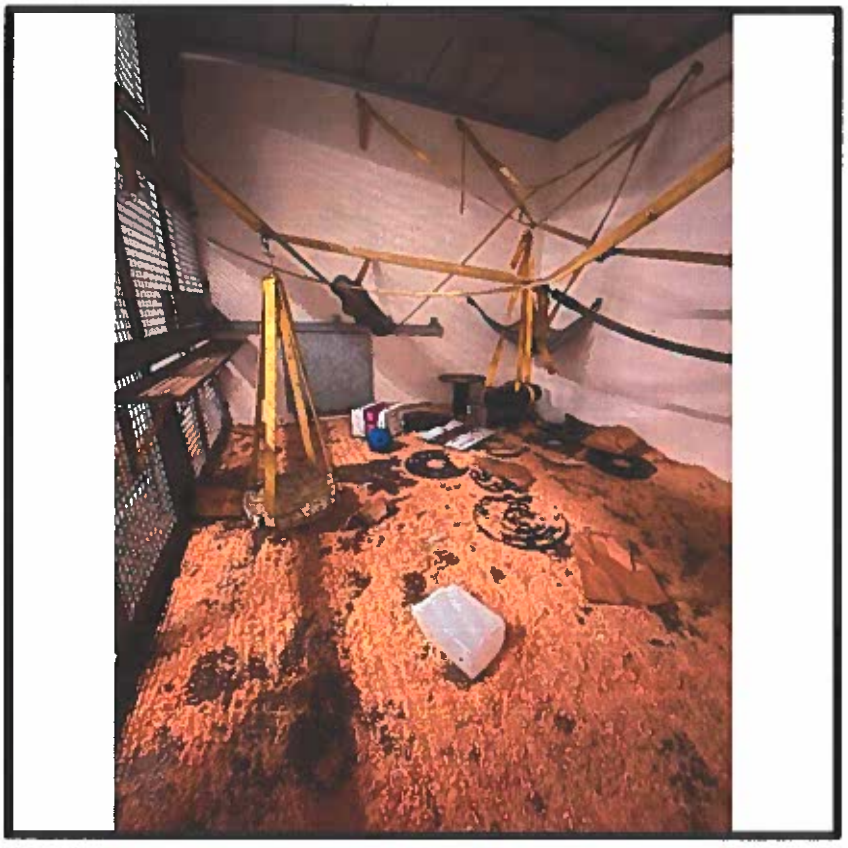
(1) Orangutan Quarantine keeper space – tunnel to patio:

(a)



(2) Quarantine Room :

(a)



ii) Meshing materials for orangutan spaces :

(1) 2 inch by 2 inch woven rigid mesh

(a)

(2) 3-inch woven SS mesh:

(a)

21) Approximate carrying capacity for the species at the facility.

a) The total holding capacity for our facility would be 6 adults plus any young they are raising under the age of 15 years.

Transport/Shipping of Live Animals

22) Transport conditions for live animals must comply with the CITES Guidelines for Transport of Live Animals. All air transport must also comply with the International Air Transport Association (IATA) live animal regulations (contact airline for information). As such provide:

a) The type, size, and construction of any shipping container and, -

i) See attachment #20 – Toronto Zoo – Medium Metal Crate – for Large Primate & Medium Carnivore.

ii) At least two qualified animal care staff will accompany the orangutan throughout the journey: from time of departure to arrival at final destination. They will remain with the transport crate at cargo facilities before loading onto flights and during any stops along the route.

b) The arrangements for watering or otherwise caring for the wildlife during transport.

i) Animal care staff will carry food and water to provide for the orangutan as needed.

All international shipment(s) must be through a designated port. A list of designated ports (where an inspector is posted) is available. If you wish to use a port not listed, please contact the Office of Law Enforcement for a Designated Port Exemption Permit (form 3-200-2).

CITES Appendix I & Marine Mammal Species

- For export of a CITES Appendix I-listed species, provide a copy of the CITES import permit, or evidence one will be issued by the Management Authority of the country to which you plan to export the specimen(s). In accordance with Article III of the CITES treaty, it is required that import permits are issued before the corresponding export permit.
    - N/A
- For import of CITES Appendix-I listed species, provide information to show the import is not primarily for commercial purposes as outlined in Resolution Conf. 5.10 (Rev. CoP 15).
    - N/A
- For import of live CITES Appendix-I marine mammals, provide a copy of your FWS or NMFS Marine Mammal Protection Act (MMPA) permit or authorization.
    - N/A

Attachment 2

toronto zoo

361A Old Finch Ave.
Toronto, ON M1B 5K7
www.torontozoo.com

Tel: 416-392-5900
Fax: 416-392-5934

April 8, 2022

To Whom it may concern,

This letter confirms that the following female Sumutran orangutan (*Pongo abelii)* was born and bred at the Toronto Zoo in Canada:

NAME: Jingga
Local ID #: 41339
GAN #: MIG12-29200304
TRANSPONDER #: 00-0695-91ED
DATE OF BIRTH: 2006/12/15

A Specimen Report confirming these details is attached.

Sincerely,

V. Hardstaff

Vicki Hardstaff
Animal Logistics Coordinator
Toronto Zoo

Attachment 3

Specimen Report

Species360 GAN MIG12-29200304 **Local ID:** TORONTO / 41339

Pongo abelii Sumatran orangutan

Studbooks EAZA, WAZA, AZA, ZAA, SEAZA, JAZA

Order Primates **Family** Hominidae

IUCN Critically Endangered (CR) **CITES** I

Start Date 1800/01/01 **End Date** 2022/04/08

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Basic Animal Information

No Local Data Differences Found

Sex - Contraception	Female -	Status	Alive
Birthdate - Age	2006/12/15 - 15Y,3M,24D	Preferred ID	TORONTO / 41339
Origin	Toronto Zoo	Rearing	Parent
Birth Type	Captive Birth/Hatch	Hybrid Status	Not Hybrid
Sire	MIG12-29200273 (TORONTO / 31446)	Dam	MIG12-5220707 (TORONTO / 20164)
Current Collection	Main Institution Animal Collection	Collection Trip	
Clutch / Litter		Enclosure	IN1300 Orangutan

Visit History

Date in	Acquisition - Vendor/Local ID	Phy	Own	Reported By	Disposition - Recipient/Local ID	Phy	Own	Date Out
2006/12/15	Birth/Hatch	In	In	TORONTO / 41339		-	-	

Identifiers

Reported By	Effective Date	Type	Identifier	Location	Status	Comments
TORONTO	2006/12/15	Local ID	41339		Active	
TORONTO	2006/12/15	Intl Stdbk#	3270		Active	
TORONTO	2006/12/15	House Name	JINGGA		Active	
TORONTO	2008/12/18	Transponder	00-0695-91ED		In-Use	

Sex Information

Reported By	Date	Sex	Comments
TORONTO	2006/12/15	Female	

Parent Info

Reported By	In ZIMS	Parent Info	Type / Probability	Birth Date	Comments
TORONTO	Yes	MIG12-5220707 [TORONTO / 20164]	Dam/100%	1985/10/04	
TORONTO	Yes	MIG12-29200273 [TORONTO / 31446]	Sire/100%	1978/06/24	

Ancestry Information (calculated by Species360 from shared data)

% Pedigree Known	% Pedigree Certain	Taxonomic Inconsistencies	No. Identified Ancestors
25.00%	25.00%	No	6

Attachment 4

Population Analysis & Breeding and Transfer Plan

Orangutan (*Pongo abelii* and *P. pygmaeus*) AZA Species Survival Plan® Green Programs

ORANGUTAN
SPECIES SURVIVAL PLAN

AZA Species Survival Plan® Coordinator & Studbook Keeper
Megan Elder, Como Park Zoo and Conservatory
(megan.elder@ci.stpaul.mn.us)

AZA Population Advisor
Jennifer Mickelberg, Zoo Atlanta
(jmickelberg@zooatlanta.org)

12 October 2021

PMC Population Management Center

LINCOLN PARK ZOO. ASSOCIATION OF ZOOS & AQUARIUMS

ZOO ATLANTA

Executive Summary

Orangutan (*Pongo abelii*, *Pongo pygmaeus*, and hybrids)

This population is divided into two separately managed species (Bornean and Sumatran) as well as hybrids of the two. At the time of analysis, there were 97 (44.53) Bornean orangutans in 25 institutions, 88 (34.53.1) Sumatran orangutans in 26 institutions, and 37 (16.21) hybrid orangutans in 18 institutions. Both species of orangutans in the wild are listed as Critically Endangered on the IUCN Red List and are on CITES Appendix I. The Ape Taxon Advisory Group (TAG) has designated these populations as SSPs and has set their target population size at 100 individuals for each species in the 2014 Regional Collection Plan (RCP). Under AZA's sustainability designations the Bornean and Sumatran populations currently qualify as Green SSP Programs.

Demography

Current to 7 March 2021	**Bornean**	**Sumatran**	**Hybrids**
Number of institutions currently holding this species	25	26	18
Current size of population (N): Total (Males.Females.Unknown Sex)	97 (44.53)	88 (34.53.1)	37 (16.21)
Number of individuals excluded from the potentially breeding population	7 (0.7)	11 (0.11)	37 (16.21)
Population size following exclusions	90 (44.46)	77 (34.42.1)	0
Target population size (Kt) from Ape TAG's 2014 RCP / Target population size discussed at the SSP meeting and used for population projections	100	100/95	0/0
Mean generation time (T; years)	21.3	24.3	-
Population Growth Rates (λ; lambda)*: Historical / 5-year / Projected	0.995/1.014/0.989	0.980/1.00/0.974	-

**Historical from life tables (DEMOG DATE WINDOW: 1/1/1984 – 3/7/2021); 5-year avg from PopLink census; Projected from PMx stochastic 20 yr. projections*

Genetics

Current to 7 March 2021	**Bornean**		**Sumatran**		**Hybrids**
**Based on analytical studbook*	**Current**	**Potential**	**Current**	**Potential**	**n/a**
Founders	54	0	60	0	-
Founder genome equivalents (FGE)	18.01	27.95	21.33	29.62	-
Gene diversity (GD %)	97.2	98.21	97.7	98.31	-
Population mean kinship (MK)	0.0278	-	0.0234	-	-
Mean inbreeding (F)	0.0007	-	0.0049	-	-
Percentage of pedigree known before assumptions and exclusions	98.9	-	100	-	-
Percentage of pedigree known after assumptions and exclusions	98.9	-	100	-	-
Effective population size/census size ratio (Ne / N)	0.5034	-	0.5062	-	-

	λ = 0.995 historical	λ = 1.014 5 yr. avg	λ = 0.980 historical	λ = 1.00 5 yr. avg	
Years To 90% Gene Diversity	117	164	75	175	-
Years to 10% Loss of Gene Diversity	153	237	88	248	-
Gene Diversity at 100 Years From Present (%); Target size (Kt) = 100	91.3	92.8	83.9	93.2	-

Bornean: To grow the Bornean population to a size of 100 individuals in the next 2 years at a growth rate of 1% (lambda = 1.01), the population needs approximately six to seven births per year. Because the annual number of births for each of the past ten years has ranged from one to eight births per year (average of 3.5 births/year), increasing the population size to 100 and maintaining this larger population size appears to be an achievable goal.

Sumatran: To grow the Sumatran population to a size of 95 individuals in the next five years at a growth rate of 3.9% (lambda = 1.039), the population needs approximately six to seven births per year. Because the annual number of births for each of the past ten years has ranged from zero to seven births per year (average 2.6 births/year), increasing the population size to 95 and maintaining this larger population size may be challenging. For this reason and others, **all available reproductively mature Sumatran females have been recommended to breed**.

Within the existing demographic and spatial limits, the SSP identified pairings for both species based on mean kinship (ideal of pairing individuals with equal/similar and low mean kinships), avoidance of inbreeding, and logistical concerns. In addition to genetic considerations, demographic goals for increasing the population sizes and evening out the sex ratios increased the number of individuals recommended to breed. ***Recommendations contained in this master plan supersede those made by earlier plans.***

Population Viability Analysis: A Population Viability Analysis (PVA) was completed in 2014 to evaluate the long-term viability of the captive population. A complete PVA report is available on the SSP website (http://www.orangutanssp.org/pva.html). Based on this PVA analysis, the Bornean population is categorized as vulnerable in zoos; there is a 4% chance of extinction in 100 years (N_{100}= 16). The Sumatran captive population is categorized as low risk of extinction in zoos (N_{100}=50). The PVA projected that if breeding rates could be increased to 5 births per year, long-term viability would be improved for both species, particularly for the Bornean orangutans (category improved to low risk). Currently, the management strategy is directed toward parent-reared individuals with a minimum 8-year inter-birth interval in order to maximize welfare and promote species-typical social development of offspring. Therefore, this increase in breeding rates is likely not possible given the social implications of a reduced inter-birth interval.

Summary Actions

Bornean:

1. SSP recommends 12 females for breeding.
    a. Draft plan recommended 13 females, but one mate has since died.
2. SSP recommends 3 transfers to create new current and future breeding pairs and to fulfill institutional requests.
    a. Draft plan recommended 4 transfers but 2 were removed and 1 was added following 30-day comment period.
    b. 1 of the 2 transfers in this final plan occurred during the 30-day comment period.

Sumatran:

1. SSP recommends 10 females for breeding.
    a. Draft plan recommended 9 females, but an additional pairing has been added.
2. SSP recommends 3 transfers to create new current and future breeding pairs and to fulfill institutional requests.
    a. 1 of the 3 transfers occurred during the 30-day comment period.

Hybrids:

1. No breeding or transfers are recommended for the hybrid orangutans.

Institutions are advised to work with the Orangutan SSP Husbandry Advisor WELL BEFORE the birth of an infant to develop a birth management plan that will help minimize the occurrence and length of hand-rearing.

Mother-rearing of infants is strongly recommended by the Orangutan SSP and the Ape TAG, and institutions should make every effort to encourage mother-rearing.

Institutions with breeding recommendations should initiate maternal training for all females they house (prospective dam as well as others that may serve as fosters if needed).

If you have a breeding recommendation in this plan,
please contact the Orangutan Husbandry Advisor immediately!
Cindy Cossaboon, ccossaboon@denver.org

Table of Contents

Acknowledgments

The Orangutan SSP planning session was held virtually on 12 August 2020 and was attended by the following:

Lori Perkins, SSP Coordinator, Birmingham Zoo, Inc.
Megan Elder, SSP Vice Chair & Studbook Keeper, Como Park Zoo and Conservatory
Dina Bredahl, SSP Secretary, Cheyenne Mountain Zoo
Erin Jones, SSP Treasurer, Utah's Hogle Zoo
Meredith Bastian, Smithsonian National Zoological Park
Cindy Cossaboon, Denver Zoo
Megan Fox, Los Angeles Zoo
Brian Kutsch, Little Rock Zoo (advisor)
Nancy Lung (advisor)
Jennifer Mickelberg, Zoo Atlanta (advisor)
Ronda Schwetz, Henry Vilas Zoo
Angie Selzer, Fort Wayne Children's Zoo (advisor)
Rob Shumaker, Indianapolis Zoo
Joe Smith, Fort Wayne Children's Zoo (advisor)
Carol Sodaro (advisor)
Lynn Yakubinis, Zoo Atlanta

Additional analysis and planning occurred in March 2021 to address any changes since plan.

Pre- and post-planning assistance was provided by:

Jennifer Mickelberg, AZA Population Management Center Adjunct Advisor, Zoo Atlanta

AZA SSP COORDINATOR and INTERNATIONAL STUDBOOK KEEPER
Megan Elder
Como Park Zoo and Conservatory
megan.elder@ci.stpaul.mn.us

PMC/SPMAG ADVISOR
Jennifer Mickelberg
Zoo Atlanta
jmickelberg@zooatlanta.org

Description of Population Status

Bornean and Sumatran Orangutan (*Pongo abelii* and *P. pygmaeus*)

Introduction: This population is divided into two separately managed species (Bornean and Sumatran) as well as hybrids of the two. At the time of analysis, there are currently 97 (44.53) Bornean orangutans in 25 institutions, 88 (34.53.1) Sumatran orangutans in 26 institutions, and 37 (16.21) hybrid orangutans in 18 institutions. The Ape Taxon Advisory Group (TAG) has designated these populations as SSPs and set the target population size at 100 individuals for each purebred species in the 2014 Regional Collection Plan (RCP) which was used as the target size for population projections. Under AZA's sustainability designations the Bornean and Sumatran populations currently qualify as Green SSP Programs.

Comprehensive genetic and demographic analyses of these populations were performed in August 2020 and again in March 2021, resulting in the present breeding and transfer plan for these species. Analyses of the analytical version of the orangutan studbook (current to 7 March 2021) were performed using SPARKS 1.66 and PMx 1.5.20190116.

Status and Conservation: Bornean and Sumatran orangutans are listed as Critically Endangered on the IUCN Red List and on CITES Appendix I. Both species are threatened by habitat loss and fragmentation due to conversion of forests to agriculture and other land use. Illegal hunting also threatens both species. Mortality exceeds the rate at which these slow reproducing species can sustain themselves. Hybrid orangutans are listed on CITES Appendix I. The newly discovered third species of orangutan, *Pongo tapanuliensis*, is similarly Critically Endangered and listed on CITES Appendix I. The degree to which the SSP population may include Tapanuli orangutan representation is under review.

Analytical Studbook:

Bornean: The current population's pedigree is 98.9% known. Seven individuals were excluded from the potentially breeding population due to having health issues or being post-reproductive or sterile (Appendix C). The potentially breeding population following this exclusion comprises 90 individuals (44.46).

Sumatran: The current population's pedigree is 100% known. Eleven individuals were excluded from the potentially breeding population due to having health or behavioral issues or being post-reproductive or sterile (Appendix C). The potentially breeding population following this exclusion comprises 77 individuals (34.42.1).

Hybrid: All hybrid individuals were excluded from the potentially breeding population.

Demography:

Orangutans have been exhibited in North American zoos since their importation in the early 1900s, with successful captive breeding taking place beginning in the mid-1900s.

Bornean: The AZA Bornean orangutan population was established by an importation of two individuals in 1940. The first zoo birth in the population was recorded in 1955 and zoo breeding became a consistent source of recruitment to the zoo population in the 1970s. The population size increased to 89 individuals in 2009, and over the last few years has increased slightly to its current size of 97. Since the population's inception, the annual growth rates due to zoo births have varied (λ = 0.714 – 1.4) though the general trend has been one of slightly positive growth (mean λ = 1.014) over the last five years (Figures 1 & 2). Over the last ten years, the number of births has ranged from one to eight and the number of deaths from zero to seven per year (Figure 3).

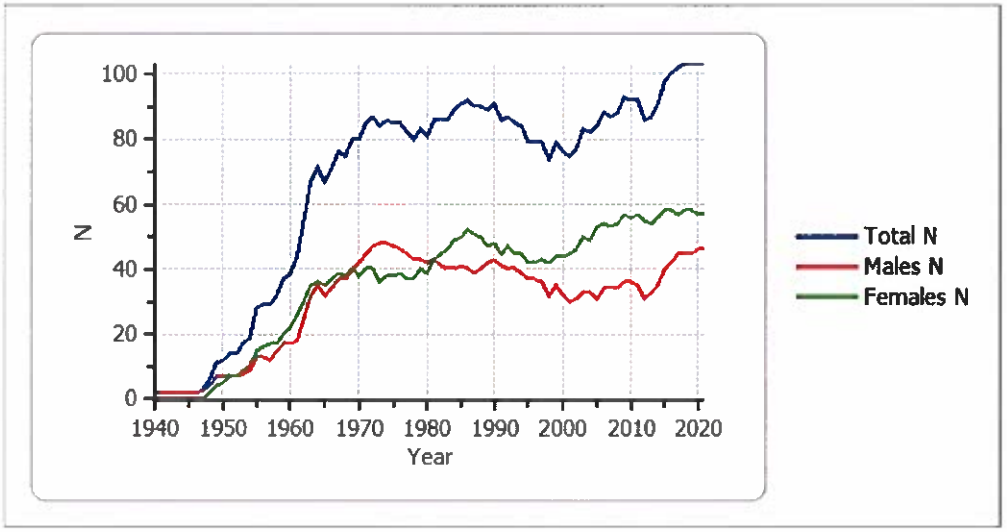

Figure 1. Bornean population census by sex, showing the SSP population (data current to 7 March 2021).

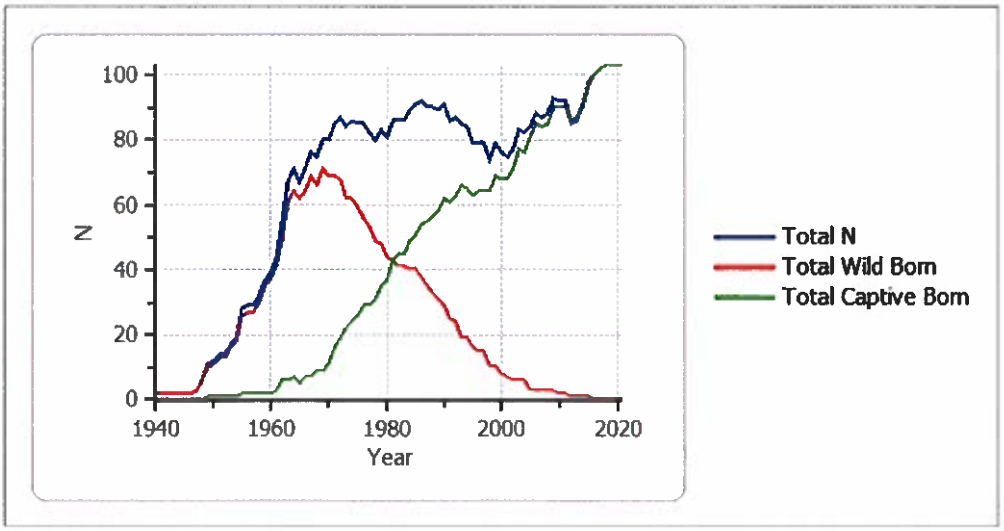

Figure 2. Bornean population census by birth type, showing the SSP population (data current 7 March 2021).

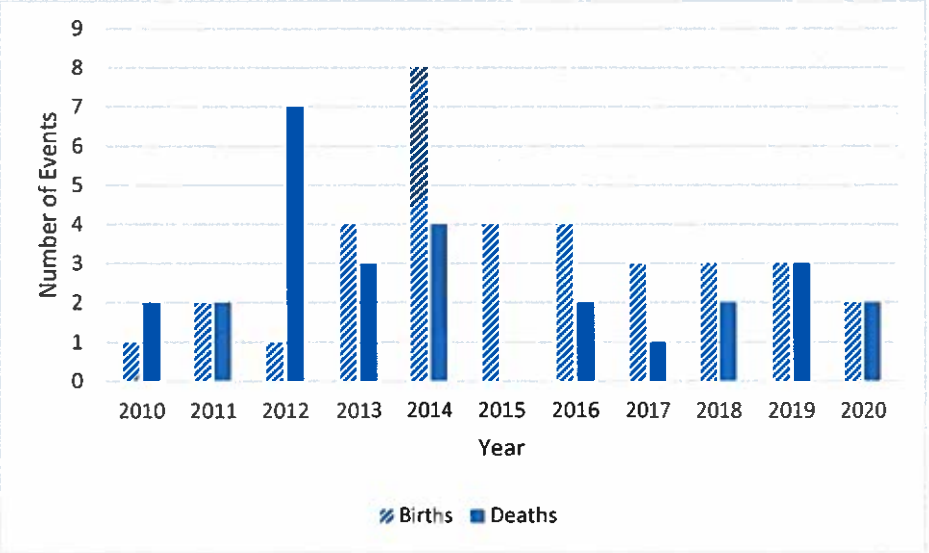

Figure 3. The number of births and deaths per year from 2010 – Dec 2020 in the Bornean SSP population.

The age structure for the current Bornean population has a slightly female-biased sex ratio and columnar shape, but has an increasing number of individuals in the younger age classes (Figure 4). However, due to a long reproductive lifespan, much of the currently living population is reproductively mature or pre-reproductive, so with continued consistent reproduction this age structure will continue to improve. This population should continue to breed regularly and keep the reproductive and pre-reproductive age classes full to offset mortality and maintain this population size.

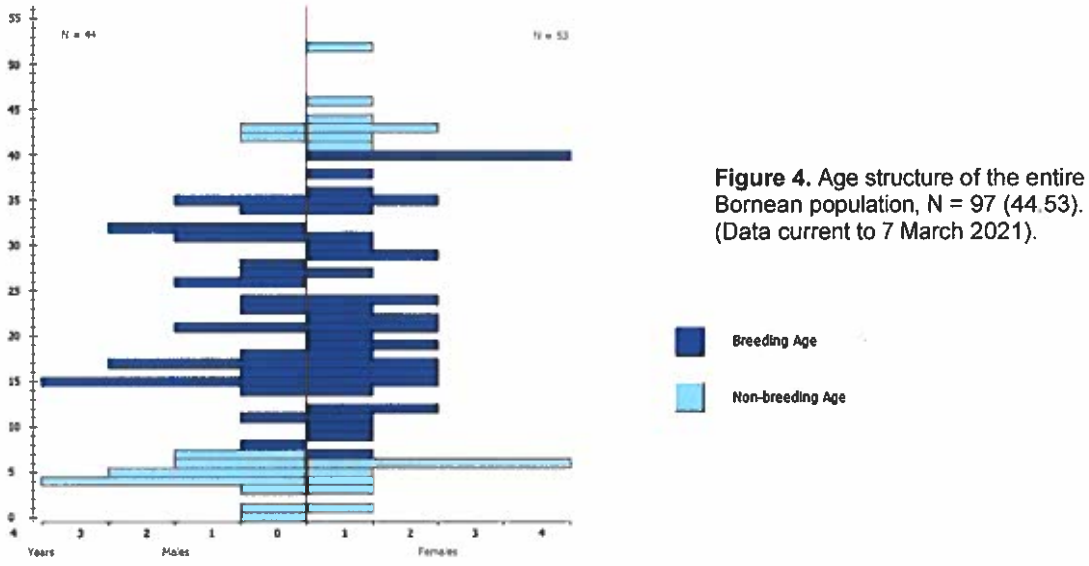

Figure 4. Age structure of the entire Bornean population, N = 97 (44.53). (Data current to 7 March 2021).

Based on studbook data, 30-day mortality is 14%. First-year mortality is low at 24% for males and 14% for females (Appendix D). However, this may be skewed due to a smaller sample size, since the species has not been in AZA for very long when compared to their median life expectancy of 21.1 years for males and 31.8 years for females. Note that if an individual survives to its first birthday, its median life expectancy is 32.3 (Appendix F). The maximum longevity observed was 43 years for males (SB#1635) and 54.8 years for females (SB#449).

Studbook data indicate that males have reproduced from the age of 8 to 41 and females from 7 to 40. However, the SSP recommends not breeding females of this species until they are at least 14 years old to more closely approximate life history and maximize the probability that females will have sufficient emotional maturity to rear offspring. Bornean orangutans typically have one offspring at a time, but there have been ten instances of twins recorded.

To maintain this Bornean population at its current size of 97 individuals, approximately four to six births are needed per year. To grow to a larger population size of 100 individuals in the next two years at a growth rate of 1% (lambda = 1.01), the population needs six to seven births per year. Because the annual number of births for each of the past ten years has ranged from one to eight births per year, increasing the population size to 100 and maintaining this larger population size appears to be a reasonable goal.

Sumatran: The first Sumatran orangutan was imported in 1923. The first zoo birth was recorded in 1935 and zoo breeding became a consistent source of recruitment to the zoo population in the 1960s. The population size peaked at 106 individuals in 1997, but has decreased to its current size of 88 since then. Since the population's inception the annual growth rates due to zoo births have varied (λ = 0.95 – 1.53), but over the past 5 years, the population has been stable at λ =1.0 (Figures 5 & 6). In an effort to reach population goals, all available reproductively mature females are being recommended to breed. Over the last ten years, the number of births has ranged from one to seven and the number of deaths from zero to six per year (Figure 7).

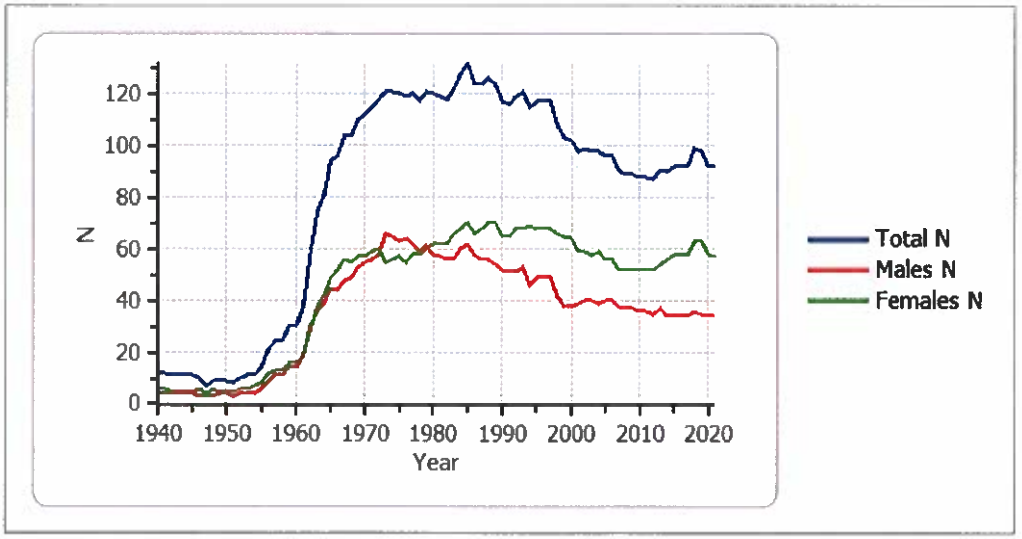

Figure 5. Sumatran population census by sex, showing the SSP population (Data current to 7 March 2021).

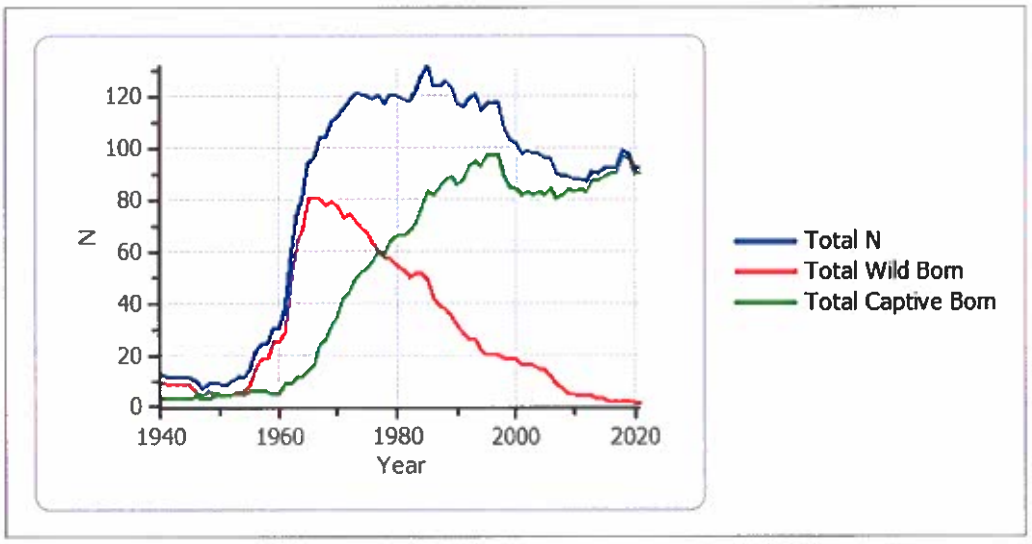

Figure 6. Sumatran population census by birth type, showing the SSP population (Data current to 7 March 2021).

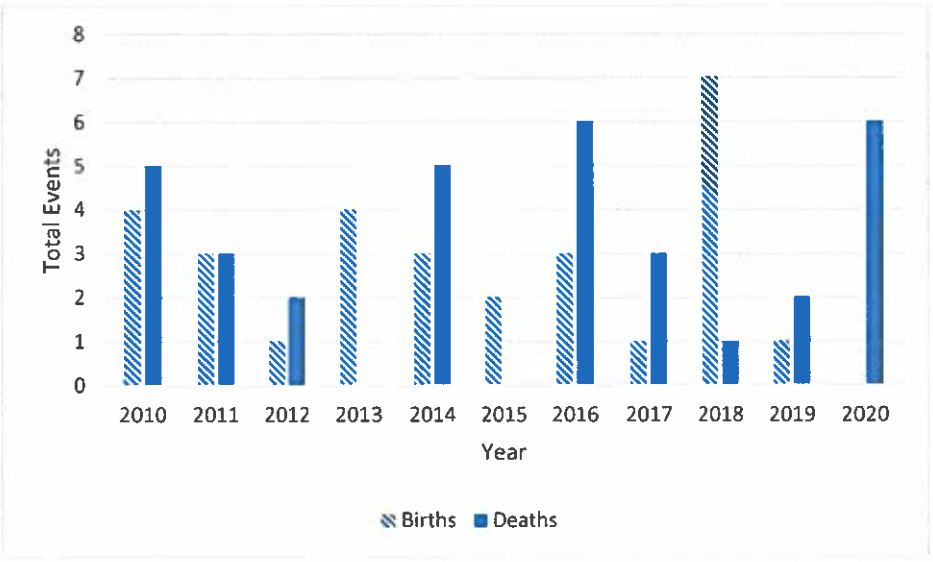

Figure 7. The number of births and deaths per year from 2010 – 2020 in the Sumatran SSP population.

The age structure for the current Sumatran population is fairly stable with a columnar shape. With the recent increase in births, there are more individuals in the younger age classes with a slight skew for females (Figure 8). Due to a long reproductive lifespan, much of the living population is reproductively mature or pre-reproductive, so with consistent reproduction, this age structure will continue to improve.

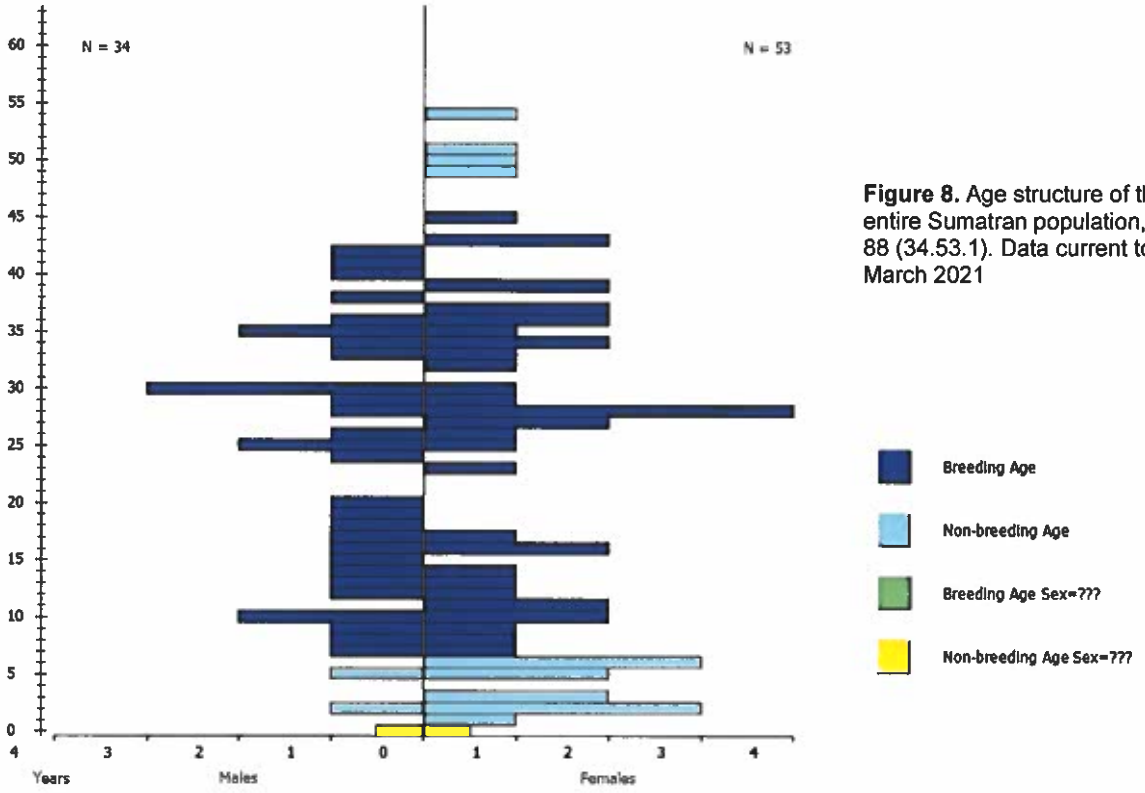

Figure 8. Age structure of the entire Sumatran population, N = 88 (34.53.1). Data current to 7 March 2021

Based on Sumatran studbook data, 30-day mortality is 19%. First-year mortality is low at 24% for males and 19% for females (Appendix D). However, this may be skewed due to a smaller sample size, since the species has not been in AZA for very long when compared to their median life expectancy of 17.6 years for males and 29.4 years for females, including first year mortality. Note that if an individual survives to its first birthday, the median life expectancy is 25.2 for males and 33.2 for females (Appendix F). The maximum longevity observed was 58 years for males (this male died before the date range used for the current analysis) and 61 years for females (#433), but both of these individuals had birth data estimates of +/- 2 years due to being born in the wild.

Studbook data indicate that males have reproduced from the age of 7 to 42 and females from 7 to 47. However, the SSP recommends not breeding females of this species until they are at least 14 years old to more closely approximate life history and to maximize the probability that females will have sufficient emotional maturity to rear offspring. Sumatran orangutans typically have one offspring at a time, but thirteen instances of twins have been recorded.

To maintain this Sumatran population at its current size of 88 individuals, approximately five to six births are needed per year. To grow to a larger population size of 95 individuals in the next five years at a growth rate of 3.9% (lambda = 1.039), the population needs approximately six to ten births per year. Because the annual number of births for each of the past ten years has ranged from one to five births per year, increasing the population size to 95 and maintaining this larger population size may be challenging. For this reason and others, ***all available reproductively mature Sumatran females have been recommended to breed.***

Hybrid: There has been little growth in the hybrid population since 1996 when the population was at 50 individuals. The age structure also reflects the phase-out management strategy (Figure 9).

A twenty-year projection of the phase-out estimates a slow and steady decline. This is mostly due to the long-lived nature of the species. Stochastic modeling projects that at the end of 25 years there will be no more hybrids remaining (Figure 10).

