

SAN DIEGO ZOO.
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Global Species Management Plans for Banteng, Anoa and Babirusa

Update on 2016 and Plans for 2017



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CONSERVATION**

www.asianwildcattle.org

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Introduction to Global Species Management Plans and the Action Indonesia Partnership

What are Global Species Management Plans (GSMPs)?

- Administered under World Association of Zoos and Aquariums
- A framework for different regional zoo associations to work together on a global plan for the *ex situ* activities in zoos for a particular species
- 9 GSMPs to date:

These 3 new GSMPs are unique because they are the 1st ungulate GSMPs and they all have a strong *in situ* element

We are discussing bringing Sumatran tiger into the fold with the three to leverage Contacts and send consistent Message to Indonesia.



Ex situ population status

	Banteng	Anoa	Babirusa
Indonesia (PKBSI)	86	37	75
Europe (EAZA)	89	53	23
N. America (AZA & others)	108	93	60
Singapore & Japan	-	3 & 1	32 & 0
Global population	203	182	190
Global founders	12 (+4)	16 (+21)	11 (+1)

- Reasonable population size and founders – but inter-regional exchange needed to achieve **viable long-term insurance population**



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The Action Indonesia Partnership



Implementing partners: All contributing expertise, staff time or financial support

GSMP Goals

- 1. Reaching a demographically and genetically healthy global *ex situ* population**
 - Population management & Capacity building
- 2. Awareness raising for zoo visitors**
- 3. Zoo expertise to help *in situ* activities**
 - E.g. support management of rescued animals
- 4. Prioritize and support *in situ* projects**

Achievements in 2016 – a busy 1st year!

GSMP Activities 2016: General



GSMP
workshops in
January 2016

PKBSI meetings in
July and October
2016



GSMP Activities 2016:

Role 1 – *ex situ* population

- Regional datasets updated, thanks to John Andrews, Jamie Ivy, and Telen Welsh from North American region
- First set of breeding and transfer recommendations for Indonesian zoos – *written, translated, distributed* *
- Survey of 7 Indonesian zoos completed: aimed to design training in 2018 *



GSMP Activities 2016:

Role 1 - *ex situ* population



Genetic Target

Maintaining 90% of the gene diversity of the wild population for 100 year

Demographic Targets

	Banteng		Anoa		Babirusa	
	2015	Target	2015	Target	2015	Target
Global	203	300	182	300	190	355
Indonesia	86	100	37	75	75	100
N. America (AZA)	108	100	93	125	60	125
Europe	89	100	53	75	23	100

More breeding is needed to reach the target population

GSMP Activities 2016: Role 2 – zoo education

- Drafts of signage for Indonesian zoos completed, GSMP logo finalised

BABIRUSA

Babyrousa celebensis

Babirusa are an incredibly rare species of pig and are only found in the wild on the island of Sulawesi.

Males can be recognised by their distinctive tusks. These are actually teeth which grow upwards through the skin of their nose and curve towards their foreheads. Scientists are not sure exactly what they are for.

GLOBAL SPECIES MANAGEMENT PLAN

HAVE A LOOK

KEY FACTS:

- DIET:** OMNIVOROUS. WILL EAT LEAVES, FRUITS & SMALL ANIMALS.
- PREFERRED HABITAT:** RAINFOREST.
- WEIGHT:** 60-100 KG.
- GESTATION:** 155-158 DAYS.
- YOUNG:** 1, 2.
- LIFESPAN:** UP TO 24 YEARS.
- MADE BY:** CHESTER ZOO.

REFERENCE: ucnredlist.org/details/136446/0 , arive.org/sulawesi-babirusa/babyrousa-celebensis/

GSMP Activities 2016: Role 3 – Zoo expertise to help *in situ*

- Meetings with various provincial and local authority offices who confiscate animals → planning of training for rescue and transport



GSMP Activities 2016:

