

THE 1998 CAT LOC RHINO CENSUS, VIETNAM

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The 1998 Cat Loc Rhino Census

Introduction

History of rhino in Vietnam

Recent evidence, previous surveys

Current survey

Method

The 1998 Cat Loc Rhino Census used a standard track analysis method, most appropriate for the purpose and the means and time available. In general the census consists of three components:

- 1 Surveying the total rhino area and adjacent areas for any sign of rhino to establish the Current Range.
- 2 Track analysis through measurements and plaster cast of rhino footprints to identify individual rhinos and to establish the Minimum Number.
- 3 Extrapolation for areas not covered and other factors to be considered to estimate the Maximum Number.

During the survey all rhino signs were recorded with their geographic position using a G.P.S. and topographic maps. From all clear footprints the width (between the tips of the side hoofs) and the length (from the notch in the heel to the tip of the front hoot) were recorded. From the good clear tracks plaster casts were made with standard Plaster of Paris of fronthoofs and of complete footprints if found.

Current Range

The three survey teams were in the field from 6 - 10 May, from 13 - 23 May and from 25 - 30 May. Most of the Cat Loc area east of 107° 30' E was covered and the total length of the transects covered was 16.4 km, with several transects visited more than once.

Note: The Eastern part of Cat Loc WR has no resident rhino population, but rhinos migrate to this area occasionally during the rainy season.

The Current range was constructed by connecting the outlying rhino sign including a 1 km buffer. The Current range was established to be 6,210 Ha, of which 15% has been lost to encroachment.

In 1990 the Rhino area was established to be ~51,000 Ha in a report produced by IEBR. In this decade the Rhino has already lost more than 85% of its habitat (for details see map 2 and Area Statistics).

Minimum Number

During the survey rhino footprints were recorded at 29 location (See Tabel 1). Track measurements are available from 16 locations (See Tabel 2). 13 casts of full prints were collected (those with a F Code in tabel 3) and 32 casts of fronthoofs (those with a H Code in tabel 3) were collected.

After the census all the casts were measured and compared for characteristic form differences between the parts. Also outline sketches of all the clear fronthoof casts were made to help comparison of form and size.

In the total collection of casts 4 different types; could be identified, each clearly different in size and/or form from the others. 19 casts were not clear enough to be identified with any of the 4 types, but were also not distinct enough to indicate another type. For details see tabel 3. Below a short characteristic of each type:

- Rhino I A circular fronthoof, comparatively narrow (<10 cm width).
 Rhino II A more angular, comparatively high fronthoof with a clear depression at the tip (< 10 cm width).
 Rhino III A wide, very angular, and comparatively low fronthoof (>10 cm width). Also the exterior side hoofs are very short.
 Rhino IV Fronthoof in form similar to Rhino I, but clearly wider (> 10 cm width).

All 4 rhinos identified from the plaster casts have a narrow foot, less than 20 cm width. Measurements of prints that are significantly larger (~23 cm) were recorded from three locations, while also several prints of ~ 21 cm were recorded. The larger prints are clearly made by a rhino different from the 4 individuals identified from the casts.

Concluding the Minimum Number of rhinos in Cat Loc WR can be set at 5.

Maximum Number

The Survey area covered about 95% of the rhino area (See map 5 and Area Statistics). To be able to cover the area more completely the teams did not go to the area where the 1993 survey established the presence of rhino (See map 3). Consequently this area may be under represented in the records.

The census was planned to coincide with the start of the rainy season to increase the chances of finding good fresh tracks. This year the rainy season started very late in Cat Loc and most surveys were carried out during periods of drought, when soils are hard and tracks difficult to find. To compensate special attention was given to swampy areas (See map 3), where the majority of the casts were made.

One cannot expect to encounter good clear tracks of all individuals in a short period of time and therefore the number of identified individuals will always be an underestimate of the true number of rhinos present. Yet it is not easy to estimate how large the underestimate might be.

Considering the above and the very small area where rhinos occur, it is considered safe to assume that probably not more than 1-2 rhinos were not recorded, or were not recognized as being distinct.

Concluding the Maximum Number of rhinos in Cat Loc WR can be set at 7.

Tabel 1**1998 CAT LOC RHINO CENSUS
LOCATIONS OF RHINO SIGNS****Latitude (N) Longitude (E)****Rhino faeces**

11.641500	107.309833
11.669333	107.340167
11.692333	107.324667
11.682333	107.333333

Saltlicks visites by Rhino

11.632000	107.305333
11.687500	107.354333

Wallows used by Rhino

11.635500	107.307000
11.696667	107.320833
11.681667	107.316667
11.682333	107.320500
11.684000	107.320667
11.685833	107.35266-7

Latitude (N) Longitude (E)**Rhino Footprints**

11.632000	107.305333
11.633167	107.305833
11.635167	107.306500
11.641500	107.309833
11.646500	107.309000
11.648667	107.305333
11.664667	107.350500
11.673333	107.347167
11.674167	107.309000
11.676333	107.313167
11.676333	107.313167
11.681667	107.316667
11.682333	107.320333
11.682333	107.320500
11.684500	107.316667
11.684500	107.364333
11.684833	107.316667
11.685833	107.352667
11.687500	107.331833
11.687500	107.354333
11.687500	107.354333
11.689167	107.321167
11.689167	107.321167
11.692333	107.324667
11.693000	107.326167
11.693000	107.326167
11.693000	107.326167
11.696667	107.320833
11.706333	107.321167

