



ACTION INDONESIA

GLOBAL SPECIES MANAGEMENT PLAN

FOR ANOA, BANTENG AND BABIRUSA



Cover photo: Banteng. Photo: Bali Safari

ANNUAL REPORT 2021

ACTION INDONESIA FOUNDING MEMBERS:



World Association of
Zoos and Aquariums
WAZA | *United for
Conservation*

ASSOCIATION
OF ZOOS &
AQUARIUMS



Asian
Wild
Cattle
Specialist
Group



Species Survival Commission



IUCN/SSC: Wild Pig Specialist Group

Achievements of Action Indonesia in 2021

In a nutshell:

Anoa, banteng and babirusa all occur within Indonesia and are under threat of extinction due to hunting and habitat loss. The Action Indonesia Partnership was created in 2016 with the aim to promote international collaboration to ensure the long-term survival of these species by a combination of *ex situ* and *in situ* activities. This used WAZA's Global Species Management Plans (GSMPs) frameworks for banteng, anoa and babirusa.

This year has once again been challenging due to the global Covid-19 pandemic. We are very thankful for your continued support, partnership and collaboration. Although in-person activities were not feasible, thanks to you the Action Indonesia GSMPs were able to progress towards our aims in 2021. Below is a summary of our achievements:

- Genetic sampling of anoa, banteng and babirusa in Indonesian zoos is underway and near completion.
- The GSMP, PKBSI and Alas Purwo National park implemented camera trapping to monitor banteng populations in a priority area for the species in East Java.
- Continued breeding of GSMP species has occurred following the second set of breeding and transfer recommendations developed and distributed to Indonesian zoos in 2018.
- The third Action Indonesia Day was held on August 15th to raise awareness for GSMP species. Over 45 organisations got involved for a successful day of virtual events and activities.
- The GSMP and the PKBSI Education Division planned and delivered two 2-day virtual Education training workshops to Indonesian zoo staff.
- The GSMP published articles in the WAZA magazine, a brief piece in Oryx journal and was featured as an IUCN Reverse the Red Case Study.
- The GSMPs were represented in the EAZA Annual conference, the SEAZA conference and the WECMIC and banteng conference in Indonesia. The GSMP also held a public webinar hosted by WAZA, attended by over 80 people.
- The IUCN SSC Asian Wild Cattle Specialist Group won the IUCN SSC Chair's Citation for Excellence for our work in 2020 to delivering the Species Strategic Plan for that period, including in large part the GSMP activities.
- We continued certain fundraising efforts to support GSMP activities.

Thank you for your support and contributions! We look forward to continuing our collaboration.



James Burton
Chair
IUCN SSC Asian Wild
Cattle Specialist Group



Terry Hornsey
Convenor
Anoa GSMP



Joe Forys
Convenor
Babirusa GSMP



Ivan Chandra
Convenor
Banteng GSMP



Corinne Bailey
Programme Officer
IUCN SSC Asian Wild
Cattle Specialist Group

Background:

What are GSMPs?

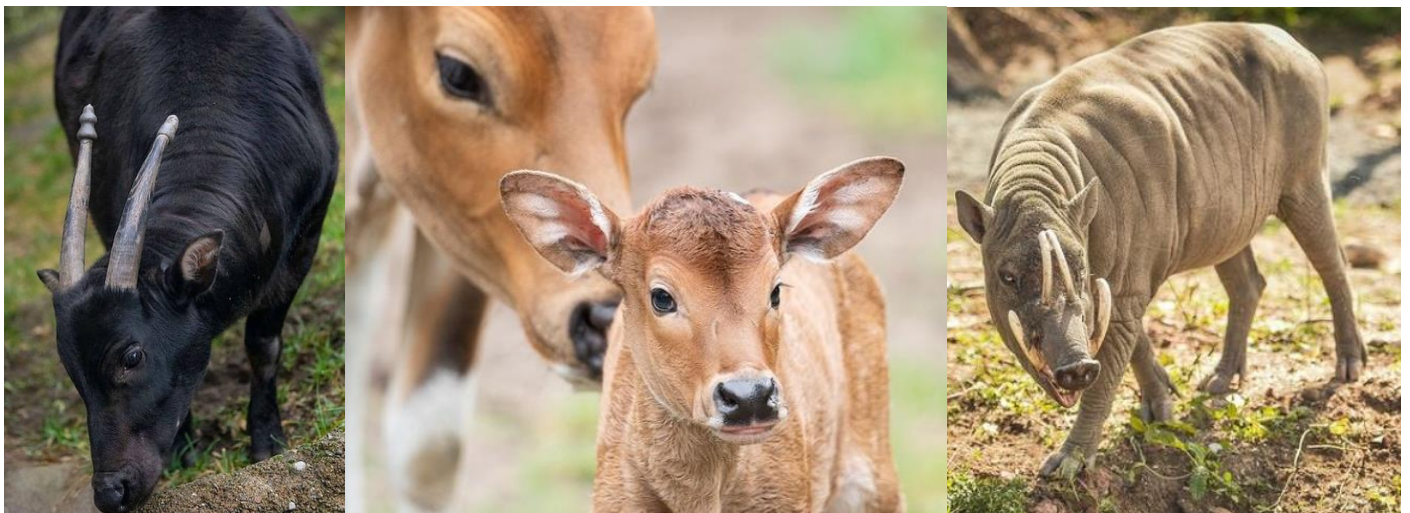
Global Species Management Plans (GSMPs) bring together zoos, governments, and conservation organisations from multiple regions to achieve globally agreed *ex situ* and *in situ* conservation goals for a species. The GSMPs are administered by the World Association for Zoos and Aquaria (WAZA) and run by committees of representatives of the regional zoo associations participating in the collaboration.

