

**MONITORING OF JAVAN RHINOCEROS
IN CAT TIEN NATIONAL PARK, VIETNAM**

July – December 2006

By Nguyen Van Thanh and Gert Polet

**WWF – ASIAN RHINO AND ELEPHANT ACTION STRATEGY IN VIETNAM
CAT TIEN NATIONAL PARK
AREAS TECHNICAL REPORT NO. 11
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EXECUTIVE SUMMARY

In December 2005, the support from the Netherlands Government for RPU work in Cat Tien National Park came to an end. The Netherlands Government remains involved in the execution of the pilot resettlement project, which benefits Javan rhinos in the Park.

Additional funding support for RPUs has been received from the Australia based Asian Rhino Project.

In the months of July to December 2006, monthly patrols lasted 113 days. This is more than twice as much as in the previous half year and caused by fielding different patrol groups in different areas at the same time. Patrol effort has thus improved in this period. The length of patrols has however not been recorded in this period. No violations have been encountered during this reporting period. The lack of detection of violations should be assessed as being a sign of diminishing violations in the rhino range.

A good number of footprint measurements have been made in this period. But not all footprints have been measured. Measurements are made with a ruler, not calipers which would have been much more accurate. Not a single plastercast has been made. This is inexcusable as only from plastercasts really accurate measurements can be made. The quality of the work delivered by the Rhino Patrol Units can therefore only be evaluated as being sub-standard.

During this reporting period, again no sign of breeding has been detected. This is a major cause of concern as it may indicate that the small rhino population present in Cat Tien National Park is not viable.

Resettlement work initiated by the Cat Tien National Park Conservation Project in 2003-04 has been concluded in this period, based on a grant made available by the Netherlands and Vietnam Governments. Hence the hamlets of K'Lo – K'It and Thung Co hamlets have been relocated outside the Park after compensations have been made available. These compensations are according to Vietnam Government standards and fall within World Bank guidelines and safety standards.

Funding for the *Javan Rhino Conservation Project in Cat Tien National Park - Vietnam* has been exhausted in January 2007. In April 2007, a workshop is being arranged to analyse the data collected by the Rhino Patrol Units and to discuss future needs for rhino conservation work. This will include an assessment of needs and feasibility to translocate rhinos to a more secure area and / or the need to resettle hamlets such as Village 4 which are inside the current rhino range. This workshop will be attended by representatives of the Vietnam Government's Ministry of Agriculture and Rural Development, Lam Dong Province, Dong Nai Province, Cat Tien National Park, The World Conservation Union's (IUCN) Asian Rhino Specialist Group and the World Wide Fund for Nature (WWF).

ACKNOWLEDGEMENTS

Here we would like to take the opportunity to thank the Cat Tien National Park authorities for their support during writing-up of proposals and making staff available to implement the work.

We thank the US Fish and Wildlife Service and WWF-AREAS for their continued interest and financial support to the conservation of Javan rhinos in Cat Tien National Park. We thank the Netherlands Government for their interest and support provided to Cat Tien National Park in the last eight years. We welcome the generous contribution from the Asian Rhino Project in support of the Rhino Patrol Unit's work in Cat Tien National Park.

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Implementation of the work is through staff of Cat Tien National Park's Forest Protection Department and Technical Department, under technical guidance of international consultants. Administration of this project is in the hands of WWF-Vietnam staff in Hanoi.

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PROJECT JAVAN RHINO CONSERVATION IN CAT TIEN NATIONAL PARK - VIETNAM

Goal and Objectives

Based on a threat analysis, the project *Javan Rhino Conservation in Cat Tien National Park – Vietnam* formulated its goal and objectives in 2005 as follows:

Goal for this Project is: To improve the conservation status of Javan Rhinos in Cat Tien National Park by supporting Park staff in rhino conservation and conservation education activities.

The Project consists of five objectives and outputs:

- In 2006, the rhino conservation strategy adapted to new information, experience and opportunities.
Under this objective, the conservation status of the Park's rhinos will be re-assessed.
- In two years, the undisturbed rhino range doubled to about 15,000 ha.
Under this objective, low-level support is maintained to move the adoption and implementation of the Resettlement Action Plan (RAP) forward. This RAP has been formulated under the auspices of the WWF-Cat Tien National Park Conservation Project in 2004.
- The adequate protection and biological management of Javan Rhinoceros ensured.
Under this objective, the existing rhino patrol unit is kept operational and the number of surviving rhinos will be verified in 2006 using data obtained by various opportunistic means.
- Mutually beneficial co-existence between people and Javan Rhinoceros improved through implementation of pilot resettlement of two hamlets.
Under this objective, final implementation of a pilot resettlement, as part of the RAP, of two hamlets is sought.
- Positive attitude towards Park and its rhinos maintained amongst at least 50% of schoolchildren in the immediate vicinity of the Park.
Under this objective, the Park's popular outreach activities amongst schoolchildren are maintained.

RESULTS

Formulation of an Updated Rhino Conservation Strategy for Cat Tien National Park - Vietnam

The meeting to update the rhino conservation strategy for Cat Tien National Park has been scheduled to hold in 27 and 28 April 2007. Representatives of the following individuals, institutions and organisations have been invited:

- Vietnam Government – Ministry of Agriculture and Rural Development
- Lam Dong Province
- Dong Nai Province
- Cat Tien National Park
- Vietnamese scientists
- IUCN-Asian Rhino Specialist Group
- WWF-Vietnam
- WWF-Asian Rhino and Elephant Action Strategy
- US Fish and Wildlife Service
- Asian Rhino Project

A tentative agenda is presented in Annex 1.

