



Borneo Rhino Sanctuary (BRS) programme

Six-monthly report : covering the period January - June 2015

Programme objective

To prevent the extinction of the Sumatran rhinoceros

Main participating agencies

Sabah Wildlife Department (SWD; www.wildlife.sabah.gov.my) and Borneo Rhino Alliance (BORA; www.borneorhinoalliance.org), with Agro-biotechnology Institute Malaysia (ABI; <http://www.abi-nibm.my>), Equine Reproduction Laboratory, Colorado State University (<http://csu-cvmb.colostate.edu/academics/bms/equine-reproduction-laboratory>), Faculty of Veterinary Medicine, Universiti Putra Malaysia (UPM; <http://www.vet.upm.edu.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) and collaborating institutions, Sabah Forestry Department (SFD; www.sabah.gov.my/htan), Sabah Foundation (www.ysnet.org.my), WWF-Malaysia (www.wwf.org.my) and Yayasan Sime Darby (YSD; www.yayasansimedarby.com).

Main financing agencies during this period

YSD

Targets for this period

(A) More options than previously for production of Sumatran rhino embryos. (B) Collaboration between Indonesia and Malaysia/Sabah on Sumatran rhino.

Activities during this period

Reproductive work There were two significant advances in reproductive work during this period, one institutional, one technical. Agro-biotechnology Institute (ABI) Malaysia, a governmental institution which has up-to-date equipment for performing intra-cytoplasmic sperm injection (ICSI), along with Faculty of Veterinary Medicine, Universiti Putra Malaysia, entered into a collaboration with SWD and BORA to attempt to produce Sumatran rhino embryos in Malaysia. A "trial-run" ICSI procedure was performed at ABI on 16 April by Professor Arief Boediono of Institut Pertanian Bogor (IPB), Indonesia, using the last remaining frozen sperm obtained by the IZW team in May 2014 and cryo-preserved at Tabin. All equipment and personnel were in place, and the only missing "ingredient" on that day was a rhino egg. On 23 April, a fresh semen sample was obtained from Tam and divided into straws for freezing by the IZW team, and three oocytes were obtained from Iman on the same day. Due to unexpected technical difficulties, no oocytes were obtained from Puntung. All the gametes

were taken to ABI on 24 April. Sperm quality turned out to be very poor and accordingly only one ICSI attempt was made by Prof. Arief, but there was no cell cleavage. The other 2 oocytes and the remaining semen straws were cryo-preserved and are stored in ABI. The IZW visit to Tabin during this reporting period for gamete harvesting was 8.5 months after the previous visit, much later than the anticipated timing of late 2014. There is currently inadequate local capacity to take on all the roles played to date by IZW and Prof. Cesare Galli, particularly oocyte harvesting. To start addressing this gap, in May the BORA veterinarian visited the Equine Reproduction Laboratory at Colorado State University for training in ovum pick-up in horses and cows. It was noted during the training that at least five veterinarians and senior technicians are needed to successfully conduct ovum pick-up, each one with a specific role, pointing to the challenges involved in developing a local team.

Iman started to lose significant amounts of blood daily from the uterine fibroids in late May, and this was halted only by mid-June through medication and intensive care applied through close consultation between SWD, BORA and IZW. As part of the treatment, a drug to suppress the oestrus cycle was administered, and this is anticipated to suppress oocyte production until mid-September. Tam and Puntung remain healthy, and Puntung is cycling.

Wild rhinos The following surveys to seek wild rhino were done during this reporting period :

8-17 January : Kulamba, Kretam, Gelogob areas, where rhinos occurred after year 2000, by talking to plantation workers and local village residents; no-one had seen signs of rhino for many years, or never at all

12-20 January, near Kalimantan border where the last known rhino poaching in Sabah occurred in March 2001; workers in a recently re-opened logging camp had never seen signs of rhino; a report received from a logging contractor that rhinos were present in nearby Serudong were followed up in collaboration with WWF-Malaysia, but found to be baseless.

