

SUMATRAN RHINOCEROS: EMERGENCY PLAN FRAMEWORK

Introduction

The Sumatran Rhino Crisis Summit (SRCS) of April 2013 mobilised great technical expertise on both rhinos and recovery efforts for other endangered species, and led to universal appreciation of the critical situation, great imagination around the problems and solutions, and stimulated unprecedented statements of intention for international collaborative efforts to save this species.

It was agreed that the situation merited urgent attention and actions by range state governments especially. Accordingly, the meeting report spoke of an Emergency Plan. Although the content of this was not specified, a working group of range state conservationists listed a series of priority actions for the next 18-24 months and further short term recommendations were discussed in other working groups. This document is an attempt to provide a framework for an Emergency Plan with a life span of two years. Further detail is contained in the SRCS 'Program Report'.

The rationale behind this framework is to take those actions or needs identified at the SRCS that should be implemented within two years. It is suggested that during the last quarter of Year 2 of the Emergency Plan, a 5-year Strategic Recovery Plan will be developed for the Sumatran Rhino that:

- will be based on current knowledge,
- will be informed by the results of assessments and information collected during the Emergency Plan period,
- will be a rolling plan, with annual review and adjustment in the light of experience, as stated in the SRCS Program Report.
- will be reviewed and updated at the end of the five years

A possible scheme for saving the Sumatran rhino is shown in Annex 1.

The need for an Emergency Plan is premised on:

- (1) the consensus amongst experts at the SRCS that the number of rhino remaining in the wild is likely to be closer to 100 than the previously accepted figures of 140-210,
- (2) an apparent decline in most wild populations and conflicting hypotheses as to why this has been happening,
- (3) unviable and small numbers remaining in the wild in Sabah and possibly also Kalimantan,
- (4) the possibility of other unviable, isolated groups of 1-3 animals in rhino areas in Sumatra,
- (5) a realisation that, to be effective, law enforcement efforts in the field will need to be stepped up significantly,
- (6) the need to secure significant additional resources and manpower and the political will to effectively secure, manage and monitor existing populations,
- (7) concerns that some animals may not be reproducing and may require intensive treatment and/or assisted reproduction,
- (8) the lack of accurate population estimates and information on current sex and age structures, and distribution needed to make informed decisions and to assess population performance,
- (9) the need to develop monitoring techniques and advise on methods and protocols and use these to obtain the necessary monitoring data,
- (10) the desirability of doing an audit of the three existing rhino protected areas in Sumatra to identify manpower, equipment, infrastructure and training needs,
- (11) the results of preliminary VORTEX population modelling.

These observations from the SRCS demonstrate that more of the same conservation action or inaction appears destined to fail, and will lead to the inevitable extinction of the species if present conditions are allowed to persist.

While many of the Emergency Plan activities would be common to any species in the Sumatran rhino's situation, there remains ignorance about many aspects of the species' ecology, demography and behaviour. Further, as mentioned in point 8 above there is also a lack of basic knowledge from monitoring these rhino with the result that current information is not sufficient:

- to make informed decisions, or
- to assess how the different populations are breeding, or
- to provide improved empirically derived parameter values for future VORTEX population modelling.

As monitoring information improves, so will estimates of ecological carrying capacity, for currently these are guesstimates on account of the lack of knowledge of population densities. Better monitoring data would also help improve understanding of population performances and the Sumatran rhino's potential rates of increase in the wild if well protected.

Conservation of the species would also be helped by a greater focus on assessing desirable levels of anti-poaching efforts, as well as equipment, infrastructure and training needs. This in turn would allow conservation agencies to budget for and secure sufficient funding and support to meet these needs and maximise the chances of turning the situation around.

Critical information gaps are suggested for attention during the Emergency Plan, while other applied research aspects that could inform and enhance future conservation efforts are suggested for inclusion in the Strategic Recovery Plan.

The Actions in this framework are almost all taken from the SRCS Program Report, with minimal editing of text for consistency; where possible, page numbers in the report are given. Most statements are taken from the sections R1 – R5 'Reports of Plans', pages 78-82.