The objective of the meeting is to update the rhino conservation strategy for Cat Tien National Park. A crucial parameter in this meeting will be whether evidence of breeding has been encountered or not. Without such evidence, the future of the Cat Tien rhinos looks very bleak. The meeting will discuss options such as continuation and improvement of protection within the current rhino range, the desirability and feasibility for ex-site intensive management in a more secure semi-natural enclosure with or without a male from Ujung Kulon National Park (Indonesia) and will also assess the desirability and feasibility to relocate hamlets remaining in the current rhino range.

Doubling the Rhino Range to about 15,000 ha

The relocation of the K'Lo – K'It and Thung Co hamlets has been completed. In total, 78 households (1,383 people) have been removed from the Park which resulted in 250 ha of land becoming available to the rhinos and a significant reduction in disturbance on the southern edge of the rhino range. The people of K'Lo – K'It and Thung Co have been compensated for their assets (houses, buildings, land and fruit trees) and provided with houses and amenities (electricity, road, school, etc) just outside the Park in the area where they originally came from before moving into Cat Tien National Park in the 1970's and 1980's. The compensation provided followed Vietnam Government regulations and falls within safety criteria and resettlement guidelines of the World Bank.

Protection of the Rhino Population

Rhino Patrols

In the immediate vicinity of the rhino range, Cat Tien National Park operates 5 guard stations (Phuoc Son, Ben Cau, Gia Vien, Tien Hoang and Village 5). These are manned by a total of 24 forest guards. There is also a mobile unit of 8 forest guards which occasionally operates in the rhino range.

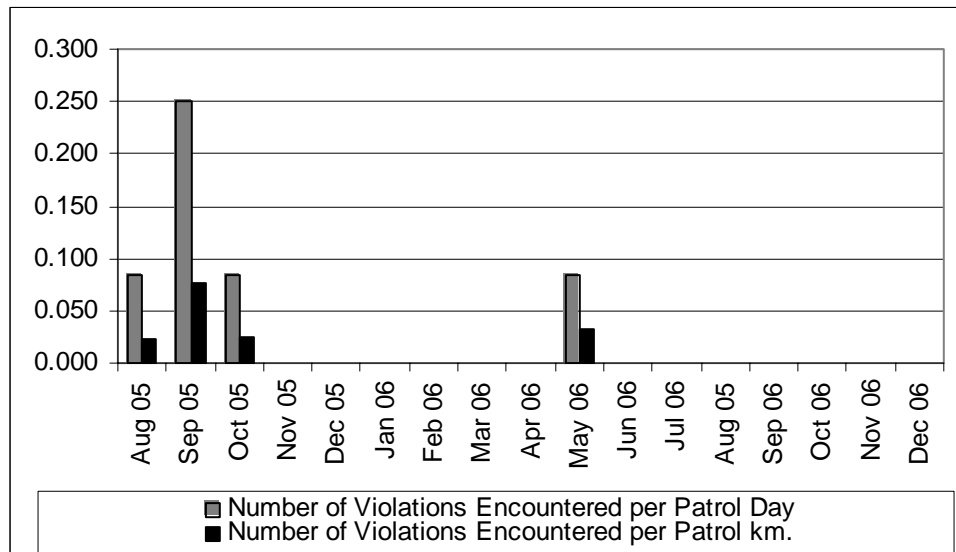
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Table 1 shows parameters to measure the patrol effort of the RPUs and its effectiveness to detect violations. The effectiveness is graphically represented in Figure 1.

Table 1: RPU Patrol Effort and Effectiveness to Detect Violations

| Month | Patrol Days (no.) | Patrolled Distance (km.) | Violations Encountered (no.) | Violations / Patrol Day (no.) | Violations / Patrolled km (no.) |
|----------------|-------------------|--------------------------|------------------------------|-------------------------------|---------------------------------|
| August 2005 | 12 | 42.5 | 1 | 0.083 | 0.024 |
| September 2005 | 12 | 39.0 | 3 | 0.250 | 0.077 |
| October 2005 | 12 | 40.0 | 1 | 0.083 | 0.025 |
| November 2005 | 13 | 40.5 | 0 | 0.000 | 0.000 |
| December 2005 | 12 | 29.0 | 0 | 0.000 | 0.000 |
| January 2006 | 12 | 31.0 | 0 | 0.000 | 0.000 |
| February 2006 | 0 | 0.0 | 0 | 0.000 | 0.000 |
| March 2006 | 0 | 0.0 | 0 | 0.000 | 0.000 |
| April 2006 | 12 | 28.0 | 0 | 0.000 | 0.000 |
| May 2006 | 12 | 30.0 | 1 | 0.083 | 0.033 |
| June 2006 | 12 | 29.5 | 0 | 0.000 | 0.000 |
| July 2006 | 10 | n.a. | 0 | 0.000 | 0.000 |
| August 2006 | 12 | n.a. | 0 | 0.000 | 0.000 |
| September 2006 | 33 | n.a. | 0 | 0.000 | 0.000 |
| October 2006 | 12 | n.a. | 0 | 0.000 | 0.000 |
| November 2006 | 36 | n.a. | 0 | 0.000 | 0.000 |
| December 2006 | 10 | n.a. | 0 | 0.000 | 0.000 |
| Average | 13 | 28.1 | 1 | | |
| Total | 222 | 309.5 | 5 | 0.499 | 0.159 |

