



Borneo Rhino Sanctuary (BRS) programme

Six-monthly report : covering the period July - December 2015

Programme objective

To prevent the extinction of the Sumatran rhinoceros

Main participating agencies

Sabah Wildlife Department (SWD; www.wildlife.sabah.gov.my), implemented by Borneo Rhino Alliance (BORA; www.borneorhinoalliance.org), financed by Yayasan Sime Darby (YSD; www.yayasansimedarby.com), with Agro-biotechnology Institute Malaysia (ABI; www.abi-nibm.my), Department of Wildlife and National Parks Peninsular Malaysia (PERHILITAN; www.wildlife.gov.my), Faculty of Science and Natural Resources, Universiti Malaysia Sabah (www.ums.edu.my/fssa), Faculty of Veterinary Medicine, Universiti Putra Malaysia (UPM; www.vet.upm.edu.my), Forest Research Institute Malaysia (FRIM; www.frim.gov.my), Institute for Tropical Biology & Conservation, Universiti Malaysia Sabah (ITBC; www.ums.edu.my/ibtp), Leibniz Institute for Zoo and Wildlife Research (IZW; www.izw-berlin.de), Malaysian Agricultural Research and Development Institute (MARDI; www.mardi.gov.my), Sabah Forestry Department (SFD; www.sabah.gov.my/htan), Sabah Foundation (www.ysnet.org.my) and WWF-Malaysia (www.wwf.org.my).

Main financing agencies during this period

YSD

Targets for this period

(A) Produce a Sumatran rhino embryo *in vitro*. (B) Develop local capacity to pursue advanced reproductive technology for Sumatran rhino. (C) Continue to seek opportunities for collaboration with Indonesia on Sumatran rhino.

Activities during this period

Reproductive work

All three rhinos were put under general anaesthesia on 6 October for gamete harvesting, by the IZW team along with Malaysian veterinarians. Small amounts of semen containing sperm were obtained and frozen. No oocytes could be obtained from Puntung; timing was not optimal. The leiomyoma tumours in Iman were found to have enlarged and the IZW team deemed it unsafe to persist with oocyte pick-up. Semen from Tam was taken immediately to ABI. On 7 October, two oocytes from Iman, frozen on 24 April 2015 and stored in ABI, were successfully thawed and intracytoplasmic

sperm injection (ICSI) was performed by Prof. Arief Boediono. Unfortunately, by 9 October, it was ascertained that no cell cleavage had occurred.

Although Puntung remains healthy, her reproductive cycle is erratic, with no follicles available in early October and incomplete oestrus cycles in November and December (in both months, a follicle grew but then regressed before maximum size was reached). On the recommendation of Dr Thomas Hildebrandt (IZW), Iman was on 7 November and 1 December administered Improvac (a synthetic vaccine that stimulates a mammal's own immune system to produce antibodies against gonadotropin-releasing hormone). The idea was to close down Iman's reproductive cycle, thereby acting to stabilise and perhaps shrink the leiomyoma growth. Iman's mood improved after the Improvac treatment, but bleeding persisted and her appetite was reduced, both issues resolved following application of blood substitute and coagulants.

Development of local capacity

The IZW team are able to visit Sabah on average only twice per year, for very short periods and on several occasions to date at non-optimum times during the rhinos' oestrus cycle. The wastage of oocytes that could potentially be harvested more frequently for *in vitro* fertilization is an issue of very great concern. Local capacity within Malaysia (and Indonesia) has to be developed as soon as possible.

PERHILITAN and BORA veterinarians collaborated (19 August) on semen collection from captive Malayan tapir, providing the opportunity for practice prior to the first electro-ejaculation procedure on Tam without foreign assistance (performed 24 August), involving a fully Malaysian team of veterinarians and technicians from BORA, PERHILITAN, SWD, Wildlife Reserves Singapore and UPM. This attempt worked very smoothly in procedural and logistical terms, but no sperm was obtained. It is believed that this unfortunate result was down to bad luck : Tam had inadvertently touched an electrified wire on his paddock perimeter fence less than 3 days before the procedure (something that happens very rarely), which resulted in low food intake, diarrhea and low mood over the days leading up to the procedure.

Links were secured during this reporting period with MARDI as an additional partner in the BRS programme, particularly in relation to ovum harvesting and *in vitro* fertilization. A collaboration agreement was secured between BORA and FRIM (via Malaysian Forestry Research and Development Board), in order to obtain funds to initiate purchase of equipment for advanced reproductive technology (ART) work for Sumatran rhino. In October, it was discovered that Faculty of Sustainable Agriculture, UMS Sandakan Campus is planning to develop facilities capable to conduct *in vitro* work for cattle and, pending further discussion, ICSI work for rhino could potentially be initiated there in 2016 in Sandakan.

Wild rhinos

Following a report that a plantation staff had recently seen rhino footprints near Kretam area, a team was dispatched 28-30 November, but they found no sign of rhino, nor of the person who lodged the report. Feral buffalo occur in this area, a possible source of reporting error.

Rhino facilities The rhino facility at Danum Valley was routinely monitored and maintained. Work on the permanent BRS facilities in Tabin Wildlife Reserve ceased in August, but commenced again under a new contractor in November. It is estimated that the overall work was over 80% complete by end of this reporting period.