Action Indonesia GSMPs

The partners of the Action Indonesia GSMPs collaborate for the conservation of three threatened Indonesian taxa; **anoa** (*Bubalus depressicornis* and *B. quarlesi*), **banteng** (*Bos javanicus*) and **babirusa** (*Babyrousa* spp.; three species). We are also working closely with the **Sumatran tiger** (*Panthera tigris sumatrae*) GSMP to align our activities where possible. These GSMPs use the One Plan Approach to combine the skills, resources and expertise of both the zoo community and *in situ* practitioners. The coordination of the GSMPs is carried out by the Indonesian Zoo and Aquarium Association (PKBSI) and the IUCN SSC Asian Wild Cattle Specialist Group.

In this report, we detail our achievements in three main areas of activity that align to the following goals:

1. *Ex situ* conservation: Healthy back up *ex situ* populations fit for reintroduction
2. Education: Action and support for conservation of target species
3. *In situ* conservation: Stable and safe *in situ* populations



The three GSMP taxa (left to right): anoa (Photo: Point Defiance Zoo & Aquarium), banteng (Photo: Zoo Wroclaw) and babirusa (Photo: Taman Safari Indonesia Bogor)

Your contributions in 2021

The achievements and activities in 2021 were only possible due to your generous contributions and support. Support included financial contributions as well as staff time, technical input and the sharing of expertise.

This year, institutions freed work time to allow staff to contribute to various GSMP activities, such as presenting in the virtual training sessions, raising awareness and funds, contributing to publications and monitoring breeding and transfer recommendations. This in-kind support provided by your institutions or organisations is shown in Table 1.

Table 1 also shows the GSMP activities that contributions by your institutions and organisations have funded or will fund. This year has again been financially challenging for many zoos and that has been reflected in our fundraising, however we have been very happy to receive consistent contributions to projects and in-kind support during this time. The hard work of all those involved in activities and the amazing generosity of our supporters is a huge credit to the collaborative partnership of the Action Indonesia GSMPs and the motivation of our partners.

The first section of Table 1 shows contributions to GSMP unrestricted funding. Unrestricted funding is important to assist with the overall functioning of the GSMPs, as well as to ensure funds are available in the case of urgent activities; these funds are allocated by approval from a majority of the Working Group leaders. Table 1 also shows restricted funding – the contributions to specific activities.



Matt Thompsett from Flamingoland, UK cycled the length on Sulawesi (1092 miles!) in 10 days to raise over £1000 for conservation in Sulawesi

Table 1 Action Indonesia Partner and supporter contributions; all funding, technical and in-kind support for the GSMPs in 2021

Institute/Organisation/Individual	Contribution
Unrestricted funds	
Zoological Society of London, UK Marcus Burkhardt, Germany Zoo Miami, USA Toronto Zoo, Canada West Midland Safari Park, UK Matt Thompsett, Cycle Sulawesi, UK San Diego Zoo global, USA AllwetterZoo Münster Saint Louis Zoological Park, USA	Funds to be used to for projects identified as priorities by Working Group leaders.
Restricted funds	
Chester Zoo, UK	Coordination of the Action Indonesia GSMPs; salary and travel of AWCSG PO and AWCSG Chair; staff time for training and education materials and banteng <i>in situ</i> monitoring
Global Wildlife Conservation, USA	Coordination of the Action Indonesia GSMPs; salary and travel of AWCSG PO and AWCSG Chair; banteng <i>in situ</i> population monitoring
San Diego Zoo Global, USA	Coordination of the Action Indonesia GSMPs; salary and travel of AWCSG Chair
Centre for the Conservation of Tropical Ungulates, USA	Coordination of the Action Indonesia GSMPs; salary and travel of AWCSG Chair
Nashville Zoo, USA	Sulawesi <i>in situ</i> population monitoring
Point Defiance Zoo & Aquarium, USA	Sulawesi <i>in situ</i> population monitoring
Zoo Leipzig, Germany	Salary and travel of AWCSG Chair
Taman Safari Indonesia Bogor, Indonesia	Contribution to PKBSI-GSMP Programme Officer salary
Batu Secret Zoo, Jatim Park, Indonesia	Contribution to PKBSI-GSMP Programme Officer salary
Alas Purwo National Park, Indonesia	Banteng <i>in situ</i> population monitoring; staff time and funds
In-kind support	
Chester Zoo, UK	Staff time coordinating the husbandry training framework
Queen Mary University of London, UK	Mentoring in population genetics for PKBSI and genetic technical advice
Copenhagen Zoo, Denmark	Mentoring and technical advice for PKBSI-led genetic project
Conservation Planning Specialist Group, USA	Mentoring the PKBSI-GSMP Programme Officer in facilitation for conservation planning.
Taman Safari Indonesia Bogor	Yohana presenting at the National Banteng Seminar
Yorick Liefting, Wulan Pusparini, Dede Rahman, Iding Haidir, Erlinda Kartika	Banteng monitoring technical advisory group
Taman Safari Indonesia Bogor, Taman Safari Indonesia Prigen, Bali Safari Park, Ragunan Zoo, Bandung Zoological Garden, Batu Secret Zoo, Surabaya Zoo, Gowa Discovery Park, Citra Satwa Celebes, Ministry of Environment and Forestry	Support with the PKBSI-GSMP genetic sample collection.
Chester Zoo, Miami Zoo, Ragunan Zoo, Bali Safari Park	Staff time: presenting and moderating in the virtual education workshops.
David Field, RZSS/WAZA	Staff time hosting the GSMP webinar.
National Research and Innovation Agency, Indonesia	Supporting genetic monitoring quality work (field and lab)