Role 4 – *In situ* activities



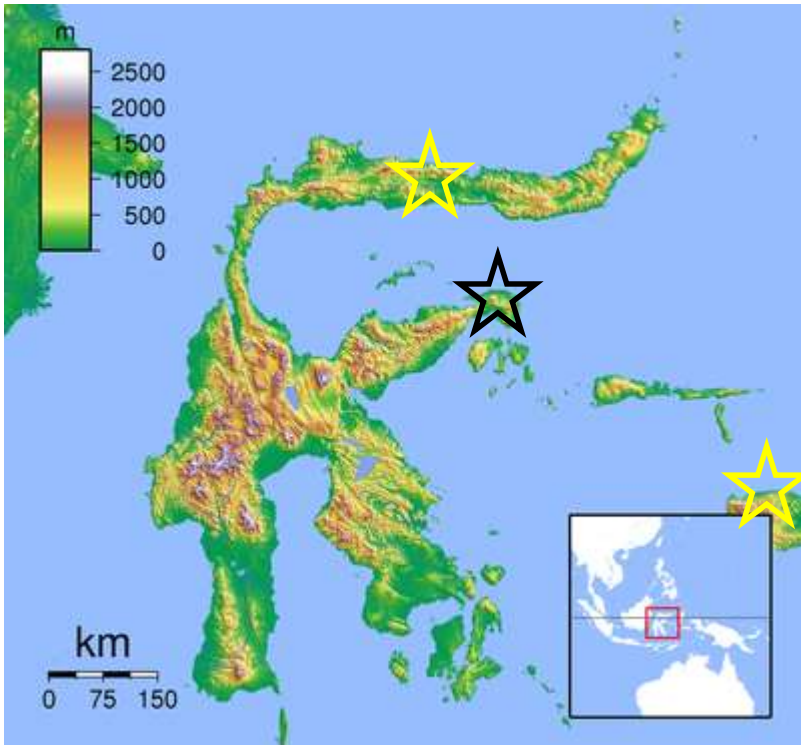
- Field surveys to Sulawesi and East Java, including site visit and meetings with government authorities and potential partners



GSMP Activities 2016:

Role 4 – *In situ* activities

- Developed *in situ* project grant scheme (short-term projects)
 - ✓ One project approved, two more in progress



Activities for 2017 and opportunities for involvement

Future activities

Opportunities for involvement 2017

General



- Participation in Indonesian Zoo Association meetings
- Preparation of 2 year GSMP review workshop, Indonesia, January 2018
- Communication about GSMP activities – newsletter, press releases, articles, blogs



Future activities

Opportunities for involvement 2017

Role 1: *ex situ* population



- Start implementation of 1st set of Indonesian Breeding and Transfer recommendations
 - ✓ Banteng: 3 transfers and up to 38 breeding pairings in the coming years, as can be arranged logistically
 - ✓ Anoa: 1 transfer and 14 breeding pairings, to produce 4 -5 young per year
 - ✓ Babirusa: 5 transfers, 12 breeding pairings and 8 piglets produced per year



Future activities

Opportunities for involvement 2017

Role 1: *ex situ* population



- Banteng husbandry and transfer training for Indonesian keepers and staff, by July
- Similar training for Babirusa and Anoa at Indonesian Zoo Association meeting, October
- Keeper exchanges to Indonesian zoos to improve conditions for breeding



Future activities

Opportunities for involvement 2017

Role 2: zoo education

- Finalise education tool kit for Indonesian zoos, available on AWCSG website
- Survey on Indonesian zoo educators and their activities, aiming to design education training
- Training in theory and practice of zoo education, October



Future activities

Opportunities for involvement 2017

Role 3: Zoo expertise to help *in situ*



- Anoa and Babirusa animal rescue training for rangers in Sulawesi, July / October
- Technical advice for Visitor Centre in Alas Purwo National Park – home to the largest Banteng population in East Java



Future activities

Opportunities for involvement 2017

Role 4: *in situ* activities



- 1 year *in situ* grant scheme for projects - further grants to be given in 2017
- Long-term *in situ* projects:
 - continuing site visits for assessing potential project sites and partners in east Java and Sulawesi.
 - Project proposals to be written for both
 - Interviewing for Indonesian GSMP project coordinator, need funding assistance.



Action Indonesia: Global Species Management Plans for Banteng, Anoa, and Babirusa



Steve Metzler

Co-Convener Banteng GSMP
Animal Care Manager-Mammals
San Diego Zoo Safari Park

PKBSI Indonesian Zoo Association Meeting



Indonesian Zoo Visits

Table 1: Indonesian zoos visited in July and October 2016. Animal collection as of the date when zoo was visited.

