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ACTION INDONESIA Newsletter

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GLOBAL SPECIES MANAGEMENT PLAN

ANOA BANTENG BABIRUSA

IN THIS ISSUE

Editor's note

by *Stuart Young, Programme Officer, IUCN SSC AWCSG*

Welcome to the fifth issue of the Action Indonesia GSMP Newsletter, and the first of 2019. It's exciting to be able to share so many updates and plans with you still so early in the year.

In this issue, we share some exciting progress and updates from the Genetics Working Group and the Education Working Group, as well as news of a babirusa birth at Surabaya zoo—a direct result of the Breeding and Transfer Recommendations.

Earlier this year, we shared our [Annual Report for 2018](#). This summarised our work and activities from last year and provided an outlook for what we have planned this year. There are more details about the Annual Report, including where to find it, in this issue.

One of the most exciting things to be planned for this year will be the inaugural **Action Indonesia Day** on

18th August. This coordinated day of activities and awareness raising, being organised by the Education Working Group, will raise the profile of our work. There is more detail about this upcoming day in this issue, or please get in touch to find out how you can get involved.

As highlighted in the 2018 Annual Report, this year we need to greatly expand our activities. This means the continued expansion of this successful partnership and continued capacity building in Indonesia. This will not be possible without increased support! Please get in touch to find out how you can help and get involved. If you would like more information about the Action Indonesia GSMP partnership, including joining and contributing, please contact Stu Young (s.young@chesterzoo.org).

We hope you enjoy this issue, and look forward to hearing from you.

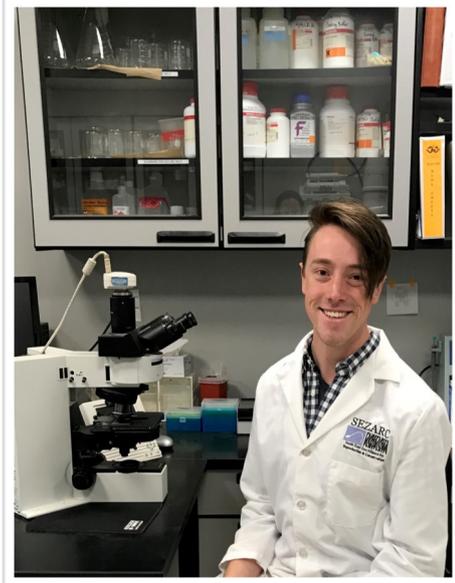
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Exciting PhD research: Advancing genome resource banking methods for the Action Indonesia GSMPs

by James Gillis, PhD Student, SEZARC and University of Nottingham



James Gillis is a PhD student with SEZARC and the University of Nottingham. He is researching methods to preserve genetic material of anoa. Here, James introduces his work and explains how it could be used to maintain genetically healthy ex situ populations of the GSMP species.

SEZARC



South-East Zoo Alliance for Reproduction & Conservation



The University of
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Small and/or fragmented populations are highly susceptible to inbreeding resulting in vulnerability to stochastic events such as disease outbreaks or environmental changes as well as increased neonatal loss, and genetic defects. As animals under managed care are also effectively small populations, they need to be carefully managed to maintain genetic diversity, especially as they can represent a genetic reservoir for wild populations. Genome resource banking can theoretically augment population management programs at zoos by facilitating the movement of genes, through artificial insemination using semen collected from another population. Furthermore, the cryopreservation and genome resource banking of sperm allows us to mitigate the loss of valuable genes in present populations and will allow us to reintroduce these genes into populations in the distant future.

Developing cryopreservation protocols for novel species can be exceedingly challenging, due to species-specific differences in sperm cells, which can lead to idiosyncratic requirements for optimal cryopreservation protocols. The South-East Zoo Alliance for Reproduction & Conservation (SEZARC) and the University of Nottingham are collaborating on a project to investigate sperm cryopreservation in the Action Indonesia GSMP species, starting with the anoa and eventually extending to banteng and babirusa. Using the domestic pig as a model, the project will in-

vestigate the advanced cryopreservation technology known as 'directional freezing' as a method to cryopreserve the fragile sperm. The use of directional freezing has increased the post-thaw survival of sperm cells in multiple species compared to traditional freezing methods, and we hope to translate this technology to GSMP species.



Today, cooperative breeding programs are the key for successful management of GSMP species. However, we hope that the findings from our studies will help facilitate the movement of genes between geographically isolated populations internationally and generate reservoirs of genes that can be reintroduced into future populations, which will aid in the long-term maintenance of genetically healthy populations of these endangered species.