Thanks to all Indonesian zoos and institutions that participated in the virtual education workshops, and to all the zoos and institutions around the world that participated in Action Indonesia Day 2021.

1. Ex situ conservation: Healthy back up ex situ populations fit for reintroduction

Genetic Population Assessment of anoa, banteng and babirusa in Indonesian zoos

In order that the greatest genetic diversity can be maintained in the *ex situ* populations, genetic assessment is required to verify the studbook data, determine the genetic make-up of the individuals and determine the geographical origin and relatedness of the wild caught individuals. The Indonesian Zoos and Aquariums Association (PKBSI), in collaboration with the National Research and Innovation Agency (BRIN), the Ministry of Environment and Forestry (KLHK) and the GSMP Genetics Working Group, is leading on the sampling and genetic assessment of the founder animals of the Indonesian zoo populations of anoa, babirusa and banteng. This will help guide the breeding and transfer recommendations to retain as much genetic diversity as possible.

The total number of founder individuals identified for sampling includes 30 banteng, 30 babirusa and 25 anoa, collected from the following Indonesian zoos: Bandung Zoological Garden, Taman Safari Indonesia Bogor, Batu Secret Zoo, Taman Safari Indonesia Prigen, Surabaya Zoo, Ragunan Zoo, Gowa Discovery Park, Citra Satwa Celebes and Bali Safari Park.

Sample collection started after obtaining a permit from the Director General of Nature Resources and Ecosystem Conservation (KSDAE) through decree number: SK.226/KSDAE/SET.3/KSA.2/11/2020 on 17th November 2020



Babirusa blood samples were collected from Surabaya Zoo. Credit: Surabaya Zoo



Anoa blood samples were collected from Citra Satwa Celebes. Credit: PKBSI

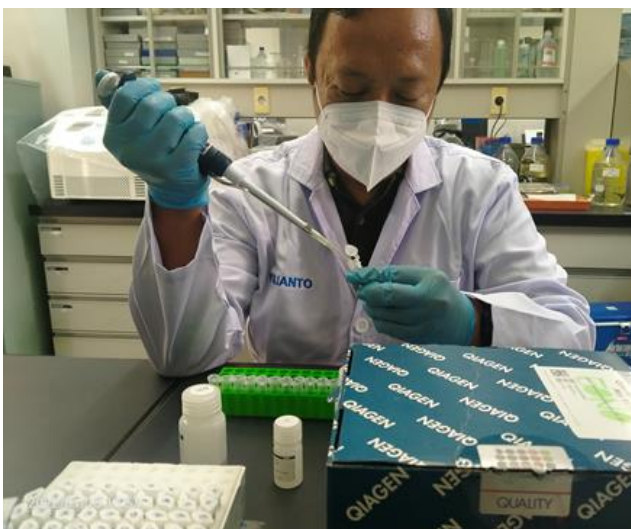


Inspection from BKSDA Jakarta, a requirement before transporting samples to BRIN Credit: PKBSI

This sampling project is a huge collaborative effort and required substantial logistical management from multiple institutions. In addition to coordination with the provincial Natural Resources Conservation offices (BKSDA) for administration required to transport blood samples, PKBSI also worked closely with zoos to help with blood drawing procedures. This project is therefore a valuable opportunity to practically engage with zoos and contribute to their knowledge of animal training, genetic relatedness and cooperative breeding.

Despite travel limitations and zoo closures, 80% of samples have been collected during 2021. A permit extension has been acquired to allow for completion of sample collection from remaining zoos in the first half of 2022. So far, the BRIN team have extracted the DNA from 53 blood samples for genetic sequencing and are ready to send them to an external company for genetic sequencing.

The aim of the genetic work under PKBSI and the GSMP is to characterize the genetic diversity of both wild populations and *ex situ* populations in Indonesian, European and North American Zoos. Genetic sample collection of banteng and anoa is also underway in European zoos, which will allow joint analysis of the EEP and Indonesian zoo population.