Zoo	Province	Date	Anoa	Babirusa	Banteng
Gowa Discovery Park	South Sulawesi	25/07/2016	1,0	-	-
Bontomatene Education Center (Celebes Zoo)	South Sulawesi	25/07/2016	2,3	-	-
Surabaya Zoo	East Java	26/07/2016	2,4	8,19	1,2
Taman Safari II, Prigen	East Java	26/07/2016	-	7,6	12,11
Batu Secret Zoo, Malang	East Java	27/07/2016	1,1	2,1	0,1
Taman Safari I, Bogor	West Java	29/07/2016	1,4	5,6	1,3
Ragunan Zoo, Jakarta	Jakarta	30/07/2016	2,2	2,2	6,6
Bali Safari Gianyar	Bali	14/10/2016	2,2	5,4,1	2,17

2.2 The survey team

Fact-finding had to be facilitated by a team experienced in the husbandry and management of banteng, anoa and babirusa. Team member included partners from all zoo regions (Table 2).

Table 2: Survey team visiting eight Indonesian zoos

Name	Institute/title	Role in GSMP	Role in the survey
Ivan Chandra	Veterinarian at Taman Safari Indonesia	Convenor Banteng GSMP	Data collection
James Burton	Chair of AWCSG	<i>In situ</i> representative of Banteng and Anoa GSMP	Planning, facilitation, data collection
Johanna Rode-Margono	Assistant to Chair of AWCSG, Field Programme Coordinator South East Asia at Chester Zoo	Coordination, facilitation	Planning, facilitation, data collection
Ligaya Tumbelaka	Lecturer, responsible for training in PKBSI	Advisor education/training	Planning, facilitation, translation
Steve Metzler	Animal Care Manager at San Diego Zoo Safari Park	Co-Convenor Banteng GSMP	Data collection
Thomas Kauffels	Director of Opel Zoo, EAZA Executive Director	International babirusa studbook keeper	Data collection
Tim Rowlands	Curator of mammals at Chester Zoo	Banteng EEP studbook keeper (as of January 2017)	Data collection
Tony Sumampau	Director of Taman Safari Indonesia, Secretary of PKBSI	Indonesia representative on all GSMPs	Planning, facilitation
Yohana Tri Hastuti	Veterinarian at Taman Safari Indonesia	Co-convenor Anoa GSMP	Data collection, translation

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Gowa Discovery Park: South Sulawesi