** Coordinates in decimal degrees*

Tabel 2

1998 CAT LOC RIHNO CENSUS
MEASUREMENTS OF RHINO FOOTPRINTS

No.	Date	Width	Length
		Latitude (N)	Longitude (E)
	Location:	11.632000	107.305333
M2	06-May-98	205	225
M1	06-May-98	208	215
	Average:	206.5	220.0
	Standard deviation:	1.5	5.0
	Location:	11.633167	107.305833
M4	07-May-98	216	
M3	07-May-98	233	241
M8	09-May-98	205	212
M6	09-May-98	196	207
M7	09-May-98	220	211
M5	09-May-98	195	211
	Average:	210.8	216.4
	Standard deviation:	13.6	12.4
	Location:	11.635167	107.306500
M9	07-May-98	210	248
M10	07-May-98	208	243
	Average:	209.0	245.5
	Standard deviation:	1.0	2.5
	Location:	11.641500	107.309833
M11	07-May-98	194	207
	Location:	11.646500	107.309000
M15	18-May-98		245
M16	18-May-98		215
M34	15-May-98	180	215
M20	15-May-98	190	220
M31	15-May-98	190	217
M21	07-May-98	191	
M29	07-May-98	191	229
M32	14-May-98	192	212
M33	07-May-98	192	235
M24	14-May-98	192	
M22	14-May-98	193	
M18	14-May-98	195	215
M28	14-May-98	195	220
M30	14-May-98	196	212
M27	14-May-98	205	248
M14	14-May-98	205	240
M26	15-May-98	206	222
M25	15-May-98	207	196
M17	15-May-98	210	210
M19	15-May-98	210	221
M13	14-May-98	227	
M12	15-May-98	228	
	Average:	199.8	221.9
	Standard deviation:	12.1	13.2

No. Date Width Length

Latitude (N) Longitude (E)

Location: 11.664667 107.350500
M60 30-Apr-98 215 225

Location: 11.673333 107.347167
M66 30-Apr-98 197 240

Location: 11.674167 107.309000
M46 30-Apr-98 192 215
M48 30-Apr-98 197 240
M47 30-Apr-98 205 234
 Average: 198.0 229.7
 Standard deviation: 5.4 10.7

Location: 11.676333 107.313167
M45 30-Apr-98 195 206
M44 30-Apr-98 207 212
 Average: 201.0 209.0
 Standard deviation: 6.0 3.0

Location: 11.681667 107.316667
M49 30-Apr-98 200 221

Location: 11.682333 107.320500
M53 30-Apr-98 183 230
M54 30-Apr-98 183 220
M52 30-Apr-98 190 209
M56 30-Apr-98 195 229
M57 30-Apr-98 200 228
M55 30-Apr-98 202 211
M51 30-Apr-98 210 234
M50 30-Apr-98 235 219
 Average: 199.8 222.5
 Standard deviation: 15.9 8.6

Location: 11.684500 107.364333
M65 30-Apr-98 225 235

Location: 11.687500 107.331833
M64 30-Apr-98 198 240
M63 30-Apr-98 202 220
M58 30-Apr-98 205 249
M61 30-Apr-98 207 214
M62 30-Apr-98 210 219
M59 30-Apr-98 216 208
 Average: 206.3 225.0
 Standard deviation: 5.7 14.6

No.	Date	Width	Length
Latitude (N)		Longitude (E)	
Location:	11.692333	107.324667	
M40	30-Apr-98	180	216
M41	30-Apr-98	200	229
M39	30-Apr-98	213	230
	Average:	197.7	225.0
Standard deviation:	13.6	6.4	

Location:	11.693000	107.326167	
M36	14-May-98	184	206
M35	14-May-98	192	200
M38	14-May-98	213	220
M37	14-May-98	240	233
Average:	207.3	214.8	
Standard deviation:	21.7	12.8	

Location:	11.706333	107.321167	
M42	14-May-98	194	209
M43	14-May-98	196	207
Average:	195.0	208.0	
Standard deviation:	1.0	1.0	

Coordinates in decimal degrees

Tabel 3

1998 CAT LOC RHINO CENSUS
MEASUREMENTS OF RHINO PLASTERCASTS

Code	Location Date	Foot Quality	Foot Ltitd, (N)	Foot Lngitd, (E)	Fronthoof From pint Width	Length	Width	Length	Width	Height
RHINO I										
H4	09-May-98 99 48	A	F	11.633167	107.305833					207
FI	07-May-98 97 49	B	G	11.646500	107.309000	195	215			
H36	14-May-98 97 42	F	F	11.689167	107.321167					196 207
Average:					195.0	215.0	186.0	207.0	97.7	
46.3										
Standard deviation:		10.0	0.0	0.9	3.1					
RHINO II										
-H7	09-May-98	B	P	11.646500	107.309000					97 56
H5	09-May-98	B	G	11.646500	107.309000					93 53
H9	09-May-98	B	p	11.646500	107.309000	195	211			99 49
Average:		195.0	211.0	96.3	52.7					
Standard deviation:		2.5	2.91							
RHINO III										
F4	15-May-98	A	p	11.633167	107.305833	192	209			
H40	15-May-98 107 44	C	p	11.674167	107.309000					197 240
F7	15-May-98 107 39	c	G	11.674167	107.309000	196	212			
H32	14-May-98 107 43	C	F	11.674167	107.309000					192 215
H39	15-May-98 101 43,	D	F	11.682333	107.320500					183 220
H33	15-May-98 100 45	D	F	11.682333	107.320333					210 234
H38	14-May-98 103 42	D	F	11.682333	107.320500,					202 211
H37	15-May-98 100 45	D	p	11.682333	107.320500					190 209
H25	16-May-98 104 51	E	p	11.684833	107.316667					
H41	16-May-98 106 41	E	p	11.684833	107.316667					
H30	16-May-98 107 45	H	p	11.693000	107.326167					192 200
F5	14-May-98	H	F	11.693000	107.326167	197	227			
H16	16-May-98 100 44	K	p	11.696667	107.320833					192 235
FII	21-May-98 103 41	K	G	11.696667	107.320833	187	214			
H15	16-May-98 101 43	K	p	11.696667	107.320833					
F13	09-May-98 107	K	p	11.696667	107.320833	199	212			
F9	21-May-98 103 46	K	F	11.696667	107.320833	191	214			