- **Cryopreservation:** Very low temperatures (-196°C) are used to maintain the viability of living cells and tissues.
- **Genome Resource Bank:** A repository of genetic material in the form of cells and tissues, used to prevent the loss of genetic diversity.
- **Directional Freezing:** An advanced method of cryopreservation that controls the velocity and direction of ice crystal formation during the freezing process.



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GSMP genetics research: meetings and discussions

By Laurent Frantz, Lecturer, Queen Mary University of London and Genetics Working Group Leader

Two days of meeting were held at the Wildlife Conservation Society (WCS) office in Bogor and the University of Indonesia in Depok. The meetings were between members of the Natural Environmental Research Council (UK) and Ristekdikti (Indonesia) funded research project entitled "Biodiversity, environmental change and land-use policy in Sulawesi and Maluku", as well as various stakeholders, including WCS (Wulan Pusparini and Matt Linkie),



and LIPI (Gono Semiadi; GSMP Genetics Working Group Leader). This project, which is led by Dr Matthew Struebig (University of Kent), Dr Laurent Frantz (Queen Mary University of London; GSMP Genetics Working Group Leader), Prof. Jatina Supriatna (University of Indonesia) and Dr

Novia Andayani (University of Indonesia) aims, among other things, to generate high quality reference genomic data for wild individuals of anoa and babirusa.

The first meeting at the WCS office in Bogor focused on the sampling strategy of wild, zoo and museum specimens, permits, as well as integrating data with future genetic work by members of the GSMP (led by Dr Frantz and Dr Hvilson) and integrating the research question with WCS's actions in Sulawesi.

The second meeting, at the University of Indonesia, focused on fundraising, training, and capacity building to improve current facilities at UI so that it will be possible in the future to conduct state-of-the-art genomic work (next generation sequencing workflow), which could also potentially be used by the GSMP.



GSMP genetics research: workshop in Indonesia

By Stuart Young, Programme Officer, IUCN SSC AWCSG

In December last year, Dr Christina Hvilson (Copenhagen Zoo and Genetics Working Group leader) attended the 'National

Seminar and Focus Group Discussion: Enabling Time Critical and Policy Driven Wildlife Genetic Studies' workshop in Depok, Indonesia.

During this workshop, organised by WCS Indonesia and Universitas Indonesia, Christina gave a talk on "how the global zoo community can benefit from a national collaboration of scientists in deal-

ing with wildlife conservation issues". In this, she highlighted and discussed the importance of understanding the genetic diversity of the wild and zoo populations of the GSMP species. This means *in situ* and *ex situ* experts embracing the One Plan Approach and working together to better manage these populations for conservation.



Education Working Group update - successful Zoo Educator workshop and 'Action Indonesia Day'

By *Charlie Daly, Community Engagement Officer, Chester Zoo*

In November last year, the Education Working Group delivered a two-day training workshop for zoo educators. Thirty-two educators from seventeen PKBSI zoos took part in the workshop which focused on planning, creating and delivering conservation education activities. The workshop content was informed by a survey of the

PKBSI zoo educators' network and delivered by educators from PKBSI, Ragunan Zoo, Chester Zoo and Audubon Zoo.

To raise public awareness of the GSMPs, the working group will coordinate an 'Action Indonesia' celebration day on **18th August 2019**. Zoo educators around the world are invited to unite in the delivery of educational activities to highlight the international collaboration. More information about Action Indonesia Day will be coming soon or get in

touch if you would like to know how you can get involved.



Keeper talks about GSMP species in Ragunan Zoo

By *Yuliyati Nurmaya, Zoo Educator, Ragunan Zoo*

Ragunan Zoo is actively involved in the *ex situ* conservation of the Action Indonesia GSMP species, including Sumatran tiger. We keep and take care of the animals, as well as including them in our education programme through keeper talks.

Keeper talks about Action Indonesia GSMP species occur regularly every Sunday between 11am–11.30am in front of each

exhibit. This activity starts with a short talk by the keeper about their animals, including the biology, behaviour, feeding habits, threats, as well as things that

visitors can do to protect the animals. After the talk, visitors are able to ask questions about the animals.



Exhibit and enclosure design workshop at a glance

By Dr Maya Rahmayani, Zoo Veterinarian, Faunaland Ancol

Maya is a vet at Faunaland Ancol, and helped to plan and deliver the November 2018 Collection Planning and Enclosure Design workshop. Here, she tells us about her experiences of this workshop (both as planner and participant).