In the lab, DNA was extracted from the samples using a Qiagen Kit ready to send for sequencing. Credit: BRIN

Breeding and transfer recommendations

A primary aim of the Action Indonesia GSMPs is to achieve healthy backup *ex situ* populations for each species. This is particularly important for Indonesian zoos, as they have a number of founder animals, whose genetics are potentially underrepresented in the Indonesian and global zoo population. GSMP population management working groups have been working with studbook keepers and zoos since 2016 to produce cooperative breeding and transfer recommendations in Indonesia. The second set of breeding and transfer recommendations was produced in 2018 during the second GSMP Planning Workshop. New recommended births are important steps forward in our goal of maintaining healthy global *ex situ* populations, which is critical to the long-term conservation of the species.

As a result of the second set of breeding recommendations, six anoa, eighteen banteng and six babirusa have been born so far, including a banteng and a babirusa birth confirmed in 2021 (Figure 1). Since the recommendations process began in 2016, there have now been at least 43 recommended births, including nine babirusa, ten anoa, and twenty-four banteng. These births help to grow the *situ* populations towards the Indonesian National cooperative breeding targets (Table 2).

Concurrently with the GSMP planning process for the period 2022-2025, the GSMP population management WGs are working together with Indonesian studbook keepers and zoos to develop a third set of breeding and transfer recommendations in 2022. It is recognised that an increase in breeding and transfer efforts takes time to happen, as zoos become familiar with the cooperative population management approach, identify how they can increase space to hold recommended offspring, and work to improve the transfer process. With continued support from PKBSI, the KSDAE, Ministry of Environment and Forestry of Indonesia (KKH) and the GSMP, we aim to renew breeding and transfer recommendations every 1-2 years in the future, to account for changes to the *ex situ* population and demography. Please get in touch with PKBSI-GSMP Officer Yonathan for more information (yonathan030892@gmail.com).

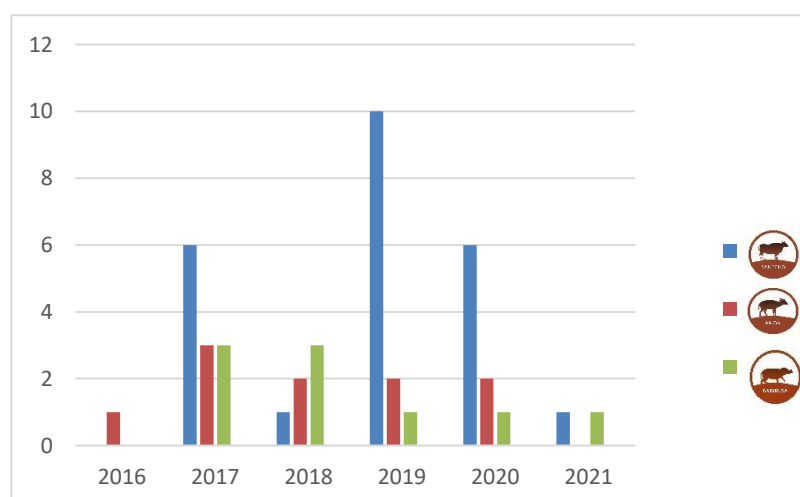


Figure 1: Births of anoa, banteng and babirusa in Indonesian zoos following breeding recommendations.

Species	Current population (Nov 2021)	Target
Banteng	75	100
Anoa	37	75
Babirusa	79	100

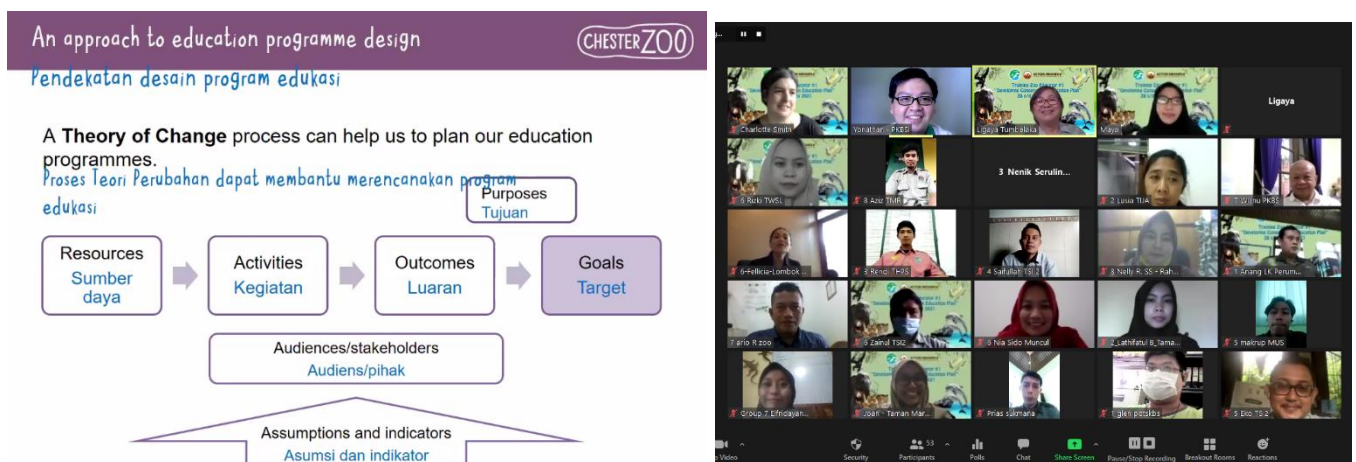
Table 2: Indonesian National *ex situ* cooperative breeding targets and the current *ex situ* populations.