	K	G	11.696667	107.3208:	189	224		105
	42							
F10	14-May-98		e~					
			Average	193.0	216.0	194.8	0 - 5	103.8 43.61
			Standard deviation:	4.1	6.3	7.7	2213.41	2.7 2.71
			RHINO IV					
H21	14-May-98	G	F	11.696667	107.320833	193	97	42
H23	16-May-98	G	F	11.696667	107.320833		107	47
			Average:	193.0	102.0	44.5		
Quality of cast			B = bad	Standard deviation:		5.0	2.5	
			P = poor					
			F = fair					
			G = good					

Code	Location	Foot	Foot	Front	Foot	Foot	Foot	Foot	Foot
Date	Quality	Latitude	Longitude	From	From	From	From	From	From
		(E)	(E)	casts	print	Width	Length	Width	Length

UNIDENTIFIABLE CASTS

F2	06-May-98	A	B	11.632000	107.305333				
H6	09-May-98	A	B	11.633167	107.305833	220		211	
H8	09-May-98	A	B	11.633167	107.305833	205		212	
F3	06-May-98	A	B	11.632000	107.305333				
H24	21-May-98	E	B	11.684833	107.316667				
H42	21-May-98	E	B	11.684833	107.316667				
F12	19-May-98	E	B	11.684500	107.316667				
H27	14-May-98	E	B	11.684833	107.316667				
H28	14-May-98	E	B	11.684833	107.316667				
H19	21-May-98	E	B	11.684833	107.316667				
H35	14-May-98	F	B	11.689167	107.321167	194		209	
H20	15-May-98	G	B	11.696667	107.320833				
H22	14-May-98	G	B	11.696667	107.320833	210		221	
F6	14-May-98	H	B	11.693000	107.326167	192		200	
H11	15-May-98	K	B	11 * 696667	107.320833				
H12	15-May-98	K	B	11.696667	107.320833				
H17	15-May-98	K	B	11.696667	107.320833				
H10	15-May-98	K	B		107.320833				
F8	14-May-98	M	p	11.685833	107.352667				102

Quality of cast B = bad
P = poor
F = fair
G = good

Area Statistics

<i>Cat Tien National Park</i>	51,031 Ha	
<i>Cat Loc Wildlife Reserve</i>	31,930 Ha	
<i>Part E of 107°30'</i>	25,262 Ha	
<i>(Area surveys and show on maps)</i>		
<i>Total area of encroachment</i>	8,916 Ha	35 %
<i>Rhino distribution ~1990</i>	51,532 Ha	
<i>Rhino distribution 1998</i>	6,210 Ha	
<i>(Based on 1 km buffer around outlying records)</i>		
<i>Reduction in last decade</i>	87 %	
<i>Encroachment in Rhino area</i>	939 Ha	15 %
<i>Area surveyed</i>		
<i>(Based on 1 km buffer around trails)</i>		12,199 Ha
<i>Overlap with rhino area</i>	5908 Ha	95 %

Taxonomic status of the Rhinos In Cat Loc.

*The footprints of the rhinos in Cat Loc, are very small compared to those of the Javan rhinos in Ujung Kulon. In Cat Loc the width of the hindfoot is between 20 and 23 cm, while in Ujung Kulon it is between 25 and 28 cm. Also during the 1993 survey only small footprints were recorded in Cat Loc. This has led to doubt about the identity of the rhinos in Cat Loc, because the reported footprint sizes are more like those of the smaller Sumatran Rhino (*Dicerorhinus sumatrensis*) than like those of the Javan Rhino known from Ujung Kulon. Rhinos with footprints less than 23 cm would be considered subadults in Ujung Kulon*

It is incomprehensible, that there would be subadults only in Cat Loc, especially since virtually all tracks reported in 1993 were also in 'subadult' size. We must therefore conclude that smallness is a characteristic of the population of Cat Loc. The poor quality of the habitat and the hilly terrain may have contributed to the diminutive size of the Rhinos in Cat Loc.

*From the form of the footprints, - comparatively wide front hoof and short skull -, there is no doubt that all footprint casts made in Cat Loc are made by Javan Rhino. Yet they are considerably - 75-80% - smaller than the footprints made by the Rhinos in Ujung Kulon. This means that also the other dimensions of the body must be similarly smaller. The shoulder height of the rhinos in Ujung Kulon varies from 135 for females, to 150 for males. Consequently shoulder heights for the Cat Loc rhinos should be between 110 and 120, and weight 50 - 60% of the weight of a rhino in Ujung Kulon. The skeleton of the Cat Loc, rhino in the collection at the IEBR in Hanoi lacks the feet, but judging from the size of the mounted specimen it was probably about 120 - 130 cm at the shoulder. The Indochinese population of the Javan rhino has been separated on morphological grounds; as a distinct species (*Rhinoceros sondaicus annamiticus*), from the nominative subspecies, in Java, the subspecies *floweri* from Sumatra and the subspecies *inermis* from the Sundarbans in India.*

The already established morphological differences and the diminutive size of the Vietnamese rhinos are sufficient ground to treat the two remaining population of the species as clearly distinct gene pools, each probably uniquely adapted to the particular habitat that they are living in. The climate, topography and vegetation in Cat Loc and in Ujung Kulon are quite distinct.