Celebes Zoo: South Sulawesi



Batu Secret Zoo: East Java



Batu Secret Zoo: East Java



Batu Secret Zoo: East Java



Batu Secret Zoo: East Java



Taman Safari II: East Java



Taman Safari II: East Java



Taman Safari II: Bali Cattle Genetic Invigoration



Taman Safari II: Bali Cattle Genetic Invigoration



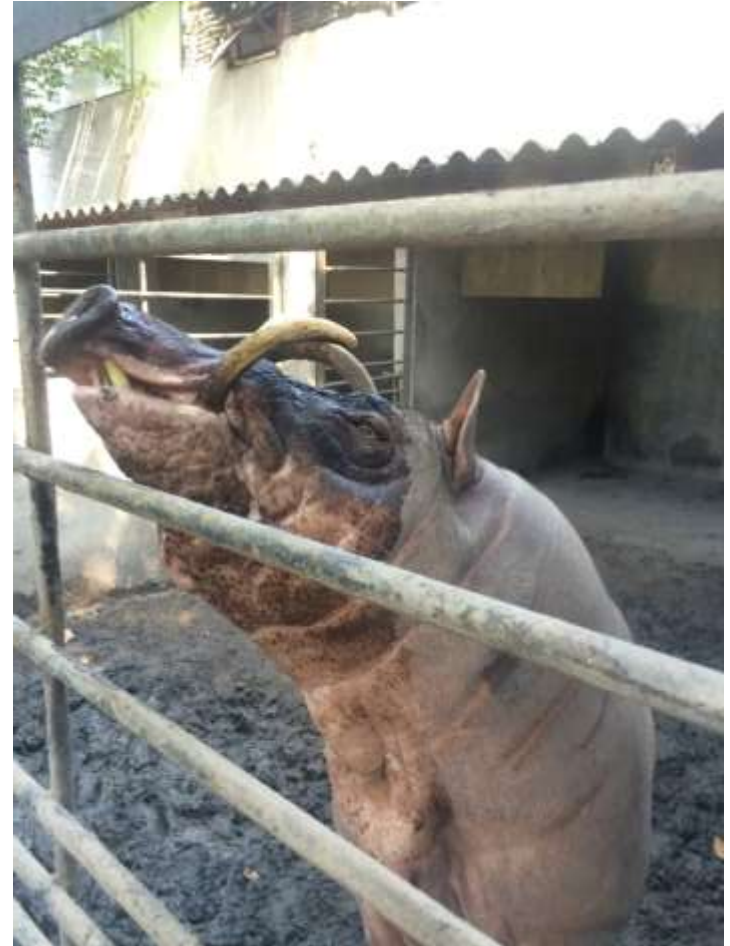
Surabaya Zoo: East Java



Surabaya Zoo: East Java



Surabaya Zoo: East Java



Taman Safari I: West Java



Taman Safari I: West Java



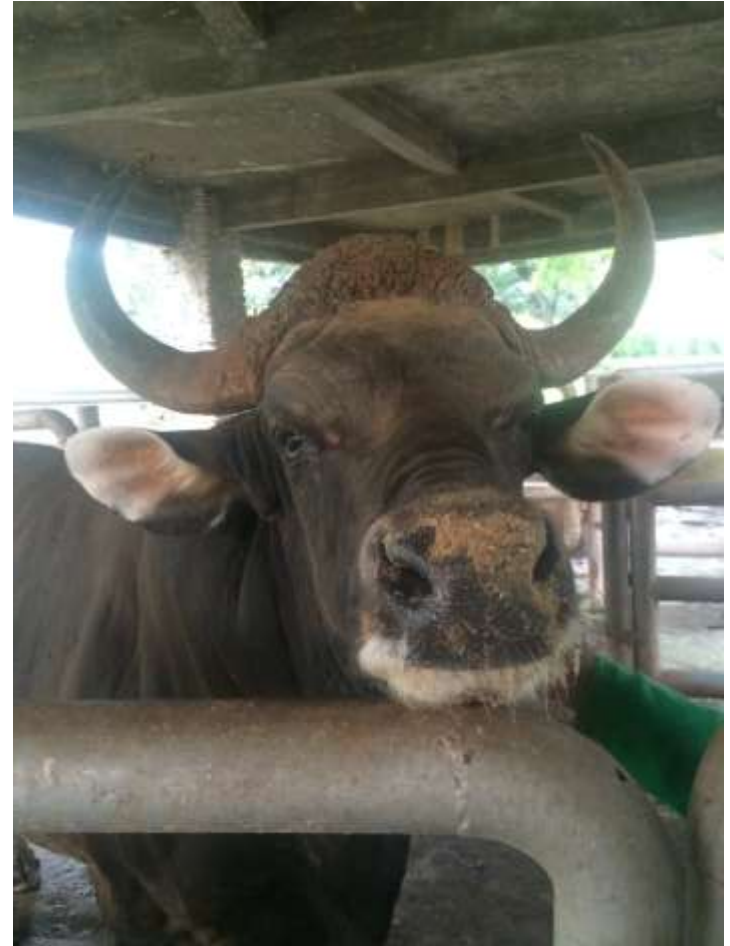
Taman Safari I: West Java



Taman Safari I: West Java



Ragunan Zoo: Jakarta



Ragunan Zoo: Jakarta



Ragunan Zoo: Jakarta



Ragunan Zoo: Jakarta



Ragunan Zoo: Jakarta



Report and Actions from Zoo Survey

Table 4: Potential Plan for Structure of GSMP-PKBSI Training in order to ensure skills transfer for the 7 listed above for 2017-2019. Dates and locations are suggestions only

Training	Subjects	Timing	Location	Topic
YEAR 1 (2017)				
Transportation training 1 (Banteng)		Apr. 2017		
	Safe transport of banteng between institutions, including habituation to transport cage, training, acclimatisation etc.		TSI Prigen	1
	Breeding and transfer recommendation (practical implementation of recommendations)		TSI Prigen	1
	Baluran Breeding Facility workshop (improvement and planning)		Baluran	7
Population management workshop 1 (all species)		July 2017		
	Promotion of cooperative breeding for decision-taking staff		N/A	3
	Training in population management for managing staff. Output: 2 nd set of breeding and transfer recommendations.		N/A	1,3
Rescue training for Ministry of Environment and Forestry staff 1 (anoa and babirusa)		Oct./Nov. 2017		
	Location 1: Transport, handling, emergency care, temporary holding facilities		Manado	6
	Location 2: Transport, handling, emergency care, temporary holding facilities		Makassar	6
Transportation training 2 (all species - if needed)		Oct./Nov. 2017		
	Safe transport of animals between institutions, including habituation to transport cage, training, acclimatisation etc. - advanced		N/A	1
	Breeding and transfer recommendation (practical implementation of recommendations) - advanced		N/A	1
	Baluran Breeding Facility workshop (improvement and planning) - follow up and advanced		Baluran	7
Annual evaluation and review to prepare following trainings				
YEAR 2 (2018)				
Breeding management and facility design 1 (all species)		Apr. 2018		
	Facility design that enables effective breeding management		N/A	2
	Training for keepers in breeding-related husbandry		N/A	4
Veterinary training (after rescue training) (all species)		Mar. 2018		
	Comprehensive veterinary training for zoos and breeding/rescue facilities (1 day non-wildlife vets, 1-2 days all vets)		N/A	5
Rescue training for Ministry of Environment and Forestry staff 2 (anoa and babirusa)		Oct./Nov. 2018		
	Transport, handling, emergency care, temporary holding facilities		Manado	6
	Transport, handling, emergency care, temporary holding facilities		Makassar	6
Breeding management and facility design 2 (all species)		Oct./Nov. 2018		
	Facility design that enables effective breeding management		N/A	2
	Training for keepers in breeding-related husbandry		N/A	4
Annual evaluation and review to prepare following trainings				