2. Education - Action and support for conservation of target species

Education training

The Education Working Group and PKBSI held two virtual training workshops with Indonesian Zoo educators in June and September on the topics: “Developing Conservation Education Plans” and “Interpretive Planning”. The training was delivered by international and Indonesian Zoos including Chester Zoo (Charlotte Smith & Fred Howat), Ragunan Zoo (Yuliyati Nurmaya), Miami Zoo (Julia Klumb & Robert Lara) and Bali Safari Park (Ida Ayu Ari Janiawati), reaching a total of 42 participants in each workshop. Since 2016, 150 practitioners from Indonesian zoos and other conservation institutions have now received training in conservation education practices.

The majority of the participants in the training webinars were zoo educators, however vets, keepers, curators and directors also joined the workshops. The workshops ran over 2 days, with interactive elements, group tasks and Q&A sessions encouraging engagement from participants.



The first session was presented by Charlotte Smith, Chester Zoo, on approaches to education programme design. Credit: PKBSI

Pre and post questionnaires demonstrated that the training was effective in increasing participant’s knowledge and confidence in a) writing a conservation education plan (35% increase); using a Theory of Change Process in activity planning (35% increase) and developing interpretive planning (20% increase). Participants also identified areas of future training need, which will guide further workshops in 2022:

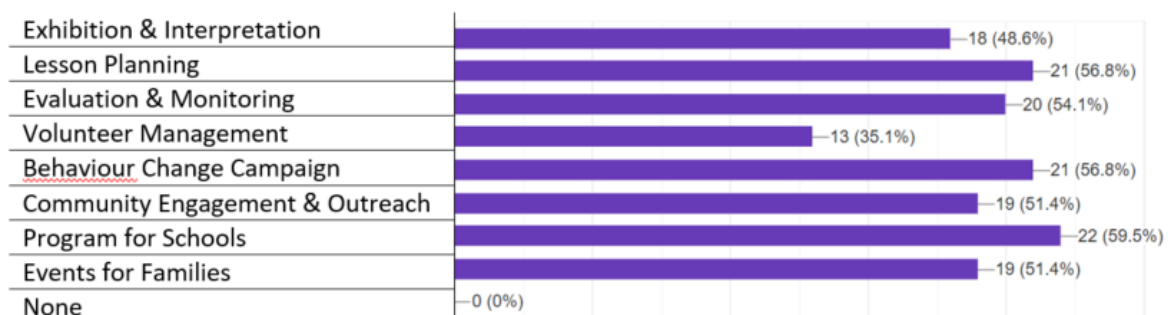
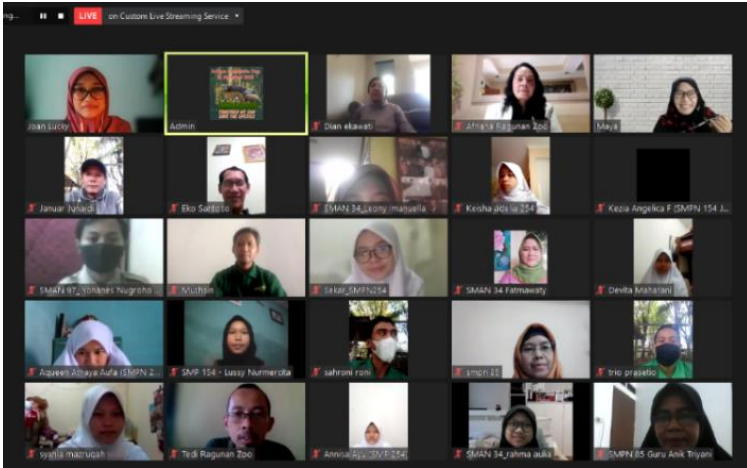


Figure 2: Feedback from participants on areas of future training they felt were most needed.



Ragunan Zoo held a webinar for high school students as part of their Action Indonesia Day activities. Credit: Ragunan Zoo



Zoo Miami shared live keeper talks from their banteng herd on social media. Credit: Zoo Miami



Three Taman Safari Indonesia facilities held an Instagram Live. Credit: Taman Safari Indonesia



Action Indonesia Day sticker activities at Siantar Zoo. Credit: Siantar Zoo



Surabaya Zoo staff found creative ways to raise awareness in their Action Indonesia event! Credit: Surabaya Zoo

Raising awareness of the GSMP

Below is a summary of our key communications to raise awareness of the Action Indonesia GSMPs in 2021.