*It is therefore better to use the vernacular 'Vietnamese, Rhino' for the Cat Loc population of *Rh. sondaicus annamiticus*, and no longer use the term 'Javan Rhino in Vietnam'.*

CONCLUSIONS

A STATUS OF THE SPECIES

*The species *Rhinoceros sondaicus* (Javan or Lesser one-horned rhino) is among the rarest and most threatened species of megaherbivores. Only two populations, representing different subspecies, survive:*

- *50 - 60 survive in the Ujung Kulon NP, Java, Indonesia (Javan Rhino).*
- *5 - 7 survive in the Cat Loc WR, Vietnam (Vietnamese Rhino).*

B STATUS OF THE VIETNAMESE RHINO

The Vietnamese rhino appears to be a form that is quite distinct from the Javan rhino population in Ujung Kulon, in particular in size. Based on footprint size the Vietnamese Rhino is only ~ 80% in size and ~ 50% in weight of the Rhinos in Ujung Kulon. It probably represents a form uniquely adapted to the environment in S Vietnam, which is quite different from the Javan environment.

For the survival of the species and to form a nucleus for re-establishing of viable rhino populations throughout its historic range the preservation of this unique gene pool is vital.

C STATUS OF THE CAT LOC RHINO POPULATION

The remaining rhino population in Cat Loc is critically small. A minimum of 5 rhinos have been identified from footprint

plaster casts and measurements. Considering the duration of the survey and the unfavorable weather we may assume that not all individuals are recorded and that there is a possibility of another 1-2 animals.

*The current estimate is: **Min 5 - Max 7***

D STATUS OF THE CAT LOC HABITAT

*The total area currently available (~ **5,100 Ha**) is too small to support a viable population of rhino and the area is under rapid encroachment.*

*The quality of the habitat is **sub-optimal**, dominated by bamboo and rattan, with good food resources scarce and widely scattered. The poor quality of the habitat is partly caused by the heavy use of defoliants during the war.*

*The area is rapidly being opened for agriculture. Already **35%** of the eastern part is lost to encroachment. All of the best rhino habitat, the flat alluvial areas, has been converted into rice fields. The few remaining areas of broadleaf forest, important feeding areas, are being converted for Cashew nut plantations.*

Access to a vital saltlick has been blocked by the advancing encroachment.

Considering the observed rate of encroachment it can be expected that all the current rhino habitat will have disappeared in 3 - 5 years time.

E STATUS OF PROTECTION AND MANAGEMENT

There is very limited actual protection of the rhino population. Only restriction of the availability of firearms in

the area has been implemented. There are only two guard posts with 4 guards for the whole area.

The rhinos have lost 85% of their habitat since ~1990 and obviously several rhinos must have died or have been killed in that period.

There is no protection of the rhino habitat. In fact settlement inside the 'Wildlife Reserve' is stimulated by the construction of roads and other facilities in the Cat Loc WR. There appear to be no plans to stem or stop, let alone reverse, the current level of encroachment and habitat destruction.

F PROSPECT

The unique Vietnamese rhino will be extinct in just a few years from now, unless immediate, appropriate action is taken.

DRAFT ACTION PLAN FOR THE SURVIVAL OF THE VIETNAMESE RHINO

Objective

*To re-establish viable populations of the Vietnamese rhino (*Rhinoceros sondaicus annamiticus*) in Vietnam and in other secure habitats throughout its historic range.*

Goals

Short term goal: Preservation of the current population and rhino habitat.

1998/1999

Conservation of the population in its original habitat in Cat Loc WR should be the preferred option, but considering the fact that already one third of the rhino habitat has been lost to encroachment, the prospects for this option being feasible are very small. Additionally there is very little time left to act and preserve the rhino population and its habitat.

Therefore the Cat Loc rhinos and their habitat need to receive better protection now, to keep open the options for re-establishing other populations by moving some of the rhinos to other environs.

If within one year from now there are no signs of improved protection and strong action being taken to reverse encroachment and restore the rhino's habitat, the relocation of the rhinos should be considered.

Actions required

- *Provide adequate protection for the last remaining population and its habitat in Cat Loc Wildlife reserve, to*

prevent any further losses of individuals and rhino habitat.

- *Appoint a qualified senior Rhino Conservation Officer based in Cat Tien to supervise the rhino protection work.*
 - *Establish at least 8 guard posts with 4 guards per post at strategic positions.*
 - *Establish 2 special Rhino Protection Units of 4 guards each to patrol the rhino area.*
- *Stop further encroachment throughout the Reserve, and remove occupation from all areas critical for the survival of the rhino.*
 - *Remove settlers from the isolated settlements inside Cat Loc WR, and restore broadleaf forest on the abandoned fields.*
 - *Remove all hill fields between the rhino area and the Dong Nai river. Existing settlement along the river can be tolerated but should restrict their agriculture to the alluvial soils and not engage in any form of extraction of forest produce.*
 - *Create clearly marked boundaries around tolerated settlements.*
 - *Prosecute any trespassing of boundaries and violations of regulations.*
 - *Establish regular river patrols and a checkpoint at a strategic place to inspect all goods moving through the area and to confiscate all illegally obtained produce.*
 - *Restore safe access to the southern saltlick by reforestation of a zone of at least 400 m around the saltlick.*
 - *Progress monitoring*
 - *In Mid-1999 a thorough evaluation of the progress made should be conducted to decide whether the actions taken are effective and have significantly increased the security and chances for survival.*

**Mid term goal: Restoration of the population of the
Vietnamese Rhino to a minimal viable level**

1998/2018

Currently the rhino population in Vietnam is critically low, and the available habitat does not allow any expansion. Such a population has an increased risk of becoming extinct, even without animals being deliberately killed, and is unviable. The first step towards restoring the population to a level that will also guaranty the long-term survival of the species would be to allow the population to increase to a level of at least 100 individuals and to provide adequate secure habitat for a population of this size.