ACTION INDONESIA
GLOBAL SPECIES MANAGEMENT PLAN

Survey of Indonesian zoos regarding husbandry and facilities

Global Species Management Plans for Banteng, Anoa and Babirusa



2017

Compiled by **Johanna Rode-Margono**

Fried Programme Coordinator for South East Asia, Chester Zoo
Programme officer Asian Wild Cattle Specialist Group



**ASSOCIATION
OF ZOOS &
AQUARIUMS**

Disclaimer:

This report may only be distributed to the GSMP committees and selected members of the Indonesian Zoo Association (PKBSI). It must not be distributed to a wider audience. It is by no means an assessment of Indonesian zoos, but it is compiled as a basis for evaluation of training programmes for Indonesian zoos.

Baluran National Park: East Java



Baluran National Park: East Java



Baluran National Park: East Java



Baluran National Park: Non Native Water Buffalo



Baluran National Park: Banteng Water Access



Baluran National Park: Javan Dhole



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Baluran National Park: Camera Trap Survey



Baluran National Park: Banteng Breeding Center



Baluran National Park: Banteng Breeding Center



Baluran National Park: Banteng Breeding Center



Baluran National Park: Banteng Breeding Center



Baluran National Park: Banteng Rescue Truck



Alas Purwo National Park: East Java



Alas Purwo National Park: East Java



Meru Batiri National Park: East Java



Breeding and Transfer Plans for Indonesia

Breeding and Transfer Recommendation Summary

Banteng (*Bos Javanicus*) Global Species Management Plan



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GSMP Co-Convenor

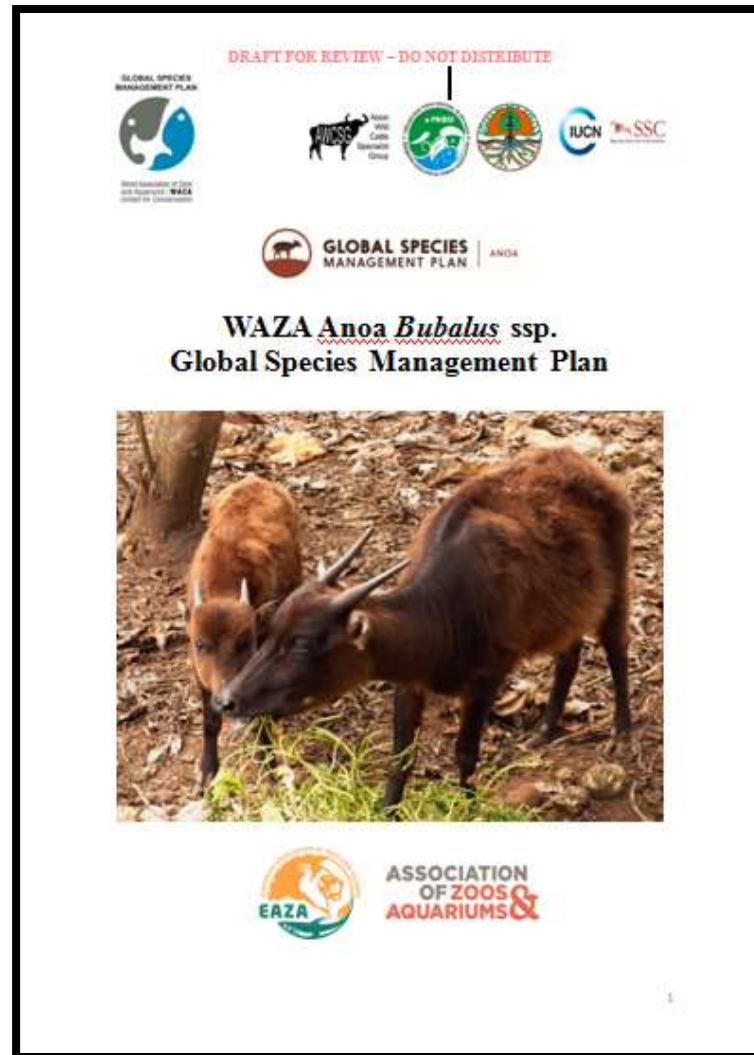
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Population Advisor