Figure 1: RPU Effectiveness to Detect Violations

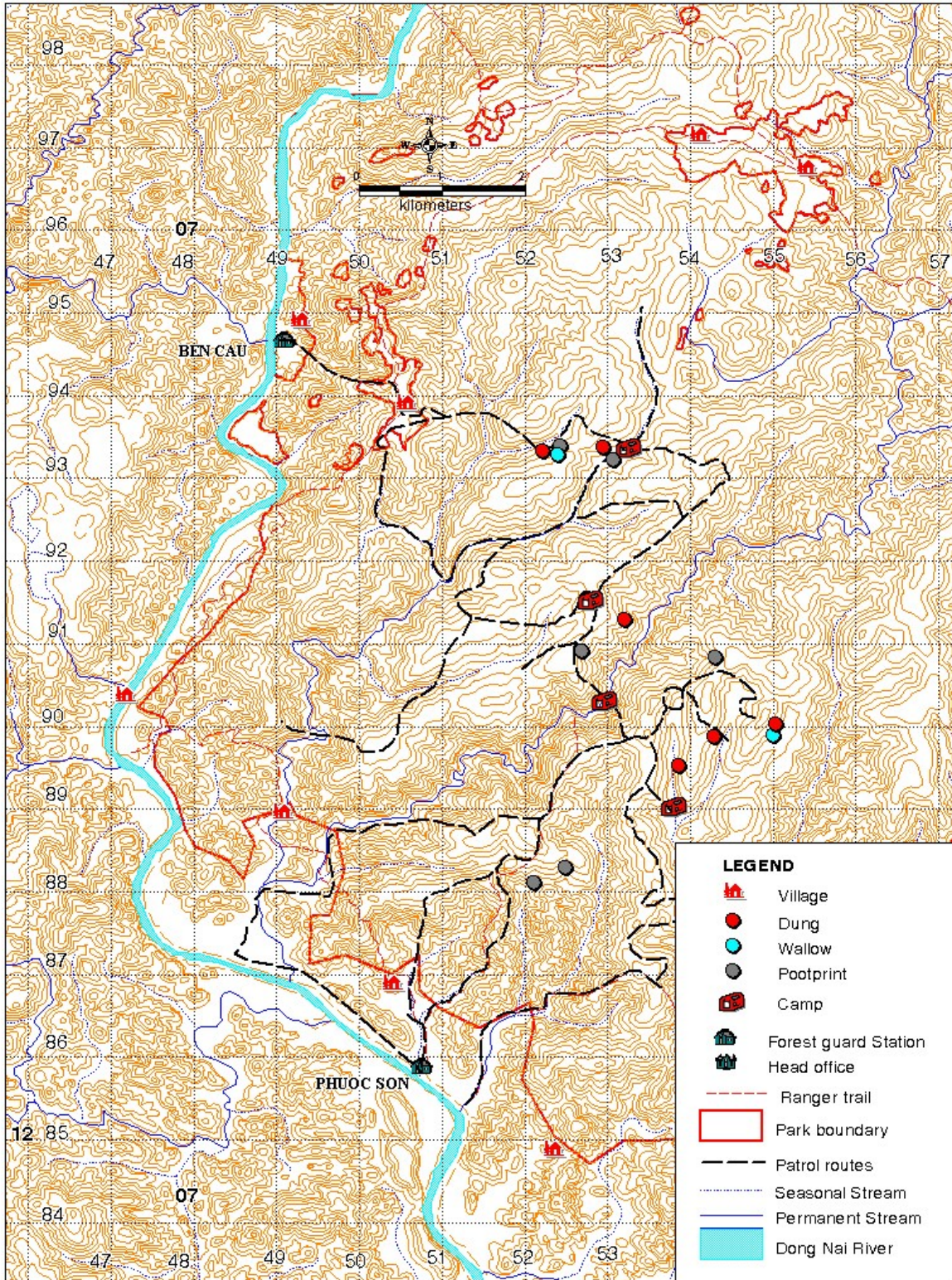


Average number of days patrolled went up to 18 per month because during this period several patrols were conducted simultaneously in different areas within the rhino range. Several of these patrols encountered rhino signs (especially footprints) at the same time. Whether or not these are of the same or of different animals is debatable as the age of the footprints varied.

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Map 1: Rhino Patrols and Rhino Signs Observed in Cat Tien National Park, July – December 2006

RHINO PATROLS - CAT TIEN NATIONAL PARK - July - 06 to December - 06



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No violations have been detected during this reporting period. The distance patrolled has not been recorded in this period. The effectiveness of the RPUs to detect violations therefore remains the dropped from 0.029 per day and 0.009 per km patrolled on average for the 17-months period of RPU operations. Measuring effectiveness per patrolled kilometre appears to be beyond the capacity of the Park. The lack of detection of violations should be assessed as being a sign of diminishing violations in the rhino range.

Map 1 depicts the patrol routes which have been walked in the period July – December 2006. All areas of recent rhino sign observations have been covered during this reporting period.