The Collection Planning and Enclosure Design workshop in November 2018 was my first time being involved in workshop planning and was a great experience. Prior to the workshop starting, I met Malcolm Fitzpatrick (ZSL), Stuart Young (AWCSG), and Jamie Jackson (Audubon Zoo) at Faunaland Ancol. This was to be the practical site for the workshop, and I took them to assess which areas and exhibits could be used as case studies. During this visit, they gave valuable input about enclosure design, and we identified the Malayan tapir, African lion, domestic



animal, and Bird Island exhibits for use in the practical sessions. I was curious about what we would do in the practical sessions and could not wait to attend the workshop.

The workshop started with presentations by the training team on the background of enclosure design. Following this, on the second day was the site visit to Faunaland Ancol and the practical sessions. Before starting the practical session, we were split into five groups with each group visiting one of the exhibits we had previously identified. Within the groups, each member was assigned a role, for instance a zoo vet who wanted to improve the conditions for tapir or a member of the public who wanted to make sure their favourite animal stayed in the zoo. With these roles and our assigned enclosures, we conducted a role-playing exercise to decide future plans. I was in the domestic

animal group, in which some 'roles' wanted to keep domestic animals in the zoo while others wanted to move to threatened species.

As a host, I was challenged to find an objective solution with the other participants. In the workshop the day before, we learnt how to design an enclosure by considering the following factors: safety for animals, visitors, and keepers; budget; and prioritising exhibits for animals of conservation importance. With this knowledge, the role-playing game helped us to solve the problem with deep and constructive discussion. Ultimately, we decided that with a few modifications to the existing enclosure we could hold endemic Indonesia priority species. We decided to replace the pony and donkey exhibit for babi-rusa with few renovations to the fences and holding cage. Our wallaby enclosure would also be replaced with an aviary for threatened songbirds. The summary of



this activity is that zoos should play an active role in conservation by taking care of threatened species such as babirusa and songbirds.

The Collection Planning and Enclosure Design workshop really helped me in making plans for im-

proving the quality of enclosures in Faunaland Ancol as a new PKBSI member. I gained a lot of knowledge and input from other participants and the trainer team from the GSMPs and PKBSI, and it encouraged me to make endangered Indonesian species a priority.

I hope we will have follow-up workshops and that more staff in Faunaland Ancol will get the opportunity to join. I am grateful to have been a part of this workshop and to be able to get valuable input from the GSMP team and other zoo participants.

Babirusa birth at Surabaya Zoo

By Yonathan, PKBSI-GSMP Programme Officer and Sri Pentawati, Head Keeper of Mammals, Surabaya Zoo

Great news from Surabaya Zoo – a female babirusa was born on 19th January 2019. The piglet was named Puan, after father (Putra) and her mother (Ani).

Following the GSMPs Breeding and Transfer Recommendations, Putra and Ani were put together in the same enclosure in July 2018 to breed. Mating was observed in August, and in October Ani was showing signs of pregnancy. Ani was given additional food

such as sweet potatoes, papaya, banana and pellets, then Ani and Putra were separated in early January.

Finally, after waiting for five months, Ani was observed showing signs of being ready to give birth. She was behaving more anxiously, there was a higher frequency of urinating and defecating and her vulva was swollen. Zoo staff prepared a birthing site for Ani with a pile of dry grass, and a healthy piglet, Puan, was born at around 3.30am on the 19th. Puan was soon feeding on milk from her mother, Ani.

This birth, as part of the Breeding and Transfer Recommendations, is an important step to-

wards achieving the GSMPs goal of reaching “a demographically healthy global ex situ population”. Indeed, this birth is particularly important as Surabaya Zoo has a number of “founder” babirusa whose genetics are underrepresented in the Indonesian – and global – ex situ population.



Action Indonesia Annual Report 2018 now available

By Stuart Young, IUCN SSC AWCSG Programme Officer

The Action Indonesia GSMP Annual Report 2018 was released last month. This report summarises all of the important work we did last year, as well as outlining the

exciting things we have planned for this year. The report is available on the IUCN SSC Asian Wild Cattle Specialist Group website or through the link below. Please get in touch if you would like to find out how you can help to support our activities in 2019.

[Click here to read the 2018 Action Indonesia Annual Report](#)



Contacts

For more information about the Action GSMP partnership, please contact:

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- Yonathan (PKBSI-GSMP Programme Officer) yonathano30892@gmail.com

Social media

For further updates, follow the IUCN SSC AWCSG on social media and the hashtag '#ActionIndonesia':



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Please enjoy this issue of the Action Indonesia Newsletter.

We look forward to hearing from you!



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Partners and supporters of Action Indonesia

Thanks to our partners and all of the organisations, trainers and staff who support the Action Indonesia GSMPs and make our work possible.