GSMP webinar

In July, the GSMP held a public webinar to increase the support for the GSMPs and increase participation in Action Indonesia Day 2021. The webinar was hosted by David Field, chair of WAZA's Committee for Population Management and featured WG representatives from across the GSMP partnership and participating regions: James Burton, Steve Metzler, Ligaya Tumbelaka, Charlotte Smith, Marcel Alaze.



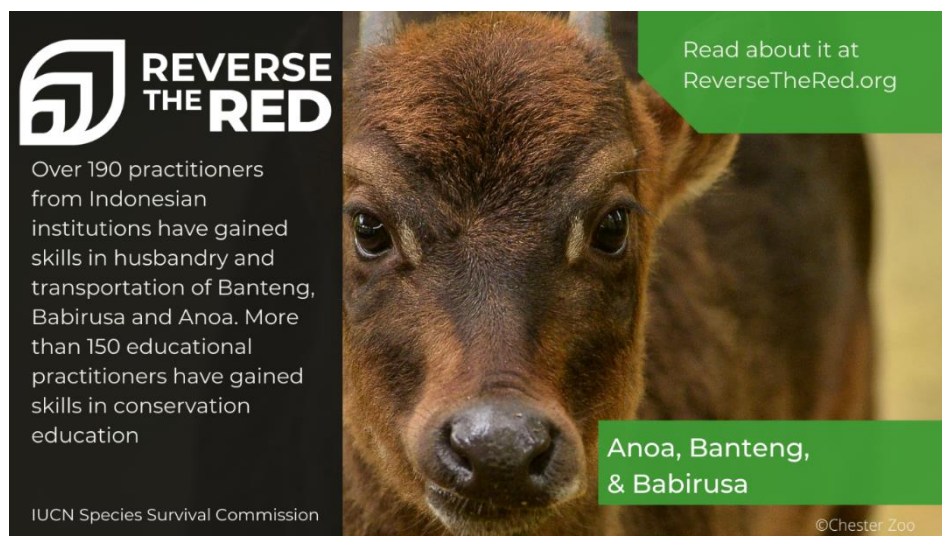
A wide range of topics were discussed in the webinar, including the One Plan Approach and its implementation through the GSMPs, conservation breeding and genetics, human impacts and engagement, capacity building and Action Indonesia Day.

80 participants attended the webinar, which has since had a further 80 views on [Youtube](#). The webinar was successful in increasing awareness of

the Action Indonesia website and resources for Action Indonesia Day. The successful coordination of the webinar and the enthusiasm of the panellists has also resulted in interest from other members of the GSMP to participate in future thematic webinars.

Publications:

Articles on Action Indonesia were published in the September issue of the [WAZA newsletter](#), as well as a short piece in [Oryx](#). The GSMPs were also featured as an [IUCN Reverse the Red Case Study](#) in December 2021 for its collaborative approach and contribution to the conservation of anoa, banteng and babirusa.



Conference presentations:

In September, the progress of Action Indonesia was presented at both the Cattle and Camelid and the Pigs and Peccaries TAG meetings at the EAZA annual conference. GSMP activities were also presented in Indonesia in the SEAZA conference in November by Tony Sumampau (PKBSI), the Wildlife Ecology, Conservation, Management, International Conference (WECMIC) conference in November by Gono Semiadi (PKBSI), and the National Banteng Seminar in October 2021 by Yohana Tri Hastuti (Taman Safari Indonesia, Bogor)

In March, Asian Wild Cattle Specialist Group Chair James Burton presented at the Association of Zoos and Aquariums (AZA) Ungulate TAG Mid-Year meeting on the activities of Action Indonesia. Updates shared during the presentations include the five-year progress of the GSMPs in increasing populations, improving genetic diversity, raising awareness, building capacity, promoting collaboration and more.

3. *In situ* Conservation - Stable and safe *in situ* population

Banteng Population monitoring in Alas Purwo National Park, East Java

Effective population monitoring of *in situ* populations of the GSMP species is essential to increasing knowledge of population sizes and trends, to identify whether populations are demographically and genetically stable and viable for conservation. Knowledge of population sizes, range and trends also helps to identify potential threats to the population and inform conservation actions. E.g. increased protection for populations vulnerable to hunting pressures.

In 2019, the GSMPs, PKBSI and Alas Purwo National Park – a priority location for banteng conservation in East Java - agreed to collaborate on a monitoring project for Javan banteng. This will allow us to establish how many banteng are in the park, how their population changes over time and the habitats they use. The project is supported by Chester Zoo, Stichting Wildlife Beekse Bergen, Re:wild and Wroclaw Zoo, with the objectives to establish effective monitoring in Alas Purwo National Park, in order to better understand and safeguard the populations of banteng in East Java, and to provide longitudinal data of banteng population density of at least 4 years to inform future management and support a future Population and Habitat Viability Analysis workshop.