Cat Loc as such, even if all the area lost to encroachment could be reclaimed, is only large enough to have a population of 30 rhinos or less (one rhino per 1000 Ha). Therefore new populations will have to be established in other secure wildlife areas. The most likely candidate area would be Cat Tien National Park, where rhino occurred till about 1990.

Actions required

- *Preparation of a detailed feasibility study for the re-introduction of rhinos in Cat Tien National Park through translocation from Cat Loc.*

The plan should study the implications of the various scenarios for direct or staged re-introductions, including semi-captive or captive breeding intermediate stages. It should also address the technical implications of capture and transportation, and the preparations for the intermediate housing and ultimate release in Cat Tien NP.

Costing of the various options and stages should be included.

An emergency scenario for rapid translocation of the Cat

Loc rhinos should be included in case the mid-1999 evaluation shows that progress made on the actions described under the short term goal have not been satisfactory.

- *Formation of a technical working group to prepare the feasibility study.*

Long term goal: Restoration of the Vietnamese Rhino to a number of viable populations throughout the historic range

2018 - ?

The action plan of the Asian Rhino Specialist Group recommends for each species or taxonomically important unit a minimum world population size of 2000 individuals or more, distributed over a number of populations, each 100 individuals or more, with a few of 500 individuals or more.

A population of 2000 Vietnamese rhinos would require several area of 100,000 to 500,000 Ha and a total area of at least 1 to 1.5 million Ha of secure habitat of good quality.

Actions required

- *A revision of the Vietnam Conservation Action Plan to incorporate a number of conservation areas that would ultimately meet the requirements for a viable rhino population.*
- *Consultation with neighboring countries - Laos, Cambodia - for the establishment of trans-frontier reserves to increase in size and viability of the national conservation areas.*

Action plan 1998/1999 for the survival of the vietnamese rhino in cat tien - cat loc national park, vietnam

summary of status assessment

a. Status of the species

*The species **Rhinoceros sondaicus** (Javan or Lesser one-horned rhino) is among the rarest and most threatened species of megaherbivores. Only two populations, representing different subspecies survive:*

50 - 60 in the Ujung Kulon NP, Java, Indonesia (Javan Rhino).

5 - 7 in the Cat Loc area of the Cat Tien - Cat Loc NP, Vietnam (Vietnamese Rhino).

b. status of the Vietnamese rhino

The Vietnamese rhino represents a form that is quite distinct from Javan rhino population in Ujung Kulon. The Vietnamese rhino is much smaller than Javan rhino. It is a recognized subspecies and represents a form uniquely adapted to the environment in South Vietnam, which is quite different from the Javan environment.

For the survival of the species and to form a nucleus for re-establishment of viable Vietnamese rhino populations throughout its historic range the preservation of this unique gene pool is vital.

c. status of the catloc rhino population

The remaining rhino population in Catloc is critically small. A minimum of 5 rhinos has been identified during the 1998 census and there could be another 1- 2 undetected animals. This number is considerably lower than the estimates from the previous censuses in 1990 and 1993.

*Therefore the current estimate is **Min 5 - Max 7**.*

d. Status of the catloc habitat

The total area currently available (» 5,100ha) is too small to support a viable population of rhino (i.e. 100 or more) and the area is under rapid encroachment.

*The quality of the habitat is **sub-optimal**, dominated by bamboo and rattan with good food resources scarce and widely scattered. The poor quality of the habitat is partly caused by the heavy use of defoliants during the war.*

The area is rapidly being opened for agriculture. Already 35% of the eastern part is lost to encroachment. All of the best rhino habitat, the flat alluvial areas along the rivers, has been converted for Cashew nut plantations. Access to a vital sallick has been blocked by the advancing encroachment.

Considering the observed rate of encroachment it can be expected that virtually all of the rhino habitat will have disappeared in 3 - 5 years time.

e. status of protection and management.

There is very limited actual protection of the rhino population. Only restriction of the availability of firearms in the area has been implemented. Protection of the rhino habitat is limited and settlement inside the 'Nature Reserve' is stimulated in the Cat Loc WR. There are insufficient guards and only two guardposts provided by WWF.

The rhinos have lost 85% of their habitat since ~ 1990 and several rhinos have been reported to be shot in that period.

F. Prospect

The unique Vietnamese rhino will be extinct in just a few years (3 - 5) from now, unless immediate, appropriate action is taken.

Goal

*To re-establish viable populations of the Vietnamese rhino (*Rhinoceros sondaicus annamiticus*) in Vietnam and in other secure habitats throughout its historic range.*

Targets

Immediate Target: Preservation of the current rhino population and habitat.

(2 years) - 1998/1999

Short term Target: Doubling of the current population and rhino habitat in 10 years time.

(10 years) - 1998/2008

Mid term Target: Restoration of the population of the Vietnamese Rhino to a minimal viable level of 100 individuals.

(50 years) - 1998/2048

Long term Target: Restoration of the Vietnamese Rhino to a number of viable populations throughout the historic range.

(70+ years) - 1998/?