8-20 February : southern parts of Tabin, where a plantation manager reported seeing rhino footprints in mid 2014, and where rhinos occurred prior to 2000; no signs of rhino were found

23-28 February : to check a report of rhino footprints in Longgom area of Danum Valley; the footprints were found to be those of an immature elephant

10-26 March : south-western part of Danum Valley, with WWF-Malaysia, an area where BORA has not previously surveyed, and where WWF-Malaysia has previously not set camera traps; no signs of rhino were found, and WWF-Malaysia set camera traps.

6-12 April : Mt. Wullersdorf; rhino report from plantation manager; no evidence found.

12-20 May : south-east Tabin; no evidence found

10-20 June : Lumpongan, north-east Tabin (the last remaining area of about 5,000 hectares within Tabin Wildlife Reserve where BORA had never previously visited); no evidence found

No further surveys were done by BORA in Danum Valley after March, as it is considered that all parts of the conservation area have been covered adequately for the basic target of detecting signs of rhino.

Malaysian National level context A national governmental programme under Ministry of Natural Resources and Environment, named Program Kerjasama Konservasi Badak, aimed at developing advanced reproductive technologies (ART) for Sumatran rhino, was initiated and announced at an ASEAN Regional Forum Workshop on Combating Wildlife Trafficking on 31 March. The first formal public domain announcement of national Malaysian governmental policy on Sumatran rhino appeared on 5 June via the Borneo Bulletin (<http://borneobulletin.com.bn/malaysia-to-conduct-first-national-tiger-survey/>) which reported “(Malaysia’s National Biodiversity Council on 4 June) agreed with the Sabah government’s proposal for joint implementation of conservation measures to prevent the extinction of the Sumatran rhinoceros (*Dicerorhinus Sumatrensis*) and other threatened wildlife using Advanced Reproductive Technology, as well as in joint efforts with Indonesia.” but this statement was not picked up by the Malaysian or global media.

Rhino facilities Danum Valley Conservation Fund (managed by Yayasan Sabah Conservation and Environmental Management Division) provided funds during this reporting period to employ one worker to monitor and maintain the rhino facility near Danum Valley. Work on construction of the government-funded permanent BRS facility in Tabin Wildlife Reserve temporarily ceased in April.

Links with Indonesia (1) In 2014, work in East Kalimantan by Government and WWF-Indonesia in relation to surveys for wild rhinos in Kutai Barat District prompted the idea for a visit to Sabah by representatives from Indonesia. The visit was made 24-26 February. The prime interest from the Indonesian group was to ascertain how rhinos have been located, captured and translocated in Sabah in recent years, and husbandry techniques employed in Sabah. In a meeting of the group with the SWD Director (26 February), it was noted by SWD and BORA that Sabah is open to collaboration. It was also noted that, prior to recent years, Sabah and Malaysia have a history of undue optimism on Sumatran rhinos, both in terms of estimated numbers of wild rhinos and the ability to progress in the absence of collaboration. (2) A meeting was held by BORA executive director with the Chief Executive Officer of WWF-Indonesia and his key staff (6 March). (3) Prof. Arief Boediono made the first in vitro fertilization attempt for Sumatran rhino in Malaysia in April. (4) The BORA veterinarian participated on behalf of BORA, the sole Malaysian invitee, in a three-day Government of Indonesia and International Rhino Foundation (IRF)-led meeting held in Jakarta, 6-8 May, to discuss topics for inclusion in Government of Indonesia action plans for Sumatran rhino, Javan rhino and Sumatran tiger. (5) A request was made to Indonesia to provide sperm from Andalas in order to conduct an ICSI attempt using the two oocytes cryo-preserved in ABI.

Other updates

Mr William Baya was appointed in February as Director of SWD.

A report on research done on “Chemical Composition & Nutritional Properties of Plant Materials Used as Feed for Sumatran Rhino” by ITBC, funded by YSD, was received on 9 June 2015.