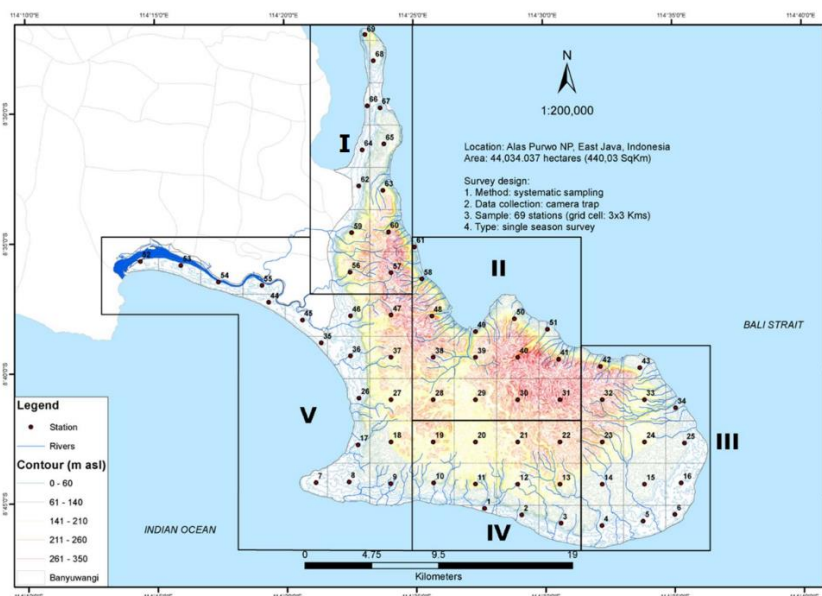


Fig. 5: Camera trap locations in Alas Purwo National Park. Polygons I-V represent the stations covered by each deployment team.

During the first half of 2021, we developed the sampling and camera trap strategy along with international experts, the park and PKBSI. We connected a technical advisory group of Indonesian academic, NGO and government experts working on other high quality camera-trapping projects that can help to advise the project, carry out capacity building and work closely with the team leaders on technical and data analysis aspects.



Camera traps were successfully deployed in the park in September 2021. Prior to deployment, the project partners held a large hybrid technical meeting, in which the deployment methodology was presented and technical experts provided advice and answered any questions, for example on calibration protocols for Random Encounter Modelling (REM). Preparation for deployment was managed by the field team leader.

Camera trap deployment began on the 15th September. The 5 field teams deployed 69 cameras in total across the entire 440km² National Park (Fig. 1). This is the first time that the entire park has been surveyed. The terrain in the park was diverse and challenging at times, ranging from thick bamboo clumps to large cliffs, dense forest and steep terrain. Many parts of the park were also only accessible by boat (Images 1-5). During deployment, field assistants collected additional data on banteng sign (trails and scat), which were observed at 35 camera trap sites. These initial observations indicate that banteng occur in areas previously unknown to the park staff. Deployment of the cameras took approximately 1 week, the cameras were then collecting data in the forest for 70 days before retrieval in mid-November.





Images: The field team setting up camera traps in Alas Purwo National Park. All images credits: Taman Nasional Alas Purwo



In 2022, camera trap data will be stored, labelled and analysed by the National Park. The GSMP will support robust data analysis through facilitating training of key park staff in areas including camera trap data storage and management; high volume camera trap data processing using specialized software; data analysis techniques including Random Encounter Modeling for population density estimates; and presentation of results. This training activity will positively impact the ability of the project to meet its conservation objectives as capacity building is essential to the longevity of the project and to establishing effective monitoring in Alas Purwo National Park in order to better understand and safeguard the populations of banteng in East Java. The data analysis training will be conducted in early 2022.

The results from the 2021 survey will help to inform and perfect data collection protocols for a subsequent survey in 2022. The results are also expected to provide a baseline for the longitudinal survey addressing the following research questions:

1. What is the density of the banteng population?
2. What is the banteng population trend over multiple years, that can be conducted annually?
3. What is the population structure, and how does it vary between years?

Population Monitoring of anoa and babirusa in Sulawesi

Anoa and babirusa are threatened by habitat loss and hunting, causing population declines. Accurate population estimates are lacking, however, as there have been no island-wide (or regional) surveys for these species to date, which hinders conservation efforts. In 2022, the Action Indonesia GSMPs and PKBSI aim to establish a trial site in Sulawesi to conduct a camera-trap study for these species. This will provide valuable information on their population abundances and densities, and will lay the groundwork for island-wide assessments and improved protection. In 2021, the GSMP began engaging with the KKH, *in situ* experts and PKBSI in order to identify the location and scope of the project. The project is supported by Toronto Zoo, Nashville Zoo, and the Dr Holly Reed Conservation Fund, Point Defiance Zoo and Aquarium.

By trialing a monitoring method in one protected area and building relationships with the relevant authorities and partners in Sulawesi, we aim to scale the project up to more areas holding remnant populations. In addition, the GSMP aims to engage with *in situ* NGOs to better understand the threats to the species and support capacity building in behaviour change and awareness raising approaches.

Outlook for 2022

Thanks to your support and contributions, we were able to adapt our plans for 2021 to the continuously changing situation. Successes this year with the *in situ* monitoring, genetic sampling and education training have demonstrated our ability to collaborate on ambitious activities using a variety of approaches. We will continue learning next year.