Links with Indonesia

A “stakeholder” forum was held in Kota Kinabalu, 14 September, to secure a Sabah government-NGO consensus view on what Malaysia might offer to Indonesia in relation to Sumatran rhino. Moves were initiated by Government of Malaysia to engage with Indonesia via a bilateral national level meeting of Minister of Natural Resources and Environment (MoNRE) Malaysia with Minister of Environment and Forestry Indonesia (<http://www.nst.com.my/news/2015/09/malaysia-indonesia-discuss-efforts-reproducing-baby-sumatran-rhinoceros>). A chronology was prepared of Malaysia-Indonesia interactions on Sumatran rhino for the period 2011-15. By end of this reporting period, Indonesia had not responded.

Other updates

An important publication on the status of Sumatran rhino appeared in the journal *Oryx* in August (<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=9889954&fileId=S0030605315000472>), in which 12 authors, some of whom disagree significantly on the steps needed to save the species, did agree to the following conclusion : “To avoid extinction it will be necessary to implement intensive management zones, manage the metapopulation as a single unit, and develop advanced reproductive techniques as a matter of urgency.” The paper also stated “As of June 2015 no further signs of the species have been found in Sabah, and it is safe to consider the species extinct in the wild in Malaysia.” The contents of the paper were well publicized locally and globally. Almost all the media reports wrongly stated that poaching and habitat loss are the main reason for the species’ predicament, and starting 20 August some used the phrase “Sumatran rhino declared extinct in the wild in Malaysia”, although no such declaration has been made.

The arrival of the eight-year old Cincinnati Zoo-born male Sumatran rhino named Harapan in Indonesia on 1 November drew wide global coverage e.g. (USA) <http://cincinnatizoo.org/blog/2015/11/02/rhino-harry-arrives-safe-and-sound-after-53-hour-journey-from-cincinnati-zoo-to-sumatran-rhino-sanctuary/>, www.takepart.com/article/2015/11/12/poachers-are-hunting-down-world-s-last-100-sumatran-rhino, (Indonesia) <http://nasional.tempco.co/read/news/2015/11/15/206718951/lahir-di-cincinnati-badak-sumatera-ini-kembali-ke-lampung>, (Malaysia) www.thestar.com.my/news/regional/2015/11/02/rare-sumatran-rhino-hope-arrives-in-indonesia-to-mate/. Every article reported the emotional “feel-good” elements of the story (Sumatran rhino “coming home” to Sumatra to breed) but none took the opportunity to describe the bigger picture for the species, or the pros and cons of this particular move.

News of the first successful birth of dogs from embryos produced in vitro appeared as a scientific paper (<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0143930>, 9 December) and in popular media (e.g. <http://www.newsweek.com/puppies-born-vitro-fertilization-first-time-ever-403210>). Despite some grumbling by social media addicts that there are already too many homeless dogs, the news was greeted with generally positive responses in the usually separate worlds of mammalian reproductive research and dog-lovers. Its relevance to critically-endangered wild mammal species was mentioned by the authors of the paper but this drew no remarks from the NGO community concerned with endangered wildlife.

Awareness

Sabah Forestry Department 2014 Annual Report was made available during this quarter online (www.forest.sabah.gov.my/images/pdf/publications/AR2014/29.Special%20Features.pdf) and through printed copies. Although superseded by events during year 2015, the report includes a good illustrated report (pages 366-368) of the main year 2014 events under the BRS programme.

A 22 September IUCN statement (www.iucn.org/?uNewsID=21904) gives rise to concern : “Malaysia was once regarded as one of the last strongholds for Sumatran rhinos, thus losing them from this country presents a major blow to the survival prospects of the species,” says Simon Stuart, Chair of IUCN’s SSC. “With the ongoing poaching crisis, escalating population decline and destruction of suitable habitat, extinction of the Sumatran rhino in the near future is becoming increasingly likely. The Indonesian Government urgently needs to develop intensive protection zones with significantly enhanced security enforcement in all sites where Sumatran rhinos still occur.” By ignoring the BRS programme, and mentioning the usual generic but incorrect reasons for the species’ approaching extinction, IUCN seems to undermine the whole intent and conclusion of the April 2013 Sumatran Rhino Crisis Summit, which aimed to have a single collaborative programme to boost reproduction. Until IUCN and the mainstream wildlife conservation NGOs start to articulate precisely, clearly and consistently what needs to be done to prevent the extinction of Sumatran rhino, one cannot blame lack of political will in Indonesia for the continuing lack of progress.

Issues and solutions to be addressed

No change from the previous report. The absence of leadership outside Malaysia is emerging as the prime cause of the species’ impending extinction, which is incorrectly linked time and again to poaching and habitat loss, thereby absolving the key institutions of blame.

Plans for next period

(A) Produce a Sumatran rhino embryo in vitro. (B) Continue to develop local capacity to pursue advanced reproductive technology for Sumatran rhino. (C) Continue to seek opportunities for collaboration with Indonesia.



(left) Disappointment on 6 October when it is seen that Puntung lacks follicles ready for aspiration of oocytes, (right) Prof. Arief Boediono performing intracytoplasmic sperm injection at ABI (7 October) using new sperm and two thawed, matured oocytes that had been frozen on 24 April.



(left) Mr Yap Keng Chee, senior technician in the Faculty of Veterinary Medicine, UPM, prepares liquid nitrogen ready for receiving semen for freezing, observed by Dr Donny Yawah (PERHILITAN veterinarian), (right) Tam under general anaesthesia undergoing the electro-ejaculation procedure (24 August), performed by the multi-institutional Malaysian team.