Jamie Ivy, San Diego Zoo Global (USA)
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20 September 2016

Masterplans for the GSMPs Being Finalized



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GLOBAL SPECIES MANAGEMENT PLAN

ANOA
BANTENG
BABIRUSA



ACTION INDONESIA
GLOBAL SPECIES MANAGEMENT PLAN



**GLOBAL SPECIES
MANAGEMENT PLAN**

BANTENG

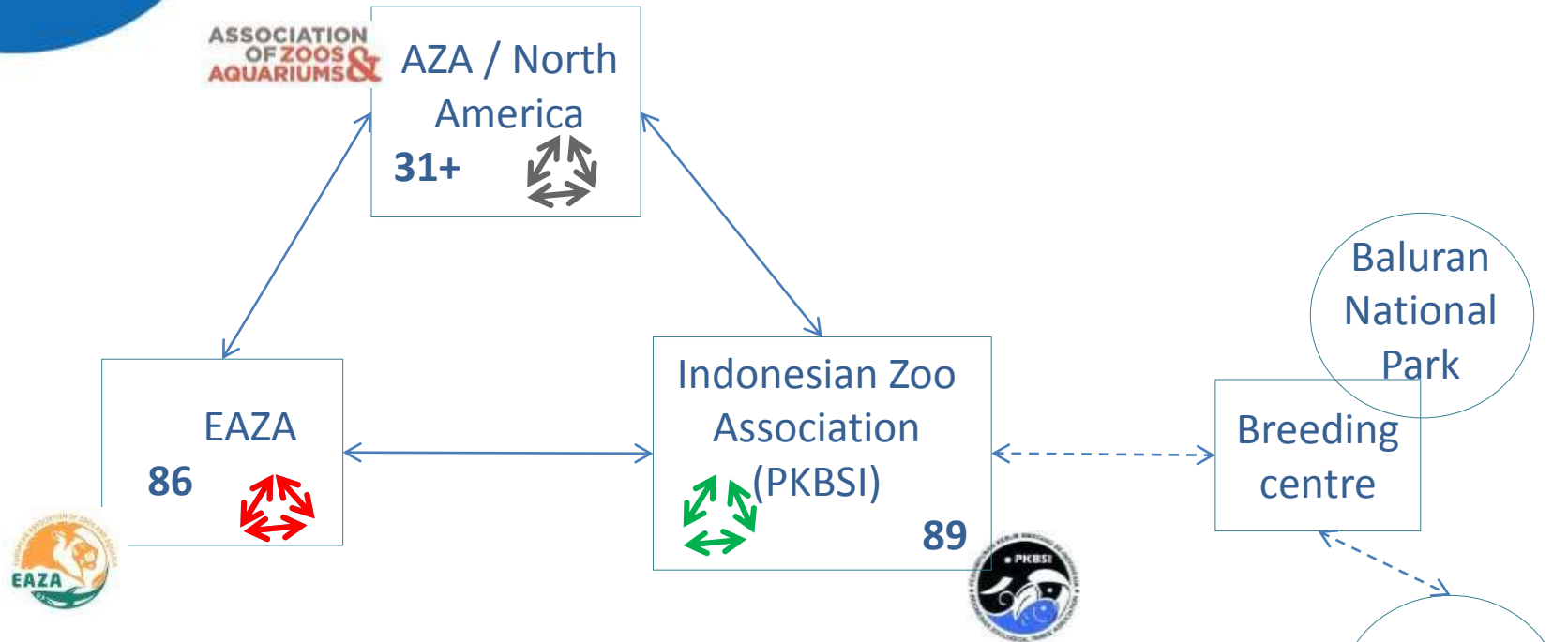


**GLOBAL SPECIES
MANAGEMENT PLAN**

BABIRUSA

Thanks to Charlotte Smith and Johanna Rode-Margano at [Chester Zoo](#) for these amazing logos!