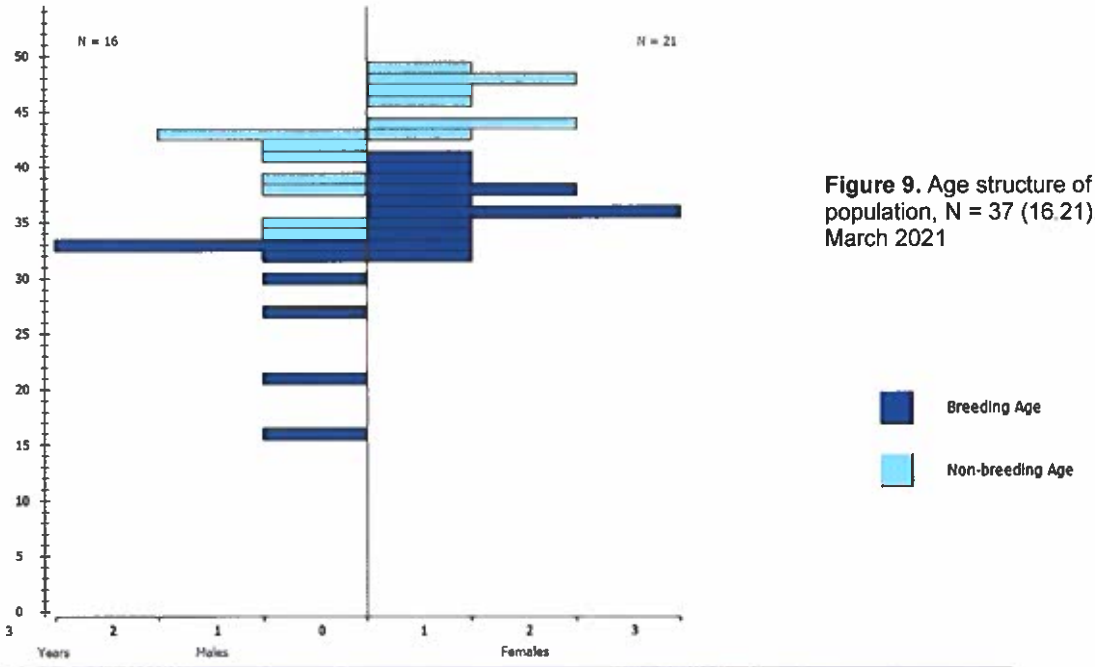

Figure 9. Age structure of the entire hybrid population, N = 37 (16.21). Data current to 7 March 2021

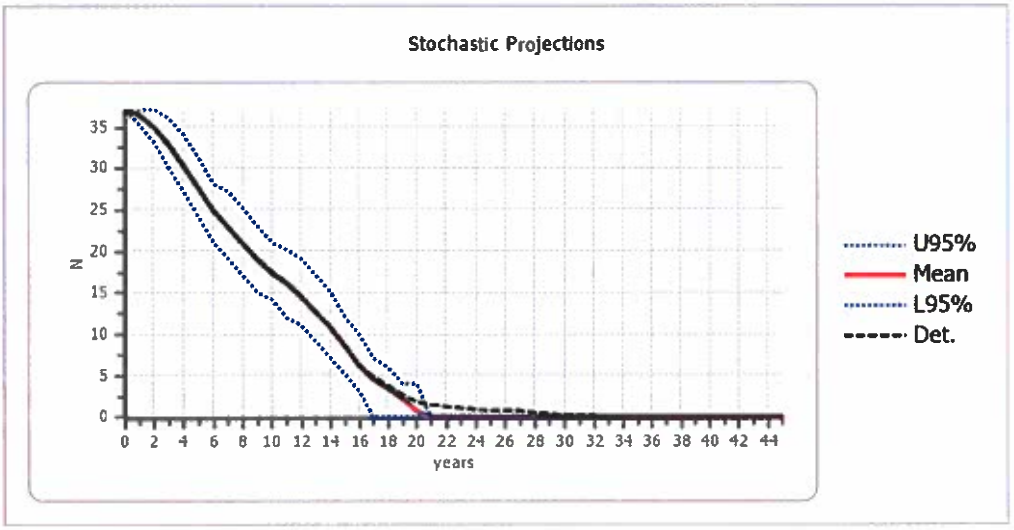

Figure 10. Stochastic projection of hybrid orangutan phase-out if no breeding occurs. Probability of extinction is greater than 95% in under 25 years (data current to 7 March 2021).

Genetics:

Bornean: This population is descended from 54 founders with no additional potential founders remaining. Gene diversity in the population is currently high at 97.2%. Gene diversity at 100 years from present is estimated to be 92.8% according to projections based on the 5-year population growth rate of 1.4%. When gene diversity falls below 90% of that in the founding population in some species, it is expected that reproduction will be increasingly compromised by, among other factors, lower birth weights and greater juvenile mortality. The potential gene diversity is high (98.21%) and could be exploited through equalization of founder representation (Figure 11) and more consistent reproduction, thus minimizing the loss of gene diversity.

Genetic Summary - Bornean

	Current	Potential
Founders	54	0
Founder genome equivalents (FGE)	18.01	27.95
Gene diversity (GD %)	97.2	98.21
Population mean kinship (MK)	0.0278	-
Mean inbreeding (F)	0.0007	-
Percentage of pedigree known before assumptions and exclusions	98.9	-
Percentage of pedigree known after assumptions and exclusions	98.9	-
Effective population size/census size ratio (Ne / N)	0.5034	-
Projections		
	λ = 0.995 (Kt) = 100	λ = 1.014 (Kt) = 100
Years To 90% Gene Diversity	117	164
Years to 10% Loss of Gene Diversity	153	237
Gene Diversity at 100 Years from Present (%)	91.8	92.8

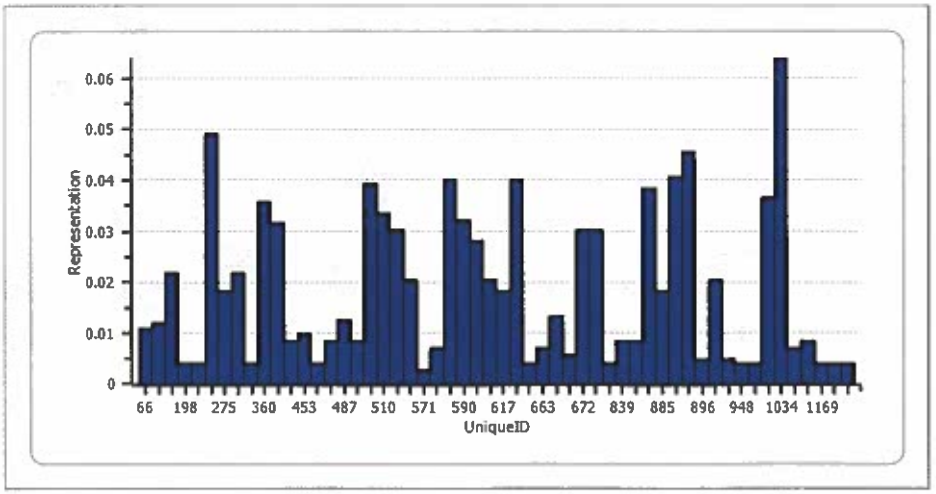

Figure 11. Illustrates the inequality of founder lineages represented in the Bornean SSP population.

Sumatran: This population is descended from 60 founders with no additional potential founders remaining. Gene diversity in the population is currently high at 97.7%. Gene diversity at 100 years

from present is estimated to be 93.2% according to projections based on the population size remaining stable (lambda = 1.0). When gene diversity falls below 90% of that in the founding population in some species, it is expected that reproduction will be increasingly compromised by, among other factors, lower birth weights and greater juvenile mortality. The potential gene diversity is high (98.3%) and could be exploited through equalization of founder representation (Figure 12) and more consistent reproduction, thus minimizing the loss of gene diversity.

Genetic Summary - Sumatran

	Current	Potential
Founders	60	0
Founder genome equivalents (FGE)	21.33	29.62
Gene diversity (GD %)	97.7	98.3
Population mean kinship (MK)	0.0234	-
Mean inbreeding (F)	0.0049	-
Percentage of pedigree known before assumptions and exclusions	100	-
Percentage of pedigree known after assumptions and exclusions	100	-
Effective population size/census size ratio (Ne / N)	0.5062	-
Projections		
	λ = 0.980 (Kt) = 100	λ = 1.0 (Kt) = 100
Years To 90% Gene Diversity	75	175
Years to 10% Loss of Gene Diversity	88	248
Gene Diversity at 100 Years From Present (%); Assuming λ = 1.011, Target size (Kt) = 100	83.9	93.2

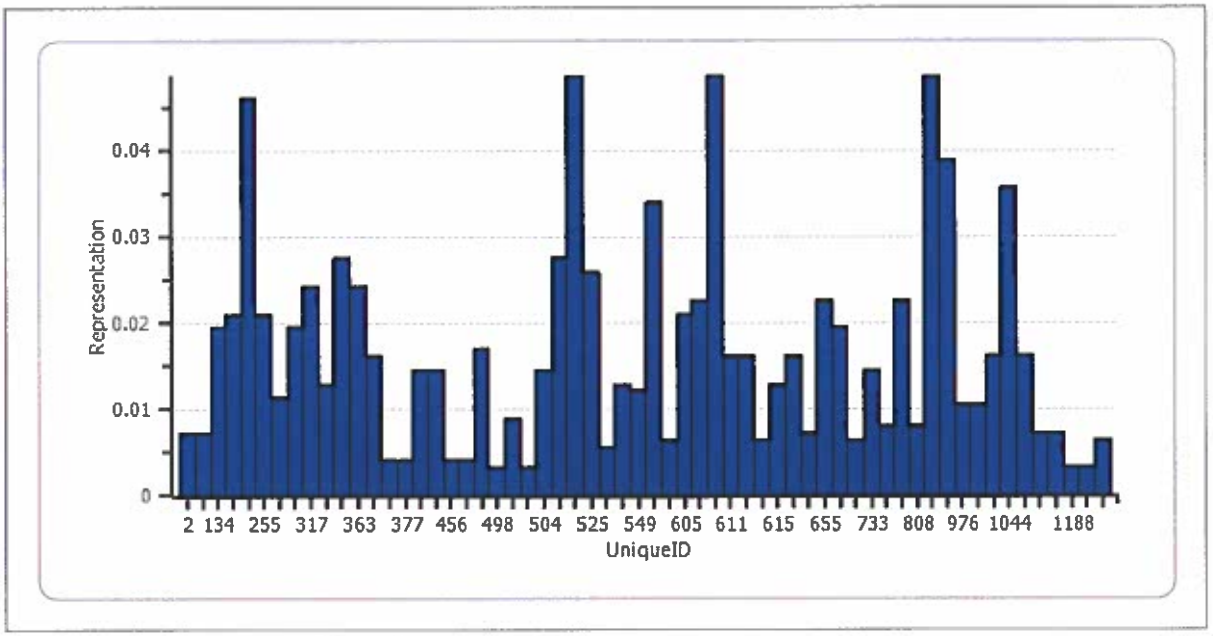

Figure 12. Illustrates the inequality of founder lineages represented in the Sumatran SSP population.

Hybrid: A genetic analysis was not performed for the hybrid population.

Management Strategies:

Bornean: To grow the Bornean population to a size of 100 individuals in the next two years at a growth rate of 1% (lambda = 1.01), the population needs approximately six to seven births per year. Because the annual number of births for each of the past ten years has ranged from one to eight births per year (average of 3.5 births/year), increasing the population size to 100 and maintaining this larger population size appears to be an achievable goal.

Sumatran: To maintain the current population size, five to six births are needed each year. Because the annual number of births for each of the past ten years has ranged from zero to seven births per year (average 2.6 births/year), it may be difficult to maintain or increase the population. For this reason and others, **all available reproductively mature Sumatran females have been recommended to breed**.

Within the existing demographic and spatial limits, the SSP identified pairings for both species based on mean kinship (ideal of pairing individuals with equal/similar and low mean kinships), avoidance of inbreeding, and logistical concerns. In addition to genetic considerations, demographic goals for increasing the population sizes and evening out the sex ratios increased the number of individuals recommended to breed. ***Recommendations contained in this master plan supersede those made by earlier plans***.

Summary Actions

Bornean:

1. SSP recommends 12 females for breeding.
    a. Draft plan recommended 13 females, but one mate has since died.
2. SSP recommends 3 transfers to create new current and future breeding pairs and to fulfill institutional requests.
    b. Draft plan recommended 4 transfers but 2 were removed and 1 was added following 30-day comment period.
    c. 1 of the 2 transfers in this final plan occurred during the 30-day comment period.

Sumatran:

1. SSP recommends 10 females for breeding.
    a. Draft plan recommended 9 females, but an additional pairing has been added.
2. SSP recommends 3 transfers to create new current and future breeding pairs and to fulfill institutional requests.
    a. 1 of the 3 transfers occurred during the 30-day comment period.

Hybrids:

1. No breeding or transfers are recommended for the hybrid orangutans.

Summary of Breeding and Transfer Recommendations
By Studbook ID
Species Note: S = Sumatran, B = Bornean, X = Hybrid
Includes population data current to March 07, 2021; changes noted in Appendix B.

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes	Species
971	LOSANGELE	4929	F	52	HOLD	LOSANGELE	DO NOT BREED		Exclusion	B
1020	ST LOUIS	921216	F	51	HOLD	ST LOUIS	DO NOT BREED			S
1106	ATLANTA	881048	F	50	HOLD	ATLANTA	DO NOT BREED		Exclusion	S
1164	TORONTO	1705	F	54	HOLD	TORONTO	DO NOT BREED		Exclusion	S
1196	SEATTLE	21505	F	49	HOLD	SEATTLE	DO NOT BREED		Hybrid	X
1209	SACRAMNTO	101049	F	49	HOLD	SACRAMNTO	DO NOT BREED		Exclusion	S
1235	HOUSTON	14526	F	48	HOLD	HOUSTON	DO NOT BREED		Hybrid	X
1289	NZP-WASH	100546	F	48	HOLD	NZP-WASH	DO NOT BREED		Hybrid	X
1335	FORTWORTH	6	F	47	HOLD	FORTWORTH	DO NOT BREED		Hybrid	X
1387	COLUMBUS	213016	F	46	HOLD	COLUMBUS	DO NOT BREED		Exclusion	B
1402	BUSCH TAM	63726	F	46	HOLD	BUSCH TAM	DO NOT BREED		Hybrid	X
1455	FORTWORTH	837	F	45	HOLD	FORTWORTH	DO NOT BREED		Exclusion	S
1515	KANSASCTY	102241	F	44	HOLD	KANSASCTY	DO NOT BREED		Exclusion	B
1539	ST PAUL	1442	F	44	HOLD	ST PAUL	DO NOT BREED		Hybrid	X
1545	NZP-WASH	103823	F	44	HOLD	NZP-WASH	DO NOT BREED		Hybrid	X
1576	MEMPHIS	2119	F	43	HOLD	MEMPHIS	DO NOT BREED		Exclusion	S
1587	BROWNSVIL	1234	F	43	HOLD	BROWNSVIL	DO NOT BREED			S
1602	HONOLULU	205130	F	43	HOLD	HONOLULU	DO NOT BREED		Hybrid	X
1614	HOUSTON	945	M	43	HOLD	HOUSTON	DO NOT BREED		Hybrid	X
1616	INDIANAPL	210094	M	43	HOLD	INDIANAPL	DO NOT BREED		Hybrid	X
~~1621~~	~~METROZOO~~	~~18M056~~	~~F~~	~~43~~	~~HOLD~~	~~METROZOO~~	~~DO NOT BREED~~		Died 9/23/21	B
1635	BUSCH TAM	64172	M	43	HOLD	BUSCH TAM	DO NOT BREED			B
1640	TOLEDO	8395	F	43	HOLD	TOLEDO	DO NOT BREED			B
1671	CHICAGOBR	920182	M	42	HOLD	CHICAGOBR	DO NOT BREED			B
1703	ATLANTA	B01030	M	42	HOLD	ATLANTA	DO NOT BREED			S
1704	PHOENIX	2788	F	41	HOLD	PHOENIX	DO NOT BREED		Exclusion	B
1714	RIO GRAND	M90001	M	41	HOLD	RIO GRAND	BREED WITH	1926		S

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes	Species
1723	LOSANGELE	4720	M	42	HOLD	LOSANGELE	DO NOT BREED		Hybrid	X
1733	INDIANAPL	210096	F	41	HOLD	INDIANAPL	DO NOT BREED		Hybrid	X
1753	LOWRY	100097	F	41	HOLD	LOWRY	DO NOT BREED			B
1756	HONOLULU	970207	M	41	HOLD	HONOLULU	DO NOT BREED		Hybrid	X
1769	NORFOLK	210089	F	40	HOLD	NORFOLK	DO NOT BREED		Hybrid	X
1773	BIRMINGHM	1601	M	40	HOLD	BIRMINGHM	DO NOT BREED			S
1789	BUSCH TAM	64173	F	40	HOLD	BUSCH TAM	BREED WITH	3229		B
1793	HOUSTON	2742	F	40	HOLD	HOUSTON	DO NOT BREED		Exclusion	B
1817	CHICAGOBR	920188	F	40	HOLD	CHICAGOBR	DO NOT BREED			B
1824	LOSANGELE	336	F	39	HOLD	LOSANGELE	DO NOT BREED		Exclusion	B
1832	SEATTLE	21238	F	39	HOLD	SEATTLE	DO NOT BREED		Hybrid	X
1850	SEDGWICK	12516	F	39	HOLD	SEDGWICK	DO NOT BREED			S
1872	MILWAUKEE	2376	M	39	HOLD	MILWAUKEE	DO NOT BREED		Hybrid	X
1882	MEMPHIS	14772	M	38	HOLD	MEMPHIS	DO NOT BREED			S
1883	LEON	MAM056	F	38	HOLD	LEON	DO NOT BREED		Hybrid	X
1886	NORFOLK	210088	M	38	HOLD	NORFOLK	DO NOT BREED		Hybrid	X
1887	LOSANGELE	94398	F	38	HOLD	LOSANGELE	BREED WITH	2663		B
1904	BIRMINGHM	107008	F	38	HOLD	BIRMINGHM	DO NOT BREED			S
1920	MILWAUKEE	117011	F	38	HOLD	MILWAUKEE	DO NOT BREED		Hybrid	X
1924	ATLANTA	830183	F	37	HOLD	ATLANTA	DO NOT BREED		Exclusion	S
1926	RIO GRAND	8121	F	37	HOLD	RIO GRAND	BREED WITH	1714		S
1971	FRESNO	970156	M	36	HOLD	FRESNO	DO NOT BREED			S
1972	INDIANAPL	210082	F	37	HOLD	INDIANAPL	DO NOT BREED		Hybrid	X
1973	RACINE	8672	F	35	HOLD	RACINE	DO NOT BREED		Hybrid	X
1980	LOUISVILL	101894	F	36	HOLD	LOUISVILL	DO NOT BREED		Exclusion	S
1981	INDIANAPL	210083	F	36	HOLD	INDIANAPL	DO NOT BREED		Hybrid	X
1987	FT WAYNE	94297	F	36	HOLD	FT WAYNE	DO NOT BREED		Hybrid	X
2007	LEON	MAM055	F	36	HOLD	LEON	DO NOT BREED		Hybrid	X
2016	GREENVISC	M16025	F	36	HOLD	GREENVISC	DO NOT BREED			S
2018	ST PAUL	1955	M	35	HOLD	ST PAUL	DO NOT BREED			S
2024	TORONTO	20164	F	35	HOLD	TORONTO	BREED WITH	3250		S

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes	Species
2025	LOWRY	100148	F	35	HOLD	LOWRY	DO NOT BREED			B
2034	EL PASO	201097	M	35	HOLD	EL PASO	BREED WITH	2419		S
2037	TOPEKA	14785	F	35	HOLD	TOPEKA	BREED WITH	2201		B
2048	KANSASCTY	M06067	F	36	HOLD	KANSASCTY	DO NOT BREED		Exclusion	B
2062	ERIE	1211	M	35	HOLD	ERIE	DO NOT BREED			B
2063	CLEVELAND	941028	M	35	HOLD	CLEVELAND	DO NOT BREED			B
2064	RACINE	8671	M	35	HOLD	RACINE	DO NOT BREED		Hybrid	X
2066	WAHPETON	201050	M	34	HOLD	WAHPETON	DO NOT BREED		Hybrid	X
2069	FT WAYNE	94296	M	34	HOLD	FT WAYNE	BREED WITH	2708		S
2070	SANDIEGOZ	592412	F	34	HOLD	SANDIEGOZ	BREED WITH	2706		S
2083	CLEVELAND	941032	F	34	HOLD	CLEVELAND	DO NOT BREED			B
2116	ST PAUL	1998	F	34	HOLD	ST PAUL	DO NOT BREED		Exclusion	S
2120	PHOENIX	9261	M	33	HOLD	PHOENIX	DO NOT BREED			B
2121	NZP-WASH	107579	F	34	HOLD	NZP-WASH	DO NOT BREED		Hybrid	X
2127	WACO	M01809	M	33	HOLD	WACO	DO NOT BREED		Hybrid	X
2131	COLO SPRG	870056	F	33	HOLD	COLO SPRG	DO NOT BREED			S
2132	NZP-WASH	107881	M	33	HOLD	NZP-WASH	DO NOT BREED		Hybrid	X
2137	LOUISVILL	101813	M	33	HOLD	LOUISVILL	DO NOT BREED			S
2138	LOUISVILL	101695	F	33	HOLD	LOUISVILL	DO NOT BREED		Hybrid	X
2139	LOUISVILL	101694	M	33	HOLD	LOUISVILL	DO NOT BREED		Hybrid	X
2157	AUDUBON	1005	F	32	HOLD	AUDUBON	DO NOT BREED			S
2175	KANSASCTY	M03033	M	32	HOLD	KANSASCTY	DO NOT BREED			B
2176	WACO	M01709	M	32	HOLD	WACO	DO NOT BREED			B
2201	TOPEKA	103404	M	32	HOLD	TOPEKA	BREED WITH	2037		B
2248	INDIANAPL	210097	F	32	HOLD	INDIANAPL	DO NOT BREED		Hybrid	X
2255	SEATTLE	890034	M	32	HOLD	SEATTLE	DO NOT BREED		Hybrid	X
2270	HOGLE	U16038	M	31	HOLD	HOGLE	DO NOT BREED			B
2274	TOLEDO	890031	M	31	HOLD	TOLEDO	DO NOT BREED			B
2287	LOSANGELE	993761	F	31	HOLD	LOSANGELE	BREED WITH	2663		B
2361	COLO SPRG	98M003	M	30	HOLD	COLO SPRG	DO NOT BREED			S
2365	FORTWORTH	210116	F	30	HOLD	FORTWORTH	DO NOT BREED		Exclusion	S
2368	FORTWORTH	210115	M	30	HOLD	FORTWORTH	DO NOT BREED			S

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes	Species
2374	MADISON	1794	F	30	HOLD	MADISON	BREED WITH	3151		B
2400	CINCINNAT	111008	M	30	HOLD	CINCINNAT	DO NOT BREED			S
2419	EL PASO	972094	F	29	HOLD	EL PASO	BREED WITH	2034		S
2431	CHICAGOBR	910056	M	29	HOLD	CHICAGOBR	DO NOT BREED		Hybrid	X
2500	ATLANTA	991009	F	29	HOLD	ATLANTA	DO NOT BREED			B
2501	ROLLING H	180525	M	29	SEND TO	BROWNSVIL	DO NOT BREED			S
2503	ERIE	1203	F	28	HOLD	ERIE	DO NOT BREED			B
2507	SANDIEGOZ	592272	F	28	HOLD	SANDIEGOZ	DO NOT BREED		Exclusion	S
2512	TORONTO	27914	F	28	HOLD	TORONTO	BREED WITH	3250		S
2517	PHILADELP	103706	F	28	HOLD	PHILADELP	BREED WITH	2726		S
2520	INDIANAPL	214052	F	28	HOLD	INDIANAPL	DO NOT BREED			S
2602	LITTLEROC	7603	M	28	HOLD	LITTLEROC	DO NOT BREED			B
2604	DENVER	A17147	M	28	HOLD	DENVER	DO NOT BREED			S
2615	WACO	M01315	F	27	HOLD	WACO	DO NOT BREED			B
2621	RIO GRAND	M03025	F	27	HOLD	RIO GRAND	DO NOT BREED		Exclusion	S
2622	OKLAHOMA	771221	F	27	HOLD	OKLAHOMA	BREED WITH	2958		S
2626	COLUMBUS	213017	M	27	HOLD	COLUMBUS	BREED WITH	3256		B
2655	INDIANAPL	210081	M	27	HOLD	INDIANAPL	DO NOT BREED		Hybrid	X
2658	COLO SPRG	20M001	M	26	HOLD	COLO SPRG	BREED WITH	2755		B
2663	LOSANGELE	993760	M	26	HOLD	LOSANGELE	BREED WITH	1887, 2287		B
2706	SANDIEGOZ	595117	M	25	HOLD	SANDIEGOZ	BREED WITH	2070		S
2708	FT WAYNE	98632	F	25	HOLD	FT WAYNE	BREED WITH	2069		S
2718	SEDGWICK	7353	M	25	HOLD	SEDGWICK	DO NOT BREED			S
2726	PHILADELP	104459	M	25	HOLD	PHILADELP	BREED WITH	2517		S
2752	ATLANTA	B01006	F	25	HOLD	ATLANTA	DO NOT BREED			S
2755	COLO SPRG	96M033	F	24	HOLD	COLO SPRG	BREED WITH	2658		B
2757	NZP-WASH	113933	M	24	HOLD	NZP-WASH	DO NOT BREED			B
2758	NZP-WASH	113934	F	24	HOLD	NZP-WASH	DO NOT BREED			B
2772	AUDUBON	18M048	M	24	HOLD	AUDUBON	DO NOT BREED			S
2801	BUSCH TAM	62929	F	23	HOLD	BUSCH TAM	DO NOT BREED			B
2802	MEMPHIS	23022	F	23	HOLD	MEMPHIS	DO NOT BREED			S
2851	OMAHA	17306	M	23	HOLD	OMAHA	BREED WITH	2908, 3005		B
2852	WACO	M00709	F	22	HOLD	WACO	DO NOT BREED			B

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes	Species
2853	CLEVELAND	MM0862	F	22	HOLD	CLEVELAND	DO NOT BREED			B
2902	KANSASCTY	M08019	M	21	HOLD	KANSASCTY	DO NOT BREED			B
2905	BUSCH TAM	63725	M	22	HOLD	BUSCH TAM	DO NOT BREED		Hybrid	X
2906	LOWRY	103094	M	21	HOLD	LOWRY	DO NOT BREED			B
2908	OMAHA	17213	F	21	HOLD	OMAHA	BREED WITH	2851		B
2923	NORFOLK	214042	F	21	HOLD	NORFOLK	BREED WITH	3105		B
2958	OKLAHOMA	770520	M	20	HOLD	OKLAHOMA	BREED WITH	2622		S
3000	MADISON	2269	F	20	SEND TO	HOGLE	DO NOT BREED			B
3003	PORTLAND	B50023	F	20	HOLD	PORTLAND	BREED WITH	3252		B
3005	OMAHA	13973	F	19	HOLD	OMAHA	BREED WITH	2851		B
3006	INDIANAPL	213032	M	19	HOLD	INDIANAPL	DO NOT BREED			S
3053	KANSASCTY	M02028	F	18	HOLD	KANSASCTY	DO NOT BREED			B
3054	TOLEDO	13242	M	18	HOLD	TOLEDO	DO NOT BREED			B
3100	SACRAMNTO	101125	M	18	HOLD	SACRAMNTO	BREED WITH	3150		S
3103	TOLEDO	8123	F	18	HOLD	TOLEDO	DO NOT BREED			B
3104	SAN FRAN	13604	F	17	HOLD	SAN FRAN	BREED WITH	3370		B
3105	NORFOLK	214045	M	17	HOLD	NORFOLK	BREED WITH	2923		B
3108	ATLANTA	A31023	M	17	HOLD	ATLANTA	DO NOT BREED			B
3150	SACRAMNTO	101269	F	17	HOLD	SACRAMNTO	BREED WITH	3100		S
3151	MADISON	2822	M	17	HOLD	MADISON	BREED WITH	2374		B
3152	ST LOUIS	110924	M	17	HOLD	ST LOUIS	BREED WITH	3167		S
3163	SEDGWICK	15198	F	16	HOLD	SEDGWICK	DO NOT BREED			S
3166	TOLEDO	3370	M	17	HOLD	TOLEDO	DO NOT BREED			B
3167	ST LOUIS	103575	F	16	HOLD	ST LOUIS	BREED WITH	3152		S
3200	LITTLEROC	7611	F	16	HOLD	LITTLEROC	DO NOT BREED			B
3201	PHOENIX	5939	F	15	HOLD	PHOENIX	DO NOT BREED		Mate died 7/25	B
3202	GREENVISC	M16028	M	16	HOLD	GREENVISC	DO NOT BREED			S
3203	HOGLE	U05037	F	15	HOLD	HOGLE	DO NOT BREED			B
3226	LOWRY	102108	F	15	HOLD	LOWRY	DO NOT BREED			B
3229	BUSCH TAM	65914	M	15	HOLD	BUSCH TAM	BREED WITH	1789		B
3250	TORONTO	40491	M	15	HOLD	TORONTO	BREED WITH	2024, 2512		S
3252	PORTLAND	B40236	M	15	HOLD	PORTLAND	BREED WITH	3003		B
3254	OMAHA	16150	M	15	HOLD	OMAHA	DO NOT BREED			B
~~3255~~	~~PHOENIX~~	~~12451~~	~~M~~	~~15~~	~~HOLD~~	~~PHOENIX~~	~~BREED WITH~~	~~3201~~	Died 7/25/21	~~B~~
3256	COLUMBUS	218035	F	14	HOLD	COLUMBUS	BREED WITH	2626		B

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes	Species
3257	TORONTO	40922	M	14	HOLD	TORONTO	DO NOT BREED			S
3258	OMAHA	16555	M	14	SEND TO	HOUSTON	DO NOT BREED			B
3270	TORONTO	41339	F	14	SEND TO	LOUISVILL	DO NOT BREED			S
3321	DENVER	A16165	F	13	HOLD	DENVER	DO NOT BREED			S
3331	INDIANAPL	210095	M	16	HOLD	INDIANAPL	DO NOT BREED		Hybrid	X
3333	DENVER	3219	M	13	HOLD	DENVER	DO NOT BREED			S
3334	LOWRY	102623	F	12	HOLD	LOWRY	DO NOT BREED			B
3335	CHICAGOBR	2870	F	12	HOLD	CHICAGOBR	DO NOT BREED			B
3338	SEATTLE	206304	M	12	HOLD	SEATTLE	DO NOT BREED			S
3347	AUDUBON	18M037	F	12	HOLD	AUDUBON	DO NOT BREED			S
3350	KANSASCTY	M09011	F	12	HOLD	KANSASCTY	DO NOT BREED			B
3351	AUDUBON	102872	F	11	HOLD	AUDUBON	DO NOT BREED			S
3370	SAN FRAN	1796	M	11	HOLD	SAN FRAN	BREED WITH	3104		B
3373	PHILADELP	104699	F	11	SEND TO	SEATTLE	DO NOT BREED			S
3395	DENVER	A10133	F	10	HOLD	DENVER	DO NOT BREED			S
3397	FRESNO	201185	M	10	HOLD	FRESNO	DO NOT BREED			S
3400	ATLANTA	11M004	M	10	HOLD	ATLANTA	DO NOT BREED			S
3403	FRESNO	201195	F	10	HOLD	FRESNO	DO NOT BREED			S
3428	HOUSTON	26271	F	10	HOLD	HOUSTON	DO NOT BREED			B
3432	SEDGWICK	13349	M	9	HOLD	SEDGWICK	DO NOT BREED			S
3436	LOSANGELE	992528	F	9	HOLD	LOSANGELE	DO NOT BREED			B
3450	BIRMINGHM	111028	F	9	HOLD	BIRMINGHM	DO NOT BREED			S
3507	ATLANTA	13M001	M	8	HOLD	ATLANTA	DO NOT BREED			S
3517	BROWNSVIL	11133	F	8	HOLD	BROWNSVIL	DO NOT BREED			S
3520	TOPEKA	100213	M	8	HOLD	TOPEKA	DO NOT BREED			B
3535	RIO GRAND	M13006	M	7	HOLD	RIO GRAND	DO NOT BREED			S
3536	METROZOO	18M057	F	7	HOLD	METROZOO	DO NOT BREED			B
3545	ATLANTA	13M023	M	7	HOLD	ATLANTA	DO NOT BREED			B
3547	SANDIEGOZ	513227	F	7	HOLD	SANDIEGOZ	DO NOT BREED			S
3562	CHICAGOBR	5162	M	7	HOLD	CHICAGOBR	DO NOT BREED			B

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes	Species
3577	PHOENIX	12706	M	6	SEND TO	METROZOO	DO NOT BREED			B
3578	CLEVELAND	141002	F	6	HOLD	CLEVELAND	DO NOT BREED			B
3580	COLO SPRG	2014M100	F	6	HOLD	COLO SPRG	DO NOT BREED			B
3581	HOGLE	U14022	M	6	HOLD	HOGLE	DO NOT BREED			B
3582	OMAHA	23113	F	6	HOLD	OMAHA	DO NOT BREED			B
3583	FT WAYNE	98772	F	6	HOLD	FT WAYNE	DO NOT BREED			S
3587	ST LOUIS	117623	F	6	HOLD	ST LOUIS	DO NOT BREED			S
3595	ST PAUL	3999	F	6	HOLD	ST PAUL	DO NOT BREED			S
3600	ATLANTA	15M013	F	6	HOLD	ATLANTA	DO NOT BREED			B
3601	EL PASO	201673	F	6	HOLD	EL PASO	DO NOT BREED			S
3606	TOLEDO	#N/A	M	5	HOLD	TOLEDO	DO NOT BREED			B
3619	INDIANAPL	216045	M	5	HOLD	INDIANAPL	DO NOT BREED			B
3621	LOWRY	103289	M	5	HOLD	LOWRY	DO NOT BREED			B
3631	LOWRY	103314	F	5	HOLD	LOWRY	DO NOT BREED			B
3633	MEMPHIS	16M016	M	4	HOLD	MEMPHIS	DO NOT BREED			S
3635	INDIANAPL	216009	F	4	HOLD	INDIANAPL	DO NOT BREED			S
3636	KANSASCTY	M16026	M	4	HOLD	KANSASCTY	DO NOT BREED			B
3642	NZP-WASH	115406	M	4	HOLD	NZP-WASH	DO NOT BREED			B
3652	CHICAGOBR	7550	F	4	HOLD	CHICAGOBR	DO NOT BREED			B
3657	WACO	M00117	M	4	HOLD	WACO	DO NOT BREED			B
3659	ERIE	2382	M	4	HOLD	ERIE	DO NOT BREED			B
3685	BUSCH TAM	66204	M	3	HOLD	BUSCH TAM	DO NOT BREED			B
3695	LOWRY	103413	F	3	HOLD	LOWRY	DO NOT BREED			B
3696	SEDGWICK	15751	F	3	HOLD	SEDGWICK	DO NOT BREED			S
3704	DENVER	A18046	F	2	HOLD	DENVER	DO NOT BREED			S
3708	COLO SPRG	2018M048	F	2	HOLD	COLO SPRG	DO NOT BREED			S
3713	GREENVISC	M18010	F	2	HOLD	GREENVISC	DO NOT BREED			S
3715	SEDGWICK	16035	F	2	HOLD	SEDGWICK	DO NOT BREED			S
3722	FRESNO	209148	M	2	HOLD	FRESNO	DO NOT BREED			S

ID	Location	Local ID	Sex	Age	Disposition	Location	Breeding	With	Notes	Species
3747	AUDUBON	19M020	F	1	HOLD	AUDUBON	DO NOT BREED			S
3748	LITTLEROC	7782	F	1	HOLD	LITTLEROC	DO NOT BREED			B
3757	TOLEDO	14179	M	1	HOLD	TOLEDO	DO NOT BREED			B
3788	LOWRY	103535	M	0	HOLD	LOWRY	DO NOT BREED			B
3803	AUDUBON	21M003	?	0	HOLD	AUDUBON	DO NOT BREED		Female	S
3806	CLEVELAND	210407	M	0	HOLD	CLEVELAND	DO NOT BREED		New Birth	B

Summary of Breeding and Transfer Recommendations

Bornean Population

Breeding Recommendations:

MALE	NAME	MK	AGE	FEMALE	NAME	MK	AGE	LOCATION
2663	Isim	0.0112	26	2287	Gangsa	0.0072	31	LOSANGELE
2663	Isim	0.0112	26	1887	Kalim	0.0274	38	LOSANGELE
3229	Madju	0.0137	15	1789	Indra	0.0084	40	BUSCH TAM
3105	Solaris	0.0197	17	2923	Dara	0.0293	21	NORFOLK
2658	**Tujoh**	**0.0207**	**26**	**2755**	**Hadiah**	**0.0135**	**24**	**COLO SPRG***
2201	Mawas	0.0253	32	2037	Rudy	0.0240	35	TOPEKA
2851	**Tukang**	**0.0264**	**23**	**3005**	**Sepilok**	**0.0165**	**19**	**OMAHA***
2851	Tukang	0.0264	23	2908	Ruby	0.0376	21	OMAHA
3151	Datu	0.0267	17	2374	Chelsea	0.0309	30	MADISON
3252	Bob	0.0279	15	3003	Kitra	0.0281	20	PORTLAND
~~**3255**~~	~~**Daniel**~~	~~**0.0281**~~	~~**15**~~	~~**3201**~~	~~**Rayma**~~	~~**0.0275**~~	~~**16**~~	~~**PHOENIX**~~
3370	Ollie	0.0375	11	3104	Amoi	0.0306	17	SAN FRAN
2626	Sulango	0.0404	27	3256	Khali	0.0312	14	COLUMBUS

***Indicates change in pairing since draft plan**

Transfer Recommendations:

STUD_ID	NAME	MK	AGE	FROM	TO	PURPOSE
~~1635~~	~~Horst~~	~~0.0084~~	~~43~~	~~BUSCH TAM~~	~~COLO SPRG~~	~~breeding w/Hadiah~~
~~2658~~	~~Tujoh~~	~~0.0207~~	~~26~~	~~COLO SPRG~~	~~OMAHA~~	~~breeding w/Sepilok~~
3000	Kawan	0.0233	20	MADISON	HOGLE	future breeding w/Mia; **completed 6/7/21**
3258	**Takai**	**0.0312**	**14**	**OMAHA**	**HOUSTON***	**basis for future pairing**
3577	**Jiwa**	**0.0248**	**6**	**PHOENIX**	**METROZOO***	**basis for future pairing**