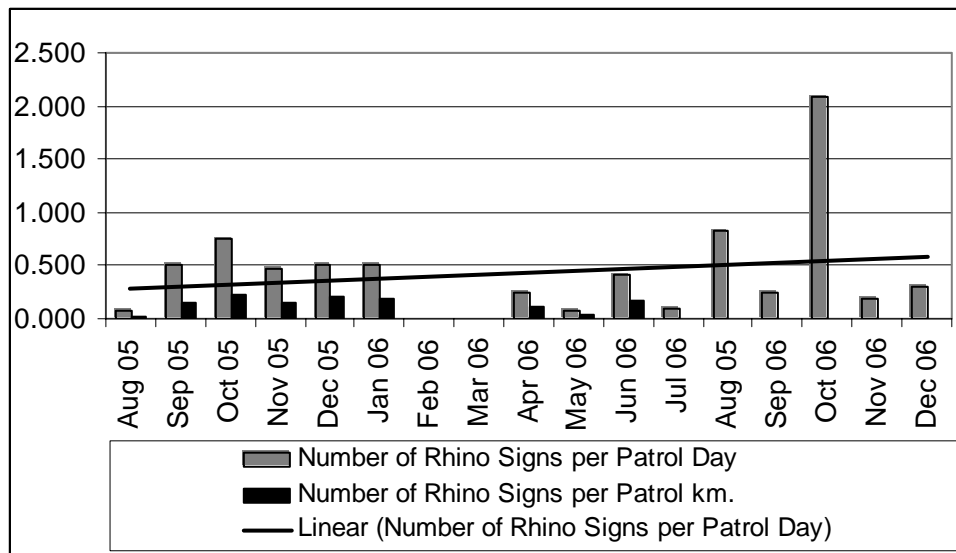
Rhino Signs

Table 2 shows parameters to measure the RPU's ability and its effectiveness to detect rhino signs. The effectiveness is graphically represented in Figure 2.

Table 2: RPU Patrol Effort and Effectiveness to Detect Rhino Signs

| Month | Patrol Days (no.) | Patrolled Distance (km.) | Rhino Signs Encountered (no.) | Rhino Signs / Patrol Day (no.) | Rhino Signs / Patrolled km (no.) |
|----------------|-------------------|--------------------------|-------------------------------|--------------------------------|----------------------------------|
| August 2005 | 12 | 42.5 | 1.0 | 0.083 | 0.024 |
| September 2005 | 12 | 39.0 | 6.0 | 0.500 | 0.154 |
| October 2005 | 12 | 40.0 | 9.0 | 0.750 | 0.225 |
| November 2005 | 13 | 40.5 | 6.0 | 0.462 | 0.148 |
| December 2005 | 12 | 29.0 | 6.0 | 0.500 | 0.207 |
| January 2006 | 12 | 31.0 | 6.0 | 0.500 | 0.194 |
| February 2006 | 0 | 0.0 | 0.0 | 0.000 | 0.000 |
| March 2006 | 0 | 0.0 | 0.0 | 0.000 | 0.000 |
| April 2006 | 12 | 28.0 | 3.0 | 0.250 | 0.107 |
| May 2006 | 12 | 30.0 | 1.0 | 0.083 | 0.033 |
| June 2006 | 12 | 29.5 | 5.0 | 0.417 | 0.169 |
| July 2006 | 10 | n.a. | 1.0 | 0.100 | n.a. |
| August 2006 | 12 | n.a. | 10.0 | 0.833 | n.a. |
| September 2006 | 33 | n.a. | 8.0 | 0.242 | n.a. |
| October 2006 | 12 | n.a. | 25.0 | 2.083 | n.a. |
| November 2006 | 36 | n.a. | 7.0 | 0.194 | n.a. |
| December 2006 | 10 | n.a. | 3.0 | 0.300 | n.a. |
| Average | 13 | 28.1 | 5.7 | 0.429 | 0.115 |
| Total | 222 | 309.5 | 97.0 | | |

Figure 2: RPU Effectiveness to Detect Rhino Signs



Fifty-four signs of rhinos were observed in this period, an average of 9 per month. Compared to previous periods, this is a much better result and indicates that the RPU has become more effective in detecting rhino signs. The effectiveness to detect a rhino sign decreased to 0.429 per day; this is as a result of the larger number of days patrolled rather than less signs detected.

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Almost all signs concerned footprints (35 in 3 series of the same animal; Table 3) but of 9 no measurements were taken. Measurements are taken with rulers. This should have been done with callipers as it will give a much more accurate result. Again, no plastercasts have been made during this reporting period. In fact, since the inception of this project, no plastercasts have been made at all. As plastercasts are the only real means to obtain accurate measurements, this omission is inexcusable. The performance of the Rhino Patrol Units to record rhino signs can therefore be only evaluated as being of sub-standard quality.

Table 3: Rhino Footprint Measurements August – December 2005

| Date | Area | Width (mm) | Length (mm) | Front Hoof (mm) | Slope |
|-------------------|---------------|------------|-------------|-----------------|-------|
| 13 August 2005 | K'Giang | 165 | 199 | 91 | Up |
| 20 September 2005 | Bau Dinh Rach | 205 | 210 | 85 | Level |
| | | 206 | 227 | 95 | Level |
| | | 201 | 211 | 85 | Level |
| | | 187 | 189 | 86 | Level |
| | | 191 | 215 | 93 | Level |
| 23 October 2005 | Bau Dinh Rach | 205 | 172 | 94 | Level |
| | | 244 | 213 | 96 | Level |
| | | 225 | 206 | 95 | Level |
| | | 224 | 192 | 93 | Level |
| | | 228 | 208 | 96 | Level |
| | | 228 | 200 | 94 | Level |
| | | 208 | 194 | 98 | Level |
| | | 217 | 210 | 95 | Level |
| | | 228 | 208 | 90 | Level |
| | | 218 | 204 | 97 | Level |
| | | 216 | 202 | 94 | Level |
| | | 219 | 209 | 95 | Level |
| | | 212 | 208 | 94 | Level |
| | | 218 | 196 | 96 | Level |
| | | 233 | 214 | 84 | Level |
| | | 217 | 195 | 86 | Level |
| | | 218 | 193 | 94 | Level |
| | | 230 | 185 | 90 | Up |
| | | 230 | 212 | 90 | Level |
| | | 232 | 193 | 85 | Level |
| 195 | 182 | 77 | Up | | |
| 190 | 169 | 85 | Level | | |
| 208 | 185 | 84 | Level | | |
| 205 | 176 | 78 | Level | | |
| 9 November 2005 | Bau Dinh Rach | 205 | 210 | 85 | Level |
| 21 December 2005 | Bau Dak Lo | 180 | 231 | 81 | Level |
| | | 182 | 229 | 82 | Level |
| | | 183 | 230 | 82 | Level |
| | | 182 | 232 | 82 | Down |
| | | 183 | 232 | 82 | Down |
| | | 178 | 227 | 90 | Down |
| | | 180 | 224 | 87 | Down |
| | | 182 | 218 | 93 | Down |
| | | 187 | 208 | 208 | Down |
| | | 190 | 221 | 94 | Down |
| | | 192 | 206 | 86 | Down |
| 195 | 217 | 85 | Down | | |