The political aspects and actions arising around the Draft Aceh Spatial Plan are not considered here. Where the drafter of this framework has added points or actions, as logical needs, they are indicated by the person's initials. Some further points have been added from the Borneo Rhino Sanctuary report for January-March 2013 and are labelled with (BRS).

It should be emphasised that this is only a framework, based on the outputs of the SRCS. There are inconsistencies in detail and, doubtless, omissions. There is, further, a major task in allocating responsibilities and setting time lines, and all will be dependent on successfully raising the resources needed.

Terminology

During the SRCS many terms were used, such as in- and ex-situ, managed breeding and captive breeding, Intensive Protection Zone, with frequently diverging interpretations by participants. In an attempt to standardise terminology, with terms that are value-free, Annex 2 shows a typology of conditions under which the Sumatran rhino occurs or is kept, with the potential conservation and management methods available in each. This may or may not be helpful. The table owes much to the paper of Leader-Williams et al. (1997)¹

Structure

The Emergency Plan has the following contents:

Political commitment and the Vision for the Sumatran Rhino.

¹ Leader-Williams N., et al. (1997). A scheme for differentiating and defining the different situations under which live rhino are conserved. *Pachyderm* 23, 24-28.

Emergency Plan Activity Areas:

1. Wild Sumatran Rhino survey: critical information needs for Gunung Leuser, Way Kambas, Bukit Barisan Selatan,
2. Protection of wild rhinos,
3. Detection and capture of isolated rhinos,
4. Management of rhinos in contained and confined situations, such as in SRS or in Sabah..
5. Infrastructure development.
6. Development of standardised monitoring techniques and recommended protocols
7. Organisational and political issues.
8. Land use and protected areas.
9. Awareness, building support, gathering resources.
10. Development of a 5-year rolling Strategic Recovery Plan.
11. Research, evidence review.

Political commitment and the Vision for the Sumatran Rhino

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Building on the strong political will and the common vision, the governments of Indonesia and Malaysia commit to:

1. Ensure no further losses, starting with a capacity-to-protect audit in all areas holding rhinos;
2. Increase effort to understand reproductive pathology;
3. Accurate estimate of SR population in Indonesia and Malaysia; and
4. Fully functioning bilateral cooperation.

The Emergency Plan is conceived as the first and urgent steps in support of the Common Vision for the Future of Sumatran Rhinos, developed at SRCS.

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Non-technical version: *“Sumatran rhino populations are secure and increasing in Indonesia and Malaysia through the collaborative management of captive and wild populations.”*

Technical version: *“The Sumatran rhino exists in the range states of Indonesia and Malaysia in the wild and in confined conditions where they are secure and in adequate numbers across multiple sites under collaborative management as a single meta-population.”*

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An integrated plan between captive and wild conservation should be established to ensure the balance of efforts to save the rhino in Borneo and Sumatra.

(MSP) This will be the medium-long term “Strategic Recovery Plan” for the Sumatran Rhino, which is to be developed during the second half of the second year of the two-year Emergency Plan.

EMERGENCY PLAN ACTIVITY AREAS

1. **Wild Sumatran Rhino survey: critical information needs for Gunung Leuser, Way Kambas, Bukit Barisan Selatan.**

Accurate information on rhino numbers, density, sex and age are required for all wild rhinos in all three Parks. DNA monitoring data has been collected in Bukit Barisan Selatan and is currently being analysed and compiled; and there has been some individual based monitoring in parts of Way Kambas (DNA) and Gunung Leuser (phototraps) as described in the table below. The same information is required for Way Kambas and Leuser, with all data to be collected through the development and field-testing and development of shared

and standardised data collection and analysis protocols. This should be completed by the end of the Emergency Plan period.

Survey question	Technique
Location and size of areas occupied by rhinos	Sightings, footprints, dung, local people reports + results from below
Size of rhino populations	DNA and or camera trap photos with Mark-Recapture Analysis
Sex structure of each population	DNA, camera trap photos,
Ages structure of each population	Video/camera trap photos supported by additional footprint size distribution data.
The relatedness amongst individuals of a population	DNA
Which females are proven breeders and which are not breeders in each population	Dung hormone analysis, with rhino identification from DNA; camera trap photos, sightings of females and calves.