***Indicates change in transfer since draft plan**

Sumatran Population

Breeding Recommendations:

MALE	NAME	MK	AGE	FEMALE	NAME	MK	AGE	LOCATION
3250	Budi	0.0179	15	2512	Sekali	0.0170	28	TORONTO
3250	Budi	0.0179	15	2024	Ramai	0.0187	35	TORONTO
2706	Satu	0.0195	26	2070	Indah	0.0154	34	SANDIEGOZ
2726	Sugriwa	0.0195	25	2517	Tua	0.0179	28	PHILADELP
2958	Elok	0.0212	20	2622	Negara	0.0083	27	OKLAHOMA
3152	Cinta	0.0223	17	3167	Rubih	0.0179	16	ST LOUIS
2069	Tengku	0.0256	34	2708	Tara	0.0392	26	FT WAYNE
3100	Makan	0.0267	18	3150	Indah	0.0212	17	SACRAMNTO
2034	**Butch**	**0.0292**	**35**	**2419**	**Ibu**	**0.0268**	**29**	**EL PASO**
1714	Tonka	0.0357	41	1926	Sarah	0.0335	37	RIO GRAND

***Indicates additional pairing since draft plan**

Transfer Recommendations:

STUD_ID	NAME	MK	AGE	FROM	TO	PURPOSE
3270	Jingga	0.0231	14	TORONTO	LOUISVILL	future breeding w/Segundo
3373	Batu	0.0219	11	PHILADELP	SEATTLE	future breeding w/Godek; **completed 5/15/21**
2501	Mango	0.0276	29	ROLLING H	BROWNSVIL	future breeding w/Dodie

Breeding and Transfer Recommendations
Sorted by Institution

ATLANTA
Zoo Atlanta
Atlanta, GA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3545	B	M	Pelari	7	9/14/2013	2626	2500	HOLD	ATLANTA	DO NOT BREED			Group 1
3108	B	M	Satu	17	11/30/2003	2626	2500	HOLD	ATLANTA	DO NOT BREED			Group 1
2500	B	F	Miri	29	2/9/1992	1034	1813	HOLD	ATLANTA	DO NOT BREED			Group 1
3600	B	F	Keju	6	4/9/2015	3151	3000	HOLD	ATLANTA	DO NOT BREED		Under 14, Contracept	Group 2; being foster-reared by 1924 Madu
1924	S	F	Madu	37	5/13/1983	605	549	HOLD	ATLANTA	DO NOT BREED		Rearing 3600; Exclusion	Group 2
3400	S	M	Remy	10	11/26/2010	1285	1455	HOLD	ATLANTA	DO NOT BREED			Group 2
3507	S	M	Pongo	8	1/10/2013	1703	2752	HOLD	ATLANTA	DO NOT BREED			Group 3
2752	S	F	Blaze	25	1/20/1996	844	845	HOLD	ATLANTA	DO NOT BREED			Group 3
1703	S	M	Benny	42	3/6/1979	721	695	HOLD	ATLANTA	DO NOT BREED			Group 3
1106	S	F	Biji	50	10/18/1970	607	612	HOLD	ATLANTA	DO NOT BREED		Exclusion	Group 4

AUDUBON

Audubon Zoo
New Orleans, LA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3803	S	F	Madu	0	2/28/2021	2772	3347	HOLD	AUDUBON	DO NOT BREED		Under 6	
3347	S	F	Reese	12	10/2/2008	1714	1926	HOLD	AUDUBON	DO NOT BREED		Rearing 3803	Contracept
3747	S	F	Bulan	1	7/17/2019	2772	2157	HOLD	AUDUBON	DO NOT BREED		Under 6	
3351	S	F	Menari	11	6/10/2009	2604	2157	HOLD	AUDUBON	DO NOT BREED		Under 14	Contracept
2157	S	F	Feliz	32	12/23/1988	518	1044	HOLD	AUDUBON	DO NOT BREED		Rearing 3747	Contracept
2772	S	M	Jambi	24	6/24/1996	787	1930	HOLD	AUDUBON	DO NOT BREED		Mates are rearing infants	

BIRMINGHM

Birmingham Zoo
Birmingham, AL

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3450	S	F	Nadira	9	12/13/2011	1773	1904	HOLD	BIRMINGHM	DO NOT BREED		Under 14	Contracept
1904	S	F	Lipz	39	3/28/1982	522	881	HOLD	BIRMINGHM	DO NOT BREED			Contracept
1773	S	M	Oliver	40	6/14/1980	721	695	HOLD	BIRMINGHM	DO NOT BREED			

BROWNSVIL

Gladys Porter Zoo
Brownsville, TX

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3517	S	F	Kade	8	2/8/2013	3202	1587	HOLD	BROWNSVIL	DO NOT BREED		Under 14	Contracept
1587	S	F	Dodie	43	7/25/1977	1043	1044	HOLD	BROWNSVIL	DO NOT BREED			Contracept
2501	S	M	Mango	29	3/13/1992	522	881	RECEIVE FROM	ROLLING H	DO NOT BREED			*Future breeding with 1587*

BUSCH TAM

Busch Gardens Tampa
Tampa, FL

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3685	B	M	Malu	3	10/14/2017	3229	2801	HOLD	BUSCH TAM	DO NOT BREED		Under 6	
2801	B	F	Luna	23	9/18/1997	1371	1793	HOLD	BUSCH TAM	DO NOT BREED		Rearing 3685	Contracept
3229	B	M	Madju	15	11/9/2005	1854	2172	HOLD	BUSCH TAM	BREED WITH	1789		
1789	B	F	Indra	40	9/7/1980	379	1093	HOLD	BUSCH TAM	BREED WITH	3229		
1635	B	M	Horst	43	1/21/1978	839	841	HOLD	BUSCH TAM	DO NOT BREED			
2905	X	M	Willie	22	4/24/1999	2018	1402	HOLD	BUSCH TAM	DO NOT BREED		Hybrid	
1402	X	F	Joy	46	11/14/1974	359	299	HOLD	BUSCH TAM	DO NOT BREED		Hybrid	

CHICAGOBR

Brookfield Zoo/Chicago Zoological Society
Brookfield, IL

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3652	B	F	Heidi	4	12/20/2016	1671	1817	HOLD	CHICAGOBR	DO NOT BREED		Under 6	
1817	B	F	Sophia	40	2/18/1981	1034	529	HOLD	CHICAGOBR	DO NOT BREED		Rearing 3652	Contracept
3562	B	M	Kecil	7	1/13/2014	2274	1640	HOLD	CHICAGOBR	DO NOT BREED			
3335	B	F	Kekasih	12	10/6/2008	1671	1817	HOLD	CHICAGOBR	DO NOT BREED		Under 14	Contracept
1671	B	M	Ben	42	10/8/1978	672	720	HOLD	CHICAGOBR	DO NOT BREED		Mate is rearing infant	
2431	X	M	Brunei	30	3/29/1991	1504	1769	HOLD	CHICAGOBR	DO NOT BREED		Hybrid	

CINCINNAT

Cincinnati Zoo and Botanical Garden
Cincinnati, OH

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
2400	S	M	Henry	30	1/1/1991	1714	1926	HOLD	CINCINNAT	DO NOT BREED			

CLEVELAND

Cleveland Metroparks Zoo
Cleveland, OH

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3806	B	M	Zaki	0	4/28/2021	2063	2853	HOLD	CLEVELAND	DO NOT BREED		Under 6	New birth. Not included in analysis
3578	B	F	Merah	6	10/5/2014	2063	2853	HOLD	CLEVELAND	DO NOT BREED		Under 14	Contracept
2853	B	F	Kera Wak	22	10/25/1998	2176	2162	HOLD	CLEVELAND	DO NOT BREED		Rearing 3806	Contracept
2083	B	F	Kayla	34	5/18/1986	888	889	HOLD	CLEVELAND	DO NOT BREED			Contracept
2063	B	M	Tiram	35	2/18/1986	1260	617	HOLD	CLEVELAND	DO NOT BREED			

COLO SPRG

Cheyenne Mountain Zoo
Colorado Springs, CO

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3580	B	F	Ember	6	10/29/2014	2658	2755	HOLD	COLO SPRG	DO NOT BREED		Under 14	Contracept
2755	B	F	Hadiah	24	6/8/1996	815	894	HOLD	COLO SPRG	BREED WITH	2658		
2658	B	M	Tujoh	26	4/30/1994	590	510	HOLD	COLO SPRG	BREED WITH	2755		
3708	S	F	Kera	2	6/6/2018	2361	2131	HOLD	COLO SPRG	DO NOT BREED		Under 6	
2131	S	F	Sumagu	33	10/10/1987	253	352	HOLD	COLO SPRG	DO NOT BREED		Rearing 3708	Contracept
2361	S	M	Baka Keri	30	6/15/1990	1297	655	HOLD	COLO SPRG	DO NOT BREED		Mate is rearing infant	

COLUMBUS

Columbus Zoo and Aquarium
Columbus, OH

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3256	B	F	Khali	14	5/13/2006	2274	2615	HOLD	COLUMBUS	BREED WITH	2626		
2626	B	M	Sulango	27	6/19/1993	1403	2025	HOLD	COLUMBUS	BREED WITH	3256		
1387	B	F	Dumplin	46	7/21/1974	360	364	HOLD	COLUMBUS	DO NOT BREED		Exclusion	

DENVER

Denver Zoo
Denver, CO

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3704	S	F	Cerah	3	3/25/2018	2604	2161	HOLD	DENVER	DO NOT BREED		Under 6	Being foster-reared by 3395 and 2604
3395	S	F	Hesty	10	6/19/2010	1932	2161	HOLD	DENVER	DO NOT BREED		Under 14; Rearing 3704	Contracept
2604	S	M	Berani	28	2/15/1993	1291	1983	HOLD	DENVER	DO NOT BREED		Rearing 3704	
3321	S	F	Eirina	13	12/30/2007	2262	2653	HOLD	DENVER	DO NOT BREED		Under 14	Contracept
3333	S	M	Jaya	13	12/13/2007	2018	2116	HOLD	DENVER	DO NOT BREED			

EL PASO

El Paso Zoo
El Paso, TX

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3601	S	F	Khaleesi	6	4/23/2015	2034	2419	HOLD	EL PASO	DO NOT BREED		Under 14	Contracept
2419	S	F	Ibu	29	8/1/1991	844	845	HOLD	EL PASO	BREED WITH	2034		
2034	S	M	Butch	35	8/19/1985	522	881	HOLD	EL PASO	BREED WITH	2419		

ERIE

Erie Zoo
Erie, PA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3659	B	M	Otis	4	2/1/2017	2062	2503	HOLD	ERIE	DO NOT BREED		Under 6	
2503	B	F	Dasa	29	4/1/1992	1403	1753	HOLD	ERIE	DO NOT BREED		Rearing 3659	Contracept
2062	B	M	Joseph	35	2/12/1986	1086	894	HOLD	ERIE	DO NOT BREED		Mate is rearing infant	

FORTWORTH

Fort Worth Zoo
Ft. Worth, TX

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
2365	S	F	Zora	30	5/1/1990	1000	1126	HOLD	FORTWORTH	DO NOT BREED		Exclusion	
2368	S	M	Kajan	30	7/28/1990	1516	1555	HOLD	FORTWORTH	DO NOT BREED			
1455	S	F	Chantek	45	8/30/1975	350	525	HOLD	FORTWORTH	DO NOT BREED		Exclusion	
1335	X	F	PT	47	9/13/1973	608	218	HOLD	FORTWORTH	DO NOT BREED		Hybrid	

FRESNO

Fresno Chaffee Zoo
Fresno, CA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3403	S	F	Ndari	10	12/18/2010	1971	2203	HOLD	FRESNO	DO NOT BREED		Under 14; Rearing 3722	Contracept
1971	S	M	Busar	36	4/28/1984	607	612	HOLD	FRESNO	DO NOT BREED			
3397	S	M	Labu	10	10/31/2010	1971	1100	HOLD	FRESNO	DO NOT BREED			
3722	S	M	Hantu	2	11/3/2018	1971	2203	HOLD	FRESNO	DO NOT BREED			Being foster-reared by 3403 Ndari

FT WAYNE

Fort Wayne Children's Zoo
Ft. Wayne, IN

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3583	S	F	Asmara	6	11/22/2014	2069	2708	HOLD	FT WAYNE	DO NOT BREED		Under 14	Contracept
2708	S	F	Tara	26	4/1/1995	1714	1926	HOLD	FT WAYNE	BREED WITH	2069		
2069	S	M	Tengku	34	7/3/1986	607	550	HOLD	FT WAYNE	BREED WITH	2708		
1987	X	F	Melati	36	11/19/1984	1008	615	HOLD	FT WAYNE	DO NOT BREED		Hybrid	

GREENVISC

Greenville Zoo
Greenville, SC

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3713	S	F	Adira	2	8/6/2018	3202	2016	HOLD	GREENVISC	DO NOT BREED		Under 6	
2016	S	F	Lagniappe	36	1/26/1985	844	1100	HOLD	GREENVISC	DO NOT BREED		Rearing 3713	Contracept
3202	S	M	Kumar	16	4/15/2005	721	1587	HOLD	GREENVISC	DO NOT BREED		Mate is rearing infant	

HOGLE

Utah's Hogle Zoo
Salt Lake City, UT

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3581	B	M	Tuah	6	11/4/2014	2354	2379	HOLD	HOGLE	DO NOT BREED			Being foster-reared by 3203 Acara
3203	B	F	Acara	15	5/7/2005	2354	2379	HOLD	HOGLE	DO NOT BREED		Rearing 3581	
3000	B	F	Kawan	20	2/7/2001	1260	1160	RECEIVE FROM	MADISON	DO NOT BREED			Contracept; transfer completed 6/7/21
2270	B	M	Mia	31	7/8/1989	1583	1259	HOLD	HOGLE	DO NOT BREED			

HONOLULU

Honolulu Zoo
Honolulu, HI

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
1756	X	M	Rusti	41	1/25/1980	941	1196	HOLD	HONOLULU	DO NOT BREED		Hybrid	
1602	X	F	Violet	43	11/19/1977	875	796	HOLD	HONOLULU	DO NOT BREED		Hybrid	

HOUSTON

Houston Zoo, Inc.
Houston, TX

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3428	B	F	Aurora	10	3/2/2011	2009	1793	HOLD	HOUSTON	DO NOT BREED		Under 14	Contracept
3258	B	M	Takai	14	8/16/2006	2602	1640	RECEIVE FROM	OMAHA	DO NOT BREED			
1793	B	F	Kelly	40	9/22/1980	318	449	HOLD	HOUSTON	DO NOT BREED		Exclusion	
1614	X	M	Rudi	43	12/9/1977	1033	529	HOLD	HOUSTON	DO NOT BREED		Hybrid	
1235	X	F	Cheyenne	48	5/13/1972	849	352	HOLD	HOUSTON	DO NOT BREED		Hybrid	

INDIANAPL

Indianapolis Zoological Society, Inc.
Indianapolis, IN

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3619	B	M	Max	5	11/22/2015	2023	1683	HOLD	INDIANAPL	DO NOT BREED		Under 6	Being foster-reared by 1733 Knobi
3635	S	F	Mila	5	3/23/2016	3006	2520	HOLD	INDIANAPL	DO NOT BREED		Under 6	
2520	S	F	Sirih	28	12/7/1992	787	1930	HOLD	INDIANAPL	DO NOT BREED		Rearing 3635	Contracept
3006	S	M	Basan	19	9/13/2001	1285	1455	HOLD	INDIANAPL	DO NOT BREED		Mate is rearing infant	
2248	X	F	Katy	32	12/18/1988	1103	1053	HOLD	INDIANAPL	DO NOT BREED		Hybrid	
1981	X	F	Nikki	36	7/1/1984	603	275	HOLD	INDIANAPL	DO NOT BREED		Hybrid	
1972	X	F	Lucy	37	2/11/1984	453	1391	HOLD	INDIANAPL	DO NOT BREED		Hybrid	
1733	X	F	Knobi	41	9/30/1979	518	1071	HOLD	INDIANAPL	DO NOT BREED		Hybrid; Rearing 3619	
3331	X	M	Rocky	16	9/25/2004	1703	2248	HOLD	INDIANAPL	DO NOT BREED		Hybrid	
2655	X	M	Charly	27	3/7/1994	1442	1141	HOLD	INDIANAPL	DO NOT BREED		Hybrid	
1616	X	M	Azy	43	12/14/1977	797	909	HOLD	INDIANAPL	DO NOT BREED		Hybrid	

KANSASCTY

Kansas City Zoo
Kansas City, MO

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3636	B	M	Dusty	4	5/23/2016	2902	3053	HOLD	KANSASCTY	DO NOT BREED		Under 6	Group 1
3053	B	F	Josie	18	6/28/2002	482	1515	HOLD	KANSASCTY	DO NOT BREED		Rearing 3636	Contracept; Group 1
3350	B	F	Kalijon	12	4/24/2009	2902	2048	HOLD	KANSASCTY	DO NOT BREED		Under 14	Contracept; Group 2
1515	B	F	Jill	44	5/25/1976	1046	261	HOLD	KANSASCTY	DO NOT BREED		Exclusion	Group 2
2902	B	M	Berani	21	6/27/1999	1403	1753	HOLD	KANSASCTY	DO NOT BREED		Mate is rearing infant	Group 3
2048	B	F	TK	36	4/22/1985	672	720	HOLD	KANSASCTY	DO NOT BREED		Exclusion	Group 3
2175	B	M	Rufus	32	10/8/1988	453	133	HOLD	KANSASCTY	DO NOT BREED			Group 4

LEON

Zoológico de León
León, Gto., MEXICO

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION	LOCATION	BREEDING	WITH	NOTES	COMMENTS
2007	X	F	Tang	36	7/24/1984	518	1071	HOLD	LEON	DO NOT BREED		Hybrid	
1883	X	F	Katie	38	5/5/1982	359	299	HOLD	LEON	DO NOT BREED		Hybrid	

LITTLEROC

Little Rock Zoo
Little Rock, AR

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3748	B	F	Kasih	1	7/28/2019	2602	3200	HOLD	LITTLEROC	DO NOT BREED		Under 6	
3200	B	F	Berani	16	2/22/2005	1823	1887	HOLD	LITTLEROC	DO NOT BREED		Rearing 3748	Contracept
2602	B	M	Chip	28	1/29/1993	888	1621	HOLD	LITTLEROC	DO NOT BREED		Mate is rearing infant	

LOSANGELE

Los Angeles Zoo and Botanical Gardens
Los Angeles, CA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3436	B	F	Elka	9	9/19/2011	1823	1887	HOLD	LOSANGELE	DO NOT BREED		Under 14	Contracept
1887	B	F	Kalim	38	6/27/1982	509	1222	HOLD	LOSANGELE	BREED WITH	2663		
2287	B	F	Gangsa	31	12/31/1989	1389	1139	HOLD	LOSANGELE	BREED WITH	2663		
2663	B	M	Isim	26	6/15/1994	1635	1789	HOLD	LOSANGELE	BREED WITH	1886, 2287		
1824	B	F	Rosie	40	3/28/1981	509	971	HOLD	LOSANGELE	DO NOT BREED		Exclusion	
971	B	F	Eloise	52	11/10/1968	593	261	HOLD	LOSANGELE	DO NOT BREED		Exclusion	Cerebral palsy
1723	X	M	Bruno	42	1/10/1979	359	299	HOLD	LOSANGELE	DO NOT BREED		Hybrid	

LOUISVILL

Louisville Zoological Garden
Louisville, KY

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3270	S	F	Jingga	14	12/15/2006	1654	2024	RECEIVE FROM	TORONTO	DO NOT BREED			Future breeding with 2137 Segundo
2137	S	M	Segundo	33	11/12/1987	518	1044	HOLD	LOUISVILL	DO NOT BREED			Future breeding with 3270 Jingga
1980	S	F	Bella	36	7/1/1984	721	695	HOLD	LOUISVILL	DO NOT BREED		Exclusion	
2138	X	F	Puki	33	10/15/1987	1085	1311	HOLD	LOUISVILL	DO NOT BREED		Hybrid	
2139	X	M	Teak	33	11/21/1987	1085	1402	HOLD	LOUISVILL	DO NOT BREED		Hybrid	

LOWRY

ZooTampa at Lowry Park
Tampa, FL

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3631	B	F	Topi	5	2/17/2016	2906	3226	HOLD	LOWRY	DO NOT BREED		Under 6	Group 1
3226	B	F	Hadiah	15	9/12/2005	1403	2025	HOLD	LOWRY	DO NOT BREED		Rearing 3631	Contracept; Group 1
3621	B	M	Gojo	5	12/20/2015	2906	2025	HOLD	LOWRY	DO NOT BREED		Under 6	Group 1
2025	B	F	Josie	36	4/3/1985	990	1259	HOLD	LOWRY	DO NOT BREED		Rearing 3621	Contracept; Group 1
3788	B	M	Riplee	0	11/15/2020	2906	3334	HOLD	LOWRY	DO NOT BREED		Under 6	Group 2
3334	B	F	Randee	12	8/3/2008	1403	1753	HOLD	LOWRY	DO NOT BREED		Rearing 3788	Contracept; Group 2
3695	B	F	Dira	3	1/6/2018	2906	1753	HOLD	LOWRY	DO NOT BREED		Under 6	Group 2
1753	B	F	Dee Dee	41	1/8/1980	360	364	HOLD	LOWRY	DO NOT BREED		Rearing 3695	Contracept; Group 2
2906	B	M	Goyang	21	6/21/1999	1034	1813	HOLD	LOWRY	DO NOT BREED		Mates rearing infants	Group 2

MADISON

Henry Vilas Zoo
Madison, WI

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3000	B	F	Kawan	20	2/7/2001	1260	1160	SEND TO	HOGLE	DO NOT BREED			Contracept; **transfer completed 6/7/21**
3151	B	M	Datu	17	1/29/2004	1999	1621	HOLD	MADISON	BREED WITH	2374		
2374	B	F	Chelsea	30	6/6/1990	1127	1817	HOLD	MADISON	BREED WITH	3151		

MEMPHIS

Memphis Zoo
Memphis, TN

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3633	S	M	Rowan	5	3/19/2016	1882	2802	HOLD	MEMPHIS	DO NOT BREED		Under 6	
2802	S	F	Jahe	23	11/28/1997	1654	1164	HOLD	MEMPHIS	DO NOT BREED		Rearing 3633	Contracept
1882	S	M	Tombak	38	5/4/1982	607	611	HOLD	MEMPHIS	DO NOT BREED		Mate is rearing infant	
1576	S	F	Chickie	43	5/24/1977	504	192	HOLD	MEMPHIS	DO NOT BREED		Exclusion	

METROZOO

Zoo Miami
Miami, FL

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3536	B	F	Bella	7	4/29/2013	3054	1621	HOLD	METROZOO	DO NOT BREED		Under 14	Contracept Future breeding with 3577
3577	B	M	Jiwa	6	9/2/2014	2120	1704	RECEIVE FROM	~~PHOENIX~~	DO NOT BREED			Future breeding with 3536
~~1621~~	~~B~~	~~F~~	~~Kumang~~	~~43~~	~~10/15/1977~~	~~583~~	~~633~~	~~HOLD~~	~~METROZOO~~	~~DO NOT BREED~~			*Died 9/23/2021*

MILWAUKEE

Milwaukee County Zoo
Milwaukee, WI

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
1920	X	F	Alexandra	38	3/17/1983	482	368	HOLD	MILWAUKEE	DO NOT BREED		Hybrid	
1872	X	M	Thomas	39	3/18/1982	938	1136	HOLD	MILWAUKEE	DO NOT BREED		Hybrid	

NORFOLK

Virginia Zoological Park
Norfolk, VA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
2923	B	F	Dara	21	9/23/1999	888	1621	HOLD	NORFOLK	BREED WITH	3105		
3105	B	M	Solaris	17	6/22/2003	2009	1793	HOLD	NORFOLK	BREED WITH	2923		
1769	X	F	Pepper	40	5/22/1980	359	299	HOLD	NORFOLK	DO NOT BREED		Hybrid	
1886	X	M	Pongo/Schnitz	38	6/27/1982	486	1311	HOLD	NORFOLK	DO NOT BREED		Hybrid	

NZP-WASH

Smithsonian National Zoological Park
Washington, DC

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3642	B	M	Redd	4	9/13/2016	2757	2758	HOLD	NZP-WASH	DO NOT BREED		Under 6	
2758	B	F	Batang	24	12/27/1996	1829	2077	HOLD	NZP-WASH	DO NOT BREED		Rearing 3642	Contracept
2757	B	M	Kyle	24	12/7/1996	2063	2083	HOLD	NZP-WASH	DO NOT BREED		Mate is rearing infant	
2121	X	F	Iris	34	4/15/1987	797	909	HOLD	NZP-WASH	DO NOT BREED		Hybrid	
1545	X	F	Bonnie	44	12/29/1976	755	719	HOLD	NZP-WASH	DO NOT BREED		Hybrid	
1289	X	F	Nancy/Lucy	48	3/2/1973	219	151	HOLD	NZP-WASH	DO NOT BREED		Hybrid	
2132	X	M	Kiko	33	11/24/1987	797	1545	HOLD	NZP-WASH	DO NOT BREED		Hybrid	

OKLAHOMA

Oklahoma City Zoo and Botanical Garden
Oklahoma City, OK

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
2622	S	F	Negara	27	12/5/1993	1437	1836	HOLD	OKLAHOMA	BREED WITH	2958		
2958	S	M	Elok	20	11/1/2000	1882	1843	HOLD	OKLAHOMA	BREED WITH	2622		

OMAHA

Omaha's Henry Doorly Zoo
Omaha, NE

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3582	B	F	Surianna	6	11/19/2014	2602	3005	HOLD	OMAHA	DO NOT BREED		Under 14	Contracept; Group 1
3005	B	F	Sepitok	19	7/22/2001	1642	1640	HOLD	OMAHA	BREED WITH	2851		Group 1
2908	B	F	Ruby	21	10/5/1999	1403	2025	HOLD	OMAHA	BREED WITH	2851		Group 2
2851	B	M	Tukang	23	1/27/1998	1034	1683	HOLD	OMAHA	BREED WITH	2908, 3005		Group 2
3254	B	M	Wgasa	15	3/2/2006	2602	2048	HOLD	OMAHA	DO NOT BREED			Group 3
3258	B	M	Takai	14	8/16/2006	2602	1640	SEND TO	HOUSTON	DO NOT BREED			Group 4

PHILADELP

Philadelphia Zoo
Philadelphia, PA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3373	S	F	Batu	11	10/2/2009	2726	2517	SEND TO	SEATTLE	DO NOT BREED		Under 14	Contracept; **transfer completed 5/15/21**
2517	S	F	Tua	28	11/4/1992	1510	550	HOLD	PHILADELP	BREED WITH	2726		Breed when health concern resolved
2726	S	M	Sugriwa	25	12/31/1995	625	1020	HOLD	PHILADELP	BREED WITH	2517		

PHOENIX

Phoenix Zoo
Phoenix, AZ

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3577	B	M	Jiwa	6	9/2/2014	2120	1704	SEND TO	METROZOO	DO NOT BREED			Future breeding with 3536
1704	B	F	Bess	42	3/26/1979	509	510	HOLD	PHOENIX	DO NOT BREED		Exclusion	
2120	B	M	Michael	34	3/27/1987	990	971	HOLD	PHOENIX	DO NOT BREED			
3201	B	F	Rayma	16	4/5/2005	2201	2037	HOLD	PHOENIX	DO NOT BREED			Contracept
~~3255~~	~~B~~	~~M~~	~~Daniel~~	~~15~~	~~4/11/2006~~	~~2063~~	~~2083~~	~~HOLD~~	~~PHOENIX~~	~~BREED WITH~~	~~3201~~		*Died 7/25/21*

PORTLAND

Oregon Zoo
Portland, OR

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3003	B	F	Kitra	20	4/23/2001	2063	2083	HOLD	PORTLAND	BREED WITH	3252		
3252	B	M	Bob	15	1/23/2006	2270	2374	HOLD	PORTLAND	BREED WITH	3003		

RACINE

Racine Zoo
Racine, WI

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
1973	X	F	Jenny	35	5/15/1985	482	483	HOLD	RACINE	DO NOT BREED		Hybrid	
2064	X	M	Max	35	3/6/1986	482	1091	HOLD	RACINE	DO NOT BREED		Hybrid	

RIO GRAND

Albuquerque Biological Park
Albuquerque, NM

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3535	S	M	Pixel	8	4/26/2013	1714	1926	HOLD	RIO GRAND	DO NOT BREED			
1926	S	F	Sarah	37	5/23/1983	907	915	HOLD	RIO GRAND	BREED WITH	1714		
1714	S	M	Tonka	41	9/26/1979	522	881	HOLD	RIO GRAND	BREED WITH	1926		
2621	S	F	Rubi/Cina	27	11/25/1993	1833	1841	HOLD	RIO GRAND	DO NOT BREED		Exclusion	

ROLLING H

Rolling Hills Zoo
Salina, KS

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
~~3258~~	~~B~~	~~M~~	~~Takai~~	~~14~~	~~8/16/2006~~	~~2602~~	~~1640~~	~~RECEIVE FROM~~	~~OMAHA~~	~~DO NOT BREED~~			~~Replaces Mango; basic for future pairing~~
2501	S	M	Mango	29	3/13/1992	522	881	SEND TO	BROWNSVIL	DO NOT BREED			Future breeding with 1587

SACRAMNTO

Sacramento Zoo
Sacramento, CA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3150	S	F	Indah	17	1/25/2004	1882	1843	HOLD	SACRAMNTO	BREED WITH	3100		
3100	S	M	Makan	18	1/13/2003	2361	2131	HOLD	SACRAMNTO	BREED WITH	3150		
1209	S	F	Cheli	49	1/22/1972	607	613	HOLD	SACRAMNTO	DO NOT BREED		Exclusion	

SAN FRAN

San Francisco Zoo
San Francisco, CA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3104	B	F	Amoi	17	5/2/2003	2602	2048	HOLD	SAN FRAN	BREED WITH	3370		
3370	B	M	Ollie	11	9/18/2009	2062	2503	HOLD	SAN FRAN	BREED WITH	3104		

SANDIEGOZ

San Diego Zoo
San Diego, CA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3547	S	F	Aisha	7	10/25/2013	2706	2070	HOLD	SANDIEGOZ	DO NOT BREED		Under 14	Contracept
2070	S	F	Indah	34	7/23/1986	1223	1409	HOLD	SANDIEGOZ	BREED WITH	2706		
2706	S	M	Satu	26	3/26/1995	1529	733	HOLD	SANDIEGOZ	BREED WITH	2070		
2507	S	F	Karen	28	6/11/1992	721	1889	HOLD	SANDIEGOZ	DO NOT BREED		Exclusion	

SEATTLE

Woodland Park Zoo
Seattle, WA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3373	S	F	Batu	11	10/2/2009	2726	2517	RECEIVE FROM	PHILADELP	DO NOT BREED		Under 14	Contracept; transfer completed 5/15/21
3338	S	M	Godek	12	2/19/2009	2361	2131	HOLD	SEATTLE	DO NOT BREED			Future breeding with 3373 Batu
1832	X	F	Belawan	39	5/17/1981	941	1196	HOLD	SEATTLE	DO NOT BREED		Hybrid	Contracept
1196	X	F	Melati	49	12/27/1971	219	151	HOLD	SEATTLE	DO NOT BREED		Hybrid	Contracept
2255	X	M	Heran	32	2/19/1989	941	1196	HOLD	SEATTLE	DO NOT BREED		Hybrid	

SEDGWICK

Sedgwick County Zoo
Wichita, KS

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3696	S	F	Mulia	3	1/18/2018	2718	3163	HOLD	SEDGWICK	DO NOT BREED		Under 6	
3163	S	F	Tao	16	11/18/2004	2262	2653	HOLD	SEDGWICK	DO NOT BREED		Rearing 3696	Contracept
3715	S	F	Lily	2	9/7/2018	2718	1850	HOLD	SEDGWICK	DO NOT BREED		Under 6	
1850	S	F	Daisy	39	10/28/1981	1109	1209	HOLD	SEDGWICK	DO NOT BREED		Rearing 3715	Contracept
3432	S	M	Kinali	9	5/19/2011	2718	1850	HOLD	SEDGWICK	DO NOT BREED			
2718	S	M	Panji	25	9/29/1995	1702	366	HOLD	SEDGWICK	DO NOT BREED		Mates rearing infants	

ST LOUIS

Saint Louis Zoo
Saint Louis, MO

SR#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3587	S	F	Ginger Lucy	6	12/14/2014	3152	1020	HOLD	ST LOUIS	DO NOT BREED			Contracept
1020	S	F	Merah	51	5/13/1969	255	190	HOLD	ST LOUIS	DO NOT BREED			
3167	S	F	Rubih	16	6/29/2004	625	1020	HOLD	ST LOUIS	BREED WITH	3152		Pending exam
3152	S	M	Cinta	17	3/5/2004	2706	2070	HOLD	ST LOUIS	BREED WITH	3167		

ST PAUL

Como Park Zoo and Conservatory
St. Paul, MN

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3595	S	F	Kemala	6	1/7/2015	2018	2116	HOLD	ST PAUL	DO NOT BREED		Under 14	Contracept
2116	S	F	Markisa	34	2/4/1987	432	433	HOLD	ST PAUL	DO NOT BREED		Exclusion	
2018	S	M	Jambu Aye	36	4/28/1985	844	845	HOLD	ST PAUL	DO NOT BREED			
1539	X	F	Amanda	44	12/4/1976	1043	529	HOLD	ST PAUL	DO NOT BREED		Hybrid	

TOLEDO

Toledo Zoo
Toledo, OH

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3606	B	M	Wakil	5	7/23/2015	2274	1640	HOLD	TOLEDO	DO NOT BREED		Under 6	Group 1
1640	B	F	Yasmin	43	2/17/1978	564	900	HOLD	TOLEDO	DO NOT BREED		Rearing 3606	Contracept; Group 1
2274	B	M	Boomer	31	9/12/1989	885	275	HOLD	TOLEDO	DO NOT BREED		Mate is rearing infant	Group 1
3757	B	M	Fajar	1	10/12/2019	3166	3103	HOLD	TOLEDO	DO NOT BREED		Under 6	Group 2
3103	B	F	Leela	18	4/25/2003	2062	2503	HOLD	TOLEDO	DO NOT BREED		Rearing 3757	Contracept; Group 2
3166	B	M	Bajik	17	4/23/2004	2274	2615	HOLD	TOLEDO	DO NOT BREED		Mate is rearing infant	Group 2
3054	B	M	Denda	18	8/23/2002	1671	1817	HOLD	TOLEDO	DO NOT BREED			Group 3; Temporary placement

TOPEKA

Topeka Zoo and Conservation Center
Topeka, KS

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3520	B	M	Bumi	8	2/25/2013	2201	2037	HOLD	TOPEKA	DO NOT BREED			
2037	B	F	Rudy	35	11/23/1985	1086	1067	HOLD	TOPEKA	BREED WITH	2201		
2201	B	M	Mawas	32	2/18/1989	590	1160	HOLD	TOPEKA	BREED WITH	2037		

TORONTO

Toronto Zoo
Toronto, Ont., CANADA

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3270	S	F	Jingga	14	12/15/2006	1654	2024	SEND TO	LOUISVILL	DO NOT BREED			Future breeding with 2137 Segundo
3257	S	M	Kembali	14	7/24/2006	1654	2512	HOLD	TORONTO	DO NOT BREED			
2512	S	F	Sekali	28	8/18/1992	606	525	HOLD	TORONTO	BREED WITH	3250		
2024	S	F	Ramai	35	10/4/1985	606	1455	HOLD	TORONTO	BREED WITH	3250		
3250	S	M	Budi	15	1/18/2006	1654	1164	HOLD	TORONTO	BREED WITH	2512, 2024		
1164	S	F	Puppe	54	1/1/1967	WILD	WILD	HOLD	TORONTO	DO NOT BREED		Exclusion	

WACO

Cameron Park Zoo
Waco, TX

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
3657	B	M	Razak	4	1/12/2017	2176	2852	HOLD	WACO	DO NOT BREED		Under 6	
2852	B	F	Mei	22	5/1/1998	879	1817	HOLD	WACO	DO NOT BREED		Rearing 3657	Contracept
2176	B	M	Kerajaan	32	8/11/1988	590	510	HOLD	WACO	DO NOT BREED		Mate is rearing infant	
2615	B	F	Kutai	27	7/27/1993	1671	1817	HOLD	WACO	DO NOT BREED			Contracept
2127	X	M	Mukah	33	7/5/1987	482	1091	HOLD	WACO	DO NOT BREED		Hybrid	

WAHPETON
Chahinkapa Zoo
Wahpeton, ND

SB#	SP	SX	NAME	AGE	DOB	SIRE	DAM	DISPOSITION.	LOCATION	BREEDING	WITH	NOTES	COMMENTS
2066	X	M	Talukan	34	6/10/1986	1344	1556	HOLD	WAHPETON	DO NOT BREED		Hybrid	

Appendix A
Analytical Assumptions

No assumptions were created for these analyses.

