



Borneo Rhino Sanctuary programme (restricted distribution)

Quarterly report : covering the period December 2010 to February 2011)

Programme objective

To prevent the extinction of the Sumatran rhinoceros in Sabah by protecting wild rhinos and by bringing rhinos together in managed breeding facilities at Tabin Wildlife Reserve (TWR)

Main participating agencies

Sabah Wildlife Department (SWD), Borneo Rhino Alliance (BORA), Sabah Forestry Department, WWF-Malaysia, Leibniz Institute for Zoo and Wildlife Research (IZW; Berlin), Zoo Leipzig.

Main financing agencies during this quarter

Sime Darby Foundation; Sabah Wildlife Department; WWF-Germany; US Fish & Wildlife Service Rhino & Tiger Conservation Fund; BORA; IZW/Zoo Leipzig.

Programme description (following May 2009 Sabah State Cabinet decision)

- protection and monitoring of wild rhinos in TWR (BORA-SWD) and Danum Valley Conservation Area (WWF-Malaysia), the only two areas where potentially viable wild populations exist.
- establishing Borneo Rhinoceros Sanctuary (BRS) breeding facilities (a managed, fenced area) inside TWR.
- bringing isolated remnant rhinos from non-viable situations, into BRS.
- establishing a sustainable financing scheme to allow long-term operations of BRS.
- appointing a professional company to manage BRS and its rhinos

Activities and progress

Monitoring and security of wild rhinos at TWR

During a routine patrol (1-2 December) along the south-west boundary between Tungku estate and Tabin Wildlife Reserve one catapult was found and removed from forest. A visit was made to Sungai Burung, 8-10 December (location of rhino presence known to SOS Rhino Borneo) but the survey was cut short due to flooding; no rhino or poacher signs were detected. Most BORA field staff were involved in closing of the original rhino trap and construction of two new ones during January, and only a short patrol was done 12-14 January along the south-east border of Tabin between Long Libong estate and Gold Crop estate, with no poacher signs found. During a border patrol 20-25 February along the south-eastern border area of Tabin, many signs of poaching found including a total of 65 snare traps at two locations, wild pig skull, shotgun cartridge and hunters' camp. All the snare traps, set for ground dwelling birds and small mammals, were destroyed. A cigarette packet and human footprints were found along Malambabula river downstream of the rhino traps in mid February.

Rhino health and management

The amount of food plants collected daily for both rhinos ranged between 105 – 136 kg, comprising four to six plant species on each day. Total daily feed intake averaged 43 kg for Tam and 32.3 kg for Gelugob. The most common food plants are : Putih Sebelah (a small tree, *Astrothalamus* spp), Kalawit (a low woody liana of several species of *Uncaria*), Nangka (*Artocarpus heterophyllus*), Maitap (a tree, *Neonauclea gigantea*), Ara / Nangka Air (*Ficus* spp), Ludai susu (a small tree, *Homalanthus populneus*) and Sedaman and Tapak Gajah (various *Macaranga* spp) and Seringkalang (a liana, *Poikilosperman suaveolens*). Both rhinos have increased in body weight by about 20 kg since mid 2010, probably due mainly to feeding of 1 kg of horse pellets daily; during this quarter, the amount was reduced to 0.5kg daily. In February, Gelogob weighed about 548 kg, Tam about 657 kg.

Common health problems affecting one or both rhinos include abrasions, pyoderma (bacterial infections of the skin), tabanid fly bites and lesions on the foot, but all are routinely and successfully treated.

Apart from work to promote reproductive fitness in Tam and Gelogob, the emphasis on management of these two rhinos is : (a) disease prevention and (b) conditioning to allow procedures including ultrasound, taking blood samples, penile massage etc. The following biosecurity protocols are now routine : chlorination of drinking water; disinfecting night stalls and surrounding areas; liming of sumps; daily cleaning of automatic drinking device in night stalls; disinfectant baths for footwear and car tyres; daily water "jet spray" cleaning of night stalls. Samples of soil, rats, water, swabs, and feed are sent monthly for analysis at the Regional Veterinary Diagnostic Laboratory in Kota Kinabalu. Blood is routinely collected from both animals for monthly health checks, including complete blood counts and serum chemistry. For monitoring the rhinos' reproductive status, the following sampling is done : faecal samples collected on alternate days and frozen for hormone profile analysis; starting February, serum and plasma samples are frozen, to be tested for hormonal profiles of testosterone and progesterone or estrogen; ultrasonography and attempts at semen collection at least once a week for Tam.