The Cat Loc rhinos and their habitat need to receive better protection immediately to preserve the rhino and any options for their continued survival.

Conservation of the population in its original habitat in Cat Loc NR should be the preferred option, but considering the fact that already one third of the rhino habitat has been lost to encroachment, the prospects for this option being feasible are not optimal. Additionally there is very little time available to act to preserve the rhino population and its habitat.

When and how rhinos are to be moved to other areas will depend on the success of the implementation of the actions to preserve the rhinos and their habitat in Cat Loc.

Ideally it should not be done before the number of rhinos has increased and is nearing carrying capacity. If however within one or two years from now there are no signs of improved protection and strong action being taken to reserve encroachment and restore the rhino's habitat in Cat Loc, a rescue operations and rapid relocation of all the rhinos to a more secure place should be considered.

Each year a thorough independent evaluation of the program should be conducted to form the basis for an annual review of the in-situ and ex-situ conservation options.

Immediate Target: Preservation of the current population and rhino habitat.

(2 years) - 1998/1999

Provide adequate protection for the last remaining population and its habitat in Cat Loc Nature Reserve to

prevent any further losses of individuals and rhino habitat.

a. Rhino protection

To achieve a good level of protection two dedicated Rhino Protection Units of 4 persons each and 8 new Guardposts with 4 guards each need to be established as soon as possible. Thus a total of 40 new Rhino protection staff need to be added immediately. A rhino conservation officer should be appointed to lead the rhino protection operations.

Activities required in 1998/1999

1 - Personnel

- A1.1 Appoint/assign a qualified senior Rhino Conservation Officer (RCO) based in Cat
Tien - Cat Loc to supervise the rhino protection work. Before end 1998
- A1.2 Establish 2 special Rhino Protection Units (RPUs) of 4 persons (1 forest
guard, 3 locals) each to patrol the rhino area. Before March 1999
- A1.3 Establish at least 8 guards posts with 4 guards per post at strategic
positions. 2 before March 1999, 4 before end 1999

2. Training

- A2.1 Three weeks study tour to RPU operations in Indonesia for RCO. Late 1998
- A2.2 One month training for 8 RPU members. January-February 1999
- A2.3 Standard guards training for new National Park guards. Regular training schedule

3. Equipment

- A3.1 4WD vehicle for RCO.
- A3.2 4 motorbikes for RPUs.
- A3.3 8 Guardposts with furniture.
- A3.4 Field equipment and radios for RPUs.
- A3.5 Radios for guardposts.

4. Studies & surveys

- A4.1 Survey to establish precise delineation of IPZ.

5. Actions

6. Miscellaneous

B. Rhino Habitat Protection

Stop further encroachment throughout the Reserve, and remove human occupation from all areas critical for the survival of the rhino.

- Remove settlers from the isolated settlements inside Cat Loc NR, and restore broadleaf forest on the abandoned fields.
- Remove all hill fields between the rhino area and the Dong Nai river. Existing settlement along the river can be tolerated but should restrict their agriculture to the alluvial soils and not engage in any form of extraction of forest produce. Clear boundaries should be demarcated about 140 - 160 MASL.
 - Create clearly marked boundaries around other tolerated settlements.
 - Prosecute any trespassing of boundaries and violations of regulations.
- Establish regular river patrols and a checkpoint at a strategic place to inspect all goods moving through the area and to confiscate all illegally obtained produce.
- Restore safe access to the southern saltlick by reforestation of a zone of at least 400m around the saltlick.

Activities required in 1998/1999

1 - Personnel

No new specialist personnel required. Regular park staff in cooperation with staff of the appropriate agencies should carry out the surveys and patrols.

2 - Training

3 - Equipments

B3.1 Boat for river patrol.

B3.2 Checkpoint for river traffic control.

4 - Studies & surveys

B4.1 Survey to establish number and identity of occupants that need to be resettled.

B4.2 Survey to establish size and identity of owner of fields to be abandoned and reforested.

B4.3 Study for most effective reforestation or regeneration of abandoned fields and plantations.

B4.4 Design for the restoration area around the 'birdswamp' saltlick.

5 - Actions

B5.1 Resettlement of families from IPZ zone.

B5.2 Compensation for abandoned fields and plantations inside IPZ.

B5.3 Reforestation or regeneration of abandoned fields.

B5.4 Restore safe access to the 'birdswamp' saltlick according to the design.

6 - Miscellaneous

B6.1 Establish good working relations with police and the legal system for the effective prosecution of violators of conservation legislation and Park regulations.

B6.2 Establish agreements with appropriate agencies for the staffing of a joint river control station and for the procedures for inspection and impounding of illegally obtained forest produce.

C. Public awareness

A vigorous public awareness campaign needs to be carried out, aimed at the villagers living in and around the National Park and at their leaders at the village and district level, to increase awareness about the importance of conservation of wildlife, in particular the Vietnamese rhino. Also the park regulations regarding access to and activities inside the National Park need to be explained.

Activities required in 1998/1999

1 - Personnel

C1.1 Appointment of a Community Outreach Officer (COO) to guide the awareness campaigns.

C1.2 Three extension workers to visit the villages and settlements.

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C2.1 1 motorcycles for COO.

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C3.1 Study of the perceptions of the local communities relating to wildlife, conservation and utilization of forest resources.

C3.2 Translation of the findings of the perception study into practical advice for the design of the awareness campaign and materials.

4 - Actions

C4.1 Production of materials for the awareness campaign.