Planned population management for Banteng



2. EEPs and SSPs are essential components of global insurance populations and expertise

1. Build more robust population in Indonesia
⇒ Breeding recommendations provided

3. Inter-regional transfers

4. Meta-population management with wild populations

North American Banteng Population Plans and Needs



- The North American regional studbook was built from scratch and is being wrapped up by [studbook keeper, Curt Coleman at the Wilds. –Thanks Curt!](#) Current NA population is 11.9.1 (31) at 6 AZA and 1 non AZA institution. The Center for the Conservation of Tropical Ungulates in FL has 98.145 (243). Animals are available and WE NEED NEW INSTITUTIONS TO COME ON BOARD to house both breeding and non breeding groups.
- Once the studbook is formally published, the Wild Cattle and Camelid TAG will be looking to make this an official SSP program.



North American Banteng Population Plans and Needs



- Once this is an SSP program, we hope to develop a more formal working group for banteng. Due to the importance of the North American population and the role of AZA in the Banteng GSMP, this is essential for the long term global success of this endangered species.
- If you or your institution is interested in acquiring animals, funding the GSMP's or specific banteng, project needs please let us know. This goes for babirusa and anoa as well.
- If you or anyone at your institution is interested in assisting the SSP/GSMP in any capacity it is much needed and would be greatly appreciated. Areas where there is the most need include; developing a banteng specific husbandry manual, putting together husbandry training courses, and/or travelling to Indonesia to assist in the direct training of Indonesian zoo and national park staff in all aspects of animal husbandry. This is a great opportunity to get involved in a great program that blends ex situ and in situ animal management and where you can make a huge difference!



Thanks to all those involved with Action Indonesia in North America



- Jamie Ivy, John Andrews, Telena Welsh, Lisa Smith, Brent Huffman, Michelle Hatwood
- All the 17 supporting institutions:



If you are interested to learn more please contact Jeff: hollandcctu1@yahoo.com

- We are looking for expertise to deliver training to Indonesian zoo keepers
- We would also appreciate a \$2000 contribution from partners to cover the costs of training, Indonesian staff and some of their travel costs



GLOBAL SPECIES MANAGEMENT PLAN

ANOA
BANTENG
BABIRUSA

Lowland anoa ... a little buffalo with lots of character!

REPRESENTATIVE
OF LOWLAND
ANOAS
OF SUMATRA
AND BORNEO



Why exhibit anoa?

- Not included with Asian bantengs, the new Global Species Management Plan for banteng, anoa, and bawean. This working collaborative effort combines the expertise of its site experts and zoo professionals to save these flagship species.
- Present a species-specific for banteng, anoa, and bawean. The island of Sumatra is home to anoa, as well as several other species, including tigers, elephants, and rhinos, all of which are facing similar conservation issues.
- Open people's eyes to the diversity of what cattle means and to the diversity of what cattle can do. Anoa are so small, most people don't even recognize them as relatives of cows!
- Encourage educational programming by interpreting the anoa's adaptations to forest life, including size, horn shape, skin, and social behavior.
- Take advantage of smaller exhibits, well-suited to the zoo's space and visiting visitors.

Stewardship Opportunities

Support the Bornean banteng (BBMP)
For more information, contact James Butler,
South Asian Wild Cattle Specialist Group Chair
james.butler@zoo.gov.uk

Care and Husbandry

• IUCN: BWP: B1 B2 N (EN) in 7 AEA (14 non-AEA institutions) (2012)
Species coordinator: James Butler, South Asian Wild Cattle Specialist Group Chair
james.butler@zoo.gov.uk

Social network: Solitary in the wild. Typically housed singly or in breeding pairs of individuals (see companion).

Mixed species: Bantengs can be aggressive (especially males) and should be housed with caution. Bantengs have been housed with female anoa with good success. Banteng should be exhibited with giraffes, meerkats, or others.

Housing: Most anoa housed below 40°F. Enclosure must have options to shield and escape the elements. Wet seasons, rainforest, and water features are preferred features to water temperatures.

Medical notes: A generally healthy, hardy species. Microbial and viral diseases of domestic ruminants are recommended for handling.

Special requirements: Due to aggression, especially during introductions, animals are usually introduced at a young age. When introducing to common to reduce likelihood of injury during initial stages.