YSD agreed to provide financial support for the BRS programme for a further two years commencing July 2015, with successful production of a Sumatran rhino embryo as a Key Performance Indicator.

Awareness

WWF-Malaysia released a media statement on 2 March (<http://www.wwf.org.my/?18945/The-ART-of-Saving-Sabahs-Last-Rhinos>) which provides a nice update of the current situation, and mentions all relevant key stakeholders. This is the first formal public domain text that states : “In Peninsular Malaysia, the species is likely to be totally extinct.”

Sabah Minister of Tourism, Culture and Environment Datuk Sri Masidi Manjun made a statement to the media on 18 April, saying that wildlife researchers had reported it was unlikely that there were any rhino left in the wild in the absence of any sightings ... and “We are facing the prospect of our Sumatran rhinos going extinct in our lifetime” (<http://www.thestar.com.my/News/Nation/2015/04/18/Masidi-Only-three-Sumatran-rhinos-left-in-Sabah/>); this was widely reported globally that the Sumatran rhino is extinct in the wild in Sabah.

A short, light-hearted BBC documentary of the BRS programme, entitled “Sumatran rhino in need of a mate”, using materials obtained in Tabin on 14 March 2015, was made public on 21 April (<http://www.bbc.com/news/world-asia-32390448>).

Issues and solutions to be addressed

(A) It now seems very likely that no more wild Sumatran rhino exist in Malaysia, so the BRS programme has to rely on Tam, Puntung and Iman to supply all gametes. Iman's health (due to the uterine tumours and associated risks) may decline rapidly at any time, as shown by the late May – mid June period of significant daily bleeding from the tumours. The key needs are to (a) continue the excellent husbandry already in place under the BRS programme and simultaneously (b) secure additional gametes and (c) conduct further ICSIs, while (d) building local capacity and expertise. (B) The continuing lack of support from IUCN and the major global wildlife conservation NGOs to pursue non-traditional approaches to save the Sumatran rhino, both as a matter of policy and through financing, remains a profound mystery. A few years hence, in the absence of an implemented plan focused on boosting embryo production, there will be a dreadful realization that the extinction of the Sumatran rhino was due ultimately to a century-long lack of recruitment into a tiny and unmanaged, fragmented wild population. It is as if the first 25 years of WWF's existence (with its mission to save endangered species from extinction) had been a waste of effort, and as if the idea of endangered species conservation as a wildlife management problem (as expounded by its greatest exponent, Graeme Caughley) had never existed. The only remedy seems to be to repeat via existing channels and public media the argumentation for the dire need to perfect as soon as possible for Sumatran rhino the techniques of artificial insemination, in vitro fertilization and other advanced reproductive technology (ART) in order to supply the necessary juvenile recruitment into the almost-extinct wild population fragments.

Plans for next period

(A) In addition to continued collaboration with IZW for all aspects of ART, development of local capacity to pursue in vitro fertilization. (B) Be ready for collaboration with Indonesia. (C) Surveys to seek wild rhinos will be terminated.