5 - Miscellaneous

D. Progress monitoring

Annually, for the first time in mid-1999, a thorough evaluation of the progress made should be conducted to decide whether the actions taken are effective and have significantly increased the security and chances for survival. The evaluation will be reviewed by a Steering Committee, who will also update the Action Plan. In case the progress is unsatisfactory the Steering committee may decide to alter the course of the program or to adopt an emergency strategy.

Activities required in 1998/1999

1 - Personnel

2 - Equipment

3 - Studies & surveys

D3.1 Ten days Evaluation mission to Cat Loc and production of evaluation report.

Mid-1999

4 - Actions

D4.1 Updating of the Action Plan for next two years.

5 - Miscellaneous

D5.1 Appointment of Steering Committee composed of representatives of National Park, IEBR, FPD, AsRSG/IRF, and Donor Agencies.

D5.2 Meeting of Steering Committee for review of Evaluation Reprt.

Short term Target: Doubling of the current population and rhino habitat in 10 years time.

(10years) - 1998/2008

The first step towards restoring the population to a level that will also guarantee the long-term survival of the species would be to allow the population to double in Cat Loc and to provide sufficient secure habitat of good quality for a population of that size.

Currently the rhino population in Vietnam is critically low, and the available habitat is being steadily reduced by encroachment. The area of secure habitat in the IPZ should be maintained at minimally 15,000ha and vigorous protection of the rhinos and the habitat need to continue. A population census need to be carried out at least every two years. Habitat improvement, if feasible, should be done in suitable locations.

The feasibility of the translocation of rhino to Cat Tien should be studied, and probably in the second half of 10 years period the first movements of a few animals could be considered.

E. Preparatory studies and surveys

Activities required in 1998/1999

1 - Personnell

2 - Equipment

3 - Studies & survey

D3.1 Feasibility study for the conversion of bamboo forest in to broaddleaf forest.

D3.2 Pilot scheme for field testing of recommended habitat improvement techniques.

D3.3 Survey of areas north of Cat Loc for potential rhino habitat.

4 - Actions

5 - Miscellaneous

Mid term target: Restoration of the population of the Vietnamese Rhino to a minimal viable level of 100 individuals.

(50 years) - 1998/2048

The next step towards achieving the objective should be to let the population of Vietnamese Rhinos increase to alevel of at least 100 individuals and provide adequate secure habitat for a population of this size.

Cat Loc as such, even if all the area lost to encroachment could be reclaimed, is only large enough to have a population of 30 rhinos or less (one rhino per 1000ha). Therefore new population will have to be established in other secure wildlife areas. The most likely candidate area would be Cat Tien National Park, where rhino occurred till about 1990.

During the next five years a detailed feasibility study for the re-introduction of rhinos in Cat Tien National Park through translocation from Cat Loc should be made.

The plan should study the implications of the various scenarios for director staged re-introductions, including semi-captive or intermediate stages. It should also address the technical implications of capture and transportation, and the preparations for the intermediate housing and ultimate release in Cat Tien NP. Costing of the various option and stages should be included.

An emergency scenario for rapid translocation of the Cat Loc rhinos should be included in case the mid-1999 evaluation shows that progress made on the actions described under the short term target have not been satisfactory.

F. Emergency translocation

Activities required in 1998/1999

1 - Personnel

2 - Equipment

3 - Studies & survey

D3.1 Preparation of the emergency scenario for rapid translocation of rhino to Cat Tien in case of failure of the protection actions in Cat Loc.

4 - Actions

D4.1 Formation of a technical working group to prepare the emergency scenario.

5 - Miscellaneous

Long term Target: Restoration of the Vietnamese Rhino to a number of viable populations throughout the historic range.

(70 years) - 1998 - ?

The action plan of the Asian Rhino Specialist Group recommends recovery for each species, subspecies or taxonomically significant unit a minimum world population size of 2000 individuals or more, distributed over a number of populations, each containing 100 individuals or more, with one or more populations of 500 individuals or more.

A population of 2000 Vietnamese rhino would require several area of 100,000 to 500,000ha and a total area of at least 1 to 1.5 million ha of secure habitat of good quality.

Activities required

A revision of the Vietnam Conservation Action Plan to incorporate a number of conservation areas that would ultimately meet the requirements for viable rhino populations (100-500 individuals).

Consultation with neighboring countries - Laos, Cambodia - for the establishment of trans-frontier reserves to increase in size and viability of the national conservation areas.

*Action plan 1998/1999 for the survival of the
vietnamese rhino in cat tien - cat loc national park, vietnam*

summary of status assessment

a. Status of the species

The species Rhinoceros sondaicus (Javan or Lesser one-horned rhino) is among the rarest and most threatened species of megaherbivores. Only two populations, representing different subspecies survive:

50 - 60 in the Ujung Kulon NP, Java, Indonesia (Javan Rhino).

5 - 7 in the Cat Loc area of the Cat Tien - Cat Loc NP, Vietnam (Vietnamese Rhino).

b. status of the Vietnamese rhino

The Vietnamese rhino represents a form that is quite distinct from Javan rhino population in Ujung Kulon. The Vietnamese rhino is much smaller than Javan rhino. It is a recognized subspecies and represents a form uniquely adapted to the environment in South Vietnam, which is quite different from the Javan environment.

For the survival of the species and to form a nucleus for re-establishment of viable Vietnamese rhino populations throughout its historic range the preservation of this unique gene pool is vital.

c. status of the catloc rhino population

The remaining rhino population in Catloc is critically small. A minimum of 5 rhinos has been identified during the 1998 census and there could be another 1- 2 undetected animals. This number is considerably lower than the estimates from the previous censuses in 1990 and 1993.