GSMP planning for 2022-2025:

In 2022, the GSMP working groups, PBKSI, KKH and Action Indonesia partner institutions will plan their activities for the next 3- year masterplan period 2022-2025. Preparation for this planning began with multiple WG leader calls in 2021 to discuss the planning process, which will be conducted virtually. The IUCN Conservation Planning Specialist Group (CPSG) has also provided technical input and advice for the multi-stakeholder planning. The Working Groups are currently reviewing activity progress of the last phase and prior to planning strategic priorities and activities for the next phase.

Some additional activities we hope to achieve next year include:

- Develop *in situ* camera trap monitoring for anoa and babirusa in one site in Sulawesi
- Conduct more husbandry and education training
- Develop the third round of breeding and transfer recommendations for the GSMP species

We look forward to the next **Action Indonesia Day on the 14th August 2022**. Please check the [GSMP website](#) and social media pages for updates and resources on how to get involved in Action Indonesia Day this year.

We rely on your support, expertise and funding to carry out our activities. If you are interested in getting involved and want to find out more, please contact either James Burton (jamesaburton@yahoo.co.uk) or Corinne Bailey (c.bailey@chesterzoo.org) of the AWCSG, a Working Group leader (see Table 4 Annex) or one of the GSMP convenors or co-convenors:

- Anoa: Terry Hornsey (smidge.cat1@yahoo.co.uk); Co-convenor: Yohana Tri Hastuti
- Banteng: Ivan Chandra; Co-convenor: Steve Metzler (steve.metzler@dallaszoo.com)
- Babirusa: Joe Forys (jforys@auduboninstitute.org); Co-convenor: Sri Pentawati

**We wish all partners well for the coming months.
We need your help for the 2022 activities – please get in touch!**

Find us on www.actionindonesiagsmp.org or on social media following the links below:



[@IUCN_WildCattle](#)



[Action Indonesia GSMP](#)



[@iucn_wildcattle](#)

[IUCN Asian Wild Cattle Specialist Group](#)

[@action_indonesiagsmp](#)

Annex: Action Indonesia GSMP founding members, working groups and leaders

The Action Indonesia GSMPs were founded by the Indonesian Zoo and Aquarium Association (PKBSI), the European Association of Zoos and Aquaria (EAZA), the Association of Zoos & Aquariums (AZA), the IUCN Species Survival Commission (SSC), the IUCN SSC Asian Wild Cattle Specialist Group (AWCSG) and the IUCN SSC Wild Pig Specialist Group (WPSG) in 2015. In March 2016, they were endorsed by the Indonesian Ministry of Environment and Forestry (KKH) and WAZA.

Below is the list of the thematic Working Groups and their leaders as developed in the second GSMP Planning Workshop in 2018.

Table 4 Action Indonesia GSMP Working Groups and leaders

Name	Contact details	Affiliation(s)
Anoa Population Management		
John Andrews	jandrews@lpzoo.org	AZA Population Management Centre, Lincoln Park Zoo, USA
Yohana Tri Hastuti	yohanavet@tamansafari.net	Taman Safari Indonesia, Indonesia
Babirusa Population Management		
Joe Forys	jforys@auduboninstitute.org	Audubon Nature Institute, USA
Sri Pentawati	pipentakbs_94@yahoo.co.id	Surabaya Zoo, Indonesia
Banteng Population Management		
Ivan Chandra	ivan@tamansafari.net	Taman Safari Indonesia, Indonesia
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Ligaya Tumbelaka	tigressgaya@gmail.com	Bogor Agricultural University (IPB) & PKBSI, Indonesia
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Laurent Frantz	laurent.frantz@lmu.de	Ludwig Maximilian University of Munich, Germany
Husbandry Training		
Joe Forys	jforys@auduboninstitute.org	Audubon Nature Institute, USA
Ligaya Tumbelaka	tigressgaya@gmail.com	Bogor Agricultural University (IPB) & PKBSI, Indonesia
Steve Metzler	steve.metzler@dallaszoo.com	Dallas Zoo, USA
Tim Rowlands/ Amy Humphreys	timr@marwell.org.uk a.humphreys@chesterzoo.org	Marwell Zoo, UK Chester Zoo, UK
Anoa and Babirusa <i>in situ</i>		
Abdul Haris Mustari	haris.anoa@yahoo.com	Bogor Agricultural University (IPB), Indonesia
James Burton	jamesaburton@yahoo.co.uk	IUCN SSC Asian Wild Cattle Specialist Group, UK
Banteng <i>in situ</i>		
Carl Traeholt	cat@zoo.dk	Copenhagen Zoo, Denmark

Citation:

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Available from:

IUCN SSC Asian Wild Cattle Specialist Group (www.asianwildcattle.org)

Contact:

James Burton, Chair of the IUCN SSC Asian Wild Cattle Specialist Group (jamesaburton@yahoo.co.uk)



Thanks to all the Action Indonesia GSMP partners and supporters