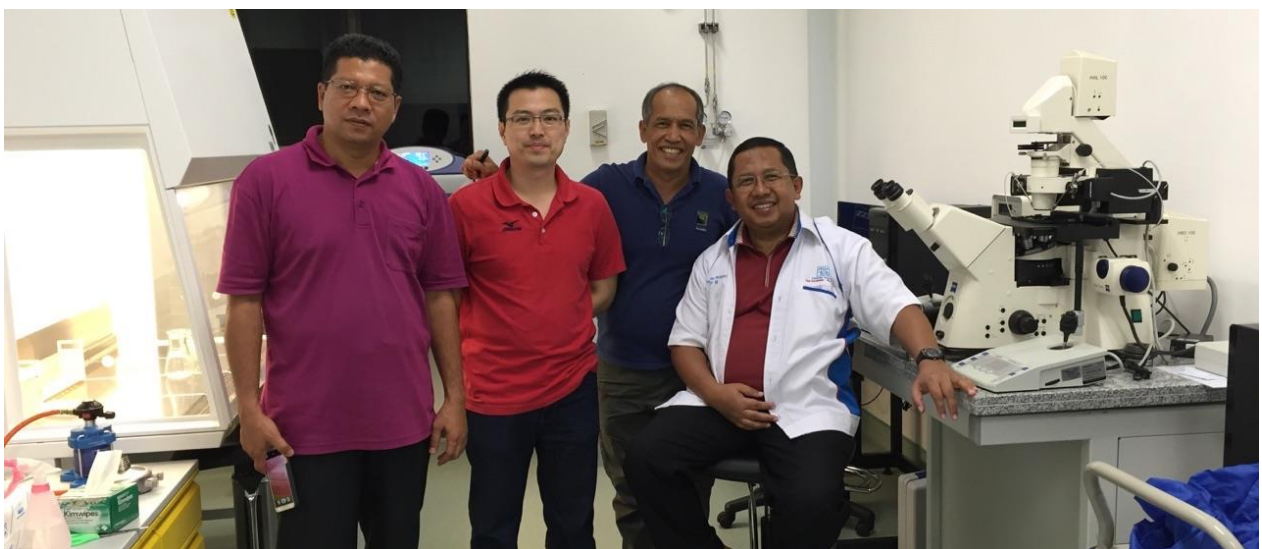
(left) The Indonesian group visitors observing husbandry techniques for Puntung at TWR (25 February), (right) meeting with Sabah Wildlife Department (SWD; 26 February) left to right standing : Dr K Yoganand and Leona Liman (WWF-Malaysia), Christianus M. Benny (Kutai Barat forestry office), Mr Augustine Tuuga (SWD Deputy Director I), Yuyun Kurniawan (WWF-Indonesia), Dr Diana Ramirez (representing the SWD Wildlife Rescue Unit); left to right sitting : Yohanes Hendradi Kusdihardjo (Balai Konservasi Sumber Daya Alam, East Kalimantan province), J. Payne (BORA), Mr William Baya (SWD Director), Ujang Mamat Rahmat (Biodiversity Conservation Division, Ministry of Environment and Forestry Indonesia)



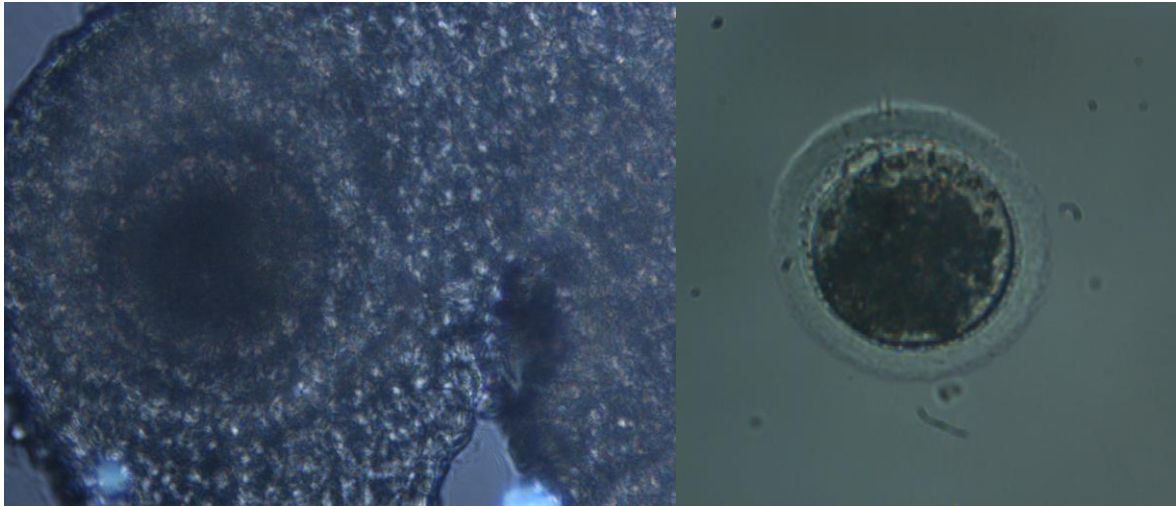
(left) helicopter drop site for rhino survey in upper Danum river (10 March), (right) the BRS night stall facilities under construction at Tabin Wildlife Reserve (25 February)