*Therefore the current estimate is **Min 5 - Max 7**.*

d. Status of the catloc habitat

The total area currently available (» 5,100ha) is too small to support a viable population of rhino (i.e. 100 or more) and the area is under rapid encroachment.

*The quality of the habitat is **sub-optimal**, dominated by bamboo and rattan with good food resources scarce and widely scattered. The poor quality of the habitat is partly caused by the heavy use of defoliants during the war.*

The area is rapidly being opened for agriculture. Already 35% of the eastern part is lost to encroachment. All of the best rhino habitat, the flat alluvial areas along the rivers, has been converted for Cashew nut plantations. Access to a vital saltlick has been blocked by the advancing encroachment.

Considering the observed rate of encroachment it can be expected that virtually all of the rhino habitat will have disappeared in 3 - 5 years time.

e. status of protection and management.

There is very limited actual protection of the rhino population. Only restriction of the availability of firearms in the area has been implemented. Protection of the rhino habitat is limited and settlement inside the 'Nature Reserve' is stimulated in the Cat Loc WR. There are insufficient guards and only two guardposts provided by

WWF.

The rhinos have lost 85% of their habitat since ~ 1990 and several rhinos have been reported to be shot in that period.

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The unique Vietnamese rhino will be extinct in just a few years (3 - 5) from now, unless immediate, appropriate action is taken.

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*To re-establish viable populations of the Vietnamese rhino (*Rhinoceros sondaicus annamiticus*) in Vietnam and in other secure habitats throughout its historic range.*

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Immediate Target: Preservation of the current rhino population and habitat.

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Mid term Target: Restoration of the population of the Vietnamese Rhino to a minimal viable level of 100 individuals.

(50 years) - 1998/2048

Long term Target: Restoration of the Vietnamese Rhino to a number of viable populations throughout the historic range.

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The Cat Loc rhinos and their habitat need to receive better protection immediately to preserve the rhino and any options for their continued survival.

Conservation of the population in its original habitat in Cat Loc NR should be the preferred option, but considering the fact that already one third of the rhino habitat has been lost to encroachment, the prospects for this option being feasible are not optimal. Additionally there is very little time available to act to preserve the rhino population and its habitat.

When and how rhinos are to be moved to other areas will depend on the success of the implementation of the actions to preserve the rhinos and their habitat in Cat Loc.

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Each year a thorough independent evaluation of the program should be conducted to form the basis for an annual review of the in-situ and ex-situ conservation options.

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To achieve a good level of protection two dedicated Rhino Protection Units of 4 persons each and 8 new Guardposts with 4 guards each need to be established as soon as possible. Thus a total of 40 new Rhino protection staff need to be added immediately. A rhino conservation officer should be appointed to lead the rhino protection operations.

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- A2.1 Three weeks study tour to RPU operations in Indonesia for RCO. Late 1998*
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5. Actions

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Stop further encroachment throughout the Reserve, and remove human occupation from all areas critical for the survival of the rhino.

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No new specialist personnel required. Regular park staff in cooperation with staff of the appropriate agencies should carry out the surveys and patrols.

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Activities required in 1998/1999

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Mid-1999

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D4.1 Updating of the Action Plan for next two years.

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- A2.3 Standard guards training for new National Park guards. Regular training schedule

3. Equipment

- A3.1 4WD vehicle for RCO.
- A3.2 4 motorbikes for RPUs.
- A3.3 8 Guardposts with furniture.
- A3.4 Field equipment and radios for RPUs.
- A3.5 Radios for guardposts.

4. Studies & surveys

- A4.1 Survey to establish precise delineation of IPZ.

5. Actions

6. Miscellaneous

B. Rhino Habitat Protection

Stop further encroachment throughout the Reserve, and remove human occupation from all areas critical for the survival of the rhino.

- Remove settlers from the isolated settlements inside Cat Loc NR, and restore broadleaf forest on the abandoned fields.
- Remove all hill fields between the rhino area and the Dong Nai river. Existing settlement along the river can be tolerated but should restrict their agriculture to the alluvial soils and not engage in any form of extraction of forest produce. Clear boundaries should be demarcated about 140 - 160 MASL.
 - Create clearly marked boundaries around other tolerated settlements.
 - Prosecute any trespassing of boundaries and violations of regulations.
- Establish regular river patrols and a checkpoint at a strategic place to inspect all goods moving through the area and to confiscate all illegally obtained produce.
- Restore safe access to the southern saltlick by reforestation of a zone of at least 400m around the saltlick.

Activities required in 1998/1999

1 - Personnel

No new specialist personnel required. Regular park staff in cooperation with staff of the appropriate agencies should carry out the surveys and patrols.

2 - Training

3 - Equipments

B3.1 Boat for river patrol.

B3.2 Checkpoint for river traffic control.

4 - Studies & surveys

B4.1 Survey to establish number and identity of occupants that need to be resettled.

B4.2 Survey to establish size and identity of owner of fields to be abandoned and reforested.

B4.3 Study for most effective reforestation or regeneration of abandoned fields and plantations.

B4.4 Design for the restoration area around the 'birdswamp' saltlick.

5 - Actions

B5.1 Resettlement of families from IPZ zone.

B5.2 Compensation for abandoned fields and plantations inside IPZ.

B5.3 Reforestation or regeneration of abandoned fields.

B5.4 Restore safe access to the 'birdswamp' saltlick according to the design.

6 - Miscellaneous

B6.1 Establish good working relations with police and the legal system for the effective prosecution of violators of conservation legislation and Park regulations.

B6.2 Establish agreements with appropriate agencies for the staffing of a joint river control station and for the procedures for inspection and impounding of illegally obtained forest produce.