Appendix B
Summary of Data Exports

All analyses used the same studbook, current through 7 March 2021:

Bornean analysis:
Primary data file
Data File Name: EXCHANGE.CSV
ORANG input file for pmx
Scientific name: PONGO
Common name: ORANGUTAN
Exported on: 12/04/2021 11:38:03
Software version: Sparks 1.66
Scope: International
Current to: 7/03/2021
Compiled by: Megan Elder, Como Park Zoo & Conservatory, pongostudbook@hotmail.com
Filter conditions in effect:
Locations: N.AMERICA/
Dates: 01/01/1984 <= 12/04/2021
User Defined Fields: "B" $upper(SP)

Sumatran analysis:
Primary data file
Data File Name: EXCHANGE.CSV
ORANG input file for pmx
Scientific name: PONGO
Common name: ORANGUTAN
Exported on: 12/04/2021 11:41:00
Software version: Sparks 1.66
Scope: International
Current to: 7/03/2021
Compiled by: Megan Elder, Como Park Zoo & Conservatory, pongostudbook@hotmail.com
Filter conditions in effect:
Locations: N.AMERICA/
Dates: 01/01/1984 <= 12/04/2021
User Defined Fields: "S" $upper(SP)

Appendix C
Individuals Excluded from Genetic Analysis

Bornean:

Studbook ID	House Name	Location	Sex	Age	Reason for Exclusion
971	Eloise	LOSANGELE	Female	50	Age; Health
1387	Dumplin	COLUMBUS	Female	44	Health
1515	Jill	KANSASCTY	Female	42	Sterile
1704	Bess	PHOENIX	Female	39	Health
1793	Kelly	HOUSTON	Female	40	Sterile
1824	Rosie	LOSANGELE	Female	37	Sterile
2048	TK/Tina	KANSASCTY	Female	35	Health

Sumatran:

Studbook ID	House Name	Location	Sex	Age	Reason for Exclusion
1106	Biji	ATLANTA	Female	48	Age; Health
1164	Puppe	TORONTO	Female	52	Age
1209	Cheli	SACRAMNTO	Female	47	Age; Sterility
1455	Chantek	FORTWORTH	Female	43	Health
1576	Chickie	MEMPHIS	Female	41	Behavior
1924	Madu	ATLANTA	Female	35	Apparent sterility
1980	Bella	LOUISVILL	Female	34	Apparent sterility
2116	Markisa	ST PAUL	Female	31	Health
2365	Zora	FORTWORTH	Female	30	Sterile
2507	Karen	SANDIEGOZ	Female	26	Sterile
2621	Rubi/Cina	RIO GRAND	Female	25	Sterile

Hybrids:

All hybrids are excluded from the genetic analyses.

Appendix D: Life Tables

Bornean Males

Age	Px	Qx	Risk Qx	Lx	Mx	Risk Mx	Vx
0	0.758	0.242	52.6	1	0	52.6	1.138
1	1	0	49.7	0.758	0	49.7	1.311
2	0.96	0.04	49	0.758	0	49	1.329
3	1	0	51.1	0.728	0	51.1	1.348
4	0.98	0.02	48.1	0.728	0	48.1	1.353
5	0.978	0.022	46	0.713	0	46	1.373
6	1	0	44.5	0.697	0	44.5	1.38
7	1	0	42.8	0.697	0	42.8	1.371
8	0.976	0.024	41	0.697	0.012	41	1.379
9	1	0	42.1	0.68	0.024	42.1	1.375
10	1	0	44	0.68	0.069	44	1.343
11	0.956	0.044	45.1	0.68	0.034	45.1	1.295
12	0.978	0.022	44	0.65	0.034	44	1.296
13	1	0	45.4	0.636	0.067	45.4	1.268
14	1	0	45.7	0.636	0.033	45.7	1.194
15	0.976	0.024	41.7	0.636	0.109	41.7	1.168
16	0.975	0.025	39.9	0.62	0.089	39.9	1.078
17	1	0	39.3	0.605	0.064	39.3	0.996
18	0.951	0.049	39.3	0.605	0.064	39.3	0.95
19	0.925	0.075	38.7	0.575	0.078	38.7	0.938
20	0.948	0.052	37.5	0.532	0.054	37.5	0.913
21	0.948	0.052	37	0.504	0.055	37	0.9
22	1	0	36	0.478	0.014	36	0.863
23	1	0	37.8	0.478	0.093	37.8	0.844
24	0.949	0.051	38.1	0.478	0.092	38.1	0.765
25	0.973	0.027	36.9	0.454	0.068	36.9	0.696
26	0.973	0.027	36.5	0.441	0.082	36.5	0.641
27	0.912	0.088	32.7	0.43	0.046	32.7	0.589
28	0.967	0.033	28.4	0.392	0.09	28.4	0.575
29	0.933	0.067	29.4	0.379	0.018	29.4	0.507
30	0.929	0.071	27.1	0.353	0.111	27.1	0.522
31	0.962	0.038	25.6	0.328	0.019	25.6	0.433
32	0.909	0.091	21.5	0.315	0.069	21.5	0.439
33	0.842	0.158	17.8	0.287	0.14	17.8	0.419
34	0.804	0.196	12.9	0.241	0.075	12.9	0.337
35	0.917	0.083	9.4	0.194	0	9.4	0.305
36	0.889	0.111	8.7	0.178	0.056	8.7	0.335
37	0.875	0.125	7.5	0.158	0	7.5	0.314
38	0.714	0.286	5.8	0.138	0.144	5.8	0.391
39	0.8	0.2	4.7	0.099	0.101	4.7	0.327
40	1	0	4	0.079	0.126	4	0.253
41	1	0	4	0.079	0.126	4	0.126
42	0.667	0.333	2.2	0.079	0	2.2	0
43	1	0	0.2	0.053	0	0.2	0
44	1	0	0	0.053	0	0	0
45	1	0	0	0.053	0	0	0
46	1	0	0	0.053	0	0	0
47	1	0	0	0.053	0	0	0
48	1	0	0	0.053	0	0	0
49	1	0	0	0.053	0	0	0
50	1	0	0	0.053	0	0	0
51	1	0	0	0.053	0	0	0

52	1	0	0	0.053	0	0	0
53	1	0	0	0.053	0	0	0
54	1	0	0	0.053	0	0	0
55	1	0	0	0.053	0	0	0
56	1	0	0	0.053	0	0	0

Qx = mortality; Px = survival; Lx = cumulative survivorship; Mx = fecundity; Vx = expected future reproduction
r = -0.006, lambda = 0.994, T = 21.9, N = 44.00, N (at 20 yrs.) = 44

Bornean Females

Age	Px	Qx	Risk Qx	Lx	Mx	Risk Mx	Vx
0	0.86	0.14	51.5	1	0	51.5	1.075
1	0.96	0.04	49	0.86	0	49	1.181
2	1	0	50.7	0.826	0	50.7	1.2
3	0.981	0.019	53.5	0.826	0	53.5	1.206
4	1	0	55.1	0.811	0	55.1	1.212
5	0.982	0.018	55.5	0.811	0	55.5	1.218
6	1	0	53	0.796	0	53	1.224
7	0.981	0.019	52.1	0.796	0.01	52.1	1.23
8	1	0	51.2	0.781	0.01	51.2	1.227
9	1	0	52.1	0.781	0.029	52.1	1.211
10	0.98	0.02	50.3	0.781	0.08	50.3	1.189
11	0.961	0.039	49.9	0.766	0.03	49.9	1.138
12	1	0	49	0.736	0.071	49	1.125
13	1	0	49	0.736	0.031	49	1.049
14	1	0	49.9	0.736	0.07	49.9	1.014
15	1	0	48.9	0.736	0.041	48.9	0.94
16	1	0	45.1	0.736	0.066	45.1	0.895
17	0.979	0.021	46.1	0.736	0.054	46.1	0.833
18	0.978	0.022	44.9	0.72	0.1	44.9	0.793
19	1	0	44.7	0.704	0.067	44.7	0.698
20	1	0	43.8	0.704	0.068	43.8	0.628
21	0.978	0.022	43.8	0.704	0.045	43.8	0.564
22	0.978	0.022	45.1	0.689	0.056	45.1	0.528
23	0.933	0.067	43.5	0.674	0.046	43.5	0.492
24	0.955	0.045	43.7	0.629	0.045	43.7	0.47
25	1	0	43.5	0.6	0.012	43.5	0.433
26	1	0	46	0.6	0.043	46	0.419
27	0.979	0.021	46.4	0.6	0.032	46.4	0.378
28	0.978	0.022	44.7	0.587	0.067	44.7	0.352
29	1	0	44.2	0.574	0.045	44.2	0.287
30	0.909	0.091	42.5	0.574	0.035	42.5	0.252
31	0.949	0.051	38.5	0.522	0	38.5	0.232
32	0.973	0.027	36.9	0.495	0	36.9	0.241
33	0.917	0.083	35.4	0.482	0.014	35.4	0.254
34	1	0	33.9	0.441	0.029	33.9	0.249
35	1	0	32.4	0.441	0.078	32.4	0.219
36	0.967	0.033	29.7	0.441	0.051	29.7	0.143
37	0.966	0.034	29	0.427	0.017	29	0.095
38	0.929	0.071	26.4	0.412	0.056	26.4	0.081
39	0.92	0.08	24.4	0.383	0	24.4	0.028
40	0.95	0.05	19	0.352	0.029	19	0.029
41	1	0	16.3	0.334	0	16.3	0
42	0.867	0.133	15	0.334	0	15	0
43	0.909	0.091	11.4	0.29	0	11.4	0
44	1	0	9.9	0.263	0	9.9	0
45	0.778	0.222	7.9	0.263	0	7.9	0
46	0.857	0.143	6	0.205	0	6	0
47	1	0	5	0.176	0	5	0
48	1	0	5	0.176	0	5	0
49	1	0	5	0.176	0	5	0
50	1	0	4	0.176	0	4	0
51	1	0	4	0.176	0	4	0
52	0.75	0.25	2.9	0.176	0	2.9	0
53	1	0	2	0.132	0	2	0
54	0	1	0	0.132	0	0	0
55	0	1	0	0	0	0	0

Qx = mortality; Px = survival; Lx = cumulative survivorship; Mx = fecundity; Vx = expected future reproduction
r = -0.004,
lambda = 0.996,
T = 20.8,
N = 53.00,
N (at 20 yrs.) = 44

Sumatran Males

Age	Px	Qx	Risk Qx	Lx	Mx	Risk Mx	Vx
0	0.758	0.242	49.3	1	0	49.3	1.138
1	0.958	0.042	47	0.758	0	47	1.317
2	1	0	47	0.726	0	47	1.315
3	1	0	49.9	0.726	0	49.9	1.285
4	0.98	0.02	51.9	0.726	0	51.9	1.268
5	1	0	53.5	0.712	0	53.5	1.251
6	1	0	55.5	0.712	0	55.5	1.223
7	0.965	0.035	56.2	0.712	0.009	56.2	1.216
8	0.982	0.018	53.4	0.687	0.019	53.4	1.212
9	0.963	0.037	53	0.674	0	53	1.199
10	1	0	51.8	0.65	0.02	51.8	1.194
11	0.981	0.019	53.8	0.65	0.009	53.8	1.158
12	0.981	0.019	52.2	0.637	0.02	52.2	1.144
13	0.944	0.056	52.5	0.625	0.038	52.5	1.141
14	0.962	0.038	52.3	0.591	0.039	52.3	1.13
15	0.942	0.058	49.4	0.568	0.052	49.4	1.12
16	0.959	0.041	47.9	0.535	0.032	47.9	1.098
17	0.957	0.043	44.8	0.513	0.011	44.8	1.088
18	0.977	0.023	42.9	0.491	0.06	42.9	1.088
19	0.953	0.047	41.4	0.48	0.037	41.4	1.041
20	0.904	0.096	39.1	0.458	0.065	39.1	1.055
21	0.947	0.053	36.3	0.414	0.028	36.3	1.047
22	0.949	0.051	38.2	0.392	0.08	38.2	1.05
23	0.947	0.053	37	0.372	0.096	37	1
24	1	0	38.2	0.352	0.08	38.2	0.907
25	0.894	0.106	35.4	0.352	0.029	35.4	0.854
26	0.973	0.027	36.5	0.315	0.083	36.5	0.866
27	0.974	0.026	38.4	0.306	0.133	38.4	0.785
28	0.899	0.101	35.5	0.299	0.144	35.5	0.68
29	1	0	35.1	0.269	0.13	35.1	0.553
30	1	0	33.9	0.269	0.015	33.9	0.413
31	0.97	0.03	32.3	0.269	0.032	32.3	0.396
32	0.788	0.212	29.5	0.26	0.085	29.5	0.404
33	1	0	25.4	0.205	0.121	25.4	0.354
34	0.84	0.16	21.7	0.205	0.07	21.7	0.247
35	0.9	0.1	19	0.172	0	19	0.2
36	0.938	0.063	15.6	0.155	0.034	15.6	0.213
37	0.929	0.071	14	0.145	0.073	14	0.188
38	1	0	13	0.135	0	13	0.117
39	0.833	0.167	11.1	0.135	0	11.1	0.124
40	0.9	0.1	9.4	0.113	0.051	9.4	0.141
41	0.714	0.286	6.8	0.101	0	6.8	0.108
42	1	0	4.1	0.072	0.127	4.1	0.127
43	0.5	0.5	3.5	0.072	0	3.5	0
44	0.5	0.5	1.4	0.036	0	1.4	0
45	1	0	1	0.018	0	1	0
46	1	0	1	0.018	0	1	0
47	1	0	1	0.018	0	1	0
48	1	0	1	0.018	0	1	0
49	1	0	1	0.018	0	1	0
50	0	1	0.5	0.018	0	0.5	0
51	0	1	0	0	0	0	0
52	0	1	0	0	0	0	0
53	0	1	0	0	0	0	0
54	0	1	0	0	0	0	0

55	0	1	0	0	0	0	0
56	0	1	0	0	0	0	0
57	0	1	0	0	0	0	0
58	0	1	0	0	0	0	0
59	0	1	0	0	0	0	0
60	0	1	0	0	0	0	0
61	0	1	0	0	0	0	0
62	0	1	0	0	0	0	0
63	0	1	0	0	0	0	0

Qx = mortality; Px = survival; Lx = cumulative survivorship; Mx = fecundity; Vx = expected future reproduction
r = -0.023, lambda = 0.977, T = 24.4, N = 34.00, N (at 20 yrs.) = 39

Sumatran Females

Age	Px	Qx	Risk Qx	Lx	Mx	Risk Mx	Vx
0	0.812	0.188	48.9	1	0	48.9	1.104
1	1	0	51.6	0.812	0	51.6	1.211
2	1	0	55	0.812	0	55	1.19
3	1	0	53.9	0.812	0	53.9	1.17
4	1	0	56.5	0.812	0	56.5	1.15
5	1	0	56.8	0.812	0	56.8	1.131
6	1	0	56.7	0.812	0	56.7	1.111
7	1	0	56.5	0.812	0.009	56.5	1.092
8	0.982	0.018	56.4	0.812	0.018	56.4	1.075
9	1	0	57.4	0.798	0.017	57.4	1.048
10	0.949	0.051	56	0.798	0.026	56	1.04
11	1	0	53.8	0.757	0.009	53.8	1.023
12	0.981	0.019	54.3	0.757	0.018	54.3	1.006
13	0.963	0.037	53.3	0.743	0.038	53.3	0.999
14	0.943	0.057	51.6	0.715	0.019	51.6	0.991
15	1	0	51.3	0.674	0.068	51.3	0.985
16	1	0	53.4	0.674	0.038	53.4	0.901
17	0.981	0.019	53.3	0.674	0.019	53.3	0.856
18	0.981	0.019	52	0.662	0.058	52	0.839
19	0.981	0.019	51.4	0.649	0.048	51.4	0.783
20	1	0	53	0.637	0.028	53	0.729
21	0.982	0.018	55.2	0.637	0.054	55.2	0.695
22	0.966	0.034	57	0.625	0.044	57	0.647
23	1	0	56.9	0.604	0.061	56.9	0.603
24	0.953	0.047	62.1	0.604	0.032	62.1	0.545
25	0.984	0.016	62.4	0.575	0.04	62.4	0.521
26	0.952	0.048	59.7	0.566	0.042	59.7	0.488
27	0.983	0.017	60.1	0.539	0.067	60.1	0.453
28	0.95	0.05	58.6	0.53	0.026	58.6	0.393
29	0.982	0.018	55.2	0.504	0.055	55.2	0.374
30	0.945	0.055	54.1	0.495	0.056	54.1	0.325
31	0.944	0.056	51.8	0.468	0.019	51.8	0.281
32	0.921	0.079	47.9	0.441	0.011	47.9	0.276
33	0.955	0.045	44.2	0.406	0.022	44.2	0.278
34	0.974	0.026	40.1	0.388	0.013	40.1	0.26
35	1	0	37.5	0.378	0.066	37.5	0.246
36	0.972	0.028	35.5	0.378	0.043	35.5	0.179
37	0.971	0.029	33.4	0.368	0	33.4	0.138
38	1	0	31	0.357	0.016	31	0.138
39	0.931	0.069	28	0.357	0.017	28	0.124
40	0.962	0.038	26	0.332	0.019	26	0.111
41	0.96	0.04	25	0.319	0.02	25	0.094
42	1	0	24	0.307	0	24	0.074
43	1	0	23.7	0.307	0	23.7	0.073
44	0.955	0.045	21.8	0.307	0.023	21.8	0.073
45	0.905	0.095	19.3	0.293	0.026	19.3	0.054
46	1	0	18	0.265	0	18	0.028
47	1	0	18	0.265	0.028	18	0.028
48	0.833	0.167	16.2	0.265	0	16.2	0
49	0.786	0.214	13.3	0.221	0	13.3	0
50	0.9	0.1	10.4	0.173	0	10.4	0
51	0.889	0.111	8.1	0.156	0	8.1	0
52	0.714	0.286	5.9	0.139	0	5.9	0

53	1	0	5	0.099	0	5	0
54	1	0	4.3	0.099	0	4.3	0
55	0.75	0.25	3.6	0.099	0	3.6	0
56	0.667	0.333	2.8	0.074	0	2.8	0
57	0.5	0.5	1.5	0.05	0	1.5	0
58	1	0	1	0.025	0	1	0
59	1	0	1	0.025	0	1	0
60	1	0	1	0.025	0	1	0
61	0	1	0	0.025	0	0	0
62	0	1	0	0	0	0	0
63	0	1	0	0	0	0	0

Qx = mortality; Px = survival; Lx = cumulative survivorship; Mx = fecundity; Vx = expected future reproduction
r = -0.017, lambda = 0.983, T = 24.2, N = 53.00, N (at 20 yrs.) = 39

Appendix E
Bornean Orangutan Ordered Mean Kinship List

*Note: This list is **current to March 2021**. Values are subject to change with any birth, death, import, export, inclusion, or exclusion.*
Population MK = 0.0278

Male

Stbk#	MK	MK Rank	Location	Pedigree Known	Age
1635	0.0084	1	BUSCH TAM	100.0%	43
2175	0.0107	2	KANSASCTY	100.0%	32
2663	0.0112	3	LOSANGELE	100.0%	26
3229	0.0137	4	BUSCH TAM	100.0%	15
3685	0.0177	5	BUSCH TAM	93.8%	3
2274	0.0183	6	TOLEDO	100.0%	31
3105	0.0197	7	NORFOLK	87.5%	17
3581	0.0199	8	HOGLE	100.0%	6
2270	0.0204	9	HOGLE	100.0%	31
3619	0.0205	10	INDIANAPL	87.5%	5
2658	0.0207	11	COLO SPRG	100.0%	26
2063	0.0212	12	CLEVELAND	100.0%	35
3562	0.0221	13	CHICAGOBR	100.0%	7
3606	0.0221	13	TOLEDO	100.0%	5
2176	0.0228	15	WACO	100.0%	32
3642	0.0237	16	NZP-WASH	100.0%	4
2120	0.0244	17	PHOENIX	100.0%	34
3577	0.0248	18	PHOENIX	100.0%	6
2201	0.0253	19	TOPEKA	100.0%	32
1671	0.026	20	CHICAGOBR	100.0%	42
2851	0.0264	21	OMAHA	87.5%	23
3151	0.0267	22	MADISON	100.0%	17
3520	0.0275	23	TOPEKA	100.0%	8
3252	0.0279	24	PORTLAND	93.8%	15
~~3255~~	~~0.0281~~	~~25~~	~~PHOENIX~~	~~100.0%~~	~~15~~
2062	0.0286	26	ERIE	100.0%	35
2757	0.0295	27	NZP-WASH	100.0%	24
3636	0.0297	28	KANSASCTY	100.0%	4
3254	0.0306	29	OMAHA	100.0%	15
3657	0.0308	30	WACO	100.0%	4
3258	0.0312	31	OMAHA	100.0%	14
3166	0.0326	32	TOLEDO	100.0%	16
2602	0.0363	33	LITTLEROC	100.0%	28
3054	0.0365	34	TOLEDO	100.0%	18
3370	0.0375	35	SAN FRAN	100.0%	11
3659	0.0375	35	ERIE	100.0%	4
2902	0.0386	38	KANSASCTY	100.0%	21
3757	0.0386	37	TOLEDO	100.0%	1
2906	0.039	40	LOWRY	100.0%	21
3621	0.039	39	LOWRY	100.0%	5
2626	0.0404	41	COLUMBUS	100.0%	27
3788	0.0409	42	LOWRY	100.0%	0
3108	0.0411	43	ATLANTA	100.0%	17
3545	0.0411	43	ATLANTA	100.0%	7

Female

Stbk#	MK	MK Rank	Location	Pedigree Known	Age
2287	0.0072	1	LOSANGELE	100.0%	31
1789	0.0084	2	BUSCH TAM	100.0%	40
2758	0.0124	3	NZP-WASH	100.0%	24
2755	0.0135	4	COLO SPRG	100.0%	24
3053	0.0151	5	KANSASCTY	100.0%	18
3005	0.0165	6	OMAHA	100.0%	19
2801	0.0166	7	BUSCH TAM	87.5%	23
3428	0.0197	8	HOUSTON	87.5%	10
3203	0.0199	9	HOGLE	100.0%	15
3580	0.0199	10	COLO SPRG	100.0%	6
2853	0.0202	11	CLEVELAND	93.8%	22
1640	0.0204	12	TOLEDO	100.0%	43
3436	0.0217	13	LOSANGELE	100.0%	9
3200	0.0231	14	LITTLEROC	100.0%	16
3000	0.0233	15	MADISON	100.0%	20
3578	0.0234	16	CLEVELAND	96.9%	6
2037	0.024	17	TOPEKA	100.0%	35
1887	0.0274	18	LOSANGELE	100.0%	38
3201	0.0275	19	PHOENIX	100.0%	16
3600	0.0278	20	ATLANTA	100.0%	6
3003	0.0281	21	PORTLAND	100.0%	19
3582	0.0292	22	OMAHA	100.0%	6
2083	0.0293	23	CLEVELAND	100.0%	34
2923	0.0293	24	NORFOLK	100.0%	21
1753	0.0298	25	LOWRY	100.0%	41
3104	0.0306	26	SAN FRAN	100.0%	17
2374	0.0309	27	MADISON	87.5%	30
3256	0.0312	28	COLUMBUS	100.0%	14
3350	0.0318	29	KANSASCTY	100.0%	11
3748	0.0325	30	LITTLEROC	100.0%	1
1621	0.0326	31	METROZOO	100.0%	43
2852	0.0332	32	WACO	100.0%	22
2025	0.0333	33	LOWRY	100.0%	36
3335	0.0351	34	CHICAGOBR	100.0%	12
3652	0.0351	34	CHICAGOBR	100.0%	4
2500	0.0362	36	ATLANTA	100.0%	29
3334	0.0372	37	LOWRY	100.0%	12
3695	0.0372	38	LOWRY	100.0%	3
3536	0.0374	39	METROZOO	100.0%	7
2908	0.0376	40	OMAHA	100.0%	21
1817	0.0386	42	CHICAGOBR	100.0%	40
2615	0.0386	41	WACO	100.0%	27
3103	0.0389	43	TOLEDO	100.0%	17
3226	0.039	44	LOWRY	100.0%	15
2503	0.0407	45	ERIE	100.0%	29
3631	0.0418	46	LOWRY	100.0%	5

Sumatran Orangutan Ordered Mean Kinship List

*Note: This list is **current to March 2021**. Values are subject to change with any birth, death, import, export, inclusion, or exclusion.* ***Population MK = 0.0234***

Male

Stbk#	MK	MK Rank	Location	Age
2368	0.0089	1	FORTWORTH	30
3400	0.0166	2	ATLANTA	10
2718	0.0179	3	SEDGWICK	25
3250	0.0179	3	TORONTO	15
3006	0.0183	5	INDIANAPL	19
2137	0.0191	6	LOUISVILL	33
2772	0.0192	7	AUDUBON	24
1703	0.0195	8	ATLANTA	42
1773	0.0195	8	BIRMINGHM	40
2604	0.0195	8	DENVER	28
2726	0.0195	8	PHILADELP	25
2706	0.0195	8	SANDIEGOZ	26
2361	0.0203	13	COLO SPRG	30
3397	0.0211	14	FRESNO	10
2958	0.0212	15	OKLAHOMA	20
3432	0.0223	16	SEDGWICK	9
3152	0.0223	16	ST LOUIS	17
3257	0.0223	16	TORONTO	14
3333	0.0227	19	DENVER	13
1971	0.0244	20	FRESNO	36
1882	0.0244	20	MEMPHIS	38
3633	0.0252	22	MEMPHIS	5
2069	0.0256	23	FT WAYNE	34
3507	0.0264	24	ATLANTA	8
3100	0.0267	25	SACRAMNTO	18
3338	0.0267	25	SEATTLE	12
3202	0.0268	27	GREENVISC	15
2501	0.0276	28	ROLLING H	29
3722	0.028	29	FRESNO	2
2018	0.0284	30	ST PAUL	36
2034	0.0292	31	EL PASO	35
1714	0.0357	32	RIO GRAND	41
2400	0.0376	33	CINCINNAT	30
3535	0.0376	33	RIO GRAND	7

Female

Stbk#	MK	MK Rank	Location	Age
2622	0.0083	1	OKLAHOMA	27
3321	0.0125	2	DENVER	13
3163	0.0141	3	SEDGWICK	16
2070	0.0154	4	SANDIEGOZ	34
2512	0.017	5	TORONTO	28
3395	0.0175	6	DENVER	10
2520	0.0176	7	INDIANAPL	28
2517	0.0179	8	PHILADELP	28
3167	0.0179	8	ST LOUIS	16
2024	0.0187	10	TORONTO	35
3696	0.0192	11	SEDGWICK	3
2802	0.0195	12	MEMPHIS	23
3704	0.0203	13	DENVER	3
1850	0.0203	13	SEDGWICK	39
3547	0.0207	15	SANDIEGOZ	7
1587	0.0211	16	BROWNSVIL	43
1020	0.0211	16	ST LOUIS	51
3635	0.0212	18	INDIANAPL	5
3150	0.0212	19	SACRAMNTO	17
3373	0.0219	20	PHILADELP	11
2157	0.0223	21	AUDUBON	32
3715	0.0223	21	SEDGWICK	2
2016	0.0227	23	GREENVISC	36
3595	0.0227	23	ST PAUL	6
3270	0.0231	25	TORONTO	14
3747	0.024	26	AUDUBON	1
3351	0.0241	27	AUDUBON	11
3587	0.025	28	ST LOUIS	6
2131	0.0266	29	COLO SPRG	33
3708	0.0267	30	COLO SPRG	2
2752	0.0268	31	ATLANTA	25
2419	0.0268	31	EL PASO	29
3517	0.0272	33	BROWNSVIL	8
3450	0.0276	34	BIRMINGHM	9
3403	0.028	35	FRESNO	10
3713	0.028	35	GREENVISC	2
1904	0.0292	37	BIRMINGHM	39

Unknown

Stbk#	MK	MK Rank	Location	AgeYears
3803	0.0324	--	AUDUBON	0

3601	0.0313	38	EL PASO	5
1926	0.0335	39	RIO GRAND	37
3583	0.0356	40	FT WAYNE	6
3347	0.0392	41	AUDUBON	12
2708	0.0392	41	FT WAYNE	26

Appendix F
DESCRIPTIVE SURVIVAL STATISTICS REPORT

Bornean Orangutan

ORANGUTAN Studbook
Como Park Zoo & Conservatory
International Studbook

Studbook data current as of 3/7/2021

Compiled by Megan Elder

PopLink Studbook filename: ORANG_2021
PopLink User Who Exported Report: Jennifer
Date of Export: 4/18/2021
Data Filtered by: SP = B AND Locations = N.AMERICA AND StartDate = 1/1/1984 AND EndDate = 4/18/2021
PopLink Version: 2.4

REPORT OVERVIEW:

Based on this analysis, if a ORANGUTAN survives to its first birthday, its median life expectancy is 32.3 years. Please see the body of the report for more details.

BACKGROUND ON ANALYSES:

These analyses were conducted using animals that lived during the period 1 January 1984 to 18 April 2021 at institutions within N.AMERICA. The analyses mainly focus on survival statistics from 1 year (e.g. excluding any individuals that did not survive past their first birthday). These statistics most accurately reflect typical survival for animals which can be seen on exhibit in zoos and aquariums.

This report summarizes survival records of individuals housed at zoological facilities for a specific geographic range and time period; these records trace an individual's history from birth or entry into the population to death, exit out of the population, or the end of the time period. As such, this history only reflects standard practices - including management, husbandry, and acquisition/disposition practices - for the specified time period and geographic range. Thus, the report contents should be viewed with some caution as they may not fully reflect current and newly emerging zoo and aquarium management techniques or practices. For example, if the population has not been maintained in zoos and aquariums long enough to have many adults living into old age, median life expectancy will likely be an underestimate until more data accrue in older age classes. Thus, users of these reports should recognize that the results produced will likely vary over time or depending on the subset of data selected.

Although for many species, including humans, survival statistics often differ for males and females, for these analyses male and female statistics were not statistically different[1]; these results therefore include pooled data from males, females, and unknown sex individuals.

SUMMARY OF ANALYSES:

SURVIVAL STATISTICS

The dataset used for analysis includes partial or full lifespans of 196 individuals, 88 (44.9%) of which had died by 18 April 2021.

If a ORANGUTAN survives to its first birthday, its **median life expectancy**[2] is **32.3 years of age**. Given the quality of the data - how many animals are in the database and how many have died - there is a 95% chance that the true median falls between 29.6 and 34.6 years of age (i.e., these are the 95% confidence limits). Only 25% of ORANGUTAN can be expected to survive to be 42.9 years or older.

First-year (infant) survival[3] for ORANGUTAN is 80%. The year after birth/hatching is a period of relatively low survival for many species and life histories.

The **maximum longevity**[4] observed for ORANGUTAN is **54.8 years**; this longevity record is based on an individual which was DEAD as of the analysis end date (studbook number 449, sex = Female, origin = Captive Born, birth date estimate = None).[5]

The correct interpretation of these statistics is that, if it survives the first year of life, the 'typical' ORANGUTAN will live 32.3 years; that half of all ORANGUTAN can be expected to die before they reach 32.3 and half will live longer than 32.3; that only 25% of all ORANGUTAN can be expected to live 42.9 years; and that it is rare but possible for ORANGUTAN to live 54.8 years.

The median life expectancy, confidence interval, first-year survival, and maximum longevity may change as more data are accumulated, the population's age structure changes, or management practices improve.

While both median life expectancy and maximum longevity are discussed in this report, it is more appropriate to rely on median life expectancy to place the age of any one individual in context. To put these statistics in perspective, median life expectancy from age one for people in the United States is 77.5 years and the maximum longevity (documented worldwide) is 122 years[6]. Therefore, if a person lived to be 85 years old, the appropriate context is that they lived well beyond the median life expectancy (77.5), not that they fell short of the maximum longevity (122).

DATA QUALITY

The PopLink Survival Tool uses five data quality measures to determine whether data are robust enough to make reliable estimates of key survival parameters. **This population passed all of the following data quality tests:**

1. Can the median life expectancy be calculated? **PASS**
2. Is the sample size (number of individuals at risk) greater than 20 individuals at the median? **PASS**
3. Is the 95% Confidence Interval (CI) bounded? **PASS**
4. Is the sample size in the first age class of analysis (e.g. the first day of analysis) greater than 30 individuals? **PASS**
5. Is the length of the 95% CI < 33% of the maximum longevity? **PASS**

PopLink data validation has never been run; if errors are present in this studbook, they may affect the data in this analysis.

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[1] Statistical significance was determined by comparing 84% confidence intervals around median life expectancy for males and females, with 0 unknown sex individuals proportionally incorporated into the analysis. For this population, overlapping confidence intervals indicated that data could be pooled. See the PopLink manual for more details.

[2] The statistics analyzed for this report (median life expectancy, 95% confidence limits, and age to which 25% of individuals survive) exclude any individuals who did not survive to their first birthday; these individuals are excluded because this Report is focused on providing median survival estimates for the typical individual that survives the vulnerable infant stage. In other words, this report answers the question, 'how long is this species expected to live once it has reached its first birthday?' For this studbook, 24 individuals died before their first birthday and were excluded from these analyses.

For all animals that survive to their first birthday, 50% will die before the median life expectancy in this report and 50% die after. Note that the median life expectancy obtained from population management software (PM2000, PMx, ZooRisk) or from life tables in Breeding and Transfer Plans (e.g. where Lx = 0.5) will be lower because it includes these individuals that did not survive to their first birthday in order to project the correct number of births needed. See the PopLink manual for more details.

[3]For reference, first-year survival is provided. For this studbook and the selected demographic window, 24 individuals did not survive to their first birthday and were excluded from the estimates provided above (median life expectancy, 95% confidence limits, and age to which 25% of individuals survive).

[4] Maximum longevity is the age of the oldest known individual for this species, living or dead. It is not necessarily the biological maximum age, but only reflects the individuals included in the dataset.

[5] Censored individuals are individuals whose deaths have not been observed as of the end of the analysis window, including individuals who 1) are still alive as of the end date, 2) exited the geographic window before the end date (through transfer or release), or 3) were lost-to-follow up before the end date.

[6] Median life expectancy for people is estimated from: Xu, Jiaquan, Kochanek KD, Murphy SL, and Tejada-Vera B. 2007. Deaths: Final Data for 2007. National vital statistics reports; vol 58 no 19. Hyattsville, MD: National Center for Health Statistics. Jeanne Calment of France was the oldest documented and fully validated human and died at 122 years and 164 days; from: http://www.grg.org/Adams/Tables.htm. Accessed August 9, 2007.

Sumatran Orangutan

ORANGUTAN Studbook
Como Park Zoo & Conservatory
International Studbook

Studbook data current as of 3/7/2021

Compiled by Megan Elder

PopLink Studbook filename: ORANG_2021
PopLink User Who Exported Report: Jennifer
Date of Export: 4/18/2021
Data Filtered by: Locations = N.AMERICA AND SP = S AND StartDate = 1/1/1984 AND EndDate = 4/18/2021
PopLink Version: 2.4

REPORT OVERVIEW:

Based on this analysis, if an ORANGUTAN survives to its first birthday, its median life expectancy is 25.2 years for males and 33.2 years for females. Please see the body of the report for more details.

BACKGROUND ON ANALYSES:

These analyses were conducted using animals that lived during the period 1 January 1984 to 18 April 2021 at all institutions in the studbook. The analyses mainly focus on survival statistics from 1 year (e.g. excluding any individuals that did not survive past their first birthday). These statistics most accurately reflect typical survival for animals which can be seen on exhibit in zoos and aquariums.

This report summarizes survival records of individuals housed at zoological facilities for a specific geographic range and time period; these records trace an individual's history from birth or entry into the population to death, exit out of the population, or the end of the time period. As such, this history only reflects standard practices - including management, husbandry, and acquisition/disposition practices - for the specified time period and geographic range. Thus, the report contents should be viewed with some caution as they may not fully reflect current and newly emerging zoo and aquarium management techniques or practices. For example, if the population has not been maintained in zoos and aquariums long enough to have many adults living into old age, median life expectancy will likely be an underestimate until more data accrue in older age classes. Thus, users of these reports should recognize that the results produced will likely vary over time or depending on the subset of data selected.

For many species, including humans, survival statistics often differ for males and females. For this population, male and female data were robust enough to detect statistical differences[1] in survival statistics. These results therefore include separate statistics for males and females; individuals whose sex is unknown are proportionally included in calculations.

SUMMARY OF ANALYSES:

SURVIVAL STATISTICS

	Female	Male
# of individuals with partial or full lifespans used in analysis	124	110
# of individuals which had died by 18 April 2021 (analysis end date)	67	71
% of individuals which had died by 18 April 2021	54.0%	64.6%
median life expectancy assuming an individual survives to its first birthday (years)	33.2	25.2
95% confidence interval for median (years)	28.7 to 40.6	20.4 to 28.1
only 25% of animals live beyond this age (years)	49.3	35.6
First-year (infant) survival	82.9%	76.5%
maximum longevity (years)	61.0	50.5

See footnotes 1, 2, 3, 4, and 5 for definitions of terminology used in this table.

The **median life expectancy**[2] for ORANGUTAN was statistically different between males and females, with **females having a significantly higher median life expectancy**. Given the quality of the data - how many animals are in the database and how many have died - there is a 95% chance that the true median for each sex falls within the 95% confidence intervals displayed in the table.

The table also lists the ages which only 25% of ORANGUTAN can be expected to survive past and the first-year (infant) survival[3] rates. The year after birth/hatching is a period of relatively low survival for many species and life histories.

The **maximum longevity**[4] observed for ORANGUTAN females is based on an individual which was DEAD as of the analysis end date (studbook number 433, sex = Female, origin = Wild Born, birth date estimate = +/- 2 Years). The maximum longevity observed for ORANGUTAN males is based on an individual which was DEAD as of the analysis end date (studbook number 606, sex = Male, origin = Wild Born, birth date estimate = +/- 2 Years).[5]

The correct interpretation of these statistics is that, if it survives the first year of life, the 'typical' male ORANGUTAN will live 25.2 years and the typical female will live 33.2 years; that half of all ORANGUTAN can be expected to die before they reach the male and female median life expectancies and half will live longer than that; that only 25% of all male ORANGUTAN can be expected to live to 35.6 years and females to 49.3 years; and that it is rare but possible for male ORANGUTAN to live 50.5 years and female ORANGUTAN to live 61.0 years.

The median life expectancy, confidence interval, first-year survival, and maximum longevity may change as more data are accumulated, the population's age structure changes, or management practices improve.

While both median life expectancy and maximum longevity are discussed in this report, it is more appropriate to rely on median life expectancy to place the age of any one individual in context. To put these statistics in perspective, median life expectancy from age one for people in the United States is 77.5 years and the maximum longevity (documented worldwide) is 122 years[6]. Therefore, if a person lived to be 85 years old, the appropriate context is that they lived well beyond the median life expectancy (77.5), not that they fell short of the maximum longevity (122).

DATA QUALITY

The PopLink Survival Tool uses five data quality measures to determine whether data are robust enough to make reliable estimates of key survival parameters. **The subsets of male and female data for this population passed all of the following data quality tests:**

1. Can the median life expectancy be calculated? **PASS**
2. Is the sample size (number of individuals at risk) greater than 20 individuals at the median? **PASS**
3. Is the 95% Confidence Interval (CI) bounded? **PASS**
4. Is the sample size in the first age class of analysis (e.g. the first day of analysis) greater than 30 individuals? **PASS**
5. Is the length of the 95% CI < 33% of the maximum longevity? **PASS**

PopLink data validation has never been run; if errors are present in this studbook, they may affect the data in this analysis.