Rhino rescue Due to failure to capture Puntung since April 2010, serious consideration was given in December to selection of a different site for building of a new trap. (To recap, the existing trap site is located on the southern edge of Puntung's home range, an area she very rarely visits, but chosen so as to be near a guaranteed water source, Malambabula river, even during long dry periods; trap 1 was abandoned due to unsuitable conditions of sand and boulders; trap 2 has been in use since April 2010). The general location investigated for a third trap site was the northern edge of Puntung's home range, a broad ridge top more than 300 metres above sea level. Puntung visits this general area more often, possibly because the location is cooler than Malambabula; there about eight wallows on the ridge top. This area was deliberately not selected initially because of concerns that there is no water source during dry periods. Following a visit to the northern ridge in December, it was decided to not build a third trap here (reasons : (a) only one 8 x 12 metre site found suitable for helicopter landing to bring in trap materials, (b) need to employ an additional 12 staff, assuming the Malambabula site is not closed, (c) logistically a difficult site due to steep terrain and need to have base camp near a permanent water source far from trap site). Instead, it was decided to improve prospects of capturing Puntung whenever she next visits Malambabula. Materials sufficient for two new traps were airlifted into Malambabula on 20 December. The pit trap for Puntung dug in April 2010 was closed on 18 January. Two major reasons for this were that Puntung's old route to this trap site had been partly blocked by a tree fall, and that the trap filled with water during every rainy period, leading to the need to often pump out the water, and the problem of added disturbance to the trap site. Two new traps (trap numbers 3 and 4) of the same design were built in the same general area under the leadership of SWD ranger Mr Herman Stawin in the same general area, one from 9-11 January, the other from 20-22 January, and both close to mud wallows used by Puntung. A decision was made to continue to prioritise capture of Puntung and to not attempt building of a trap at Kretam.

Reproductive assessment of Tam and Gelogob Assessments of the reproductive condition of Tam and Gelogob were done by Institute for Zoo and Wildlife Research (IZW; Berlin) veterinarians Thomas Hildebrandt, Frank Goeritz and Robert Hermes with SWD and BORA veterinarians on 5 and 19-22 January and on 10 February. These investigations included hormone treatments of Gelogob on 15 and 21 January, and electro-ejaculation of Tam, under anaesthesia, on 20 January. Lisa McLellan and Jennifer Kelly (Australian specialists in production and treatment of horse embryos) were on standby in case rhino eggs and sperm became available. Drs Rosa Sipangkui and Diana Ramirez of Lok Kawi Wildlife Park (Sabah) and Dr Endre Sos of Budapest Zoo assisted in the electro-ejaculation procedure. The results were disappointing. Absence of follicular growth even with hormone treatment indicate that Gelogob is well past reproductive age, with a breakdown in the hypothalamus-pituitary-gonal axis, equivalent to menopause. Hormonal stimulation can be attempted again although prospects for success appear limited. Tam's ejaculate contained no sperm. The IZW veterinarians concur with an estimated age of about 18 years for Tam, sufficiently young for sperm production. Previous experience in Peninsular Malaysia and Cincinnati Zoo indicates that manual stimulation and/or a series of low voltages pulses plus penile massage are alternative methods to a single pulse. Commencing in February BORA veterinarian Dr Zainal conducted weekly manual penile massage of Tam, and small quantities of semen (lacking sperm) were obtained. The IZW veterinarians have expressed concern that the

constant close proximity of Gelogob to Tam may be one factor acting to suppress sperm production.

Relationship of Sumatran and Bornean forms of the Sumatran rhinoceros The issue of whether or not the Sumatran and Bornean forms of the Sumatran rhino should be “mixed” (i.e. interbred) has arisen on occasion since the unsuccessful global programme to breed the species in captivity started in 1985. At the Sumatran rhinoceros global management and propagation board (GMPB; see below) meeting in Indonesia in 2009, the consensus was that such mixing should be done because few options remain for production of Sumatran rhinos in captivity. This view was challenged in the 2010 GMPB meeting. Accordingly, a comparison of DNA from Peninsular Malaysian rhinos and Sabah rhinos was made by Jeffrine Jovie Ryan at the Perhilitan (Peninsular Malaysia Department of Wildlife and National Parks) in December and results presented and discussed at a meeting involving SWD, BORA, Perhilitan and Dr Benoit Goossens of University of Cardiff in January. Subsequently, Dr Goossens along with Dr Milena Salgado-Lynn found that adequate information exists from previous Sumatran rhino DNA sequencing, to show that the two forms are very closely related, and there is no scientific or technical reason to disallow interbreeding. Thus, governmental policy can comfortably allow the mixing of Sumatran and Bornean rhino gametes based on sound scientific support.

Sumatran rhinoceros global management and propagation board (GMPB) meeting The GMPB is an ad hoc grouping of people representing Sumatra rhino range states, institutions and expertise in Sumatran rhinos, which has met previously in Indonesia in 2005, 2006, 2009 and 2010, and which previously had emphasis on captive rhinos in Sumatra and USA. At the January 2010 meeting, it had been suggested that the next meeting should be held in Sabah. Thus, the fifth GMPB meeting was held at Rasa Ria Resort, north of Kota Kinabalu, 8-9 February. There were 42 participants from Malaysia, Indonesia, USA, Germany, Australia and India. No major policy decisions were taken at the meeting but significant outcomes included : mixing gametes (sperm and eggs) of Sumatran and Bornean is supported; Indonesia will not allow rhinos to leave Indonesia; Dr Laurentius Ambu will replace Widodo Ramon as chairman of GMPB for the period 2010-2012.