Actions:

- 1.1. Bukit Barisan Selatan: survey data to be analysed and report available by end 2014
- 1.2. For Way Kambas and Gunung Leuser:
 - 1) Survey all areas that may still have rhinos,
 - 2) Obtain GIS data for each site,
 - 3) Decide on technique and design survey technique,
 - 4) Explore potential for leech blood DNA to identify host species,
 - 5) Obtain resources,
 - 6) Develop personnel for training / implementation.
 - 7) Timing: probably ongoing with surveys, most likely August-October 2013, or February-April 2014.

Cost: to follow

It will be critical that participating organisations are effectively coordinated and are formally and fully committed to using standardised protocols and to sharing all data through agreed mechanisms.

2. Protection of wild rhinos

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- 2.1. Maintain current protection by RPUs and enhance protection capacity and strategy of RPUs through refresher courses and tweaking of current strategies for RPU's at Way Kambas, Bukit Barisan Selatan and Gunung Leuser.
- 2.2. By March 2014 at the latest, conduct a rhino protection needs-assessment in all sites with known populations or groups, covering Gunung Leuser, Bukit Barisan Selatan, Way Kambas, with effort to be stratified to areas of known rhino occupance, and integrating with survey results (above) as they become available.

The overall objective should be specification of the minimum field ranger density at each key site, with the needs for training, equipment and infrastructure identified, with full costs developed.

Consultant's outline activities:

- 1) meet with local conservation authorities,
- 2) meet with local rangers,

- 3) be briefed fully on threats they are faced with,
- 4) be briefed fully on current law enforcement strategy,
- 5) be shown the terrain, acknowledging impossibility of total exposure, but focusing on areas with rhino, using light aircraft if possible,
- 6) review ranger/scout accommodation,
- 7) review ranger equipment issue,
- 8) 5-7 days required at each site (Leuser, Way Kambas, BBS), with further exploration of critical sites within larger areas,
- 9) report on needs at each site and overall, within 10 days.

Cost: total to be determined by number of sites to be visited; best estimate is US\$4,000 per site visited, plus fixed costs (travel to/from Indonesia, internal travel, accommodation, subsistence etc. \$2,000).

Note: consultant Brian Harris not available until November 2013.

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- 2.3 Adoption of plans by relevant body.
- 2.4 Additional staff hired with focus on recruitment from local communities.
- 2.5 (MSP) Investigating how rangers from local communities can be empowered to carry firearms.
- 2.6 On site mentoring and training.

This system is to be in place by January 2014.

Issue: this is unrealistic if Brian Harris is not available until Nov. 2013 at the earliest.

Issue: despite the acknowledged shortage of RPU's on the ground, the selection, recruitment and training of new rangers will be covered in the protection needs assessment; therefore, expanding the ranger/RPU strength should only follow the protection needs assessment.

3. Detection and capture of all isolated rhinos

- 1) (MSP) Use all sources of information and incentives to detect isolated rhinos² e.g. Kalimantan, Danu, Tabin, and then consolidate them to facilitate breeding,
- 2) (MSP) Define factors (location, sex, age etc.) that would determine policy and efficient decision-making as to where any captured isolate should be sent, which for Indonesia will depend on the results of the rhino monitoring,
- 3) (MSP) Have in place a quick-response capacity for any confirmed reports of isolated rhinos,
- 4) (MSP) Activate capture efforts for all isolated rhinos (excepting any captured pregnant female is to be GPS-collared and monitored in the wild),

4. Management of rhinos in contained and confined situations

(Note: there was no section in R1-R5 'Reports of Plans' dealing with this aspect: information here is taken from earlier section of the SRCS Meeting report).