[1] Statistical significance was determined by comparing 84% confidence intervals around median life expectancy for males and females, with 0 unknown sex individuals proportionally incorporated into the analysis. For this population, non-overlapping confidence intervals indicated that male and female medians were significantly different. See the PopLink manual for more details.

[2] The statistics analyzed for this report (median life expectancy, 95% confidence limits, and age to which 25% of individuals survive) exclude any individuals who did not survive to their first birthday; these individuals are excluded because this Report is focused on providing median survival estimates for the typical individual that survives the vulnerable infant stage. In other words, this report answers the question, 'how long is this species expected to live once it has reached its first birthday?' For this studbook, 26 individuals died before their first birthday and were excluded from these analyses.

For all animals that survive to their first birthday, 50% will die before the median life expectancy in this report and 50% die after. Note that the median life expectancy obtained from population management software (PM2000, PMx, ZooRisk) or from life tables in Breeding and Transfer Plans (e.g. where Lx = 0.5) will be lower because it includes these individuals that did not survive to their first birthday in order to project the correct number of births needed. See the PopLink manual for more details.

[3] For reference, first-year survival is provided. For this studbook and the selected demographic window, 26 individuals did not survive to their first birthday and were excluded from the estimates provided above (median life expectancy, 95% confidence limits, and age to which 25% of individuals survive).

[4] Maximum longevity is the age of the oldest known individual for this species, living or dead. It is not necessarily the biological maximum age, but only reflects the individuals included in the dataset.

[5] Censored individuals are individuals whose deaths have not been observed as of the end of the analysis window, including individuals who 1) are still alive as of the end date, 2) exited the geographic window before the end date (through transfer or release), or 3) were lost-to-follow up before the end date.

[6] Median life expectancy for people is estimated from: Xu, Jiaquan, Kochanek KD, Murphy SL, and Tejada-Vera B. 2007. Deaths: Final Data for 2007. National vital statistics reports; vol 58 no 19. Hyattsville, MD: National Center for Health Statistics. Jeanne Calment of France was the oldest documented and fully validated human and died at 122 years and 164 days; from: http://www.grg.org/Adams/Tables.htm. Accessed August 9, 2007.

Appendix G
Definitions

Management Terms (as of July 2016)

Green Species Survival Plan® (Green SSP) Program – A Green SSP Program has a population size of 50 or more animals and is projected to retain 90% gene diversity for a minimum of 100 years or 10 generations. Green SSP Programs are subject to AZA's Full Participation and Non–Member Participation Policies.

Yellow Species Survival Plan® (Yellow SSP) Program – A Yellow SSP Program has a population size of 50 or more animals but cannot retain 90% gene diversity for 100 years or 10 generations. Yellow SSP participation by AZA institutions is voluntary.

Red Species Survival Plan® (Red SSP) Program – A Red SSP has a population size of greater than 20 but fewer than 50 animals, at least three AZA member institutions, and a published studbook. Animal Programs that manage species designated as Extinct in the Wild, Critically Endangered, or Endangered (IUCN) do not need to meet minimum population size and number of participating institution criteria to be designated as an SSP Program. Red Program participation by AZA institutions is voluntary.

Full Participation – AZA policy stating that all AZA accredited institutions and certified related facilities having a Green SSP animal in their collection are required to participate in the collaborative SSP planning process (e.g., provide relevant animal data to the AZA Studbook Keeper, assign an Institutional Representative who will communicate institutional wants and needs to the SSP Coordinator and comment on the draft plan during the 30-day review period, and abide by the recommendations agreed upon in the final plan).

All AZA member institutions and Animal Programs, regardless of management designation, must adhere to the AZA Policy on Responsible Population Management and the AZA Code of Professional Ethics. For more information on AZA policies, see https://www.aza.org/board-approved-policies-and-position-statements.

Demographic Terms

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

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

Lambda (λ) or Population Growth Rate – The proportional change in population size from one year to the next. Lambda can be based on life-table calculations (the expected lambda) or from observed changes in population size from year to year. A lambda of 1.11 means an 11% per year increase; lambda of 0.97 means a 3% decline in size per year.

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

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

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

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

Qx, Mortality – Probability that an individual of age *x* dies during time period. Qx = 1-Px. Alternatively, the proportion of individuals that die during an age class. It is calculated from the number of animals that die during an age class divided by the number of animals that were alive at the beginning of the age class (i.e.-"at risk").

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

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

Genetic Terms

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

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

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

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

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

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

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

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

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

Percent Certain -- The percentage of the living individuals' pedigree that can be completely identified as *certain:* (exact identity of both parents is known) and traceable back to known founders. Individuals that are 100% *certain* do not have any MULTs or UNKs in their pedigree. *Certainty* represents a higher degree of knowledge than *Known* and therefore is always less than or equal to *Known*.

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

Appendix H
Directory of Institutional Representatives

LIAISON	MNEMONIC	ZOO	FIRST	LAST	PHONE	EMAIL
Yakubinis	ATLANTA	Zoo Atlanta	Lynn	Yakubinis	404-624-5939	lyakubinis@zooatlanta.org
Cossaboon	AUDUBON	Audubon Zoo	Liz	Wilson	504-212-5203	lwilson@audubooninstitute.org
Lefave	BIRMINGHM	Birmingham Zoo	Danielle	Williams	205-879-0409 ext 282	dwilliams@birminghamzoo.com
Schwetz	BROWNSVIL	Gladys Porter Zoo	Walter	DuPree	956-546-8125	wdupree@gpz.org
Elder	BUSCH TAM	Busch Gardens Tampa	Jay	Duncan	813-987-5578	jay.duncan@buschgardens.com
Heller	CHICAGOBR	Brookfield Zoo	Nava	Greenblatt	708-688-8248	nava.greenblatt@czs.org
Lefave	CINCINNAT	Cincinnati Zoo	Stephanie	Schuler		stephanie.schuler@cincinnatizoo.org
Yakubinis	CLEVELAND	Cleveland Metroparks Zoo	Tad	Schoffner	216-635-3332	tad@clevelandmetroparks.com
Bredahl	COLO SPRG	Cheyenne Mountain Zoo	Dina	Bredahl	719-424-7866	dbredahl@cmzoo.org
Heller	COLUMBUS	Columbus Zoo & Aquarium	Audra	Meinelt	614-724-3535	audra.meinelt@columbuszoo.org
Cossaboon	DENVER	Denver Zoo	Cindy	Cossaboon	303-376-4932	CCossaboon@DenverZoo.org
Jones	EL PASO	El Paso Zoo	Griselda	Martinez	915-521-1850	martinezgx@elpasotexas.gov
Schwetz	ERIE	Erie Zoo	Lisa	Rekitt	814-864-4091	lrekitt@eriezoo.org
Bredahl	FORTWORTH	Fort Worth Zoo	Stephanie	Crowson	817-759-7188	scrowson@fortworthzoo.org
Shumaker	FRESNO	Fresno Chaffee Zoo	Sarah	Shearer		sshearer@fresnochaffeezoo.org
Heller	FT WAYNE	Fort Wayne Children's Zoo	Angie	Selzer	260-413-8915	angie.selzer@kidszoo.org
Jones	GREENVISC	Greenville Zoo	Greg	Garcia	864-467-4300	ggarcia@greenvillesc.gov
Jones	HOGLE	Utah's Hogle Zoo	Erin	Jones	801-584-1717	ejones@hoglezoo.org
Cossaboon	HONOLULU	Honolulu Zoo	(Ms.) Tyris	Perreira	808-971-7167	tperreira@honolulu.gov
Yakubinis	HOUSTON	Houston Zoo	Amanda	Daly	713-533-6820	adaly@houstonzoo.org
Shumaker	INDIANAPLS	Indianapolis Zoo	Rob	Shumaker, Ph.D.	317-610-9021	rshumaker@indyzoo.com
Fox	KANSASCTY	Kansas City Zoo	Cinnamon	Williams	816-595-1325	cinnamonwilliams@fotzkc.org
Cossaboon	LEON	Zoologico de Leon	David	Rocha	011- 52 (477) 764 3143	david.rocha@zooleon.org.mx
Jackson	LITTLEROC	Little Rock Zoo	Fran	Lyon	501-661-7204	flyon@littlerock.gov
Fox	LOSANGELE	Los Angeles Zoo	Megan	Fox	626-794-1773	megankfox@att.net
Shumaker	LOUISVILL	Louisville Zoo	Jill	Katka	502-238-5444	Jill.Katka@louisvilleky.gov
Lefave	LOWRY	ZooTampa at Lowry Park	Jane	Lefave	813-935-8552 x5228	jane.lefave@zootampa.org
Schwetz	MADISON	Henry Vilas Zoo	Ronda	Schwetz	608-266-4708	Schwetz@countyofdane.com
Lefave	MEMPHIS	Memphis Zoo	Melissa	Peterson	901-258-6012	mpeterson@memphiszoo.org
Heller	METROZOO	Zoo Miami	Lyn	Heller	305-251-0400 x84914	lynann.heller@miamidade.gov
Schwetz	MILWAUKEE	Milwaukee County Zoo	Trish	Khan	414-256-5446	Patricia.Khan@milwaukeecountywi.gov
Bredahl	NORFOLK	Virginia Zoo	Jill	Tarrant	757-390-9314	jill.tarrant@norfolk.gov
Schwetz	NZP-WASH	Smithsonian National Zoo	Becky	Malinsky	202-633-4729	malinksyb@si.edu

Cossaboon	OKLAHOMA	Oklahoma City Zoo	Tracey	Dolphin	405-425-0521	TdolphinDrees@okczoo.org
Shumaker	OMAHA	Omaha's Henry Doorly Zoo	Christine	Dupre	402-733-8401	aps@omahazoo.com
Lefave	PHILADELP	Philadelphia Zoo	Michael	Stern	215-243-5352	stern.michael@phillyzoo.org
Jackson	PHOENIX	Phoenix Zoo	Mary	Yoder	602-286-3800 (7634)	myoder@phoenixzoo.org
Jackson	PORTLAND	Oregon Zoo	Scott	Jackson	417-425-2642	scott.jackson@oregonzoo.org
Fox	RACINE	Racine Zoo	Crystal	Champeau-Williams	262-636-9308	cchampeau@racinezoo.org
Cossaboon	RIO GRAND	Albuquerque Biopark Zoo	M. Debbie	Wiese	505-764-6211	mwiese@cabq.gov
Jackson	ROCHESTER	Seneca Park Zoo	Brian	Sheets	585-753-2502	WilliamSheets@monroecounty.gov
Fox	ROLLING H	Rolling Hills Wildlife Adventure	Brenda	Gunder	785-827-9488 ext 143	brenda@rollinghillszoo.org
Bredahl	SACRAMNTO	Sacramento Zoo	Janine	Steele	916-808-5888	jsteele@saczoo.org
Jackson	SAN FRAN	San Francisco Zoological Gardens	Amber	Rindy	(415) 753-7080x7039	amberr@sfzoo.org
Yakubinis	SANDIEGOZ	San Diego Zoo	Dean	Gibson	619-557-3985	dgibson@sandiegozoo.org
Jones	SEATTLE	Woodland Park Zoo	Kim	Szawan	206-548-2509	kim.szawan@zoo.org
Fox	SEDGWICK	Sedgwick County Zoo	Devin	Turner	316-213-8388	devin.turner@scz.org
Heller	ST LOUIS	Saint Louis Zoo	Kim	Emerson	314-781-0900	emerson@stlzoo.org
Elder	ST PAUL	Como Park Zoo & Conservatory	Megan	Elder	651-487-8221	Megan.Elder@ci.stpaul.mn.us
Bredahl	TOLEDO	Toledo Zoo	Suzanne	Husband	419-385-5721 x 2018	suzanne.husband@toledozoo.org
Bredahl	TOPEKA	Topeka Zoological Park	Beckee	Niemackl	785 228-3060	bniemackl@Topeka.org
Shumaker	TORONTO	Toronto Zoo	Amanda	Carroll	416-392-5901	acarroll@torontozoo.ca
Yakubinis	WACO	Cameron Park Zoological & Botanical Society	Terri	Cox	254-750-8427	terric@cameronparkzoo.com
Jones	WAHPETON	Chahinkapa Zoo	Kathy	Diekman	701-642-8709	kdiekman@chahinkapazoo.org

Attachment 5

ORANGUTAN
SPECIES SURVIVAL PLAN
www.orangutanssp.org

Steering Committee
Megan Elder – SSP Chair &
International Studbook Keeper
Como Park Zoo & Conservatory
1225 Estabrook Drive
Saint Paul, MN 55103
megan.elder@ci.stpaul.mn.us

Cindy Cossaboon – *Vice Chair*
Dina Bredahl – *Secretary*
Erin Jones – *Treasurer*
Ronda Schwetz – *OSAFE Advisor*
Megan Fox
Lyn Heller
Scott Jackson
Jane Lefave
Rob Shumaker, Ph.D.
Lynn Yakubinis

Advisors
- *Education*: Brian Kutsch
- *Genetics*: Oliver Ryder, PhD
- *Husbandry*: Cindy Cossaboon
- *Nutrition*: Deb Schmidt, PhD
- *Past Chair*: Lori Perkins
- *Pathology*: Linda Lowenstine, PhD, DVM; Rita McManamon, DVM; & Sushan Han, DVM, PhD, DACVP
- *Population Management*: Jennifer Mickelberg, PhD
- *Research*: Meredith Bastian, PhD
- *Social Media*: Angie Selzer
- *Veterinary*: Nancy Lung, VMD, & Joe Smith, DVM

ASSOCIATION OF ZOOS & AQUARIUMS

04 March 2022

Amanda Carroll
Indomalaya Zookeeper III
Toronto Zoo
acarroll@torontozoo.ca

Sarah Shearer
Animal Mgr – Asia Central
Fresno Chaffee Zoo
sshearer@fresnochaffee.zoo.org

Jill Katka
Asst. Mammal Curator
Louisville Zoo
Jill.Katka@louisvilleky.gov

Dear Amanda, Sarah & Jill,

This letter presents the updated Orangutan SSP recommendation for Toronto Zoo, Fresno Chaffee Zoo, and Louisville Zoo as follows:

- Transfer Sumatran female #3270 "Jingga" from TORONTO to FRESNO, instead of LOUISVILL, for companionship and future breeding with Sumatran male #1971 "Busar"

This is a change from the 2021 Orangutan SSP Breeding Transfer Plan since Louisville Zoo is unable to import from Toronto at this time. As detailed in the recent plan, in order to grow the Sumatran population to a size of 95 individuals in the next five years at a growth rate of 3.9% (lambda = 1.039), the population needs approximately six to seven births per year. Because the annual number of births for each of the past ten years has ranged from zero to seven births per year (average 2.6 births/year), increasing the population size to 95 and maintaining this larger population size may be challenging. For this reason and others, all available reproductively mature Sumatran females have been recommended to breed. There are currently no breeding options for "Jingga" at TORONTO, nor "Busar" at FRESNO, so this is an important future pairing.

This import/export should be accomplished as soon as feasible for both institutions. Please communicate directly with one another to make arrangements. Let me or your steering committee liaison, Rob Shumaker, know if you have any other questions or needs from the OSSP.

Many thanks for your active participation in the Orangutan SSP program!

Sincerely,

Megan Elder
Chair, Orangutan SSP
megan.elder@ci.stpaul.mn.us

The Orangutan Species Survival Plan® is a cooperative population management and conservation program for orangutans living in zoos accredited by the Association of Zoos and Aquariums (AZA). The steering committee and advisory board are made up of experts in the field of orangutan care and behavior who are well positioned as advocates for the well-being of orangutans both within and outside of accredited zoos.

Attachment 6

Fresno Chaffee Zoo
Wildlife Conservation Grant
2021 Application

Project Title: Sumatran Orangutan Reintroduction Research and Community Conservation Education

Abstract: (Project Summary. Not to exceed 300 words): Orangutan populations are in rapid decline due to increasing habitat loss. Amongst other conservation efforts, one tool being employed is the reintroduction of ex-captive, rehabilitant orangutans to areas where the species was previously eradicated. The goal of the Sumatran Orangutan Conservation Programme (SOCP) Jantho Reintroduction Programme in Aceh on the Island of Sumatra, Indonesia, is to rescue, rehabilitate and release ex-captive Sumatran orangutans (Pongo abelii; Critically Endangered) and establish a new, self-sustaining population in the Jantho Nature Reserve, serving as a safety net population should catastrophe befall the remaining naturally wild orangutans. This conservation intervention has even greater urgency currently, given the grave potential threat of the coronavirus to the entire orangutan species. The SOCP is a collaborative initiative between the PanEco Foundation (the applicant organisation), the Indonesia-based NGO the Yayasan Ekosistem Lestari (YEL; Sustainable Ecosystem Foundation), and the Indonesian Government's Directorate General of Natural Resource and Ecosystem Conservation. We are seeking support for our innovative reintroduction project in the Jantho Pine Forest Nature Reserve, in order to monitor and survey released orangutans, both directly following reintroduction (in line with IUCN guidelines on great ape introduction) and those previously released that have dispersed into remote parts of the expansive forest. Furthermore, our long-term biodiversity monitoring in Jantho allows us also to evaluate the impact of the reintroduced orangutan population on resident biodiversity. This research will directly increase our knowledge of the health, survival, and ranging patterns of this new, growing population of Sumatran orangutans, and evaluate methodologies to maximize reintroduction success for conservation programmes. In addition, we will empower local people to directly work with us on these efforts, building capacity for long-term, local conservation action while inspiring the wider community and youth to act as advocates and protectors of orangutans and the forest.

Principal Investigator(s): Dr. Ian Singleton OBE, SOCP Director, PanEco

1. **Amount requested per year from FCZ Wildlife Conservation Fund: $ 20,000**
2. **Number of years of support requested: 5**
3. **Contact Person for Grant Application: Vicky Dauncey**

Address for Communication
Organization: PanEco
Address (include state, zip/postal code and country):
PanEco,
Chileweg 5,
8415 Berg am Irchel,
Switzerland

Telephone: +44 7985 195 484
E-mail: vicky@sumatranorangutan.org

If award is granted, please indicate whether check should be:

☐ **Mailed:** (check to be made out to):
☐ **Electronic funds transfer:** (we will contact you to obtain account information)

4. **Has this project received FCZ Wildlife Conservation Fund support in the past? N If so, when?**

5. **Proposed Project Period: From: July 1, 2021 To: June 30, 2026**

6. **Project Location: Jantho Pine Forest Reverse, Aceh Province, Indonesia**

7. **Is this project new? N (circle one)**

Attachment 7

SAFE
SAVING ANIMALS FROM EXTINCTION
ORANGUTAN

The Orangutan SAFE program moves beyond the goals of the AZA Orangutan Species Survival Plan (SSP), of which the aim is to manage our captive populations, by focusing specifically on the conservation of the wild orangutan population. The Orangutan SAFE Program aims to protect and restore the wild orangutan population and their habitats through public engagement, funding, and field work.

Statement of Institutional Support

<Institution Name> is committed to providing adequate resources and support for the Orangutan SAFE program as a Program Partner.

As a Program Partner, we agree to:

1) Contribute at least $1,000 to orangutan conservation priorities identified in the Orangutan SAFE Program Plan for the next three years.

2) Participate in public engagement and educational initiatives sponsored by the SAFE program

3) Identify an Institutional Representative who will serve as the primary point of contact between the institution and the SAFE program.

4) Assist in development of annual reports and 3-year Program Plan that will include measurable objectives to advance an established conservation plan.

5) Report conservation funding to AZA's Annual Report on Conservation on Science (ARCS)

I understand that failure to meet these obligations may result in the institution being removed as a Program Partner.

Name of the Director/Governing Official: Scott Barton

Signature of the Director/Governing Official: Scott Barton

Date: Nov 12, 2020

Attachment 8

ASSOCIATION OF ZOOS & AQUARIUMS

SAFE™
SAVING ANIMALS FROM EXTINCTION

2020-2022 Orangutan SAFE Program Plan

HENRY VILAS ZOO
CONSERVATION FOR GENERATIONS

Seneca Park Zoo
Connect. Care. Conserve.

COMO PARK ZOO & CONSERVATORY

Kansas City ZOO

ORANGUTAN SAFE PROGRAM PLAN

Contents

Cover photo © Meredith Bastian, Sungai Lading Orangutan Project

Orangutan SAFE Species Program Goal

The Orangutan SAFE program moves beyond the goals of the AZA Orangutan Species Survival Plan (SSP), of which the aim is to manage our captive populations, by focusing specifically on the conservation of the wild orangutan population. The Orangutan SAFE Program aims to protect and restore the wild orangutan population and their habitats through public engagement, funding, and field work.

Program Operational Structure

Program Leaders		
Ronda Schwetz	Henry Vilas Zoo • Executive Zoo Director	Schwetz.Ronda@henryvilaszoo.gov 608- 266-4708
Stacia Pieroni	Kansas City Zoo • Conservation Manager	staciapieroni@fotzkc.org 816-595-1364
Vice Program Leader		
Louis DiVincenti, DVM, MS, DACLAM, DACAW	Seneca Park Zoo • Assistant Zoo Director-Animal Care and Conservation	LouisDiVincenti@monroecounty.gov 585-753-2512
Steering Committee		
Megan Elder	Como Park Zoo and Conservatory • Primate Zookeeper, Orangutan SSP Vice Chair, International Orangutan Studbook Keeper	megan.elder@ci.stpaul.mn.us 651-487-8221
Devin Turner	Sedgwick County Zoo • Chimpanzee and Orangutan Keeper	devin.turner@scz.org 316-266-8301
Courtney Eparvier	Audubon Zoo • Curator of Primates and Sea Lions	ceparvier@audubooninstitute.org 504-212-5190
Program Partners		
Como Park Zoo and Conservatory	Michelle Furrer • Director/Campus Manager	michelle.furrer@ci.stpaul.mn.us 651-207-0333
Cameron Park Zoo	Terri Cox	TerriCo@wacotx.gov

Program Partners (Continued)		
Zoo Miami	Lyn Heller • Animal Science Manager	Lynann.Heller@miamidade.gov 305-251-0400
Program Advisors		
Wildlife Conservation Committee Liaison	Beth Schafer • Los Angeles Zoo and Botanical Gardens	beth.schaefer@lacity.org 323-644-4254
Research Advisor	Dr. Meredith L. Bastian • Smithsonian's National Zoological Park & Conservation Institute	BastianM@si.edu 202-633-3243
Education Advisor	Brian Kutsch • Little Rock Zoo	bkutsch@littlerock.gov
Orangutan SSP Advisor	Lori Perkins • Birmingham Zoo	lperkins@birminghamzoo.com 205-397-3844
Palm Oil Advisor	TBD	

Conservation Target

Orangutans (Order: Primates; Family: Hominidae) comprise three species in the genus *Pongo*. Though they once ranged as far north as China, each is now isolated to the islands of either Borneo (*P. pygmaeus subsp.*), across the territories of Indonesia and Malaysia, or Sumatra (*P. abelii; P. tapanuliensis*) in Indonesia. All three species are now recognized as Critically Endangered by the International Union for the Conservation of Nature (IUCN), having sharply declined in the Anthropocene due to habitat loss, exploitation and fragmentation; hunting; and the illegal pet trade.

Status of Species within the AZA Community

Orangutans have been exhibited in North American zoos since their importation in the early 1900s, with successful captive breeding taking place since the mid-1900s (Perkins, 2008; Elder, 2018). They are an iconic great ape, particularly due to extreme sexual dimorphism and the unique and distinctive cheek flanges of adult males. They are also the only great ape found outside of Africa; these factors help to make orangutans a popular species in zoos. The Orangutan Species Survival Plan (SSP) was initiated in 1985 and officially formed in 1988. Orangutans within the SSP are managed as two genetically separate breeding populations – the Sumatran and the Bornean. A third, non-breeding population made up of Sumatran x Bornean hybrids, also exists within the SSP. Because the species (at the time, subspecies) distinction was not clearly understood until the late 1980s, there was a sizeable population of "hybrid" orangutans in human care worldwide. In 1985, the Orangutan SSP adopted a policy placing a moratorium on the production of hybrid orangutans. The other regional zoo management programs (Europe and United Kingdom, Australia and New Zealand, Southeast Asia, Japan) adopted similar policies during the same time period. The recent discovery of a third species of orangutan, *Pongo tapanuliensis*, was announced in 2017

(Nater et al 2017). The SSP is currently working with the AZA Molecular Data for Population Management Scientific Advisory Group to determine potential impacts on current management strategy.

As of 01 September 2019, the SSP serves 53 accredited zoos across the U.S., Canada, and Mexico. At present, there are 98 (43.55) Bornean orangutans in 25 institutions, 95 (35.60) Sumatran orangutans in 27 institutions, and 38 (16.22) hybrid orangutans in 21 institutions. The Ape Taxon Advisory Group (TAG) has set the target population size at 100 individuals for each species in its 2014 Regional Collection Plan (RCP). Under AZA's sustainability designations the Bornean and Sumatran populations currently qualify as Green SSP Programs. Both populations are stable and self-sustaining, with small annual growth rates over the past 5 years (lambda 1.036 and 1.011 for Borneans and Sumatrans respectively), and the strong genetic profiles reflective of long-lived species (97.4% and 97.7% retained genetic diversity for Borneans and Sumatrans respectively, miniscule inbreeding, and an Ne/N ratio of 0.49 for each). Over the past several years, minimally-related or un-related individuals of both species have been imported into the SSP population from partner programs in other regions of the world (specifically from the ZAA program in Australia/New Zealand and the EEP program in Europe). Less frequently, individuals from the SSP population have been transferred to zoos in these overseas regions. In all cases, such transfers have been made with a focus on the best long-term option for the individual orangutan, and on mutual benefit to the regional breeding and management programs involved.

Whereas orangutans within the SSP are extremely unlikely to ever be candidates for reintroduction efforts, they do play important roles as ambassadors to inspire advocacy and caring among zoo visitors, and to promote action for the species' protection and conservation in the wild.

AZA Conservation Activities

According to the 2015-2017 AZA Annual Report on Conservation and Science (ARCS), 63 member institutions supported orangutan field conservation, with contributions totaling nearly $2 million. Conservation efforts in both Borneo and Sumatra were mainly focused on habitat protection, rescue and rehabilitation, and capacity building.

AZA Public Engagement Activities

There are many days throughout the year in which AZA organizations currently bring awareness to orangutans, including Ape Awareness month, Missing Orangutan Mother's Day, International Primate Day, Orangutan Caring Week and International Orangutan Day.

Conservation Status of the Species

Bornean Orangutan (*Pongo pygmaeus*)	
United States Fish and Wildlife Service Status	Endangered
IUCN Conservation Status	Critically Endangered

Bornean orangutan population sizes are not fully understood. The most recent estimate, published in 2004, identified a range-wide population of approximately 55,000 individuals inhabiting 82,000 km^2 of forest. However, that study may have underestimated inhabited range, and the population may have been as high – at the time of surveying in 2003 – as 104,700 (Wich et al 2012). This higher population estimate still represents a significant decline from an estimated 288,500 individuals in 1973, and does not account for decline occurring since 2003, now projected to reach 47,000 individuals by 2025. In recognition of precipitously declining numbers, the IUCN changed the conservation status of Bornean orangutans from 'endangered' to 'critically endangered' in 2016.

Population sizes of Bornean orangutans are further complicated by the recognition of three sub-species based on geographical distribution: *Pongo pygmaeus pygmaeus* (from the norther part of the Kapuas River to northeastern Sarawak; Sarawak, Malaysia and West Kalimantan, Indonesia), *P.p. wurmbii* (from the south of Kapuas River to the west of the Barito River; West and Central Kalimantan, Indonesia), and *P.p.morio* (from Sabah extended south to the Mahakam River in East Kalimantan; Sabah, Malaysia and North and East Kalimantan, Indonesia). Conservation efforts, thus, must address each sub-species.

In addition to loss of habitat, killing of orangutans, especially in Indonesian Borneo, is reported to be a key contributor to declining populations. Consequently, and in combination with habitat loss, many sub-populations are projected to become extinct in the next 50 years (Abram et al 2015).

Sumatran Orangutan (*Pongo abelii*)	
United States Fish and Wildlife Service Status	Endangered
IUCN Conservation Status	Critically Endangered

The range of Sumatran orangutans is limited to just 16,775 km^2 of forest, and the most recent population survey estimated 13,846 individuals (Wich et al 2016). The vast majority (~95%) occur in the Leuser Ecosystem, while other populations are found in the Sidiangkat and Pakpak. Recent studies have found genetic differentiation between subpopulations that is at least partially due to geographic barriers, such as rivers and high mountain ridges, even with the Leuser Ecosystem (Nater et al 2013).

About 35.6% of the Sumatran orangutan population is in protected areas (World Database Protected Areas recognized areas, SOCP unpublished data).

Tapanuli Orangutan (*Pongo tapanuliensis*)	
United States Fish and Wildlife Service Status	Not Recognized
IUCN Conservation Status	Critically Endangered

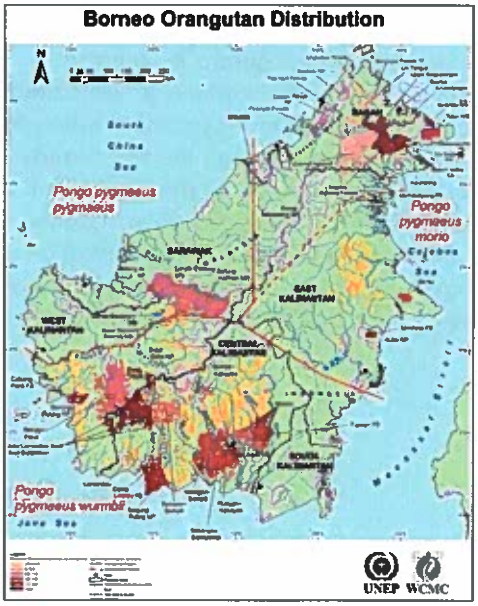
Although initially discovered by scientists in 1997, the Tapanuli orangutan was not described as a separate species until 2017. With a population estimate of fewer than 800 individuals (Wich et al 2016), *Pongo tapanuliensis* is the least numerous of all great ape species; despite being the first to be discovered since 1929.

Small population size and geographic isolation are the major challenges facing this species. Additionally, only about 10% of the geographic range is an area recognized by the World Database of Protected Areas. Another 76% is in Hutan Lindung (Protection Forest), while 14% does not have any recognized 'forest status.'

Population and Habitat Viability Assessment

The most recent finalized Population and Habitat Viability Assessment (PHVA) occurred in 2004. A 2016 PHVA is in the final editing stages for eventual publication, and changes reflected in that document will be incorporated into the SAFE Action Plan within one year of its release by IUCN/SSC. The 2004 PHVA recognized that wild orangutans are in steady decline due to logging, habitat conversion, fires, and poaching. The population has continued to decline since 2004, and the threats previously identified continue to be the major drivers of this decline. The assessment divided orangutan populations geographically through a working group for Borneo and one for Sumatra. Both working groups evaluated habitat units for orangutan population viability and identified priority units for conservation action using similar criteria. Based on the threats to high priority habitat units, a list of potential conservation action options that might be applicable was also determined. The Orangutan SAFE program has incorporated these priorities within our plan.

Orangutans in Borneo



Priority Bornean Orangutan Habitat Units

Location		Population Size	Habitat Size (Ha)
West Kalimantan & Sarawak	Gunung Palung	2500	90,000
	Betung Kerihun	1330-2000	450,000
	Batang Ai	119-580	24,050
	Lanjak Entimau	1024-1181	168,768
	Danau Sentarum	500-1000	109,000-190,000
	Bukit Baka	175	35,000
	Bukit Rongga & Parai	1000	420,000
Central Kalimantan	Tanjung Puting National Park	6000	415,040
	Sebangau	6900	578,000
	Mawas	3500	501,082
	Arut-Belantikan	6000	510,000
	Sambah-Kahahyan	1000	150,000
East Kalimantan	Kutai National Park*	600	198,629
	Berau & Sungai Lesan	400	--
	Gunung Gajah*	1500	140,000
	Kutai Timur	980	?
	Sangatta – Bengaton & Muara	175	?
Sabah	Sabah Foundation	6318	4461
	Lower Kinabatangan	517	1125
	Tabin	1200	1285
	North of Kinabatangan	2000	2298
	Trus Madi Forests	1897	255
	Kulamba Wildlife Reserve	204	730

Threats to viable Bornean orangutan populations are region-specific. Habitat fragmentation is the most significant threat in Sabah, while habitat fragmentation and hunting are major challenges in Sarawak. In Kalimantan, illegal logging, habitat conversions, and hunting were the most significant threats identified by the Borneo Working Group. Orangutans in Borneo are perceived to have lower mortality, faster breeding, and therefore, resulting in a capacity for more rapid population growth, compared to orangutans in Sumatra. These input values affected the models used to evaluate population demographics. The working group called for more demographic data from long-term field studies from both islands to provide more accurate estimates of population rates and to better document the existence and extent of differences between the two islands (and possibly between different regions within each island). Models for Borneo suggest that populations of 250 orangutans are demographically stable and will retain at least 90% of their initial gene diversity over time. Thus, habitats capable of supporting more than 250 orangutans should be prioritized for conservation action. The model assumes that habitat units will remain largely unchanged. However, the reality is that many of these forests are under significant threat of deforestation, which would cause significant harm to orangutan populations and long-term survival of the species.

Orangutans in Sumatra

Estimated Area and Orangutan Numbers for 13 Habitat Units for Sumatra Used for Modeling in 2004 PHVA

Habitat Unit	Est Orangutan #	Habitat Block	Primary Forest (km^2)	Orangutan Habitat (km^2)
NW Aceh*	654	1. Ulumasin (Aceh Besar)	2066	847
		2. Tutut (Woyla: NW Aceh)	1918	832
NE Aceh*	180	7. Geumpang	2116	282
Seulawah	43	6. Seulawah	103	85
West Middle Aceh*	103	3. Beutung (W Aceh)	1297	261
		9. Linge	352	10
East Middle Aceh*	337	8. Bandar-Serajadi	2117	555
West Leuser*	2508	4. Kleut Highlands (SW Aceh)	1209	934
		5. W Mt. Leuser	1261	594
		5A. Kleut Swamp	125	125
		10. E Mt. Leuser/Demiri	358	273
		11. Mamas-Bengkung	1727	621
Sidiangkat	134	12. Puncak Sidiangkat/B. Ardan	303	166
East Leuser*	1052	13. Tamiang	1056	375
		14. Kapi and Upper Lesten	592	220
		15. Lawe Sigala-gala	680	198
		16. Sikunder-Langkat	1352	674

Habitat Unit	Est Orangutan #	Habitat Block	Primary Forest (km^2)	Orangutan Habitat (km^2)
Tripa Swamp	280	17. Tripa (Babahrot) swamps	140	140
Trumon-Singkil*	1500	18. Trumon-Singkil Swamps	725	725
E Singkil Swamps	160	19. East Singkil Swamps	80	80
West Batang Toru*	400	20. West Bantang Toru	600	600
East Sarulla	150	21. East Sarulla	375	375
Total	7501		20552	8992

* Indicates priority habitat units

Population modeling over the short term (50-100 years) identified almost no probability of extinction. However, this time period encompasses only 2-3 generations for this long-lived species, making long-term projects (e.g., 1000 years) more appropriate for modeling. Populations under 100 individuals had a high probability of extinction over 1000 years, while populations of 250 individuals had a very small probability of extinction but declined to almost one-half of their original size and lost substantial genetic diversity. In contrast, populations of 500 or larger were demographically stable and retained over 90% of gene diversity, a common genetic goal for managed populations. Thus, the PHVA identified populations of 500 as being more ideal to contribute to the long-term conservation of the species, while smaller populations linked by occasional exchanges of animals could also contribute to the overall stability of a larger meta-population.

Key Orangutan Conservation Strategies Identified in National Action Plan

1. Build and maintain corridors between fragmented patches of orangutan habitats
2. Rehabilitate and restore potential habitats inside and outside of existing orangutan conservation areas
3. Release orangutans into their natural habitat according to their genetic data, taking care to maintain sample authenticity and avoid genetic contamination
4. Compile a guideline for the reintroduction and release of orangutans into their natural habitats, including accurate judgements about the viability of the original habitat
5. Conduct research on the ecology, behavior, distribution, genetics, diet, and reproduction of orangutans inside and outside designated conservation zones to minimize human-orangutan conflicts and promote effective orangutan management in commercial forest and plantation areas
6. Survey and monitor orangutan populations and habitats, both inside and outside of designated conservation zones
7. Review and develop economic alternatives that are both environmentally friendly and conducive towards orangutan conservation (e.g. ecotourism)
8. Extending the reach of orangutan conservation awareness programs through environmental education networks, routine meetings with the local community, and special approaches to religious, youth, and women's organizations
9. Include orangutan conservation material within elementary and secondary school curriculum

Threats

Primary Threats to Orangutans

- Habitat loss and fragmentation
- Fires
- Illegal Hunting/Trafficking
- Gaps in information on distribution and numbers

Strategic Objectives

Conservation Objectives	
Objective	
1.	Protect, Connect, and Restore Orangutan Habitat
2.	Support Anti-poaching and Wildlife Trafficking Prevention Efforts
3.	Continue and Enhance Research Related to Orangutan Distribution and Numbers

Public Engagement Objective	
Objective	
1.	100% of AZA zoos housing orangutans participating in World Orangutan Day Annually

Communication Objective	
Objective	
1.	Increase the number of AZA zoos housing orangutans that incorporate orangutan conservation messaging on grounds and social media to 100% by 2022

Funding Objectives	
Objective	
1.	Increase the amount of funds for orangutan conservation

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The Orangutan SAFE Steering Committee recognizes and thanks the following individuals for their contributions to development of this Program Plan, without whose efforts this endeavor would not have been possible:

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Orangutan SAFE Species 3-year Action Plan (2020-2022)

Conservation Objectives

Strategic Objective 1. Protect, Connect, and Restore Orangutan habitat in Borneo and Sumatra

Number	Action	Metric	Time Frame			Budget	AZA Members & Field Partners	Notes
			2020	2021	2022			
1.1	Increase participation in forest restoration and corridor connection activities.	Two new institutions added per year to the CREATE project.	X	X	X	$8,000 for 1,000 saplings	APE Malaysia Kansas City, Zoo, Audubon Zoo, Como Park Zoo and Conservatory	
1.2	Increase support for in-country habitat protection	1)Support Customary Forest programs to give local communities the legal rights to the lands on which they live and work	X	X	X	$100,000 TBD	Bornean Orangutan Survival Foundation Gunung Palung Orangutan Conservation Project Seneca Park Zoo	
		2)Support education, awareness, and field trips for community leaders and local school children to understand conservational issues and/or observe wild orangutans	X	X	X			

Strategic Objective 2. Support Orangutan Anti-Poaching and Wildlife Trafficking Prevention

Number	Action	Metric	Time Frame			Budget	AZA Members & Field Partners	Notes
			2020	2021	2022			
2.1	Confiscation and translocation of orangutans to appropriate habitats in county, based on site-specific release plans following IUCN guidelines	Provide veterinary, husbandry, and financial support to help with care of at least destined for translocation.	X	X	X	$28,000 $14,000	Danau Girang Field Center Bornean Orangutan Survival Foundation Henry Vilas Zoo Cameron Park Zoo	

Conservation Objectives (Continued)

Strategic Objective 3. Continue and Enhance Research Related to Orangutan Distribution and Numbers

Number	Action	Metric	Time Frame			Budget	AZA Members & Field Partners	Notes
			2020	2021	2022			
3.1	Support research of wild orangutan reproduction, ecology, behavior and health Metric	Support for research that monitors orangutan populations at sites important for long-term population sustainability to identify population trends and conservation threats	X	X	X	TBD TBD	HUTAN Gunung Palung Orangutan Conservation Project Seneca Park Zoo	
3.2	Support oil palm research	1)Support research regarding oil palm mapping 2) Investigate research regarding ethics of palm oil production	X X	X X	X X	$20,000	Serge Wich, Sumatran Orangutan Conservation Program	

Public and Stakeholder Engagement Objectives

Strategic Objective 1. 100% of AZA zoos housing orangutans participating in World Orangutan Day Annually

Number	Action	Metric	Time Frame			Budget	AZA Members & Partners	Notes
			2020	2021	2022			
1.1	Celebrate World Orangutan Day annually	1)Orangutan conservation efforts by AZA zoos and aquariums promoted through World Orangutan Day 2)Track number of AZA institutions celebrating World Orangutan Day annually and increase number of participating zoos to 100%	X X	X X	X X		All AZA institutions, field partners, and Orangutan SSP	World Orangutan Day occurs annually on August 19th. We recognize that organizations may choose to celebrate on a weekend shouldering this date.