BRS breeding facilities Due to heavy and frequent rain, work on the access road to the BRS breeding facilities was halted during this period. The slow pace of developing the BRS breeding facilities infrastructure is emerging as a significant concern.

Meetings held SWD programme coordinator and BORA executive director, 1 & 10 December, 8, 17, 23 January, 21 February; SWD-BORA-BRS consultant, 11 January; SWD-IZW-BORA, 6 & 10 February, BORA-District Forest Officer, 18 January; BORA Board meeting, 15 December.

Institutional arrangements A memorandum of understanding between SWD and BORA was signed on 1 February

Other issues

The Board of Tabin Wildlife Holiday (which has sole rights to operate tourism in Tabin) visited Tabin on 21 December. There may be some interest in developing indirect ways (e.g. closed-circuit television) for tourists to Tabin to see rhinos.

The satellite tracking device fitted to Tam on 13 November continued to provide location readings until 10 January. There was no evidence that Tam's health or behaviour were influenced by the device. However, Tam managed to slip off the device in mid January (the collar was fitted rather loosely) and it was not re-fitted to him due to imminent arrival of reproductive assessment team.

Channel News Asia (<http://www.channelnewsasia.com>), visited Tabin 21 January and obtained video film of the BRS programme. This was included in a feature film on "saving the forests of Sabah", which was broadcast in February.

The Prime Minister of Malaysia launched the Maliau Basin studies centre at Maliau Basin on 29 January. Materials on the BRS programme were available at the launching.

Problems to be addressed

Problems

1. Failure to capture Puntung
2. Absence of ideal facilities to place and maintain Puntung once she is caught (both in terms of the long-term BRS breeding facilities, and for health reasons, as no quarantine facilities exist)
3. No production of sperm by Tam
4. Gelogob too old to breed

Solutions

1. Described above (two new traps)
2. Build a new Rhino Quarantine Facility at a convenient location in TWR (no funds are available for this)
3. (a) Weekly penile stimulation, with use of artificial vagina of appropriate size, (b) move Gelogob to a separate facility to test the possibility that Tam may be stressed by constant presence of Gelogob
4. Keep Gelogob in good condition in preparation for third attempt with hormone treatment scheduled for June 2011

Plans for next quarter

- (1) Capture Puntung. (2) Build Rhino Quarantine Facility at Tabin (and move Gelogob to this facility). (3) Obtain sperm from Tam.



Location of 20-25 February patrol, with example of a snare trap and a shotgun cartridge found in this area



(left) Assessing the north side of Puntung's home range for a possible new trap site (l-r, Herman Stawin, France Bianus and Tinrus Tindok; 8 December), (right) the only possible helicopter landing site on the ridge top



(left) preparation of materials to be brought to the Malambabula site for construction of a third and fourth trap for Puntung, (right) air lift of materials to the third and fourth trap site (20 December)



(Left) A mud wallow used by Puntung at Malambabula, (right) new trap for Puntung (trap 4, near to a rhino wallow), in process of construction, 20-22 January (© Herman Stawin).



(left) paddock team leader Alvin Erut brushes Gelogob's skin, (right) Tam defaecates at the same spot as does Gelogob, indicating that wild rhinos may communicate each other's presence by means of finding and monitoring dung piles (both pictures February 2011)



(left) Tam's reproductive organs are examined using an ultrasound device prior to electro-ejaculation, January 2011, (middle) commencing February, regular examination and penile stimulation is done to promote sperm production, (right) Mr Hirmy Sigawan is the newest member of the rhino paddock team



(left) commencing February 2011, blood is taken periodically from Tam and Gelogob to monitor for possible physiological problems, as well as to detect the possible presence of blood parasites, (right) signing of the memorandum of understanding between Sabah Wildlife Department and BORA, 1 February (l-r, Dr Laurentius Ambu, Dr Junaidi Payne, Dr Sen Nathan)



(left) the Sumatran rhinoceros global management and propagation board meeting at Rasa Ria Resort, 8-9 February (l-r, Bapak Novianto Bambang Wawandono, Ministry of Forestry, Indonesia; Dr Christy Williams, WWF-International coordinator for the Asian Rhino and Elephant Action Strategy programme; Bapak Widodo Ramono, executive director of the Indonesian Rhino Foundation; Dr Heribert Hofer, director of IZW; Dr Thomas Hildebrand, head of Reproduction Management Research Department, IZW), (right) participants of the GMPB meeting visit the interim rhino paddocks at Tabin, 10 February