(Borneo Rhino Sanctuary (BRS) Report for Jan-March 2013)

- 4.1 Reproductive technology
 - 1) Develop rhino reproductive laboratory facilities in Sabah,
 - 2) Exchange Sumatran rhino gametes between Sabah and other countries,

² Experience and Vortex models with input data from other rhino species (and using empirically derived parameters) indicate that, while not ideal, as few as 4 breeding rhino can lead to recovery of numbers. Therefore, it is suggested that where 1, 2 or 3 rhino are found, efforts are made to either capture all the animals and integrate them with other rhino or to introduce additional founder rhinos to boost the effective founder number in this area ; if 4 or more rhino are found in an area and are proven to be in social contact, they should be protected in the wild until/unless the situation changes for the worse. If, in due course, monitoring indicates Sumatran rhino breeding rates at any sites are lower than modelled, then this guideline may need revision.

- 3) Continue to explore potential for captive rhinos in Sabah through advanced reproductive technologies.

4.2 (MSP) Explore potentials and obstacles to the exchange of genetic materials and other samples between Indonesia and Malaysia, and to/from both to third countries (e.g. USA, Germany), and develop fast-track processes in advance of urgent needs.

5. Infrastructure development

5.1 (BRS) Develop rhino breeding facilities at Danum Valley and/or Tabin Wildlife Reserve,

5.2 (MSP) Select IPZ locations, especially with respect to concentration on and/or development of SRS in Indonesia or establishment of facilities in other provinces,

5.3 Identify the infrastructure and equipment needs for the three protected areas in Sumatra with remaining rhinos,

6. Development of standardised monitoring techniques and recommended protocols

Given the need to obtain accurate estimates of population size and distribution together with data on population and sub-population age and sex structures, it is essential that suitable base monitoring methods and protocols for individual recognition are developed and implemented.

6.1 Based on experience with dung DNA sampling, DNA analysis and statistical analysis of the data in Way Kambas and especially in BBS (where there has been a formal DNA survey), assess the suitability and cost effectiveness of this method as a long-term Sumatran rhino monitoring tool based on individual identification,

6.2 Based on experience at Gunung Leuser and any additional photo sampling surveys elsewhere, assess the suitability and cost effectiveness of this method as a long-term Sumatran rhino monitoring tool based on individual identification, and make recommendations on sampling and data collection,

6.3 Investigate the potential of leech DNA as a monitoring tool,

6.4 Based on analyses of data collected, develop recommended protocols for both sampling and analysis of monitoring data,

6.5 Develop annual status reporting format to be used across all rhino sites and populations.

7. Organisational and political issues

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7.1 Political actions

- 1) Cabinet letter to both governments, first Malaysia and then Indonesia,
- 2) Data/information about Sumatran rhinos: this requires a scientific paper using practical words of action for governments: focusing on success and failure of rhino population conservation so far and also comparative information on other highly endangered species,
- 3) Contact high-level people who have access to government and influence government. [John Payne already has interested party (Tun Musa Hitam) from the Indonesian-Malaysian Eminent Persons group who wants to help rhinos].
- 4) Arranging a private meeting with a high-level Minister from Sabah with Indonesian President, making the case for rhinos.
- 5) IUCN recommendation letter to both range state countries.
- 6) Develop concept of meeting re Sumatran rhino immediately prior to the meeting of Asia-Pacific Economic Cooperation in November 2013.

7.2 Organisational actions

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- 1) Within one month of SRCS (by end May 2013), a temporary National Rhino Coordinator (NRC) for each of Malaysia and Indonesia is to be appointed and mandated / empowered by the government; these are not decision-makers but coordinators who make recommendations, advise and press for action.
- 2) Within 2 months, John Payne and Pak Tony (the 2 NRCs) revisit, rationalise and revise existing national plans based on new population estimates, incorporate recommendations from the SRCS to develop the 2-year emergency strategy.
- 3) Within 3 months, these are to expand to a team of 5, a Coordination Unit (one government, one NGO representative from each country (possibly rotating) + 1 international), between them, covering expertise on: security and protection, managed breeding, hands-on in situ conservation, implementation; the Chairman of this Unit needs to sit in the Indonesian President's office – be appointed by Presidential decree.
- 4) "Go to" officials in each key ministry or provincial government to be identified.
- 5) Monthly reports (1-page) – on agreed format - from each field site to be sent to Coordination Unit and to the Indonesian President and to the State Minister for Sabah.
- 6) Coordination Unit to assess progress on a quarterly basis, to adapt the strategy as necessary, to prioritise actions and budget accordingly.
- 7) Annual, standardised status reports to be produced and published by Coordination Unit.
- 8) Multi-stakeholder IPZ protection body established to coordinate standard operating procedures, SMART indicators and peer review.
- 9) Coordination Unit to visit a successful example of co-management rhino programme in Africa, for example Grumeti Reserves (Tanzania), Hlane Royal National park (Swaziland), North Luangwa (Zambia) by January 2014, to see if the co-management approach is appropriate for Indonesian and Malaysian conditions.
- 10) The Asian Rhino Specialist Group develops the concept, with partners and Asian range state government officials, of Asian rhino range state meeting.
- 11) The Asian Rhino Specialist Group considers recovery of the SR at its 2013 meeting, resulting in time-bound, specific and measurable activities in support.
- 12) (MSP) Develop a mechanism for effective NGO coordination and knowledge-sharing.