Communication Objectives

Strategic Objective 1. Increase the number of AZA zoos housing orangutans that incorporate orangutan conservation messaging on grounds and social media to 100% by 2022

Number	Action	Metric	Time Frame			Budget	AZA Members & Partners	Notes
			2020	2021	2022			
1.1	Develop an orangutan SAFE toolkit	Create and distribute a complimentary toolkit to use for communications efforts	X	X	X		All AZA institutions, field partners, and Orangutan SSP	Education Advisor
1.2	Connect zoo visitors with orangutan conservation issues year-round	1) Create common messaging for zoo exhibits developed and updated with orangutan conservation information.	X	X	X		All AZA institutions, field partners, and Orangutan SSP	Education Advisor
		2) Ensure the Orangutan SAFE plan is on both the AZA and Orangutan SSP websites.	X	X	X			

Funding Objectives

Strategic Objective 1. Increase the amount of funds for orangutan conservation

Number	Action	Metric	Time Frame & Budget			Budget	AZA Members & Partners	Notes
			2020	2021	2022			
1.1	Increase the number of Orangutan SAFE program partners	Add 9 new Orangutan SAFE Partner Organizations by 2022	X	X	X	Raise at least $3,000 annually		Orangutan SAFE Program Partnership requires a 3-year commitment of at least $1,000 annually to Orangutan SAFE focused conservation objectives
1.2	Increase the number of AZA zoos housing orangutans contributing to in-situ Orangutan SAFE focused conservation initiatives annually	100% of AZA Zoos housing orangutans contributing to orangutan conservation by 2022	X	X	X			According to the 2018 ARCS report 33 out of 54 AZA accredited facilities holding orangutans
1.3	Increase the amount of funds directed to in-situ Orangutan SAFE focused conservation initiatives	Increase total funds by 10% by 2022	X	X	X	$60,700		According to the 2018 ARCS report $607,000 was contributed to orangutan conservation efforts. An increase of $60,700 would meet our goal of 10%.
1.4	Ensure all AZA zoos housing orangutans are reporting their orangutan conservation efforts annually	1)Designated steering committee member will conduct reach outs and reminders to encourage orangutan institutions to participate in the AZA ARCS report annually 2)100% participation of orangutan conservations efforts reported on the annual AZA ARCS report	X X	X X	X X			The ARCS report will serve as the Orangutan SAFE program conservation contribution data base. We will utilize this report to determine who is participating in orangutan conservation and we will also cross reference this data base with the self-reporting results that are submitted to the Orangutan Species Survival Program to determine who may be contributing to orangutan conservation but not reporting it on the ARCS report.

Attachment 9

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Education

Doctorate of Veterinary Medicine
2007-2011 University of California at Davis School of Veterinary Medicine

Bachelor of Science
2002-2006 University of California at Davis

Licensure

Veterinary License. California
Drug Enforcement Agency Licensure for controlled substances class II-V. (#FN3520435)
USDA-APHIS Veterinary Accreditation, Category II. (#058163)

Work Experience

Chief Veterinary Officer Jan 2017-present Fresno Chaffee Zoo, Fresno CA

- Executive team member providing strategic and operational leadership to a team of over 200 employees, multimillion annual budget, and $100 million in construction projects currently underway. Responsible for steering our team to uphold the mission and vision of our organization in all of our endeavors including development of zoo policies, exhibit design, collection planning, operations, and administration of the institution.
- Serve as the institution's senior veterinarian providing medical and surgical care to a diverse collection of ~1000 animals.
- Creating and routinely updating preventative medicine programs
- Developed a research committee to oversee and coordinate all research requests, formal sample banking protocols, and process for successful completion of inhouse research projects
- Design nutritional program and diet development for all collection animals
- Collaborated with animal welfare task force to create objective measurable criteria and system for review and follow through of standards
- Assisted in expanding our institutional conservation goals to include opportunities for staff field conservation participation
- Coordinated with local, state and federal officials to bring in a assurance colony for the last Blunt-nosed leopard lizard population known in the Ponoche Plateau for hopeful breeding and future release
- Provide educational resource and training for aspiring and current veterinary students, and veterinary technicians
- Manage diverse hospital team including associate veterinarian, veterinary technicians, and hospital zoo keeper.

Associate Veterinarian
Jul 2015- Jan 2017 Fresno Chaffee Zoo, Fresno CA

- Serve as the institution's staff veterinarian providing medical and surgical care to a diverse collection of ~1000 animals.
- Coordinate all animal shipping organization, and quarantine procedures upholding all state and federal guidelines
- Initiate veterinary and veterinary technician student rotations and education program

Relief Veterinarian
Jan 2019-current Fresno Specialty and Emergency Center, Fresno CA

- Serve as staff veterinarian providing emergency, critical and surgical care.

Veterinarian
Jul 2013- present Abilene Zoo, Abilene TX

- Serve as the institution's only staff veterinarian providing medical and surgical care to a diverse collection of ~1000 specimens.
- Oversee the wildlife rehabilitation program and administer medical and surgical care to ~300 diverse avian species admitted annually.
- Created and implement the institution's preventative medicine, nutrition, and research programs.
- Updated and supervise the training, and enrichment programs.
- Developed and manage the institution's commissary department and all animal food-related policies and procedures.
- Supervise veterinary technicians, commissary and animal keepers, registrar, preceptors/externs, volunteers, and other students.
- Serve as senior administrative staff of the zoo, participating in the development of zoo policies, exhibit design, collection planning, operations, and administration of the institution.

Veterinarian
Dec 2013- present Emergency Veterinary Center, Abilene TX

- Provide emergency triage, diagnostics, critical care and emergency surgical procedures to small domestic and pet exotic species.
- Communicate effectively and compassionately with clients, referring veterinarians, and co-workers.

Veterinary Internship
Jul 2012- Jul 2013 Fort Wayne Children's Zoo, Fort Wayne, IN

- One year internship practicing clinical medicine with an extensive collection of animals. Direct mentoring with frequent and well-rounded didactic learning.

Veterinary Internship
Jul 2011- Jul 2012 Pet Emergency and Specialty Center, San Diego, CA

- One year internship in an emergency focused specialty hospital. Direct mentoring by several emergency clinicians and specialists. Moderate exotic and wildlife caseload.

Externship Experience (2 to 5 weeks each from 2009-2011)

- California National Primate Research Center, Davis, CA
- Sacramento Zoo, Sacramento, CA
- Oakland Zoo, Oakland, CA
- Lindsey Wildlife Museum, Walnut Creek, CA
- San Francisco Zoo, San Francisco, CA.

- The Denver Zoo, Denver, CO
- The Marine Mammal Center, Sausalito, CA
- California Raptor Center, Davis, CA

Preceptorship Experience (12 weeks each from 2006-2008)

- Cotati Large Animal Hospital, Cotati CA
- Veterinary Consulting Service

Zoo Keeper Aide 2008-2010. Sacramento Zoo, Sacramento, CA

Wildlife Care Volunteer 2007-2008. Oiled Wildlife Care Network, International Bird Rescue, Suison City, CA

Large Animal Intensive Care Veterinary Technician 2003-2009 University of California Veterinary Teaching Hospital, Davis, CA

Teaching Experience:

- Pharmacology in Zoological medicine, Primary lecturer, CHSU Pharmacy School, Fresno CA (2017)
- Animal Handling and Procedures (VMD 415A), and Advanced Animal Handling and Procedures (VMD 415 B&C), Laboratory Teaching Assistant, *UC Davis VMTH*, Davis, CA, Sep 2003-2009. *Handling, treatment methods, physical examination, & disease processes of equines, cattle, small ruminants, & camelids*
- Comparative Animal Nutrition (NUT123), Tutor, *UC Davis,* Davis, CA (Spring 2006)
- Animal Nutrition (NUT 115), Tutor, *UC Davis,* Davis, CA (Winter 2005)
- Animal Biochemistry & Metabolism (ABI 102), Tutor, *UC Davis,* Davis, CA (Fall 2004)
- Animal Practice Dairy Production (ANS 049C) Lab Teaching Assistant, *UC Davis,* Davis CA (Spring 2003)
- Animal Practice Sheep Production (ANS 049I) Lab Teaching Assistant, *UC Davis,* Davis CA (Fall 2002)

References

Jon Dohlin
CEO & Zoo Director, Fresno Chaffee Zoo
1250 W. Olive Ave. Fresno, CA 93728
T: 559-498-5915/Fax: 559-264-9226
Email: jdohlin@fresnochaffeezoo.org

Amos Morris
Executive Zoo Director, Milwaukee County Zoological Gardens
10001 W. Bluemound Road, Milwaukee, WI 53226
T: 414-256-5401
Email: Amos.Morris@milwaukeecountywi.gov

Joseph A. Smith, DVM
Director of Animal Health Fort Wayne Children's Zoo
3411 Sherman Blvd. Fort Wayne, IN 46808
T: 260-427-6815/ Fax: 260-427-6859
Email: vet@kidszoo.org

Attachment 10

Michael Wenninger DVM, CertAqV

[redacted]
Sanger, CA 93657
[redacted]

Objectives: Practice high quality medicine and surgery for zoo/aquarium animals. Achieve board certification by the American Board of Veterinary Practitioners (DABVP-Reptile and Amphibian). Become board certified by the American College of Zoological Medicine (via the alternate route). Advance the field of zoological/aquatic medicine. Assist in wildlife conservation. Inspire the next generation of veterinarians.

Education: Doctor of Veterinary Medicine-University of Wisconsin School of Veterinary Medicine
May 2004, Other/Zoo track with preceptorships at Denver Zoo, Toronto Zoo, Marathon Veterinary Hospital. World Aquatic Veterinary Medical Association Certification as an Aquatics Veterinarian (CertAqV) received May 2020.

Employment:

Associate Veterinarian-Fresno Chaffee Zoo, Fresno, CA
June 2018-present
Duties include preventative, medical, surgical, and emergency care for a diverse zoological collection, direct management of RVTs and hospital keeper, management of animal transactions, and oversight of pest control.

Interim Chief of Veterinary Services-Fresno Chaffee Zoo, Fresno CA
August 2021-January 2022
Duties include providing leadership to hospital staff, budget management, research approvals, diet management and commissary oversight, and preparation for AZA inspection. Duties also include preventative, medical, surgical, and emergency care for all species at the Fresno Chaffee Zoo, management of animal transactions, and oversight of pest control.

Associate Veterinarian-Animal Medical Center, Merced, CA
September 2018-present
Duties include advanced and routine surgery and urgent care for companion animals

Locum Veterinarian-24/7 Pet Vets, Fresno, CA
June 2020-present
Duties include emergency medical and surgical care for companion animals

Medical Director/Chief of Staff Veterinarian-Spartan Animal Hospital, McFarland, WI
July 2011-June 2018
Duties included practice development/management and primary care for dogs and cats, primary and referral care for zoo animals/exotics.

Associate Veterinarian-Creature Comforts Veterinary Service, Saylorsburg, PA
April 2008 through July 2011
Duties included primary, referral, and emergency care for dogs, cats, exotics, and zoo animals.

Attending/Consulting Veterinarian-Pocono Snake and Animal Farm, Marshalls Creek, PA

June 2006 through June 2018
Duties included primary and emergency care for primates, big cats, wolves, bears, reptiles, birds, small hoof stock, and other small exotics.

Attending/Consulting Veterinarian-Claws and Paws Zoo, Hamlin, PA
June 2006 through July 2011
Duties included primary care for primates, large carnivores, birds, reptiles, hoof stock, and other small exotics.

Attending/Consulting Veterinarian-Lehigh Valley Zoo, Schnecksville, PA
May 2010 through July 2011
Duties included referral care for primates, large carnivores, birds, reptiles, hoof stock, and other small exotics.

Associate Veterinarian-Wright Veterinary Medical Center, Bethlehem, PA
June 2004 through April 2008
Duties included primary, referral, and emergency care for dogs, cats, exotics, and zoo animals.

Qualifications:
Experience managing and developing veterinary practices
Experience with medicine, surgery, and husbandry of zoo species
Excellent surgical skills-comfortable with routine and advanced procedures
Excellent medical skills-comfortable with complex internal medicine cases
Excellent interpersonal communication skills
Experience as mentor for veterinary students and graduate veterinarians
USDA Level II Accreditation
DEA Licensed for Class II Narcotics
Certified Aquatics Veterinarian (CertAqV)
SSP Veterinary Advisor Varanus salvadorii

References: Dr. Shannon Nodolf DVM, Chief Veterinary Officer at Fresno Chaffee Zoo, 916-365-6740
Dr. Taylor Bliss, Part-time Veterinarian at Fresno Chaffee Zoo, 928-499-5927
Dr. Sheryl Allen-Gould, colleague for 3 years at Spartan Animal Hospital, 608-295-4012
Dr. Dan Kelleher, colleague for 4 years at Creature Comforts Veterinary Service, 203-610-1654

Lectures: Reptile Husbandry and Commonly Associated Diseases
Common Snake Maladies
Emerging Infectious Diseases of Reptiles
Small Mammal Dental Disease
Rabbit Urinary Tract Disease
Zoonotic Diseases Associated with Exotic Pets

Publications: EAZA Reptile Taxon Advisory Group Best Practice Guidelines for the Crocodile monitor (Varanus salvadorii). Borja Reh, Jesús Recuero, Yirui Heng, Chris R. Shepherd, Andy Reeves, Tim Trout, Stan Mays, Michael Wenninger, Samuel S. Sweet, Álvaro Camina, Charlie Frelon, Robert Haines, Brett Smith, Hakeemulislam Osman, Sarah J. Smith, and Alex Mitchell. Currently being reviewed.

Serotonin elicits long-lasting enhancement of rhythmic respiratory activity in turtle brain stems in vitro.

Stephen M. Johnson, Julia E. R. Wilkerson, Daniel R. Henderson, Michael R. Wenninger, and Gordon S. Mitchell. Journal of Applied Physiology 2001 91:6, 2703-2712

Role of synaptic inhibition in turtle respiratory rhythm generation. Johnson, S. M., Wilkerson, J. E., Wenninger, M. R., Henderson, D. R. and Mitchell, G. S. The Journal of Physiology 2002, 544: 253-265.

Time-dependent changes in spontaneous respiratory activity in turtle brainstems in vitro. J.E.R. Wilkerson, M.R. Wenninger, G.S. Mitchell, S.M. Johnson. Respiratory Physiology & Neurobiology, Volume 138, Issues 2–3, 2003, Pages 253-263

Attachment 11

Nicole Presley
[redacted] Clovis CA 93619 npresley@fresnochaffeezoo.org

Professional Experience

Fresno Chaffee Zoo – Fresno, California
June 2016 - present
Curator – Mammals & Sea Lion Cove

Responsibilities:

- Supervise daily husbandry, training and enrichment, reproduction programs including breeding introductions, nutrition, and veterinary procedures for animals contained in sections including Sumatran Orangutans, Siamang, Colobus, Wolf's guenon, and Common squirrel monkey.
- Collection planning involving animal acquisition and disposition for section, working with Species Survival Programs as part of the AZA requirements
- Direct and participate in the selection, orientation and training for Zookeeper staff
- Staff schedule, payroll, and performance reviews for staff
- Budget preparation, purchasing of equipment, organizing maintenance work, or other activities that need coordinating with other departments
- Assist with the design of animal enclosures and exhibits
- Work with Vet staff to determine appropriate diet for animals and recommends dietary changes when needed to maintain a healthy animal collection
- Assist Veterinary staff with animal health management

Fresno Chaffee Zoo – Fresno, California
April 2015 – June 2016
Lead Carnivore Keeper

Responsibilities:

- Daily animal husbandry, observation and enclosure maintenance for lions, cheetahs, and meerkats
- Ensuring safety and shifting protocols are followed and training new staff in proper shifting procedures for dangerous animals
- Successful introductions of lions for breeding to produce healthy parent-reared cub
- Organizing of daily duties, work assignments and extra work projects to complete responsibilities of the unit
- Act as liaison between team and Curator using effective communication
- Building a training program for animals in section using operant conditioning principles

Toronto Zoo - Toronto, Ontario
September 2008 – August 2014
Wildlife Care Supervisor – Indo-Malaya Pavilion
Behavioral Husbandry Coordinator

Responsibilities:

- Supervised daily husbandry, training and enrichment, nutrition, and veterinary procedures for animals contained in the Indo-Malaya Pavilion including Sumatran Orangutans.
- Managed complex group dynamics with 2.4 Sumatran Orangutans
- Guided the Toronto Zoo enrichment program for all Wildlife Care Units
- Implemented and supervised animal training programs for various species throughout the Toronto Zoo according to operational procedures
- Staff schedule and performance reviews for full-time staff

- Budget preparation, purchasing of equipment, organizing maintenance work and veterinary procedures, or other activities that needed coordinating with other departments

Toronto Zoo - Toronto, Ontario
January 2003 – August 2008
Keeper Grade IV – Wildlife Health Centre (WHC)

Responsibilities:

- Daily animal husbandry, observation and enclosure maintenance for a variety of taxa in holding and quarantine, including assistance with medical treatments for hospitalized animals
- Primary care giver for female gorilla in 90 day quarantine
- Trained all new staff in holding set-up, capture and restraint, enrichment, quarantine procedures, and daily husbandry for WHC units
- Organized staff daily duties, work assignments and extra work projects to complete responsibilities of the WHC
- Ensured effective communication between keepers and veterinarians concerning animal treatment, care, and containment for animals in the WHC, including the quarantine facility

Toronto Zoo, Toronto, Ontario
November 1995 – January 2003
Keeper Grade I, II, and III

Responsibilities:

- Daily animal husbandry, observation and enclosure maintenance for a variety of taxa at the Toronto Zoo including Sumatran Orangutans
- Assisted in the care and treatment of sick and injured animals and in animal immobilizations and transport
- Participated in the training and evaluation of seasonal, co-op students, Gr. I, Gr. II and Gr. III keepers
- Interacted with zoo visitors during Meet the Keeper Talks, tours, general zoo hours, and education programs
- Participated in exhibit design, animal management and projects of interest

Professional Development

- Graduated from the University of Guelph in 1994 with Specialized Honours Zoology, BSc.
- City of Toronto Leadership Skills course, Effective Coaching Skills course, and Managing in a Unionized Environment
- AZA course, Managing for Success: Part I (February 2009)
- AZA course, Managing for Success: Part II (February 2011)
- AZA course, Managing Animal Enrichment & Training Programs (November 2010)
- Member of the American Association of Zoo Keepers since 1996-2015
- AAZK Professional of the Year Award – 2009
- Current member of the Animal Behavior Management Association

Attachment 12

Sarah Shearer

[redacted] Fresno, Ca. 93711
[redacted]

Zoo Animal Manager of Asia Central – Fresno Chaffee Zoo

EXPERIENCE SUMMARY

- Animal introductions – tigers, bears, orangutans, siamangs, wolves, pinnipeds, colobus, and various other small mammal species
- Animal training - blood draw, x-ray, ultrasounds, injections, crating, and paternal care training
- Animal transportation – tigers, orangutans, chimpanzees, bears, primates, pinnipeds, and various other small mammal species
- Birth planning and management – orangutan, siamang, tiger, colobus, wolves, lemurs and various other small mammal species
- Orangutan SSP conference presenter for my team's extensive work developing our orangutan maternal care training program and successful training and reintroduction of an infant orangutan to his mother. This included training
  - breast pumping every 2 hours
  - nursing through the fencing
  - hand expression of milk
  - supplemental nutrition feeding while infant was nursing
  - infant bottle feeding through mesh
- Critical care experience – periods of time requiring high levels of veterinary involvement, team communication and animal cooperation - orangutans, lion, tiger, pinniped
- Training team members for two person shifting of potentially dangerous animals
- Leading team members in the merging and restructuring of departments and cross training of animal behaviors
- Recapture coordinator

Zoo Animal Manager of Asia Central– Fresno Chaffee Zoo **Feb 2020 - Current**

- Oversee department training programs, behavioral enrichment programs and welfare programs for malayan tigers, lions, sumatran orangutans, siamangs, sloth bears, colobus, Red-ruffed lemurs, squirrel monkeys, fennec fox and meerkat.
- Coordinate staff schedules including day-to-day operations and workflow, team projects and facilitate communication meetings.
- Train keepers to work safely around dangerous animals and regularly ensure that safe practices are being followed.
- Oversee payroll for direct reports. Provide guidance and feedback to team members throughout the year and give evaluations or corrections when needed.
- Keep area protocols up to date and ensure team compliance with policies.

Lead Zookeeper - Fresno Chaffee Zoo **Feb 2020 - Jun 2011**

- Plan and oversee department training programs, work with the zoo's behavioral enrichment coordinator to update and implement individual enrichment programs.
- Communicate effectively with management and all team members and departments.
- Organize tasks and coordinate with other teams to assist with projects and staffing needs.
- Train team members in the operation of the department.
- Mentor team members to create a positive and cooperative work environment.
- Assist management in developing area policies that help further the zoo's mission.
- Preform all duties and responsibilities of a primary zookeeper.

Interim Mammal Curator - Fresno Chaffee Zoo **Nov 2015 - June 2016**

- Developed and reviewed animal training and enrichment programs.
- Guided staff in the breeding, training and exhibit needs of the collection.
- Coordinated schedules and activities for multiple departments, reviewed timecards.

- Provided support, correction, and evaluation of job performance for staff in the department.
- Ensured that departments are following all current USDA and AZA standards.

Mammal Primary Zookeeper - Fresno Chaffee Zoo **May 2005 - Jun 2011**

- Participated in developing the FCZ two-person hot shifting policy.
- Provided husbandry for a variety of carnivores and primates, following the zoo's safety policies.
- Observe animal behavior and health. Fed and cared for a variety of zoo animals.
- Performed public presentations, keeper chats and training demonstrations.
- Record information about enrichment, training, medical issues, and daily observations.
- Assisted in veterinary procedures when necessary.
- Provided medications as needed and communicated continuing medical needs to coworkers.
- Interacted with zoo docents and assisted zoo visitors with questions and needs.

Temporary Zookeeper - Fresno Chaffee Zoo **Jan 2002 - Jan 2005**

- Participated in all full time zookeeper duties for a one year durations in mammals with pinnipeds, carnivores and primates, in the hospital and in the elephant department.

Student Research Assistant - Long Marine Lab **Aug 2000 - Jan 2002**

- Worked 20 hours per week volunteering with pinniped research in cognition and sensory systems.
- Met animal husbandry needs and participated in training plan development and implementation.

Seasonal Full-Time Keeper - Ocean World Aquarium **May 1998 - Sep 1998**

- Provided daily husbandry and training of aquarium fish, otters and pinnipeds.
- Provided guided tours, presentations and pinniped training demonstrations.

EDUCATION

University of California, Santa Cruz - emphasis in Ecology and Evolutionary Biology
Fresno Community College - AS degree in Life science

Attachment 13

EW

Erica Wiebe

ADDRESS

[redacted]
Madera, CA, 93636

PHONE

[redacted]

EMAIL

ewiebe@fresnochaffeezoo.org

EDUCATION

Texas A&M University @ Galveston

Galveston, TX
Graduated May 2010
Bachelor of Science Degree in Marine Biology

WORK HISTORY

May 2011 – Present

ASIA CENTRAL ZOOKEEPER • FRESNO CHAFFEE ZOO • FRESNO, CA

- Provide daily husbandry care, enrichment, and training for a variety of mammal species; having included Sumatran orangutans, siamang, colobus, guenons, lemurs, felids, bears, otter, pinnipeds, wolf and fennec fox.
- Assist with developing and implementing improvements within the department's enrichment, training, and husbandry programs to better animal welfare and help promote an increase in natural behaviors.
  - Helped with multi-species exhibit introductions and work through social dynamics issues among a variety of species; including orangutans with siamang and social dynamics among orangutans themselves.
  - Helped with crate training and transport with variety of primates including orangutan and siamangs, as well as felids and bears
  - Helped with critical care for an orangutan with severe dental issues
    - Involving helping with and training for several procedures and providing round the clock care and feeding
    - Involving training orangutans for different social dynamic potentials, including training her daughter to be able to take on the role of mother to this orangutans 1 year old son.
  - Helped with colobus monkey maternal care training
    - Providing infant care with supplemental bottle feedings while still integrated with the adult group
  - Helped with training nebulizer behavior for our male orangutan and blood pressure with all our orangutans
  - Helped with formulating and implementing recapture plans
  - Helped with design of new Kingdoms of Asia area – including habitat/holdings, training demonstrations areas, and enrichment devices
- Trained by vet staff to successfully draw blood during voluntary training sessions for orangutans, siamangs, tigers, lions, and bears. As well as helping during medical procedures.
  - Helped create/implement our voluntary ape blood draw training process
- Successfully trained voluntary injection for procedures for a variety of species including and not limited to orangutans, siamangs, colobus, tigers, and bears.
- Provide training and guidance to new keeper staff to safely work around, clean and manage the species under our care.
- Participate in tv/media spotlights to help spread conservation messaging
- Utilize Excel, Word, PowerPoint, Microsoft Office TEAMS, and ZIMS Species360 for animal care record keeping and team communication.

April 2011 – May 2011

SWING ZOOKEEPER PART-TIME • RED RIVER ZOO • FARGO, ND

- Provided daily husbandry care, enrichment, record keeping and prepared diets for a variety of birds, reptiles, mammals, and insects.

Attachment 14

AMELIA LAUTENBERG

[redacted] • [redacted] • Fresno CA, 93720

SKILLS: ANIMAL RELATED

- Writing and implementing training plans
- Presenting animals for educational purposes
- Shifting animals between exhibit areas
- Animal husbandry
- Assisting veterinary staff during procedures
- 10 years experience riding/handling/training horses
- Neonatal and critical care in domestic kittens

SKILLS: GENERAL

- Proficient in both digital and film photography
- Proficient in Adobe photoshop and lightroom

RELATED EXPERIENCE

FRESNO CHAFFEE ZOO, Fresno, CA

Keeper Asia Central Oct 2022- Present

- Daily care for lions, Sumatran orangutans, siamangs, squirrel monkeys, red ruffed lemurs, colobus monkeys, Wolf's guenons, meerkats, and fennec foxes.
- Responsibilities include daily animal husbandry, exhibit maintenance, observation, enrichment, animal training, detailed record keeping, and dispensing medication.
- Experience working safely using a two person shifting system around potentially dangerous animals.
- Ape Experience
    - Training sessions working maintenance behaviors with Sumatran Orangutans including but not limited to
        - Body presentations
        - Tooth brushing
        - Voluntary injections
        - Blood draws
    - Experience facilitating and observing introductions between different groups of Sumatran Orangutans
    - Administering medications both orally and through nasal spray in Sumatran Orangutans
    - Experience working with a female surrogate raising her younger brother

Keeper Apprentice May 2021- Oct 2022

- Care for squirrel monkeys, red ruffed lemurs, colobus monkeys, Wolf's guenons, fennec foxes, California sea lions, Pacific harbor seals, ring tailed lemurs, and red wolves.
- Responsibilities include daily animal husbandry, exhibit maintenance, observation, enrichment,

observing animal training, detailed record keeping, dispensing medication, shifting all primates and fennec foxes listed above, and encouraging public interest in conservation.

MEMPHIS ZOO, Memphis, TN

Primate Intern Jan 2021- May 2021

- Care for Sumatran orangutans, western lowland gorillas, bonobos, white-cheeked gibbons, siamangs, colobus monkeys, patas monkeys, spot-nose guenons, red ruffed lemurs, black and white ruffed lemurs, and Asian small-clawed otters
- Responsibilities include daily animal husbandry, exhibit maintenance, observation, enrichment, observing animal training, crate training a red ruffed lemur, detailed record keeping, dispensing medication, shifting lemurs and otters, and encouraging public interest in primates and conservation
- Ape Experience
    - Worked around Sumatran Orangutans, Western lowland gorillas, and bonobos
        - Participated in husbandry and daily care for the above species

SIX FLAGS WILD SAFARI, Jackson, NJ

Animal Educator June - November 2020

- Animal husbandry, set up enrichment, provide overall care for all animals in the Safari Discoveries collection
- Observe training sessions for all animals

BUCKNELL UNIVERSITY ANIMAL BEHAVIOR LAB, Lewisburg, PA

Research Fellow August 2016- Jan2020

- Design and carry out cognitive and observational studies
- Assisted in animal husbandry
- Animal Behavior projects:
    - Husbandry training in 1.0 hamadryas baboons
    - Focal observations on tufted capuchin monkeys
    - Social learning in tufted capuchin monkeys
    - Vocalization study in squirrel monkeys

PROSPECT PARK ZOO, Brooklyn, NY

Animal Care Intern May - August 2019

- Trained and socialized Bushy Tailed Jirds to be used for education programs.
- Designed enrichment for all animals in the collection; animal husbandry for all animals.

STATEN ISLAND ZOO, Staten Island, NY

Animal Care and Nutrition Intern May - August 2018

- Designed enrichment for all animals in the tropical forest collection
- Devised and executed behavior training plan for spider monkeys and marmosets
- Animal husbandry

COLTS NECK EQUINE ASSOCIATES- *Extern*

NEW JERSEY EQUINE CLINIC- *Extern*

RED BANK VETERINARY HOSPITAL- *Extern*

EDUCATION

BUCKNELL UNIVERSITY, Lewisburg, PA

Bachelor of Arts, Animal Behavior January 2020

- Presidential Fellow - awarded to select highly qualified applicants. Fellows work closely with a professor for 6-8 hours per week on a challenging, long-term project matching their interest.
- Vice President, New Member Education - Delta Zeta Sorority
- Presenter, Kaufman Research Symposium

Attachment 15

Heather Chance

[redacted] Fresno, CA 93722
[redacted]

Education:

Blinn Junior College, Brenham, TX
AS Biology May 2006
Texas A&M University, College Station, TX
BS Zoology May 2008
AZA Felid TAG Husbandry Course Completed
Certificate issued July 2018
AZA Felid TAG Husbandry Course Completed
Certificate issued November 2021
Mental Health First Aider Course Completed
Certificate issued February 2022

Experience:

August 2018 – Present: Zookeeper Asia Central Department
Fresno Chaffee Zoo, Fresno, CA
Duties focused on animal care and husbandry including but not limited to feeding, cleaning, medicating, providing enrichment and husbandry training, observation, and reporting to managers as to the overall welfare of species under departmental care. This department is responsible for multiple species and taxa including Orangutan, Siamang, and multiple other primate species. I have been part of multiple medical procedures with these species and have participated on intensive care teams that were responsible for the care and welfare of a female Orangutan suffering from, and being treated for, oral cancer. I also participated in team discussions for that individual's short-term and long-term care, and helped navigate difficult situations that arose. That individual's eventual passing resulted in an adolescent sibling rearing the infant that was then motherless. I also participated in discussions and evaluations, as well as daily care, that this social dynamic brought on. I have trained multiple maintenance behaviors with the infant, am on training teams for medical husbandry training for the Orangutans and Siamangs including voluntary blood draws, voluntary injections, and am shaping voluntary radiograph behaviors with one of the adolescent Orangutans under our care. Duties also focused on guest interaction with pathway duties, animal demonstrations and public presentations.

March 2017 – August 2018: Lead Keeper Carnivore Department
Fresno Chaffee Zoo, Fresno, CA
Duties include those listed under Interim Lead Keeper Carnivore Department. Duties also include, but are not limited to facilitating growth within the department for animal care and training programs as well as the development of staff.

July 2016 – March 2017: Interim Lead Keeper Carnivore Department
Fresno Chaffee Zoo, Fresno, CA
Duties include those listed under Zookeeper Carnivore Department as well as planning and driving the daily activities and routines of the department and staff, leading team discussions, and facilitating communication between management and the team as well as communication across departments within the facility until a permanent Lead Keeper is assigned. Management training classes are attended quarterly.

June 2015 – July 2016: Zookeeper Carnivore Department
Fresno Chaffee Zoo, Fresno, CA
Duties focused on animal care and husbandry including but not limited to feeding, cleaning, medicating, providing enrichment and husbandry training, observation, and reporting to lead keeper or managers as to the overall welfare of individuals under departmental care. Species under care included large carnivores such as African Lions and Cheetah. Aided in creating birth management plans and protocols for African Lions as well as cub socialization protocols. Duties also focused on guest interaction on pathway, animal demonstrations and other public presentations. I have been cross-trained for closing duties in multiple animal departments.

November 2008 – June 2015: Large Mammal Keeper

San Antonio Zoo and Aquarium, San Antonio, TX.
Duties included daily husbandry care and documentation as well as public speaking and guest interactions. Responsible for multiple species and taxa including large carnivores such as Sumatran Tiger, African Lion, and Spotted Hyena. Participated in animal transport including the transfer of a 1.0 Sumatran Tiger to our facility from another across state lines. Planning and preparation for the birth of tiger and lion cubs including birth management plans and any necessary modifications to animal spaces. At times when the Supervisor and Lead Keeper were absent, I acted as a team leader for the Department. I was also cross trained in a second mammal department to assist when short staffed.

September 2008 – November 2008: Animal Care Intern

International Exotic Animal Sanctuary, Boyd, TX.
Duties included diet and medication preparation and distribution, habitat and grounds cleaning and maintenance, safely using vehicles and equipment, public tours, emotional enrichment of sanctuary residents, and building enclosure features such as pools. I learned to work with mortar and cement, how to install PVC plumbing pipe. I attended developmental classes that included grant writing and fire arms training for shoot teams. A variety of species were residents of the sanctuary including African Lions, Tigers, Jaguars, Leopards, Snow Leopards, Pumas, Brown Bears, Black Bears, and small felids.

Attachment 16

KS Kimberly Sharp

OBJECTIVE

[Zookeeper with 5+ years of experience assisting in the supervision and care for animals. Thorough knowledge of the characteristics, habits, and the natural environment of animals. Excellent ability to interact with zoo visitors with courtesy while enforcing regulations. Looking forward to using my skills, knowledge, and abilities to enhance conservation and enrich animals' lives.]

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[redacted]
[Fresno, CA, 93728]

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[redacted]

EMAIL
[kashford@fresnochaffeezoo.org]

EXPERIENCE

[2019] – [Present]
[Zookeeper Asia Central] • [Fresno Chaffee Zoo] • [Fresno, CA]

Responsible for the daily care, feeding, and enrichment of six Sumatran Orangutans: an adult male, 2 adult females, 2 juveniles, and an infant; and 3 Siamangs: 1 adult male, 1 adult female, 1 infant. Prepared and administered appropriate daily diets, implemented effective behavioral enrichment, maintained records, completed health and welfare and assessments, thoroughly cleaned and disinfected enclosure and ensured cleanliness throughout the day. Maintained, as well as shape, training behaviors, such as body presentations and injections, and assisted veterinary staff in all aspects of animal treatment. Participated in caring for and administering medication for an adult female orangutan undergoing treatment for cancer; maintaining accurate health and welfare records. Involved in working with juvenile orangutans to become the primary caregivers for their infant sibling after their mothers both succumbed to their illnesses. Assisted the team with introductions between the adult male orangutan and the younger individuals. Assessed behavioral interactions between our orangutans and siamangs. Educated guests in overall zoo care of apes and primates (and all animals), educating about our training program, as well as conservation efforts for orangutans and other species native to South East Asia. Provided training and guidance to new keepers and volunteers cleaning and caring for the apes.

EDUCATION

[University of California, Davis] [Davis, CA] [2014]

Animal Biology

Attachment 17

Dallas LaDucer | Ape Curriculum Vitae

[redacted] Fresno, CA Zip 93721] | [redacted]
[redacted] | Dladucer@fresnochaffeezoo.org

Objective

To highlight my experience working with Apes and other primates.

Skills & Abilities

I possess a general knowledge of the husbandry of various primate species including dietary, environmental, social and enrichment needs. I have worked around primates in both free and protected contact situations, in one and two person shifting protocols and understand the safety involved with working dangerous or "hot" animals including serving on both chemical and lethal response teams. I have an understanding of training and maintaining husbandry behaviors with primates to aid in their medical care. I have experience in breeding, birth management and neonatal care in several primate species. I have worked with primates being treated for various medical conditions, during immobilizations and postmortem social dynamics. The details of my experience limited to Apes and primates is listed below.