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| | | | | | |
|----------------------|----------|-----|-------|------|-------|
| | | 200 | 223 | 92 | Down |
| 15 June 2006 | Soui Lon | 189 | 210 | 98 | Level |
| | | 200 | 208 | 100 | Level |
| | | 202 | 200 | 95 | Level |
| | | 190 | 222 | 84 | Level |
| | | 200 | 220 | 90 | Level |
| | | 186 | 220 | 80 | Level |
| | | 196 | 218 | 88 | Level |
| | | 196 | 235 | 90 | Level |
| | | 206 | 230 | 83 | Level |
| | | 206 | 222 | 93 | Down |
| | | 182 | 230 | n.a. | Level |
| | | 195 | 222 | 91 | Level |
| | | 196 | 229 | 96 | Level |
| 27 August 2006 | | 180 | 203 | 90 | Level |
| | | 190 | 203 | 92 | Level |
| | | 180 | 190 | 95 | Level |
| | | 180 | 194 | 94 | Level |
| | | 192 | 195 | 90 | Level |
| | | 169 | 185 | 85 | Level |
| | | 180 | 200 | 89 | Level |
| | | 183 | 190 | 81 | Level |
| | | 193 | 205 | 94 | Level |
| 10 + 11 October 2006 | | 188 | 200 | 92 | Level |
| | | 170 | 200 | 90 | Level |
| | | 165 | 195 | 88 | Level |
| | | 174 | 201 | 92 | Level |
| | | 172 | 196 | 87 | Level |
| | | 173 | 202 | 95 | Level |
| | | 180 | 204 | 91 | Level |
| | | 181 | 200 | 94 | Level |
| | | 170 | 194 | 90 | Level |
| | | 175 | 198 | 89 | Level |
| | | 189 | 201 | 90 | Level |
| | | 175 | 195 | 86 | Level |
| | | 178 | 200 | 88 | Level |
| | | 200 | 210 | 85 | Level |
| | | 202 | 212 | 93 | Level |
| | | 195 | 204 | 87 | Level |
| | | 191 | 200 | 90 | Level |
| 189 | 198 | 92 | Level | | |
| 190 | 200 | 94 | Level | | |
| 192 | 201 | 88 | Level | | |
| 188 | 195 | 89 | Level | | |
| 190 | 198 | 90 | Level | | |
| 15 November 2006 | | 215 | 225 | 95 | Level |
| | | 205 | 225 | 92 | Level |
| | | 215 | 222 | 93 | Level |
| | | 207 | 225 | 94 | Level |

Nine rhino dung samples were encountered during this reporting period. However, no samples have been taken for DNA analysis indicating again a certain lack of commitment to the work at hand.

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After several fruitless attempts in the previous reporting period, there has been no further contact with experts at the Centre for Environmental Research and Conservation of Columbia University in New York – USA on the matter of dung DNA analysis. It appears that Columbia University has lost interest in working on rhino dung samples from Cat Tien National Park.

The outcome of the dung DNA analysis conducted by Columbia University (2004, using samples collected in 2001 and 2002) has been re-assessed by the Department of Biology Queen's University Kingston, Ontario (Prof. Peter J. van Coeverden de Groot) in Canada in 2006. This analysis confirmed that there are four rhinos to be present in Cat Tien National Park, with at least one individual of either sex present (at least one male and one female present). Earlier, Columbia University (Fernando & Melnick, 2004) came to a number of five to six animals, also with males and females present. Fecal DNA tests of Cat Tien National Park's rhinos thus provides some hope that there is still some chance of breeding and survival of the sub-species. However, it should be noted that these results are based on comparing Javan rhino (*Rhinoceros sondaicus annamiticus*) dung DNA with DNA obtained from Indian Rhinoceros (*Rhinoceros unicornis*) and hence this result should be treated with caution. It is critical that future DNA testing is done by using primers from Javan rhino. These can be obtained from museum specimen.