8. Land use and protected areas

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- 1) Use rhino arguments to support wider initiative on habitat and park protection e.g. Aceh spatial planning and BBS road development.

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- 2) Propose buffer-zones for IPZ's and integrate into national park management, as well as local and national spatial planning and gain support from local companies/stake-holders.

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- 3) Seek government endorsement by December 2013, including legal protection for IPZ's (zero development within IPZ's).

9. Awareness, building support, gathering resources

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- 1) Ensure local communities are involved in and have a stake in all rhino protected areas and facilities, and where possible empower local communities surrounding protected areas and develop alternative livelihoods, as done around Way Kambas, including the potential for ecotourism,

- 2) By end of June (the end of the International Year of the Rhino), there should be an Indonesian Presidential statement on this emergency Sumatran rhino strategy: “Presidential decree for salvaging Sumatran rhinos as a flagship species”. State Minister for Sabah is to do the same.
- 3) (MSP) Develop a communications strategy, prepared in advance, for when any rhino is removed from the wild; this especially relevant to Indonesia, as the Sabah government has already approved removal of any rhinos found.
- 4) (MSP) The Emergency Plan needs to be costed comprehensively,
- 5) (MSP) Develop a coordinating mechanism whereby governments and NGO’s can raise and allocate funds for implementing the Emergency Plan efficiently and swiftly,
- 6) (MSP) Consideration should be given to the scope for co-management agreements for key rhino areas.

10. Development of a 5-year rolling Strategic Recovery Plan

- 1) (MSP) The Coordination Unit should, in the first 6 months after SRCS, confirm how the Strategic Recovery Plan will be developed, and whether development should be scheduled, as proposed, for the second half of year two of the Emergency Plan.

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- 2) Action plan or management plan should be reviewed annually and amendment / modification should be made, based on the latest priority or needs on the species itself,
- 3) Plan should be in conjunction with governments (state and federal) to support a Sumatran Rhino Action Plan,
- 4) Type of management or plan should be based on site specific assessment and actual situation.

Issue: *there is nothing on record as to who, how or when the ‘Strategic Recovery Plan for the Sumatran Rhino’ will be developed, hence the MSP insertion above.*

11. Research, evidence review

The following are information gaps or assumptions that need validation; all were mentioned during the SRCS; they have been divided here into:

- (1) Those that are urgent and should be tackled as part of making the Emergency Plan effective and as input to the Strategic Recovery Plan, and
- (2) Those that are more suited as longer-term research questions for the Strategic Recovery Plan.

(1) Emergency Plan:

1. Causes of extinctions: have populations declined to extinction without evidence of poaching, or has illegal killing (whether directed at rhino or not) been undetected, or are data insufficient to indicate either way?
2. Where is there evidence of the Sumatran rhino breeding now?
3. What was the range of natural densities in the past?
4. What is the best (most efficient, least stress on rhinos) of capture: pitfall trap or enclosed wallow or other?
5. What is the best post-capture treatment? Immediate removal or habituation and stress reduction through feeding on site, then transport out?
6. What defines ‘sub-fertile’? Which conditions of reproductive pathology / sub-fertility have been reversed clinically in rhinos (of any species)?