Experience

Zookeeper — Fresno Chaffee Zoo 05/19 — Presen

Worked with a total of 3.3 Sumatran Orangutans, 1.2 Siamangs as well as groups of Colobus monkeys, Wolf's Guenons, Squirrel monkeys, Red Ruffed and Ring-tailed lemurs. Trained on most husbandry behaviors and regularly involved in veterinary training and procedures. Cared for 0.2 mature Orangutans during cancer symptoms and treatments. 0.1 Siamang born during tenure. Have been a part of multiple social group separations and introductions as our social dynamics have adapted over time with all species, but primarily with the Orangutans. Cared for the group fully in holding while the ape exhibit was under renovations.

Zookeeper — Idaho Falls Zoo 02/15 — 05/1

Primary caretaker for 2.1 Red Ruffed lemurs.

Zookeeper — Woodland Park Zoo 10/12 — 02/1

Cared for 1.1 Siamangs as well as groups of Lion-tailed Macaques and Pata's Monkeys. Occasionally assisted with diet prep and enrichment for 2.3 Orangutans. 1.0 Siamang suffered from IBS and had an extensive feeding and supplement routine. Lion-tailed Macaques were cared for using full PPE precautions for Herpes B.

Education

Evergreen State College – BA/BS Evolutionary Biology and Animal Behavior 09/07 – 06/12
Courses focused on General Biology, Evolutionary Biology and Animal Behavior. Traveled abroad to study the social behavior of Wolverines at zoos in Russia, Finland and Sweden.

Communication

Given a broad range of public presentations about various species of exotic animals, in person, in classrooms, to private clubs/parties and on various media platforms, including with free-contact program animals.

Attachment 18

Lawrence Rea

894 W Belmont Ave, Fresno, CA 93728 | [redacted] | LRea@fresnochaffeezoo.org

Experience

Zookeeper Asia Central – [Fresno Chaffee Zoo] 02-2015 – Present

- I have been responsible for the daily husbandry care and training for a total of 6 Sumatran orangutans, 3 females and 3 males ranging in age from infant to 49 years old.
- Managed various social groups at times to prevent unwanted interactions between certain individuals where health and safety would be a concern.
- I assisted in the training and mentoring of new keeper staff on daily husbandry, safety and shifting protocols for working with Orangutans and Siamangs.
- Assisted Vet staff during medical procedures, Pre-shipment procedures, assisted loading adult male for transport off site for medical procedure, witnessed necropsy of older female, observed partial jaw extraction of female due to cancer and assisted with after care for her.
- The daily duties included preparing daily diets, administering medications, cleaning and disinfecting of exhibits and holding spaces and also providing species appropriate enrichment and logging interactions for record keeping and also training new behaviors providing daily training of maintenance and medical behaviors including participating in pretransfer procedures, help start the training program of 3-year-old adolescent male, and also teaching orangutans to voluntarily hold their mouths open for saliva collection for a study.

Education

Central Learning Adult School Site June 13,2013
Received Diploma
Fresno, CA

Attachment 19

Anthony F. Stenger

[redacted]

EDUCATION

Miami University, Oxford, OH **Graduated:** August 2018
Bachelor of Arts
Major: Zoology **Minor**: Geography & Sustainability, College of Arts and Science
Concentration in Natural Resources and Wildlife Conservation

PROFESSIONAL AFFLICATIONS & DEVELOPMENT

- Professional Associate, Association of Zoos and Aquariums (AZA)
- Professional Development Course; Foundations of Ambassador Animal Management, Fall 2021
- Professional Member, American Association of Zookeepers (AAZK)
- Member, AAZK Fresno CA Chapter

CONSERVATION PROJECTS & CONFERENCES ATTENDED

- Chihuahuan Conference, November, 2019
- Texas Lobo Coalition, Vice Chairman

SKILLS

- Certified Naturalist and Environmental Educator
- Certified Pet Dog Trainer (CPDT- KA)
- Operant conditioning & positive reinforcement training
- Animal husbandry & handling
- Data entry & familiarity in ZIMS
- Manual labor skills/lifting to 100+ lbs.
- Extensive customer service experience
- Public presentation/communication
- Proficiency in Microsoft Office, Teams & Zoom
- Operation of power tools and machinery

WORK EXPERIENCE

Animal Management: Zookeeper, Swing/Asia Central **January 2022-Present**
Fresno Chaffee Zoo Corporation. - Fresno, CA

- Providing general husbandry and preparing diets for orangutans, siamang, primates, pinnipeds, aneaters, capybara, small and large carnivores including African lions.
- Parcipation in animal training and enrichment program, develop shaping plans.
- Presenting "Keeper Talks," and "Guest Enrichment Talks," to educate and engage the public/guests.

Zoo Education: Zoo Keeper, Education & Ambassadors Animals **July 2021-Janurary 2022**
City of El Paso Zoological Park & Society. - El Paso, TX

- Providing general husbandry and preparing diets for animal ambassadors including; armadillos, foxes, small mammals, psittacines, raptors, various small reptiles, amphibians and invertebrates.
- Assisted in opening new section/area. (Education & Animal Ambassadors, July, 2021)
- Training new avian species for education programs such as Golden Eagle, East African Grey-crowned Crane, Great Horned and Burrowing Owls.
- Participation in conditioning/training and enrichment programs; proposing new enrichment ideas and develop shaping plans.
- Assisting in developing Strategic & Collection Planning for new animal ambassador program with Education Department.
- Providing daily opertaion/management of area; processing documents and training/guiding new staff and keepers.
- Monitoring animal health and reporting illness or injury to veterinary and other zoo staff.
- Conducting and participating in Animal Welfare Assessments, improving overall health of animals care in collection.
- Assisting veterinary staff administering medications, providing treatment, capturing and restraining animals.
- Recording and data entry of animal information, such as weights, consumption and animal behavior into ZIMS.
- Responsible for carrying out Safety Protocol accordance with AZA.
- Presenting, 'Wild Encounters,' stage show and other animal programs to educate and engage the public/guests.
- Assisted in Chihuahuan Desert area, providing care for jaguar, mountain lion, Mexican Gray wolves, hoofstock, livestock, coati, spider monkeys, raptors, pscittanes, small mammals, reptiles and invertebrates.

Animal Care: Zoo Keeper, Chihuahuan Desert **September 2019-July 2021**

- Providing general husbandry and preparing diets for Jaguars, Mountain lions, Mexican wolves, hoofstock, livestock, coati, Spider monkeys, raptors, psittacines and education animals such as small mammals, reptiles, amphibians and invertebrates.
- Assisted in opening new section/area of the zoo (Chihuahuan Desert, November, 2019).
- Complying to US Fish and Wildlife Service regulations of Mexican Gray Wolf and Black-footed Ferret Recovery Programs.
- Assisted in neonatal care of 0.1 Collared Peccary and successful intergration to mixed-species habitat.
- Assisted in South America area, providing care for Ocelots, Sea lions, avairy birds, reptiles, small primates and mammals.
- Other duties pertaining to animal health, welfare and data entry transferred over to next position within zoological institution.

Pet Services: Dog Trainer **June 2016- January 2022**
Petco Animal Supplies, Inc. – El Paso, TX

- Duties include positive reinforcement training of dogs of all breeds and ages.
- Scheduled both group and private training lessons; develop training plan and working relationship between trainer, dog, and owner to provide consistent behavior training techniques.
- Providing care for live animals in store including aquatic life and small companion animals.
- Customer service duties such as hospitality and animal care and nutrition instruction for customers.
- Store operation that include cash register duties, stocking store shelves and general cleaning duties; with store opening and closing responsibilities.

Interpretive Collection: Animal Keeper Intern **September 2019**
Cincinnati Zoo & Botanical Gardens. - Cincinnati, OH

- Provided general husbandry; preparing diets and cleaning enclosures for animal ambassadors including; xenarthrans, foxes, skunks, binturong, macropods, raptors, psittacines, flamingos, other avian species, reptiles, amphibians and invertebrates.
- Presented, "Keeper Talks," as programs to educate and engage zoo patrons/public.
- Assisted in training sessions and socialization of ambassador animals.

Land Stewardship Unit: Natural Resources Technician **June 2019-August 2019**
MetroParks of Butler County. – Hamilton, OH

- Assisted with conservation, wildlife management, and land stewardship activities in parks and natural areas.
- Assisted with prescribed fires, invasive plant control, and nuisance wildlife as directed.
- Used and maintained equipment such as hand and power tools and heavy machinery safely to carry out duties.
- Aided in general public programming and special events.
- Maintained facilities by, but not limited to: litter pick up, landscape development and upkeep, cleaning and maintenance of park facilities and public areas, mowing and trimming around park grounds, applying pesticides and fertilizers.
- Operated motor vehicles and large equipment such as and not limited to mowers, skid steers, tractors and other equipment to accomplish assigned tasks.
- Maintained records of tasks performed: including but not limited to: environmental projects and application of pesticides in parks.

Cheetah & Carnivore Department: Animal Care Intern **December 2018-March 2019**
Wildlife Safari, Inc.- Winston, OR

- Provided general husbandry and enrichment activities for African lions, Sumatran tigers, cheetahs, Brown & Black bears.
- Assisted in hand-rearing and socialization of 1.0 cheetah cub to become an ambassador animal/cheetah.
- Behavioral observations and health monitoring of animals; including and not limited to breeding cheetahs and hibernating bears, recording data in logs/notes and ZIMS.
- Presented animal encounters and cheetah outreach programs, educating and engaging the public/guests.
- Conditioned and trained lions, tigers, and cheetahs; maintaining behaviors for basic husbandry and enrichment.
- Trained 1.0 African lion, "crate," behavior for pre-shipment transfer to another zoological insitution.
- Assisted with arrival of 1.0 Sumatran tiger and introduction through "howdy," to 0.2 Sumatran tigers.
- Assisted with capture, restraint and trans-location of animals for medical procedures and animal acquisitions.
- Participated in animal food donation program, processing carcasses and caring for live prey to be used as feed.
- Responsible for carrying out Safety Protocol accordance with AZA; securing gates, locks, and shifting animals.
- Cross-trained in Elephant Department, providing care for 1.3 African elephants.

Volunteer: Wild Animal Keeper **May 2018-December 2018**
Red Wolf Sanctuary, Inc. and Raptor Rehabilitation Center - Rising Sun, IN

- Provided general husbandry animal collection of North American wildlife: Mountain lion, Bobcats, canids, Black bears, elk, deer and raptor species.
- Assisted in wildlife rehabilitation and release of injured or orphaned native animals and raptors; recording slow motion videos of wildlife release to publish on organization's social media page/account.
- Natural resource management of 452 acres and ecological restoration work; including removal of invasive plant species, tending to gardens, trail maintenance and other landscaping duties.
- Maintained facilities and constructed enclosures; including new Flight Center for Bald Eagles and other raptors.
- Compliance with USDA and USFWS regulations in the care and safety of captive wildlife.

Animal Operations: Mammal Intern, Carnivores **May 2017-August 2017**
Nashville Zoo at Grassmere, Inc. - Nashville, TN

- Provided general husbandry for Andean bears, anteaters, red pandas, civets, binturong, small and large felids such as Clouded leopards, Mountain lions and Eurasian lynx
- Cleaned animal enclosures, shifted animals and maintained exhibits with minor repairs.
- Assisted staff and veterinarians with ultrasound of Giant anteaters to determine pregnancies.
- Socialized 2.2 binturongs and 1.1 clouded leopard cubs to be ambassadors and to participate in SSP Program.
- Assisted in preparation of 0.3 Sumatran tiger arrival; safety check, walk through and stocking any supplies needed.
- Collected and recorded behavioral data and fecal specimens for medical, research and reproductive purposes.
- Assisted with baby watch of Red panda cubs that were born Summer, 2017.
- Cross-trained in Contact Area; caring for macropods and livetsock

Volunteer: Wildlife Resource Aide **September 2016-November 2016**
ODNR: Hueston Woods State Park and Nature Center – College Corner, OH

- Provided general husbandry and proper handling and feeding of raptors, reptiles, native mammals and Mountain lion.
- Prepared carnivorous diets that includes husbandry of rodents used for prey to feed.
- Assisted in rehabilitation and release of native animals such as raptors, administered medication and monitored health.
- Responsible for observing all proper safety precautions standards for animal handling and work environment.

VolunTeen: Zookeeper Aide & Interpreter **May 2009-January 2012**
Cincinnati Zoo & Botanical Gardens – Cincinnati, OH

- Responsible for proper feeding, caring and cleaning of enclosures of animals in Children's Zoo and Ambassador Animals area that included various species of livestock and small mammals, birds, and reptiles.
- Animal handling and demonstrations of animal ambassadors for hands on education for the public/patrons.
- Assisted with operant conditioning training of 2.0 Mountain lions with trainers/staff members.
- Responsible for proper safety precautions in carrying out duties.

Attachment 20

toronto zoo

Medium Metal Crate – Large Primate & Medium Carnivore (2)

IATA NUMBER	34, 72
SPECIES	Orangutan, gorilla, mandrill, hyena, polar bear (sub-adult)
LENGTH (cm/inches)	145 / 57
WIDTH (cm/inches)	66 / 26
HEIGHT (cm/inches)	109 / 43
WEIGHT (kg/lbs)	159 / 350
MATERIAL	Aluminum & stainless steel
ADDITIONAL DETAILS	Food & water can be filled from the outside
VALUE (CDN)	$4000.00

Re: [EXTERNAL] RE: Additional Information Required - CITES/ESA Import Application CS0086806

Lamberson, Amanda M <amanda_lamberson@fws.gov>
Fri 6/2/2023 11:48 AM
To: Katharine Alexander <KAlexander@fresnochaffeezoo.org>

Hi Katherine,

Sorry for my delayed reply. Thank you for the updated exhibit photos. I will continue with processing the application and will follow-up if we need anything else.

Kind regards,

Amanda Lamberson

From: Katharine Alexander <KAlexander@fresnochaffeezoo.org>
Sent: Thursday, May 25, 2023 2:32 PM
To: Lamberson, Amanda M <amanda_lamberson@fws.gov>
Subject: [EXTERNAL] RE: Additional Information Required - CITES/ESA Import Application CS0086806

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Hi Amanda!

Here is an updated version of our Attachment 1. We have included photos of the completed exhibit.

Please let me know if you need anything else. Have a great weekend!

Katharine Alexander (She/Her) | Registrar
Email: kalexander@fresnochaffeezoo.org
Administration Office: 1250 W. Olive, Fresno, CA 93728
Zoo Grounds: 894 W Belmont Ave, Fresno, CA 93728
Main: 559.498.5910 Direct: 559.498.5912

FRESNO CHAFFEE ZOO

Fresno Chaffee Zoo inspires people to care for animals, create connections, build community and save wildlife.

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From: Katharine Alexander
Sent: Monday, May 22, 2023 2:06 PM
To: Lamberson, Amanda M <amanda_lamberson@fws.gov>
Subject: RE: Additional Information Required - CITES/ESA Import Application CS0086806

Hi Amanda!

Thank you so much for contacting us! I have asked our team to get updated exhibit photos by the end of the week. We will have this to you by Monday/Tuesday of next week at the latest.

Please let me know if there is anything else that you need!

Katharine Alexander (She/Her)| Registrar
Email: kalexander@fresnochaffeezoo.org
Administration Office: 1250 W. Olive, Fresno, CA 93728
Zoo Grounds: 894 W Belmont Ave, Fresno, CA 93728
Main: 559.498.5910 Direct: 559.498.5912

**Fresno Chaffee Zoo inspires people to care for animals,
create connections, build community and save wildlife.**

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From: Lamberson, Amanda M <amanda_lamberson@fws.gov>
Sent: Monday, May 22, 2023 12:37 PM
To: Katharine Alexander <KAlexander@fresnochaffeezoo.org>
Subject: Additional Information Required - CITES/ESA Import Application CS0086806

Good afternoon Katherine,

Thank you for your application for a CITES/ESA import permit. This application was just recently assigned to me, however I do apologize for the substantial delay. Given the time that has passed, I am emailing to request updated information on the facilities that would used to house Jingga. I understand from the application that the Fresno Chaffee Zoo's orangutan facility was in the process of renovation. When determining whether an importer has adequate facilities for the species requested, we must consider the facilities as they are at the time of review. Therefore, please send photographs of the facilities as they are at the time of this email and update the written description if necessary. I have attached the application with the information previously submitted for question # 20 for reference. If you have questions or need clarification, please let me know. Thank you.

In accordance with 50 CFR 13.ll(e), if the requested information is not received by this office within 45 calendar days of the date of this email, your application will be abandoned and administratively closed. Once a file is closed, you will need to submit a new application, and all required fees, for the Service to consider your proposed activity.

Kind regards,

Amanda Lamberson
Biologist
U.S. Fish and Wildlife Service
Division of Management Authority
Branch of Permits, MS: IA
5275 Leesburg Pike
Falls Church, VA 22041

Import/Export/Re-Export of Live Animals (CITES/ESA)
Application Form (3-200-37a)
Fresno Chaffee Zoo Application
0.1.0 Orangutan from the Toronto Zoo
Attachment 1

Section E

1) Name and address where you wish the permit to be mailed, if different from physical address. If you would like expedited shipping, please enclose a self-addressed, pre-paid, computer-generated, courier service airway bill. If unspecified, all documents will be mailed via regular mail through the U.S. Postal Service.
   a) Fresno Chaffee Zoo
      Attn. Katharine Alexander
      1250 W. Olive Ave.
      Fresno, CA 93728

2) Point of contact if we have questions about the application (name, phone number, and email).
   a) Katharine Alexander
      559-498-5912
      kalexander@fresnochaffeezoo.org

3) Have you or any of the owners of the business (if applying as a business, corporation, or institution), been assessed a civil penalty or convicted of any criminal provision of any statute or regulation relating to the activity for which the application is filed; been convicted, or entered a plea of guilty or nolo contendere, for a felony violation of the Lacey Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act; forfeited collateral; OR are currently under charges for any violation of the laws mentioned above?
   a) No

4) Type of Activity: Import, Export, or Re-Export (e.g. exporting a specimen that was previously imported into the United States.
   a) Import

5) The current location of the animal(s) (if different from the physical address):
   a) Toronto Zoo
      361A Old Finch Avenue
      Toronto, ON M1B 5k7
      Canada

6) Recipient/Sender: If export/reimport, provide name and physical address of the recipient in the foreign country. If import, provide name and physical address of the exporter/re-exporter in the foreign country.
   a) Import.
   b) Toronto Zoo
      361A Old Finch Avenue
      Toronto, ON M1B 5k7
      Canada

7) For EACH animal/specimen involved in the import/export/re-export, provide (you may use the table below):

Scientific Name (Genus, species, and if applicable, subspecies)	**Common Name**	**Birth/Hatch Date** (MM/DD/YYYY) (Approximate of actual unknown)	**Wild or Captive Born**	**Quantity**	**Sex** (Males.females. unknown sex, 10.2.3)	**Permanent Markings** &/or identification information (e.g. microchip #, leg band #, tattoo, studbook #, etc.)
Pongo abelii	Sumatran orangutan	12/15/2006	C	0.1.0	Female	Transponder: 00-0695-91ED House Name: Jingga Studbook #: 3270 Local ID:41339

Source of Specimen

8) For each captive-born/captive-hatched animal(s), provide a signed and dated statement from the breeder or other appropriate documentation (e.g. Species 360 report) that includes the following:
   a) Scientific name (genus, species, and if applicable, subspecies): (See table)
   b) Common name: (See table)
   c) Name and address of the facility where the animal was bred and born (See table)
   d) Birth/hatch date (mm/dd/yyyy): (See table)
   e) Identification information (studbook, microchip, leg band, etc.): (See table)
   f) Name & address of the facility where the parental stock is located: (See table)
   g) A statement from the breeder that the animal was bred and born at the breeder's facility (including the facility's name and address), and if you are not the breeder, provide documentation demonstrating the history of transactions (e.g., chain of custody or ownership of the animal).
      (1) Attachment 2 – Letter of Origin from Toronto Zoo
      (2) Attachment3 – Specimen Report

Scientific Name (8a) Common Name (8b)	**Name & Address of the Facility where the animal was bred & born (8c)**	**Birth/Hatch Date (8d)**	**Identification Information (studbook, microchip, leg band, etc.) (8e)**	**Name & Address of the Facility where the Parental Stock is Located (8f)**
Pongo abelii Sumatran orangutan	Toronto Zoo 361A Old Finch Ave. Toronto, ON M1B 5k7 Canada	12/15/2006	Transponder: 00-0695-91ED House Name: Jingga Studbook #: 3270 Local ID:41339	Toronto Zoo 361A Old Finch Avenue Toronto, ON M1B 5k7 Canada Dam: Alive Sire: Deceased

9) For each animal/specimen taken from the wild, provide:
   a) N/A – This animal was bred in captivity.

10) For each animal being re-exported (e.g. exporting animal(s) previously imported into the United States) provide:
   a) N/A – This animal has never been previously exported.

Description and Justification for Requested Activity

Describe the purpose of your proposed activity.

11) If scientific research, provide:
   a) This animal is not for scientific research.

12) If conservation education and/or zoological display, provide:
   a) Objectives of proposed activity in support of an education program & (b) copies of educational materials (e.g., handouts, text of signage or public presentations, incorporating the following information: Status in the wild, current threats, and conservation efforts.

i) Fresno Chaffee Zoo is in the process of building new exhibit space, Kingdoms of Asia, which will house orangutans, tigers, sloth bears, tomistoma, as well as a variety of fish and songbirds. Along with the construction, we will be focusing on new interpretation throughout the exhibit.
   (1) Kingdoms of Asia Exhibit Goals:
      (a) 1. To provide spacious, naturalistic habitats that enrich animals' daily lives, offer opportunities for choice, and stimulate natural behaviors
      (b) 2. To create an exciting journey to tropical Southeast Asia where visitors discover its rich diversity of animals, plants and human cultures
      (c) 3. To offer memorable experiences for visitors of all ages through up-close animal viewing, detailed exhibit features that reward exploration, interaction with staff, and intimate spaces for observation
      (d) 4. To connect the Zoo with Fresno's Southeast Asian communities and enable the broader visitor population to discover both the ancient and modern cultures represented in Kingdoms of Asia
      (e) 5. To engage our visitors in taking conservation actions to protect threatened and endangered Southeast Asian species
   (2) Kingdoms of Asia Interpretive Goals:
      (a) 1. To facilitate close connections between visitors and animals that inspire wonder, caring and empathy
      (b) 2. To encourage family/social interaction in fun, thought-provoking experiences that engage multiple learning styles
      (c) 3. To enable visitors to gain awareness of ancient and modern Southeast Asian cultures
      (d) 4. To demonstrate the Zoo's commitment to animal care and welfare
      (e) 5. To connect our visitors to the field conservation projects the zoo supports by illustrating positive stories of how dedicated Southeast Asian conservationists are working to protect animals and habitats
      (f) 6. To empower visitors to join the Zoo in taking conservation action by donating to field conservation projects, making informed consumer choices, and supporting community actions that help protect species and habitats
   (3) Kingdoms of Asia audiences:
      (a) Like other AZA-accredited institutions, Fresno Chaffee Zoo's most frequent visitors are families with younger children.
      (b) Forty-nine percent of Fresno residents are white, non-Hispanic; 42% are Mexican. Other major groups are Asian. The last visitor survey in 2008 showed that the visitation to Fresno Chaffee Zoo is reflective of the community; however, some noted that the Zoo has disproportionately fewer Asian visitors. Those not visiting the Zoo also include adults whose children are grown and who do not have grandchildren; millennials without children (yet they do attend Zoo events); and those who perceive the area where the zoo is located to be unsafe. In 2017 people visited from all 50 states and 27 different countries. The Zoo gets fewer visitors from those tourists going to national parks.
      (c) Kingdoms of Asia is designed to appeal to all audiences, yet the focus of the exhibit provides a wonderful opportunity to welcome Fresno's Southeast Asian communities of Cambodian, Lao and Hmong people.
   (4) Kingdoms of Asia Outcomes:
      (a) Animal Connection:
         (i) Goal 1: To facilitate close connections between visitors and animals that inspire wonder, caring and empathy
            1. Report that they experienced an animal encounter, observed behavior, and/or learned something about animals that amazed them
            2. Feel a closer connection to one or more Kingdoms of Asia species than they did before their visit
            3. Express concern about animals whose survival is threatened

4. Value the importance of animals to maintaining healthy ecosystems more than they did before their Kingdoms of Asia visit
5. Be inspired to help protect wild animals and habitats.

(b) Social Interaction:
   (i) Goal 2: To encourage family/social interaction in fun, thought-provoking experiences that engage multiple learning styles
      1. Report that exhibit experiences engaged them in fun interactions with family members or others in their social group
      2. Describe how children's experiences at the exhibit sparked their curiosity
      3. Relate something that they saw, heard or did at the exhibit that was a new experience for them
      4. Describe how using the question prompts enhanced their social experience at the exhibit
      5. Indicate their intention to recommend the exhibit to family and friends
      6. Indicate that they plan to return

(c) Cultural Awareness:
   (i) Goal 3: To enable visitors to gain awareness of ancient and modern Southeast Asian cultures
      1. Feel awed by their experience of Southeast Asian traditions and culture
      2. Recognize that Kingdoms of Asia illustrates both historic and contemporary Southeast Asian cultures
      3. Appreciate the resilience of Southeast Asian peoples as they overcame extreme hardship to migrate and keep their cultural traditions alive
      4. Indicate they now have a greater awareness of/appreciation for the distinctive Cambodian, Lao

(d) Animal Welfare:
   (i) Goal 4: To demonstrate the Zoo's commitment to animal care and welfare
      1. Agree that Fresno Chaffee Zoo provides the highest quality care for animals
      2. Recognize that zoo animal habitats are designed to meet animals' physical, emotional and social needs: some live in social groups; others are naturally solitary
      3. Appreciate the close bond that exists between keepers and animals in their care
      4. Value that zoo staff provide enrichment to stimulate animals' natural behaviors
      5. Recognize that voluntary training reduces stress by enabling animals to participate in their own health care

(e) Field Conservation:
   (i) Goal 5: To connect our visitors to the field conservation projects the zoo supports by illustrating positive stories of how dedicated Southeast Asian conservationists are working to protect animals and habitats
      1. Value the efforts of field scientists working to conserve Southeast Asian wildlife and habitats
      2. Feel pride in the zoo's support for conservation
      3. Feel inspired by and hopeful about the work of field conservationists
      4. Donate money at the zoo to conservation projects

(f) Conservation Action:
   (i) Goal 6: To empower visitors to join the Zoo in taking conservation action by donating to field conservation projects, making informed consumer choices, and supporting community actions that help protect species and habitats
      1. Recognize that habitat loss and wildlife trade are major threats to animal survival
      2. Name two actions they can take to help wildlife (don't buy wild animals as pets or products made from wild animals; purchase products with sustainably harvested palm oil)
      3. Demonstrate that they know how to take action
      4. Believe that their actions make a difference for wildlife

5. Take action at the zoo
6. Declare intent to take consumer actions such as purchasing only sustainable palm oil products and FSC-certified hardwoods, and being a responsible pet owner
7. Declare intent to take broader community actions such as writing to companies regarding use of sustainable palm oil

ii) Conservation Interpreter Presentation:

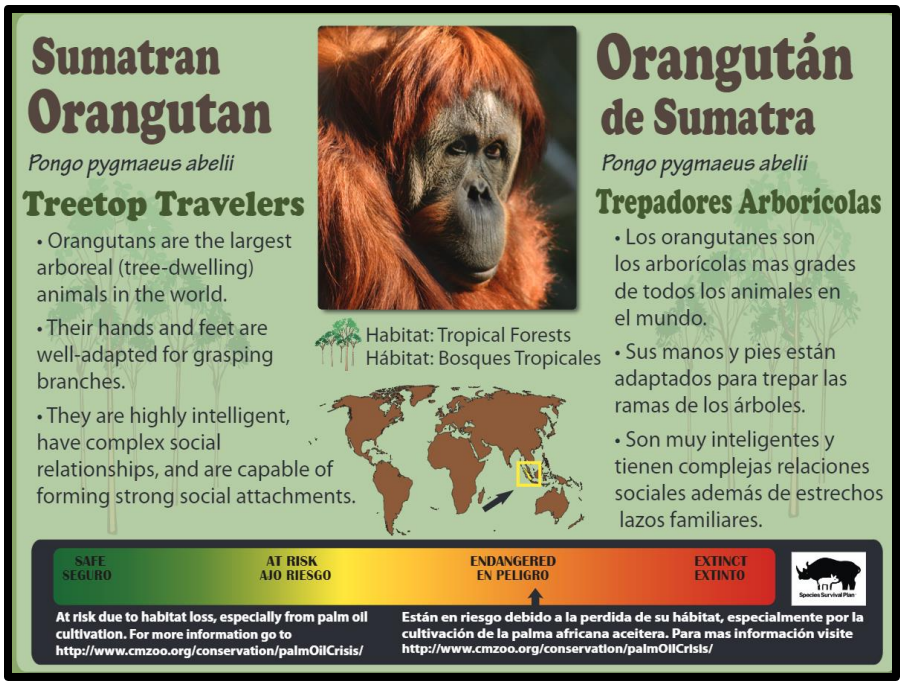
(1) FCZ's planned interpretive signage for orangutan focuses on the threats of unsustainable palm oil production and the ways in which guests can support sustainable production. An interactive component of this messaging includes a staff facilitated activity in which guests can use a smartphone and the Sustainable Palm Oil Shopping app by Cheyenne Mountain Zoo to scan a variety of items and check their sustainable status. The goal of this interaction is to showcase the variety of items that contain palm oil while familiarizing guests with the idea of sustainable palm oil and providing them with the tools to take action on their own.

iii) Orangutans are critically endangered in the wild. Our identification signage and keeper/conservation presentations highlight this.

(1) Since our exhibit is currently under construction and we are working on our new signage design, below is an example our new signage, which does not have information on it yet, and our old sign whose information will go on the new signage.

(a)

(b)



iv) The below slides focus on our orangutan species and are taken from our interpretive plan for the Kingdoms of Asia exhibit.

(1)

Bonner Station Lower Level: Orangutans and Siamangs

We will interpret orangutans and siamangs on the lower level. The upper level will focus on conservation.

Story/Concept Signs

KA-1-20 Differences between monkeys and apes; great apes and lesser apes **(This lends itself to a lift-panel interactive quiz or a touch screen interactive instead of a panel sign—**how many great apes can you name?) Humans are primates, too! Guess how much DNA humans have in common with orangutans and chimpanzees?

KA-1-21 Communication: touch in primates, body language, vocalizations: they have distinct calls for different individuals; siamangs have a unique song they sing and practice together (duet). Songbirds do this, too!

KA-1-22 Compare social organization of orangutans and siamangs. Orangutans: maternal care (solitary species; offspring stay with mother six years or longer; maternal care is unique, long-lasting; young are dependent on mothers for longest period of any animal. Siamangs: pair bonding. How FCZ meets animals' needs (e.g., appropriate social groups)

Themes

Connection
Both people and animals need to communicate with others and raise our families—our behaviors may be similar or very different. **(Animals compared to me—to promote empathy)**

(2)

Animal ID Signs

1. **Sumatran orangutan ID:** Long hair, differences between males and females
2. **Siamang ID:** Throat sac to amplify calls
3. **Small tiles** to identify our individual orangutans and siamangs

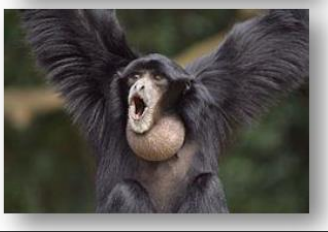
Tactile/Interactive

- Bronze orangutan and siamang hand casts
- Optional for universal design: Bronze cast or male and female orangutan faces
- Optional: Interactive OR touch screen: differences between monkeys/apes; great apes, lesser apes

Signs can be placed on the doors to the storage closet because it will always be closed. Interactives will work best on the left hand side.

Technology

- Touch screen OR interactive for differences between monkeys and apes; greater and lesser apes; great apes and humans



Live Interpretation

- Training demonstrations: Include in presentation the topics of great ape intelligence, tool use, emotion and personality
- Focus on family life; similarities and differences between humans and apes

Cultural Elements

- Malay translation of orangutan: Person of the forest

Bonner Station Upper Level: Conservation

Threats to Wildlife Survival

Interpretation at the upper level of Bonner Station communicates the impact of oil palm plantations on orangutans and other Southeast Asian forest species, the devastating effects of wildlife trafficking, and the drastic decrease in the numbers of Sumatran orangutans due to deforestation (habitat loss) for oil palm plantations. Siamangs are threatened by habitat loss, especially elimination of corridors by roads.

Conservation Signs

KA-1-23 Palm oil info graphic:

- Impact of deforestation (habitat loss) from unsustainable palm oil on orangutans and other species; elimination of corridors. Use the term "deforestation-free" palm oil.
- Sustainable palm oil: describe causal chain of sustainable palm oil harvesting and purchasing
- Roundtable on Sustainable Palm Oil (RSPO)
- Why boycotting is not the right solution: other crops are less efficient, causing more environmental damage; people's livelihoods depend on palm oil—compassionate conservation
- Sustainable palm oil is now a fraction of the total market—increasing demand for sustainable palm oil will increase its production

Themes

Connection
The lives of people, plants and animals are interconnected.

Caring/Compassion
Protection of wildlife begins with our caring and compassion for animals and the local people whose lives are affected.

Commitment
Sustainable practices enable wildlife and communities to thrive

The future of SE Asian wildlife depends on everyone's commitment to take positive action—here is how you can help.

(3)

- **Actions:**
  - Download and use the palm oil app developed by Cheyenne Mountain Zoo to scan products when shopping to ensure that palm oil contents were sustainably harvested.
  - Support companies that are members of the Roundtable on Sustainable Palm Oil (RSPO).

Note: Formative evaluation will help define the most effective messaging for visitors

KA-1-24 Wildlife trafficking affects multiple Kingdoms of Asia species

- Demand for tiger skins and for other tiger body parts, rhino horn and bear bile used in traditional Asian medicines
- Impact on wild animal populations
- Protective international legislation, policies: CITES, the Endangered Species Act
- **Actions:**
  - Do not buy products made from wild animals
  - Support the FCZ conservation fund for rhinos, sloth bears, tigers and hornbill (although this one is less affected by trafficking)

References

https://www.smithsonianmag.com/science-nature/rhino-horn-and-tiger-wine-how-illegal-wildlife-trade-growing-bolder-180970382/
https://knowledge.wharton.upenn.edu/article/how-tech-companies-are-helping-to-curb-wildlife-trafficking/

(4)

(5)

Tactile/Interactive

- Pledge to use sustainable palm oil
- Shopping app at table
- Loss of habitat interactive
- Donation Plinko station to support the FCZ conservation fund
- The back of the Plinko board is a mural that shows the different layers of the forest, illustrating who lives there and interpreting that your money saves these species.

Add interactive elements to appeal to young children in this area in order to keep them engaged while their parents or other caregivers read/interact with conservation interpretation, such as:

- Orangutan costume to try on to see how long their arms are, or one affixed to the wall so that kids can wrap themselves in an orangutan hug
- Match your arm span to an orangutan's (image and photo op)
- Cable with brass or resin figures of orangutans/siamangs that young children can move along
- Lift panel matching game

Technology

- Video monitor: video depicting palm oil effects; use of app
- Touch screen interactive in lieu of/or in addition to the palm oil infographic
- Den cam

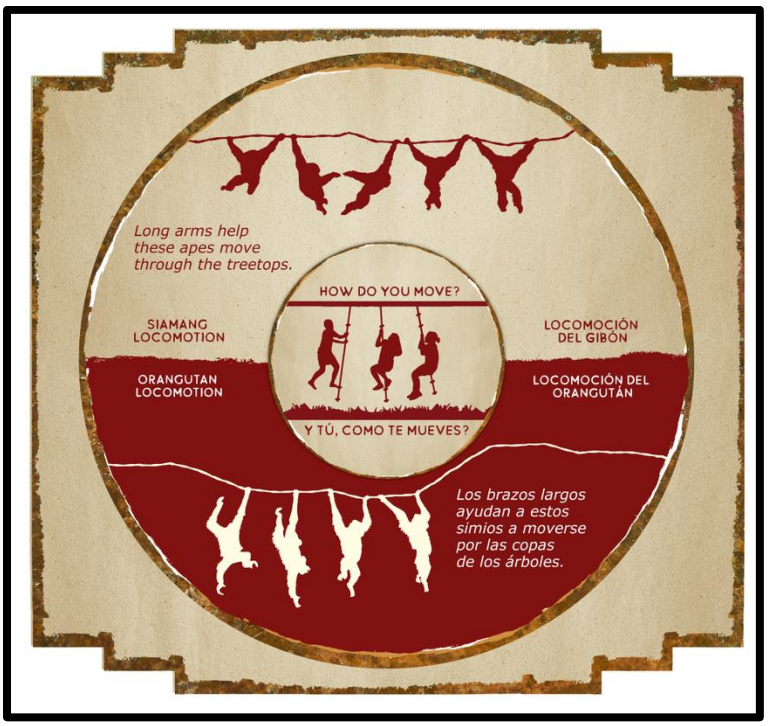
Live Interpretation

- Palm oil—being an informed consumer, demonstrating how to use the app
- Volunteer to engage young children while adults read/listen to conservation interpreter

v) Below are some mockups of our signage featuring interpretation around our orangutans.

(1)

(2)



(3)

(4)


Orangutans express their needs and emotions through sounds and visual cues, just as humans do. They communicate mostly through gestures and body language. Adult males bellow a "long call" to announce their territory or attract a mate.
Orangutans express their needs and emotions through sounds and visual cues, just as humans do. They communicate mostly through gestures and body language. Adult males bellow a "long call" to announce their territory or attract a mate.
Siamangs
Siamangs

(5)


APE FAMILIES
APE FAMILIES
MONKEY OR APE?
MICO O SIMIO?
COMMUNICATIONS
COMUNICACIÓN
MONKEY OR APE?
MICO O SIMIO?
TAIL
COLA
BODY SIZE
TAMAÑO DEL CUERPO
MOVEMENT
MOVIEMIENTO

(6)


Orangutans are semi-solitary, yet they have strong social bonds. Mothers and young form short-term groups, as do juvenile males and females. With so much to learn, a single infant is dependent on its mother for six to seven years—the longest childhood of any ape except humans.
Siamang pairs mate for life. The father assumes daily care of the young after its first year. Families include the adults and a few juveniles, who stay with the group for five to seven years.
Orangutans are semi-solitary, yet they have strong social bonds. Mothers and young form short-term groups, as do juvenile males and females. With so much to learn, a single infant is dependent on its mother for six to seven years—the longest childhood of any ape except humans.
Siamang pairs mate for life. The father assumes daily care of the young after its first year. Families include the adults and a few juveniles, who stay with the group for five to seven years.