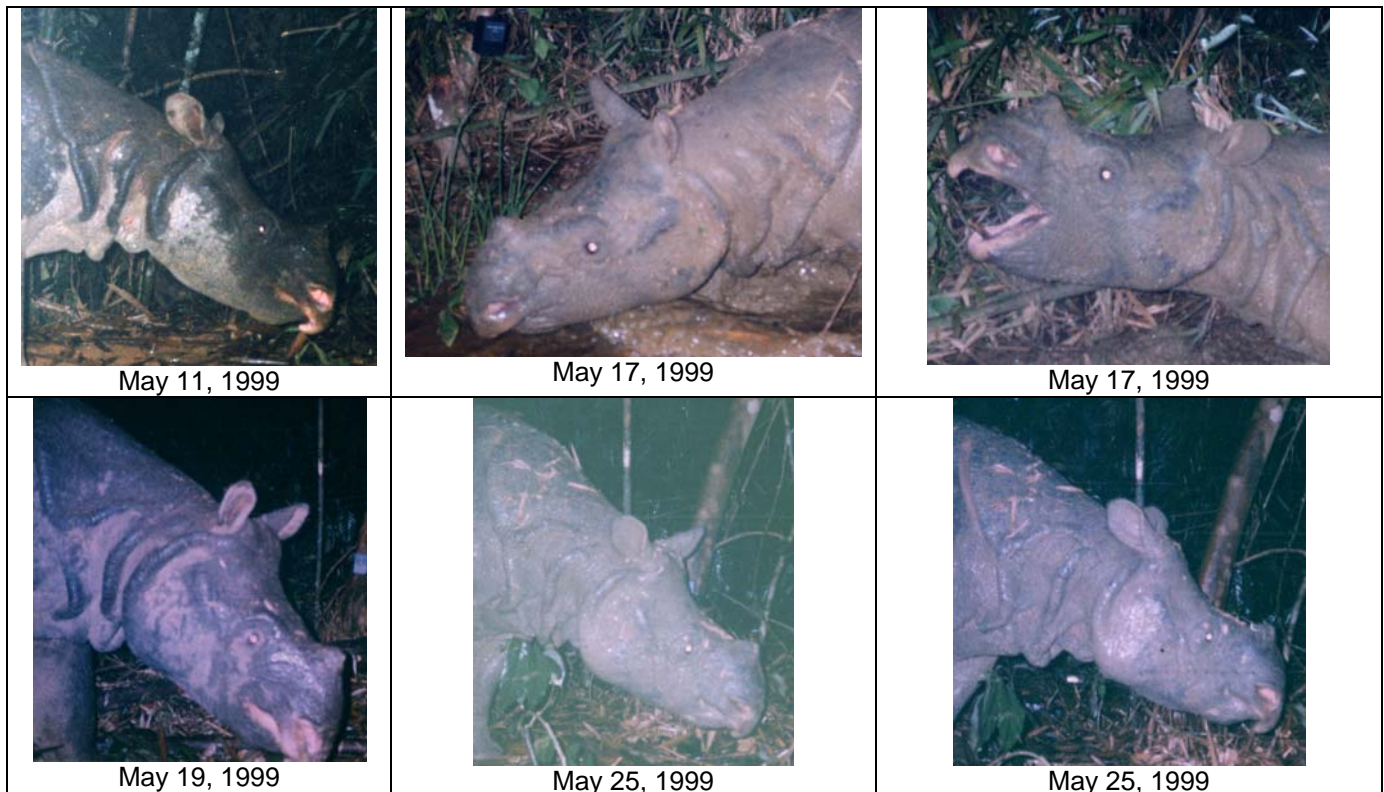
No new wallows or feeding areas have been encountered during this reporting period. Hence the number of known wallows remains to be 18 and feeding sites to be 7 (see AREAS Technical Report No. 9 of the WWF-Asian Rhino and Elephant Strategy in Vietnam).

DISCUSSION

Previously, a lot has been written and said about the conservation status of Javan rhinos in Cat Tien National Park. The situation in 2004, when the CTNCP closed, can be summarized as follows:

- Rhino range is about 4,000 ha (Bui Huu Manh, 2001; Strien, 2003).
- 18 wallows and 7 main feeding sites have been identified in the past (Annex 2).
- A total of 17 pictures have been taken of Javan rhinos in Cat Tien National Park (Figure 3). No specific features spring to the eye which could distinguish one rhino from the other.
- A picture taken on June 27, 2001 on the Saddle near the Bau Chim wallow reveals a rhino of the female gender, so it is certain that there is at least one female rhino in Cat Tien National Park.
- Footprints vary in size according to factors such as substrate but also whether an animal walks up a slope (narrower footprints), down a slope (wider footprints) or at level ground (Bui Huu Manh, 2001). Data presented by Bui Huu Manh (2001) shows variations of 20 to 40 mm within the footprint sizes of one animal, upon which he proposes to use front-hoof widths (which are more stable in print-size), distribution of rhino signs and shapes of front-hoofs to determine the estimated number of animals. Using these variables, he arrives at two distinct rhino feeding ranges (Bau Chim – Suoi Tre – Bau Trau – K’Lo and Suoi Sinh – Bat Cave – Bau Dinh Rach – Dam Cau), two animals (the round-hoofed < 95 mm animal in the Bau Chim – Soui Tre – Soui Sinh area and the square-hoofed >95 mm animal in the Bau Trau – Dac Lo – K’Lo – Dinh Vu area) plus possibly a third animal overlapping with the other two or in un-surveyed territory. This estimate was much lower than the earlier estimates of 5-6 to 7-9 animals (IUCN-AsRSG, 2000).
- Colombia University (Fernando and Melnick, 2004) analysed 30 rhino dung samples and concluded that there are five to six animals present, with both sexes represented.