Keeper resources: Standard workload. Banteng individuals should be worked in protected context for safety of staff from jabbing through mesh fencing.

Please contact the TAG for full husbandry guidelines.
<http://www.san-diego-zoo.org>

Javan banteng ... who says wild cattle aren't beautiful!

REPRESENTATIVE
OF JAVAN
BANTENG
OF SUMATRA
AND BORNEO



Why exhibit banteng?

- Not included with Asian bantengs, the new Global Species Management Plan for banteng, anoa, and bawean. This working collaborative effort combines the expertise of its site experts and zoo professionals to save these flagship species.
- Displayed as the banteng's familiar size like the bawean to contrast the domestic anoa with its more wild relatives.
- Provides a first point for Asian banteng visitors with this large, striking species. Banteng are more over-represented than other wild cattle and are well with many species.
- Share key reproductive technologies via long-term genetic work with banteng has included artificial insemination, embryo transfer, and even cloning. It is important to document individual alleles given their under-representation in the population.

Stewardship Opportunities

Support the Asian banteng (BBMP)
For more information, contact James Butler,
South Asian Wild Cattle Specialist Group Chair
james.butler@zoo.gov.uk

Care and Husbandry

• IUCN: BWP: B1 B2 N (EN) in 7 AEA (14 non-AEA institutions) (2012)
Species coordinator: James Butler, South Asian Wild Cattle Specialist Group Chair
james.butler@zoo.gov.uk

Social network: Solitary and well-maintained. Typically housed in a female group (one male and several females). Multiple males can be housed together without issue.

Mixed species: We work with other ungulates, including various deer, antelope, giraffe, and wild boar. Other successful mixes include meerkats, giraffes, anoa, and water buffalo.

Housing: Tolerant of very high temperatures, and can adapt to cold weather (provided supplemental heat below 40°F). Spacing and location on barriers from other cattle.

Medical notes: Susceptible to BVD; do not house near infectious or other common viruses.

Special requirements: Standard cattle choice for mental management. Regular veterinary (clipping, etc.) - a quick shower and get banteng are generally robust and easy to work with - a banteng family.

Please contact the TAG for full husbandry guidelines.
<http://www.san-diego-zoo.org>

Babirusa ... a unique pig with tusks like no other!

REPRESENTATIVE
OF BABIRUSA
OF SUMATRA
AND BORNEO



Why exhibit babirusa?

- Not included with Asian bantengs, the new Global Species Management Plan for banteng, anoa, and bawean. This working collaborative effort combines the expertise of its site experts and zoo professionals to save these flagship species.
- Present a species-specific for banteng, anoa, and bawean. The island of Sumatra is home to anoa, as well as several other species, including tigers, elephants, and rhinos, all of which are facing similar conservation issues.
- Shows off pigs in a given exhibit. Babirusas do not meet up to regulation like other wild pigs.
- Shows how many wild bantengs develop the tusks of males grow up. Babirusas that grow up.
- Connect with your local museum visit to other mammals and banteng. Babirusas fight by rearing up and "bawean" with their front legs.

Stewardship Opportunities

Support the Bornean banteng (BBMP)
For more information, contact James Butler,
South Asian Wild Cattle Specialist Group Chair
james.butler@zoo.gov.uk

Care and Husbandry

• IUCN: BWP: B1 B2 N (EN) in 7 AEA (14 non-AEA institutions) (2012)
Species coordinator: James Butler, South Asian Wild Cattle Specialist Group Chair
james.butler@zoo.gov.uk

Social network: Typically housed individually, in pairs, or in small groups (including multiple males). Pigment female groups, solitary, or other adults may have piglets.

Mixed species: Babirusas interact with other ungulates, including various deer, antelope, giraffe, and wild boar. Other successful mixes include meerkats, giraffes, anoa, and water buffalo.

Housing: Not cold tolerant. Most anoa and/or piglets are not cold.

Medical notes: Skin problems may occur if housed in humid or hot environments. Banteng and bawean are common, particularly when kept in humid conditions.

Special requirements: Types of males are bawean, care should be taken to ensure enough to avoid large gaps where bawean may get caught and injured.

Keeper resources: Typical cleaning of exhibit and feeding areas. A variety of enrichment to encourage to keep animals stimulated. Banteng, babirusa, and meerkats.

Please contact the TAG for full husbandry guidelines.
<http://www.san-diego-zoo.org>