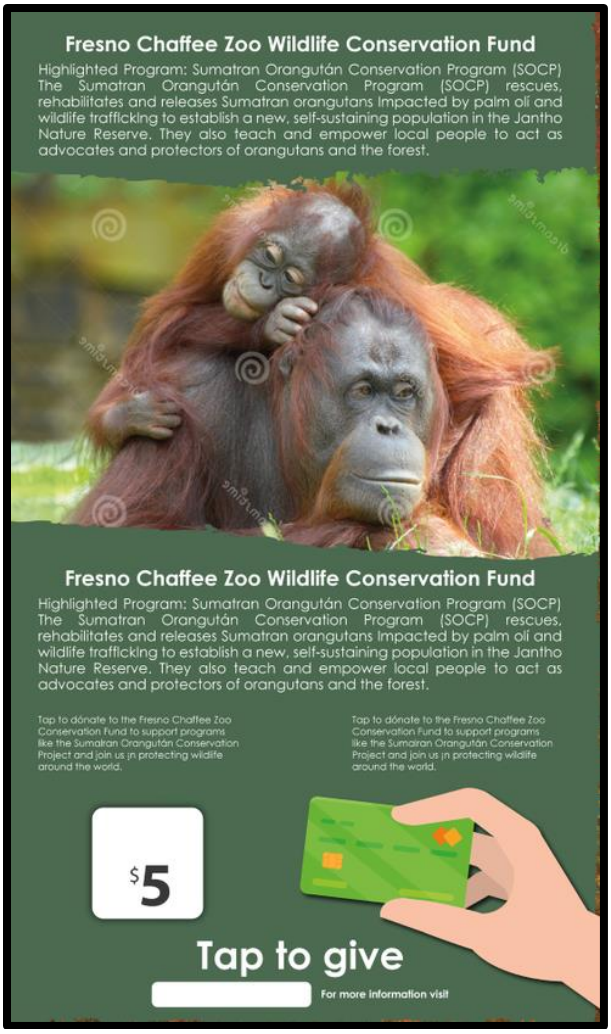
(7)


DEFORESTATION-FREE PALM OIL WILL ONLY HAPPEN IF THERE IS A DEMAND FOR IT.
DEFORESTATION-FREE PALM OIL WILL ONLY HAPPEN IF THERE IS A DEMAND FOR IT.

(8)


DEFORESTATION-FREE PALM OIL WILL ONLY HAPPEN IF THERE IS A DEMAND FOR IT.
DEFORESTATION-FREE PALM OIL WILL ONLY HAPPEN IF THERE IS A DEMAND FOR IT.

(9)


Fresno Chaffee Zoo Wildlife Conservation Fund
Highlighted Program: Sumatran Orangután Conservation Program (SOCP) The Sumatran Orangután Conservation Program (SOCP) rescues, rehabilitates and releases Sumatran orangutans impacted by palm oil and wildlife trafficking to establish a new, self-sustaining population in the Jantho Nature Reserve. They also teach and empower local people to act as advocates and protectors of orangutans and the forest.
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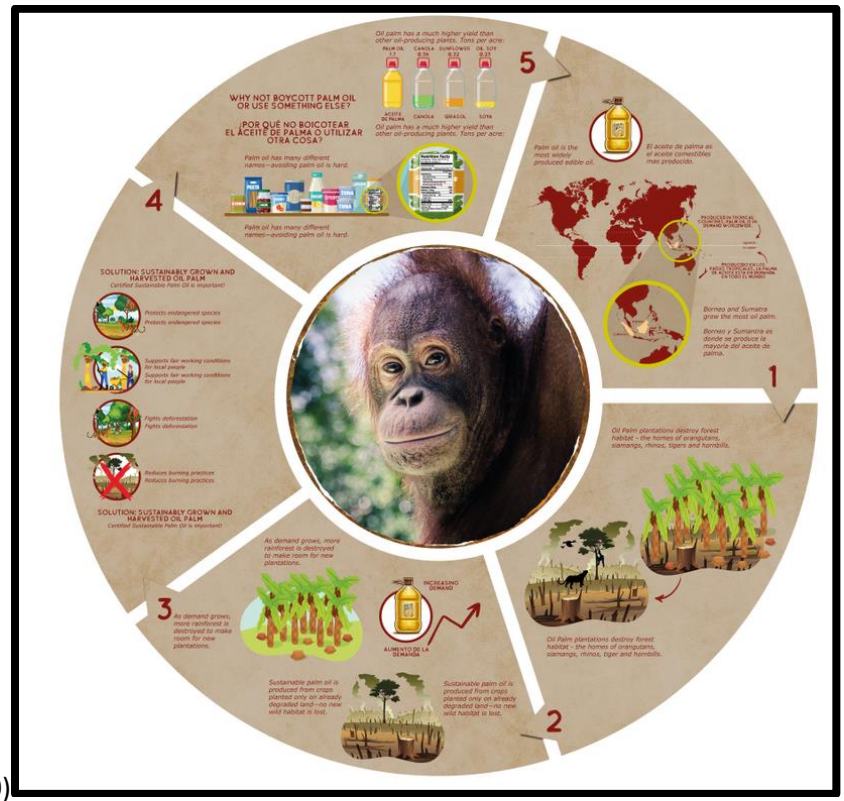
Tap to dónate to the Fresno Chaffee Zoo Conservation Fund to support programs like the Sumatran Orangután Conservation Project and join us jn protecting wildlife around the world.
Tap to dónate to the Fresno Chaffee Zoo Conservation Fund to support programs like the Sumatran Orangután Conservation Project and join us jn protecting wildlife around the world.
$5
Tap to give
For more information visit

(10)


WHY NOT BOYCOTT PALM OIL OR USE SOMETHING ELSE?
¿POR QUÉ NO BOICOTEAR EL ACEITE DE PALMA O UTILIZAR OTRA COSA?
Oil palm has a much higher yield than other oil-producing plants. Tons per acre:
PALM OIL
CANOLA
SUNFLOWER
OIL SOY
ACEITE DE PALMA
CANOLA
GIRASOL
SOYA
Palm oil has many different names—avoiding palm oil is hard.
Palm oil has many different names—avoiding palm oil is hard.
5
Palm oil is the most widely produced edible oil.
El aceite de palma es el aceite comestibles mas producido.
Borneo and Sumatra grow the most oil palm.
Borneo y Sumatra es donde se produce la mayoría del aceite de palma.
1
Oil Palm plantations destroy forest habitat – the homes of orangutans, siamangs, rhinos, tigers and hornbills.
Oil Palm plantations destroy forest habitat – the homes of orangutans, siamangs, rhinos, tiger and hornbills.
2
Sustainable palm oil is produced from crops planted only on already degraded land—no new wild habitat is lost.
Sustainable palm oil is produced from crops planted only on already degraded land—no new wild habitat is lost.
3
As demand grows, more rainforest is destroyed to make room for new plantations.
As demand grows, more rainforest is destroyed to make room for new plantations.
INCREASING DEMAND
AUMENTO DE LA DEMANDA
4
SOLUTION: SUSTAINABLY GROWN AND HARVESTED OIL PALM
Certified Sustainable Palm Oil is important!
Protects endangered species
Protects endangered species
Supports fair working conditions for local people
Supports fair working conditions for local people
Fights deforestation
Fights deforestation
Reduces burning practices
Reduces burning practices
SOLUTION: SUSTAINABLY GROWN AND HARVESTED OIL PALM
Certified Sustainable Palm Oil is important!

(11) 

13) If captive propagation for the conservation and survival of the species, provide:
    a) A description of how the species will be propagated (e.g. artificial insemination, breeding pairs/groups),
        i) Our breeding program at the Fresno Chaffee Zoo is all natural. Males are paired with genetically appropriate females as recommended by the Association of Zoos & Aquariums Species Survival Program for Sumatran Orangutan after studying each individual ape's genetics. See attachment #4 for the orangutan species survival plan. FCZ will then introduce the pair to each other through a series of steps until we have successful bonding and natural breeding.
    b) Documentation showing your participation in an established breeding program (example: current breeding plan outlining your role in the program & letter from the breeding coordinator confirming your participation in this breeding program.)
        i) See attachment #5 – Breeding Plan & Recommendation letter for SSP.
    c) How your breeding stock is managed to maintain genetic vitality, including:
        (1) Avoidance of inbreeding, considerations of average kinship, and differences in paternal and maternal average blood relationships/relatedness:
            (a) The orangutan population is managed as part of a Species Survival Program (SSP) under the Association of Zoos and Aquariums (AZA). As such, the population is rigorously managed (with assistance from AZA's Population Management Center; PMC) to avoid inbreeding and maximize retention of genetic diversity. A studbook (pedigree database) is maintained for the species and from that, the demographic and genetic health of the population is monitored and managed. PMC scientists use state of the art programs (ZIMS, PMx, SPARKS) to develop and review breeding plans. These programs use the pedigree data base to calculate several genetic parameters, including retention of genetic diversity, inbreeding, and mean kinship which is a measure of relatedness for an individual to that of the entire population. Within the existing demographic and spatial limits, the SSP identifies breeding pairings for individuals based on mean kinship (ideal of pairing individuals with equal/similar and low mean kinships), avoidance of inbreeding, demographic, and logistical concerns.
        (2) Carry capacity of your facility:
            (a) Our facility can hold up to six adults and young under fifteen years of age.
        (3) Disposition of progeny:
            (a) FCZ follows the recommendations of the Sumatran Orangutan SSP for the disposition of progeny to be placed in other AZA SSP institutions to maximize the genetic diversity of the North American population.
    d) Plans & agreements for future re-introduction (if applicable):
        i) N/A

14) Please provide a detailed description on how the proposed activities will enhance or benefit the wild population within its native range (e.g., direct or indirect conservation efforts) and provide documentation (e.g. signed memorandums of understanding) demonstrating your commitment to supporting the program and how the program contributes directly to the species identified in your application.
    a) Sumatran orangutans are specimens maintained at Fresno Chaffee Zoo for the purpose of conservation education and zoological display. The habitat is themed to show how animals live in their natural environment, while depicting Asian culture and history to immerse guests into a part of the world they may never see otherwise, inspiring them to conserve orangutan rainforest habitat.

b) Furthermore, Sumatran orangutans are endangered and by educating guests through our interpretive signage and keeper chats we hope to connect guests with conservation actions for wild orangutans and their habitat. Our conservation message focuses on habitat loss due to palm oil plantations, giving guests real world actions to help wild Orangutans by purchasing products that use sustainable palm oil.

c) In addition, FCZ directly supports Sumatran Orangutans *in situ* through our Conservation Fund which has committed to donating $15,000 US dollars annually for the next five years to Sumatran Orangutan Conservation Program (SOCP). SOCP is saving and protecting captive and wild Sumatran orangutans and their rainforest habitat, through science-based conservation, establishing new wild populations, advocacy, education and awareness building. FCZ funds are used to track recently rehabilitated orangutans confiscated from the pet trade as they are released into the Jantho Pine Forest Nature Reserve which is a protected area maintained by SOCP. The purpose of the SOCP's Jantho Pine Forest Nature Reserve Reintroduction program is to successfully establish a self-sustaining Sumatran orangutan population within the Jantho Nature Reserve in Aceh province, Indonesia, serving as a safety net population for the survival of the species. The contribution of FCZ to this program allows for the release and tracking of over 30 Orangutans spanning 5 years, as well as monitoring for previously released Orangutans that have widely dispersed into the reserve. SOCP involves local communities in their education programs and employs locals as monitoring rangers
   i) Please see attachment #6.

d) Lastly, we are a partner with the AZA Orangutan SAFE Program, attachment 7, and as such fully support their goals and objectives which can be found in their 2020-2022 plan as a part of our attached documents, attachment 8.

<u>Technical Expertise & Facilities</u>

- For export/re-export, provide information for the receiving institution.
- For import, provide information on your institution.
- For import to multiple facilities, provide information for all receiving institutions.

15) CV or resume outlining the technical expertise of each caretaker working with, maintaining, and/or propagating each species, as it relates to the proposed activities, including experience with similar species:

a) The Asia Central team consists of seven full-time keepers, one Zoological Animal Manager, and Curator. This team has varying degrees of experience working with large ape species, including orangutans. Please refer to the attached CV's/Resumes. This team is committed to excellent animal care and prides itself on training animals for voluntary husbandry and medical behaviors. Daily enrichment activities focus on goals to promote natural behaviors. The team is supported by the nutrition and veterinary departments to provide complete animal welfare. Team members have experience with Orangutan introductions, breeding activities, and infant raising.

   i) Attachment #9 – Shannon B. Nodolf, DVM – Chief Veterinary Officer
   ii) Attachment #10 – Michael Wenninger, DVM – Associate Veterinarian
   iii) Attachment #11 – Nicole Presley – Curator of Sea Lion Cove/Asia Central
   iv) Attachment #12 – Sarah Shearer – Zoo Area Manager of Asia Central
   v) Attachment #13 – Erica Weibe – Zookeeper Asia Central
   vi) Attachment #14 – Amelia Lautenberg – Zookeeper Asia Central
   vii) Attachment #15 – Heather Chance – Zookeeper Asia Central
   viii) Attachment #16 – Kimberly Sharp – Zookeeper Asia Central
   ix) Attachment #17 – Dallas LaDucer – Zookeeper Asia Central
   x) Attachment #18 – Lawrence Rea – Zookeeper Asia Central
   xi) Attachment #19 – Anthony Stenger – Zookeeper

16) Current inventory of the species at the facility (males.females.unknown sex, e.g. 10.2.3)
    a) 3.1.0

Scientific Name (Genus, species, and if applicable, subspecies)	**Common Name**	**Birth/Hatch Date** (MM/DD/YYYY) (Approximate of actual unknown)	**Wild or Captive Born**	**Sex** (Males.females.unknown sex, 10.2.3)	**Permanent Markings** &/or identification information (e.g. microchip #, leg band #, tattoo, studbook #, etc.)
Pongo abelii	Sumatran orangutan	4/28/1984	C	M	GAN: MIG12-30073696 Local ID: 970156 House Name: Busar Studbook #: 1971 Tattoo: 101 on chest
Pongo abelii	Sumatran orangutan	12/18/2010	C	F	GAN: MIG12-28927017 Local ID: 201195 House Name: Ndari Studbook #: 3403
Pongo abelii	Sumatran orangutan	10/31/2010	C	M	GAN: MIG12-28745552 Local ID: 201185 House Name: Labu Studbook #: 3397
Pongo abelii	Sumatran orangutan	11/3/2018	C	M	GAN: SMT18-01601 Local ID: 209148 House Name: Hantu Studbook: 3722

17) Number of years the species has been maintained at the facility:
    a) Orangutans were first maintained at Fresno Chaffee Zoo beginning in 1959.
        (1) Approximately 63 years.
            (a) 10.13.0
                (i) Births: 5.7.0
                (ii) Acquisitions: 7.7.0
                (iii) Deaths: 2.7.0
                (iv) Dispositions: 7.6.0

18) Number of births per species per year over the last 5 years:
    a) Since 2017, there has been one birth; a male.

19) Number of mortalities per species (or similar species) per year over the last 5 years and steps taken to avoid or decrease such mortalities:
    a) Since 2017, there have been two deaths; both females.
        i) Local ID: 210014, Sara, 49 years at time of death.
        ii) Local ID: 210015, Siabu, 31 years at time of death.
    b) Steps taken to avoid or decrease such mortalities:
        i) Both animals were humanely euthanized due to quality-of-life concerns secondary to cancer. There are no further steps to avoid such occurrences that we could have taken.

20) A detailed description, diagrams, and photos clearly depicting the existing facilities where the wildlife will be maintained including dimensions, construction materials, and protection from the elements. Do not provide blueprints.
    a) Habitat:
        i) The orangutan habitat is a large oval enclosure measuring approximately 30 ft high, 100’ long, and 50’ wide. The primary barrier, including the roof, is 3” woven stainless-steel mesh. See diagram under mesh materials. The guest viewing area has been upgraded from mesh to glass to prevent any contact between guests and the animals. There is a shallow pool for cooling and trees that provide shade. The substrate is natural soil and grass mixture. A large artificial banyon tree provides multiple climbing, foraging, and resting

opportunities for all the apes. In front of the banyon tree is a deck that is shaded by the viewing structure with heating and cooling on its surface via inline water tubing that is heated or cooled by condenser units. This area will provide relief from the heat in summer and allow for warm surfaces in our cooler temperatures of winter. Throughout the habitat are artificial vines to allow for natural brachiation as a means of locomotion. Two Lixit drinkers provide a constant flow of fresh drinking water.

ii) Below is the current habitat showing vines and natural substrate along with photos of the artificial tree and construction of glass viewing shelter for guests. Additional trees have also been planted on habitat.

iii)

(1)

(2)

(3)

(4)

(5)

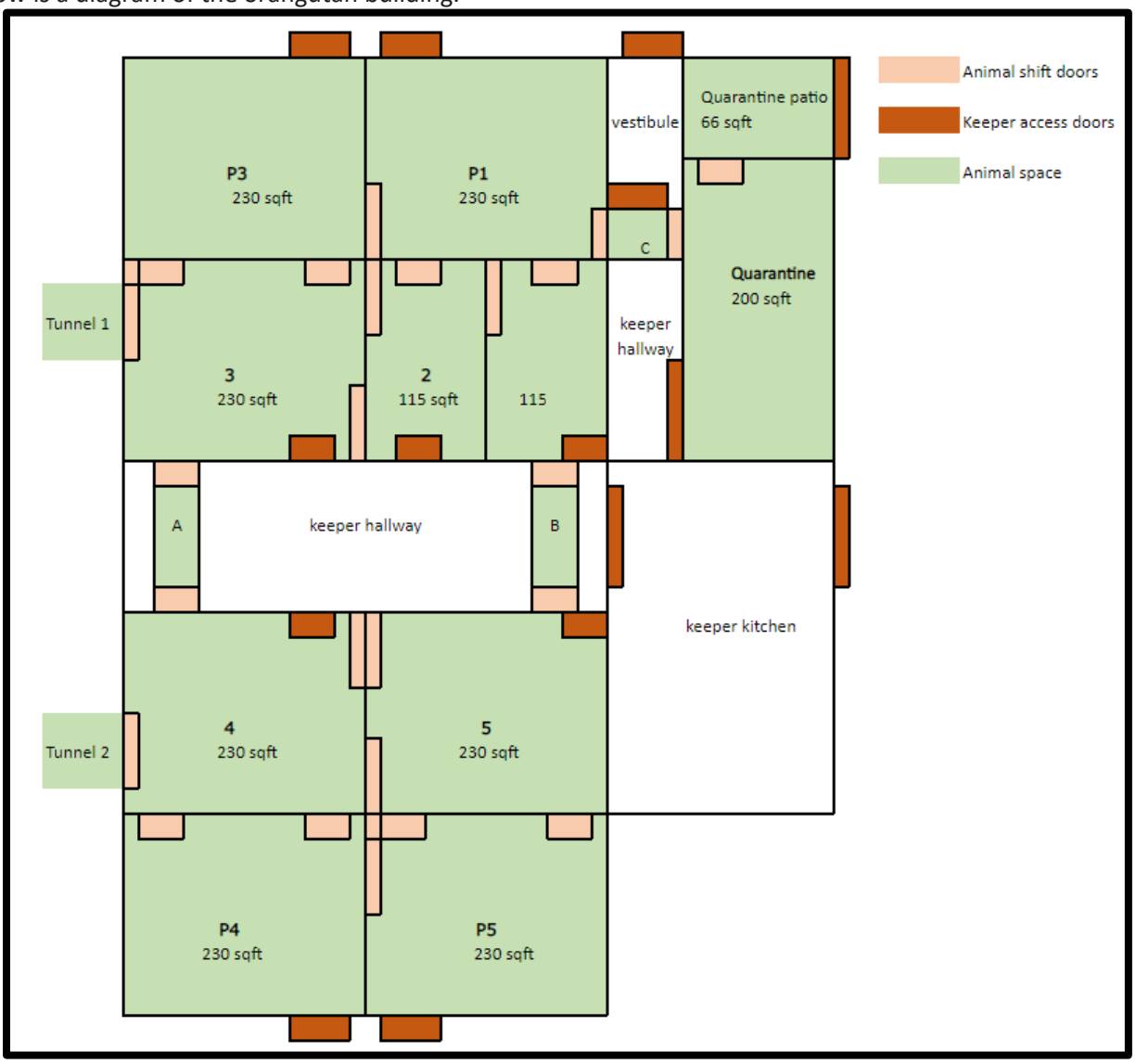
iv) Below are husbandry areas that the keepers can use to work with the primates while they are on exhibit. The first picture is attached to our lower guest viewing area and has a blood sleeve. The second picture is a keeper area that is attached to the upper guest viewing area.

(1)

b) Orangutan Building:

i) Below is a diagram of the orangutan building.

(1)



ii) The Orangutan Building is a totally enclosed indoor facility with heating and air conditioning comprised of 5 indoor spaces. Attached to each indoor space (1-5) is an outside fully roofed patio (P1-P5) for outdoor options. Each indoor space is furnished with vines, nesting platform, resting platform, an automatic Lixit drinker, and heated floors.

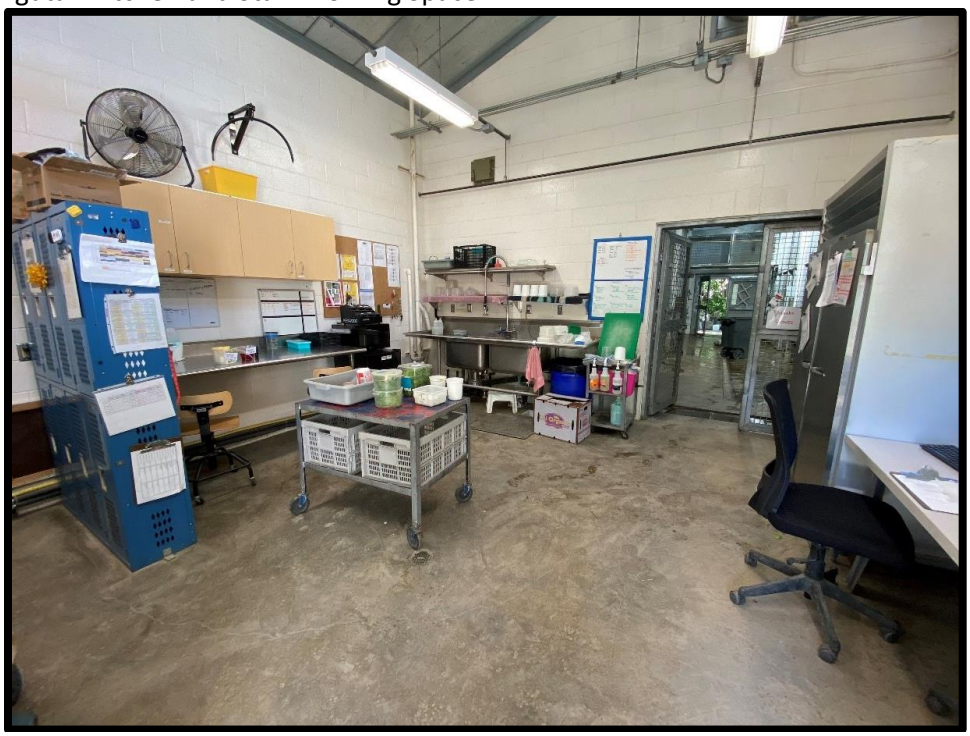
(1) Animal Care staff provide multiple enrichment activities throughout the day and over the evening, including foraging and bedding substrates for nest building.

iii) The primary barrier for every orangutan space is 2”x2” welded woven rigid mesh. Two mesh tunnels connect each end pen to the exhibit and are furnished with horizontal bars for brachiation through the tunnels.

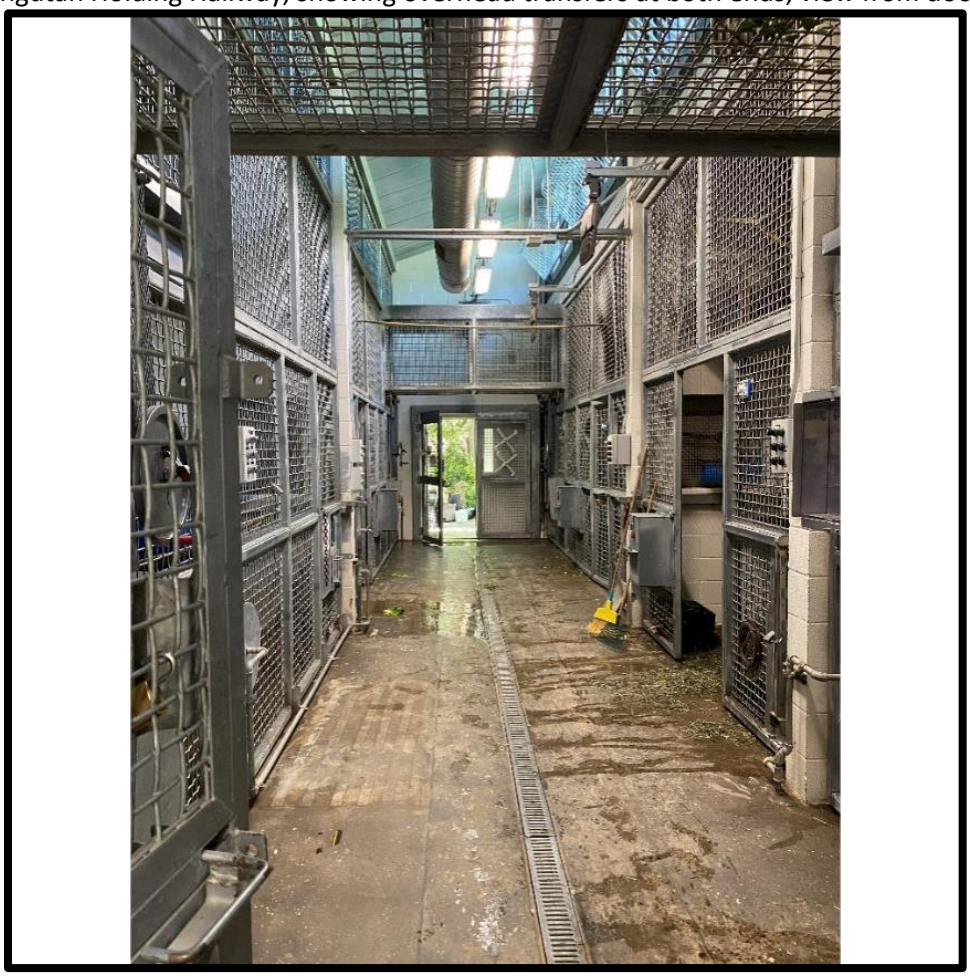
iv) Two indoor overhead tunnels (marked A and B on diagram) connect each side of the building to the other side to create multiple ways to move orangutans around the building. New LED lights hang in the hallway and reflect into the indoor spaces to properly illuminate.

v) Animal training ports and feeders are attached to front of the pens to be used as needed.

c) Orangutan Kitchen and Staff Working Space:

i) 

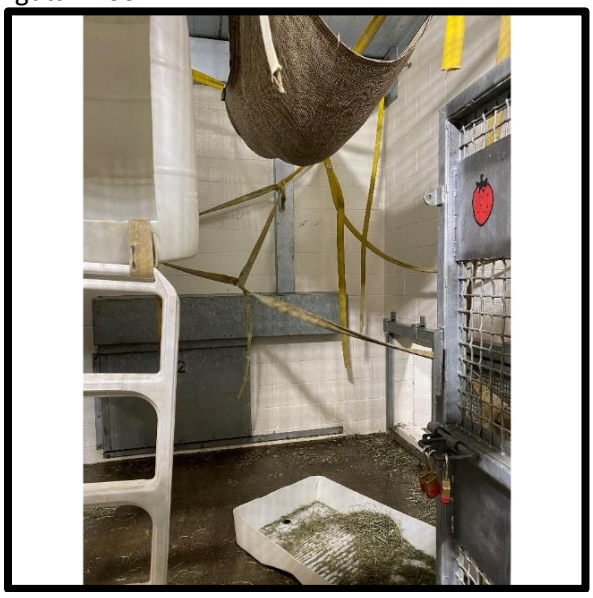
d) Orangutan Holding Hallway, showing overhead transfers at both ends, view from doors off the kitchen:

i) 

e) Orangutan Room #1:

i) 

f) Orangutan Room #2:

i) 

g) Orangutan Room #3:

i) 

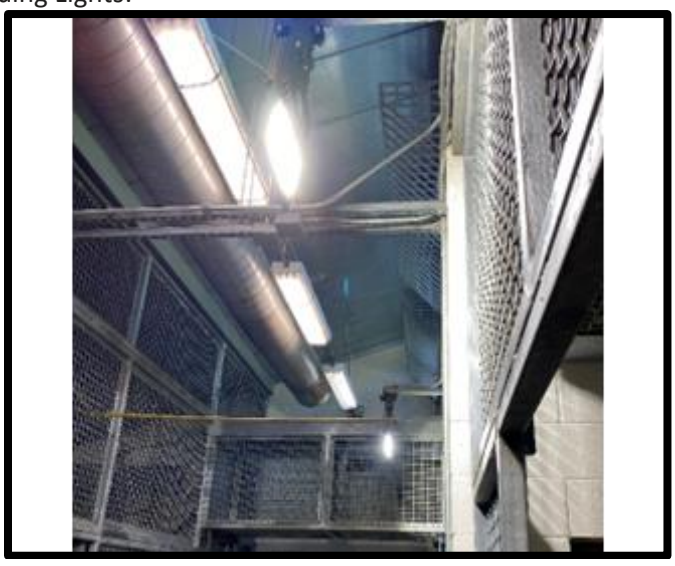
h) Orangutan Room #4:

i) 

i) Orangutan Room #5:

i) 

j) Holding Lights:

i) 

k) Feeder and training port for blood sleeve:

i) 

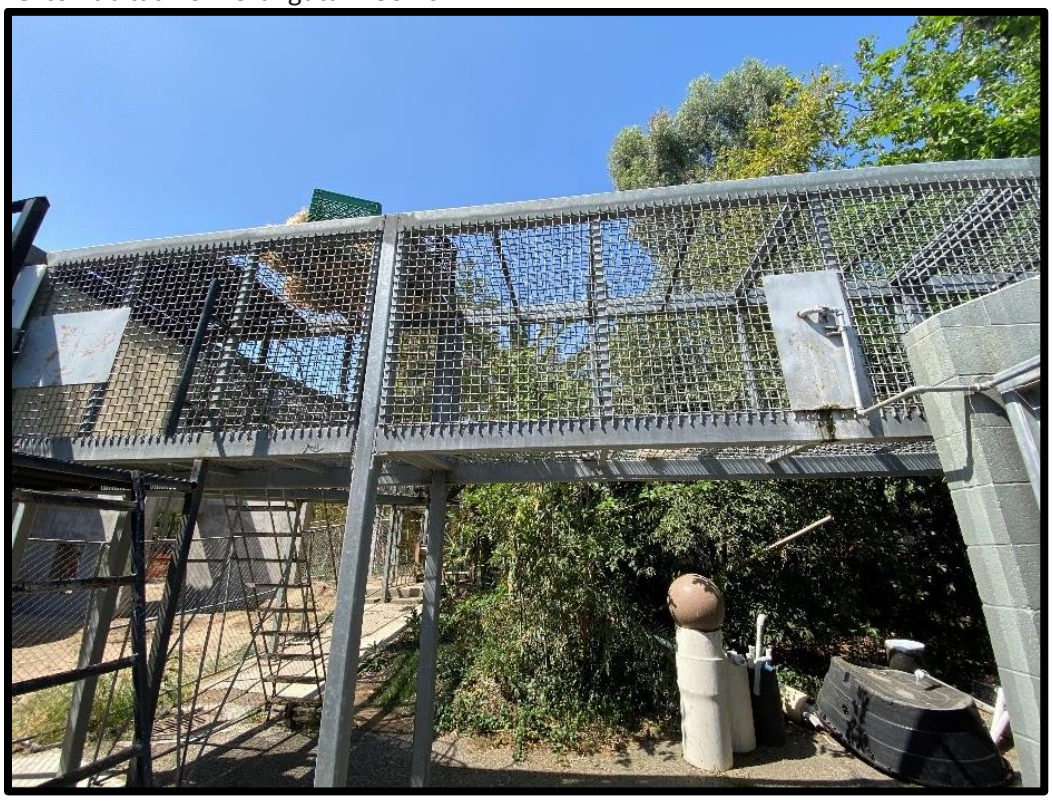
l) Ultrasound training port:

i) 

m) Nesting platform in rooms #2-5 and patio #3:

i) 

n) Tunnel to habitat from orangutan rooms :

i) 

o) Outdoor patio off orangutan room #3:

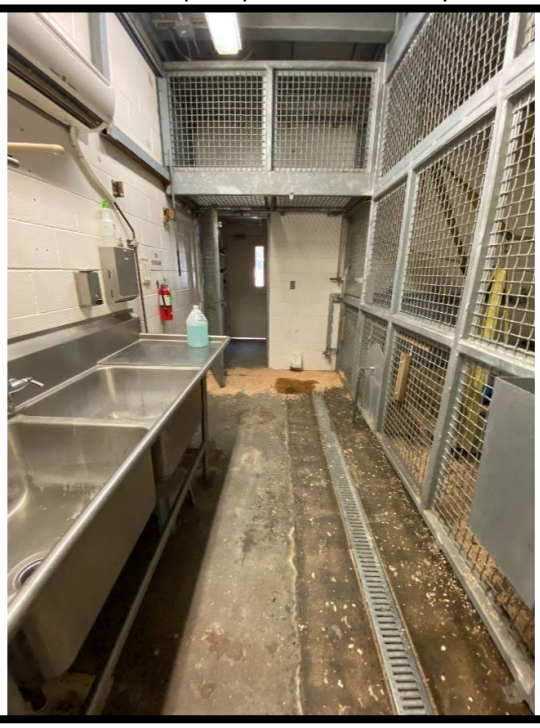
i) 

p) Orangutan Quarantine:

i) At Fresno Chaffee Zoo we have the capability to quarantine Orangutans onsite in a fully separate area attached to the Orangutan building. See above diagram (Question 20, b, (1)) for details. The quarantine space consists of a single large room with one outdoor patio and a tunnel that connects it to patio P1 when any quarantine restrictions are lifted. This area has its own ventilation system with heating and cooling. This area is equipped with vines, benches, and other furniture as required or needed. A window into the keeper kitchen area allows for close monitoring by staff of the animal in quarantine.

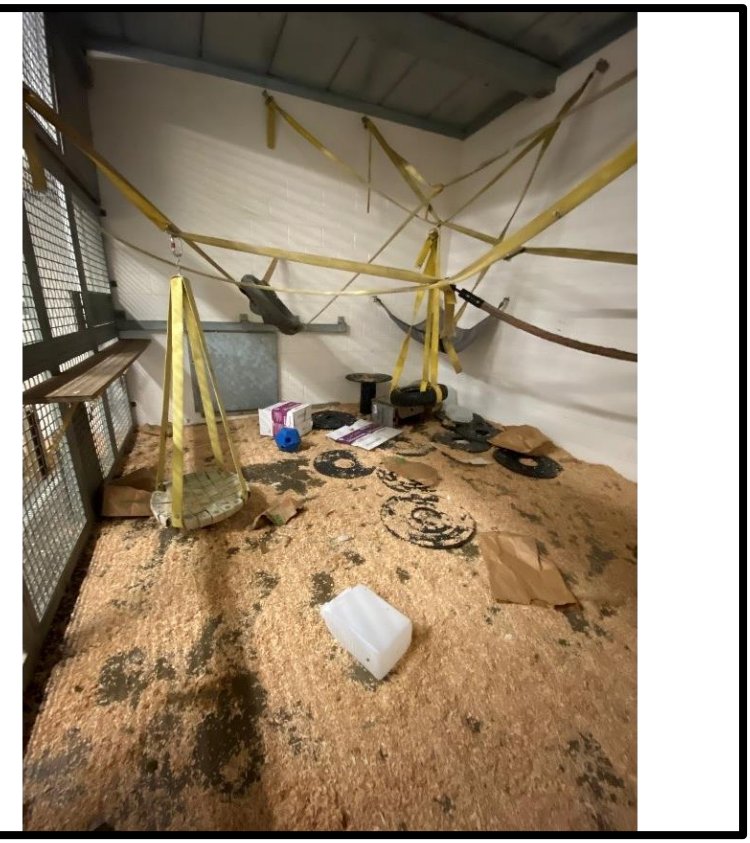
(1) Orangutan Quarantine keeper space – tunnel to patio:

(a)



(2) Quarantine Room :

(a)



ii) Meshing materials for orangutan spaces :

(1) 2 inch by 2 inch woven rigid mesh

(a)

(2) 3-inch woven SS mesh:

(a)

21) Approximate carrying capacity for the species at the facility.

a) The total holding capacity for our facility would be 6 adults plus any young they are raising under the age of 15 years.

<u>Transport/Shipping of Live Animals</u>

22) Transport conditions for live animals must comply with the CITES Guidelines for Transport of Live Animals. All air transport must also comply with the International Air Transport Association (IATA) live animal regulations (contact airline for information). As such provide:

a) The type, size, and construction of any shipping container and, -

i) See attachment #20 – Toronto Zoo – Medium Metal Crate – for Large Primate & Medium Carnivore.

ii) At least two qualified animal care staff will accompany the orangutan throughout the journey: from time of departure to arrival at final destination. They will remain with the transport crate at cargo facilities before loading onto flights and during any stops along the route.

b) The arrangements for watering or otherwise caring for the wildlife during transport.

i) Animal care staff will carry food and water to provide for the orangutan as needed.

All international shipment(s) must be through a designated port. A list of designated ports (where an inspector is posted) is available. If you wish to use a port not listed, please contact the Office of Law Enforcement for a Designated Port Exemption Permit (form 3-200-2).

CITES Appendix I & Marine Mammal Species

- For export of a CITES Appendix I-listed species, provide a copy of the CITES import permit, or evidence one will be issued by the Management Authority of the country to which you plan to export the specimen(s). In accordance with Article III of the CITES treaty, it is required that import permits are issued before the corresponding export permit.
    - N/A
- For import of CITES Appendix-I listed species, provide information to show the import is not primarily for commercial purposes as outlined in Resolution Conf. 5.10 (Rev. CoP 15).
    - N/A
- For import of live CITES Appendix-I marine mammals, provide a copy of your FWS or NMFS Marine Mammal Protection Act (MMPA) permit or authorization.
    - N/A