7. What is the success record of artificial insemination in all species of rhinos, leading not just to pregnancy but to the successful birth of calves?
8. Conduct an evidence-based analysis of population performance in SRS examining individual rhino reproductive health, behaviour, ecological conditions and density and management systems there,
9. (MSP) Develop a model for community involvement in rhino conservation in the wild, based on site-specific attitudes survey and needs assessments, emphasising employment opportunities, with a mechanism for delivery through governments and NGO's.
10. Experimentation is needed on minimal fencing for containing rhinos in a variety of terrains and situations with other co-existing species,
11. Are pesticides, ferritin etc. implicated in poor reproductive performance?

(2) Strategic Recovery Plan

1. Does monitoring information confirm that 4 effectively protected rhinos in the wild can increase, or does the criterion for removal from the wild or consolidation with the addition of further animals into the wild need adjusting?
2. Do Sumatran rhino prefer to use areas that have been cleared of human encroachment and forest removal i.e. do they prefer secondary forest / regrowth? What are their most preferred food resources and can these be increased through management action such as selective clearances.
3. Impacts of invasive plant species; scope for control / eradication and benefit monitoring,
4. Faecal DNA should be used to establish the size of home ranges and the extent of overlaps between individual rhinos.

Annex 1: SUMMARY SCHEME FOR SAVING THE SUMATRAN

JUNE 2013

Develop Emergency Plan

Wild rhino survey
Protection of wild rhinos
Capture of isolates
Management of confined rhinos

Organisational and political elements
Awareness, support, resources
Critical knowledge gaps

Implement
EMERGENCY PLAN
2013-2015

JANUARY-JUNE 2015

Develop Strategic Recovery Plan

STRATEGIC RECOVERY PLAN
(SRP)
2015-2020

SRP IMPLEMENTATION

LATE 2019: Develop new
Strategic Recovery Plan

Annual cycle of
monitor, review,
adaptive management,
refine objectives etc.

STRATEGIC RECOVERY PLAN
2020-2025

5. Annex 2: Sumatran rhino conservation: a typology of situations and potentials

	Locally intensively protected	Intensively protected		Intensively protected
Location	Range state	Range state	Range state	Range or non-range state
Rhino situation	Free-ranging with no fencing	Free-ranging in large area with, perimeter fencing only (irrespective of whether small-scale electric fencing is used for short-term management of immigrant rhinos)	In contained environment, perimeter fencing with paddock system and central management facilities for handling and intensive treatment	In confined conditions
Density or spacing	Natural	Natural	Compressed	Highly compressed
Description	Wild	Wild	Semi-wild	Captive
Level of protection	General, area-based protection, but intensive protection around areas occupied by rhino = Intensive Protection Zone	Intensive protection	Intensive protection, but increased vulnerability to armed gang attack	Vulnerability to armed gang attack
Rhino management	None, apart from occasional removals/additions for meta-population management	None, apart from occasional removals/additions for meta-population management	Intensive management feasible, but not always necessary: <ul style="list-style-type: none"> • Partial diet supplementation if necessary • Managed pairings possible • Veterinary support and intervention feasible • Exposure to natural habitat and diet for much/most of the time, • Some reproductive technologies interventions possible 	Intense management: <ul style="list-style-type: none"> • Diet largely/totally provided • Managed pairings normal, • Veterinary support and intervention more feasible and/or more intensive, • Advanced reproductive technologies feasible, • Risk of health problems in confined browsing species

Monitoring	Difficult; direct observations rare; indirect methods and/or technology essential to obtain sufficiently accurate ID-based monitoring information on population sizes, age and sex structures and distribution.	More scope; direct observations less rare, but indirect methods or technologies will still be essential to obtain sufficiently accurate ID-based monitoring information on population sizes, age and sex structures and distribution	Direct observations; all animals known and seen regularly	Intense and continuous monitoring possible
Example	Gunung Leuser, Way Kambas, Bukit Barisan Selatan	None yet?	Sumatran Rhino Sanctuary @ Way Kambas	Tabin, Cincinnati, any other zoo