Figure 3: Heads of Javan Rhinos from Pictures Taken in Cat Tien National Park



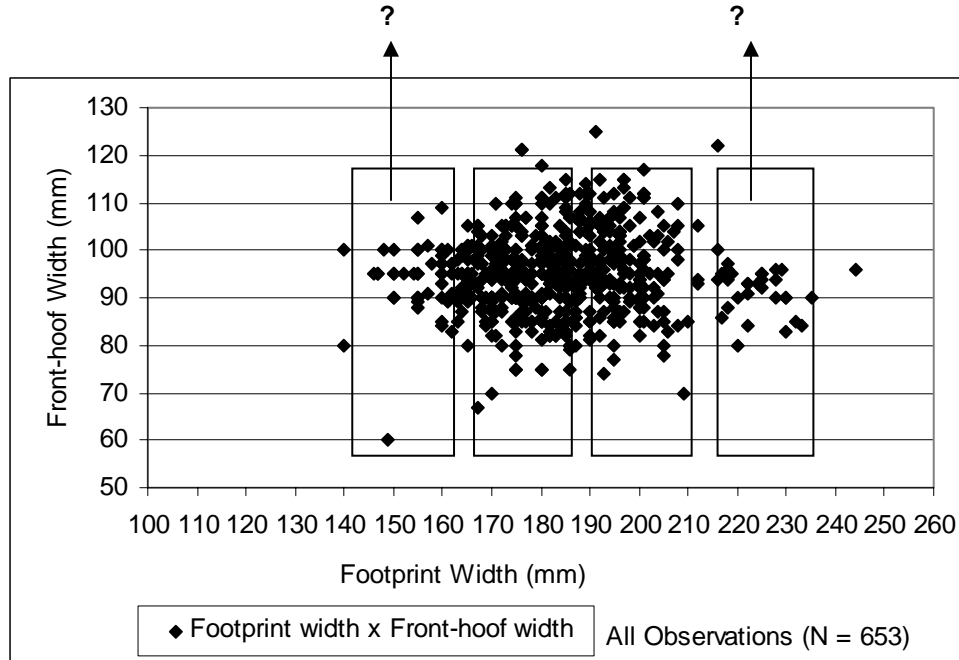
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A dataset has been compiled of all footprint and front-hoof measurements made between 2003 and 2006. In total, the dataset contains 653 measurements in 36 series (measurements made of a track of rhino footprints presumably made by one animal at the same time). The 2003 data is from Vuong Duy Lap *et al.* (2003) and contains 563 measurements in 19 series originating from single tracks. The 2005 data is from Nguyen Van Thanh & Polet (2005): 42 observations in 3 series originating from single tracks (plus two single footprint measurements). The 2006 data (48 measurements in 4 series) are from data collected during this and the previous reporting periods. An additional 161 footprint measurements in 10 series originating from single tracks (Bui Huu Manh, 2001) were used to calculate standard deviations of footprint and front-hoof measurements.

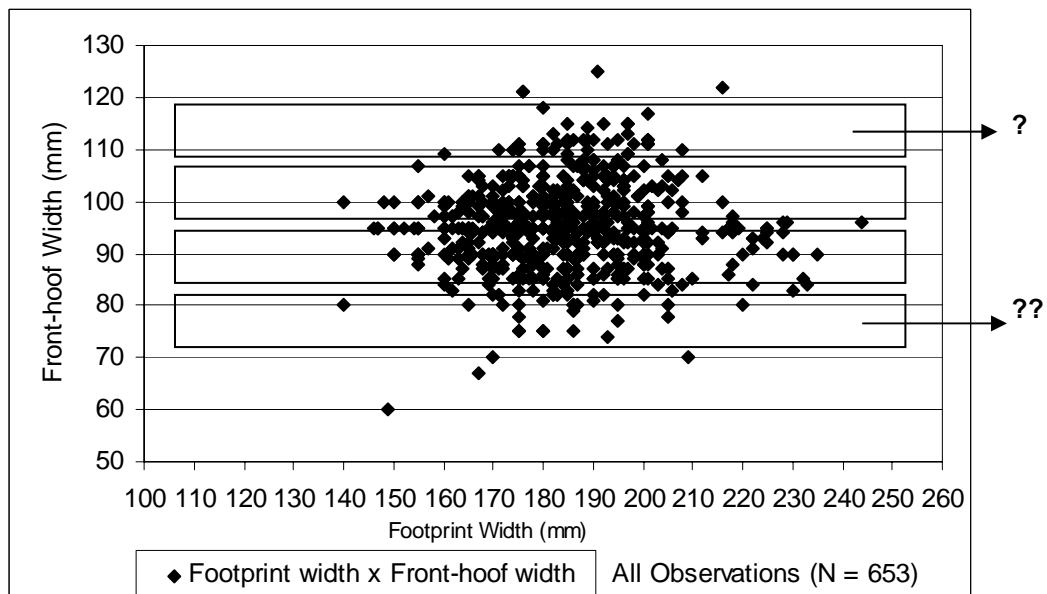
An analysis of average footprint width and front-hoof width and its standard deviation has been made for each of the 36 series (see Annex 3). The average standard deviation of footprint width and front-hoof width is 10.0 mm and 6.6 mm respectively. A scatter diagram of the footprint width x the front-hoof width (N = 653) is presented in Figure 4. The rectangular vertical bars represent two times (20 mm) the average standard deviation of footprint width. It seems clear that not all measurements can be of one or of two different animals, the data points are too far apart for that to be the case. The graph can easily contain 3 bars (and 4 with some difficulty), which would suggest that the measurements could be from 3, possibly 4 different rhinos. An additional rhino or two could be present, which footprint measurements overlap with those of others. Caution should be observed here as the measurements taken in the field have been obtained in most of the cases with a ruler which is not very accurate.

Figure 4: Footprint widths by Front-hoof widths and standard deviation of footprint measurements x 2 (~20 mm)



If the standard deviation of front-hoof size is taken as the point of departure, a similar picture emerges (Figure 5).