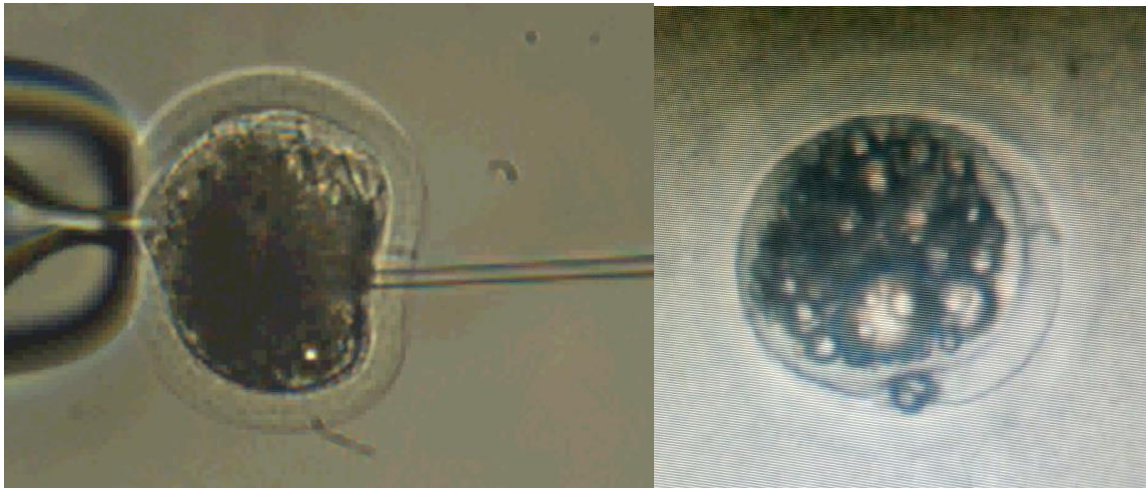
Meeting at SWD HQ (22 April) (left to right) Prof. Arief Boediono, Dr Abdul Hamid Ahmad (BORA chairman), Dr Sen Nathan (SWD senior veterinarian and BRS programme coordinator), Mr William Baya (SWD Director), Rafaela Anna Barbosa de Lima Fiuza, Dr Frank Goeritz, Dr Thomas Hildebrandt, Dr Robert Hermes (IZW)



ABI laboratory (24 April) (left to right) Prof. Abdul Wahid Haron (Faculty of Veterinary Medicine, Universiti Putra Malaysia), Mr Loo Shu San (ABI), Dr Zainal Z Zainuddin (BORA veterinarian), Prof. Arief Boediono (Institut Pertanian Bogor)



(left) one of the oocytes harvested from Iman (23 April, courtesy Prof. Dr. Thomas Hildebrandt), (right) one of the egg cells (ovum) under culture at ABI on 26 April (courtesy of Prof. Dr. Arief Boediono)



(left) first attempt at intracytoplasmic sperm injection into the ovum in Malaysia by Prof. Arief Boediono at ABI (26 April), (right) the ovum has fragmented but not divided to produce an embryo (28 April) (courtesy of Prof. Dr. Arief Boediono)



(left) copious bleeding from Iman's uterine tumours (12 June), (right) smaller amounts of blood-tinged mucus discharge (18 June)



(left) Iman recovers body weight with constant attention and an enriched diet (19 June), (right) Tam remains in good condition (19 June), although now estimated to be about 25 years old, advanced middle age for a Sumatran rhino.