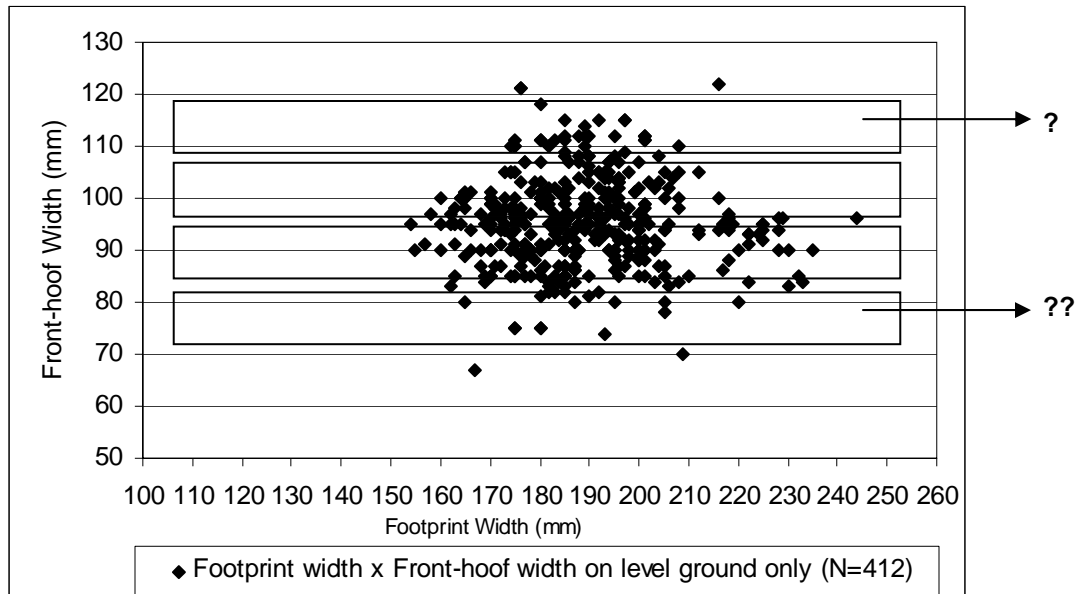
Figure 5: Footprint widths by Front-hoof widths and standard deviation of front-hoof measurements x 2 (~13.2 mm)



Bui Huu Manh (2001) demonstrated that footprint sizes vary according to the slope on which they are found. Footprints going upward on slopes are narrower than footprints on slopes going downward on slopes. If the same analysis is run for footprint measurements on level ground only (N = 412; with 6.6 mm as the average standard deviation in measurement size on either side (= 13.2 mm)), a similar picture emerges again (Figure 6) with 3, possibly 4 “animals” fitting into the range of measurements.

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Figure 6: Footprint widths by Front-hoof widths and standard deviation of front-hoof measurements x 2 (~13.2 mm)



Although the analysis on footprint measurements presented above is not conclusive, its outcome is close to the latest fecal DNA test results produced by Queens University and not too far off of earlier estimates by Bui Huu Manh (2001) which were based on intensive field investigations. No hard conclusions can be drawn but there appear to be strong indications of three or four Javan rhinos to be present in Cat Tien National Park with both male(s) and female(s) present.

With such a small number, the viability of this group is in serious doubt. The fact since 15 January 1999 (when a small footprint was found of which a plastercast was made) no sign of reproduction has been observed is perhaps the greatest cause of concern and an illustration of the critical situation the Javan rhinos in Vietnam find themselves in.

RECOMMENDATIONS

Bearing in mind that performance of Cat Tien National Park's staff to produce monitoring data of adequate quality has been sub-standard, that there is a glimmer of hope for Cat Tien National Park's rhinos (~4 animals, both male and female possibly present) and that external financial support for the Rhino Patrol Units has run-out at the moment, the following course for immediate action is proposed.

- Cat Tien National Park is to appoint one of its staff as a dedicated Rhino Conservation Officer.
- Cat Tien National Park's Forest Protection Department staff in the vicinity of the rhino range should continue to patrol the rhino area (Rhino Protection Units) and collect rhino data using the forms available which have been in use for 1.5 years already.
- A member of the IUCN Asian Rhino Specialist Group is to provide guidance to the RCO, RPU and management of Cat Tien National Park through an annual visit and / or remotely by e-mail. Cat Tien National Park's management should formally request for such support to the IUCN-AsRSG so that advice provided will be adhered to.
- In this manner security should remain to be provided to the Park's rhinos, monitoring data collected and assistance provided in guiding the Park and analysing data at minimal cost.
- The Vietnam Government should continue and speed-up its resettlement plan for isolated hamlets remaining in the direct vicinity of the current rhino range.
- Apart from technical support provided under point 3 and some funding through the IUCN-AsRSG specialist for the up-keep of equipment, in the short term external donors are advised not to provide further support for rhino conservation in Vietnam so that Cat Tien National Park staff are able to prove their dedication and skills in rhino conservation work.
- External donors are to re-assess their support with a view to re-invest in rhino conservation in Cat Tien National Park, after data collected has proven to be of adequate quantity and quality and in case evidence of reproduction has been collected.

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ANNEX 1: TENTATIVE AGENDA FOR THE “VIETNAMESE RHINO CONSERVATION IN CAT TIEN NATIONAL PARK” WORKSHOP, DONG NAI, APRIL, 27TH 2007

Chairmen:

- Mr. Hua Duc Nhi, Deputy Minister, Minister of Agriculture and Rural Development
- Chairman, Lam Dong Province People Committee
- Chairman, Dong Nai Province People Committee
- Netherlands Ambassador in Vietnam
- Director, Cat Tien National Park

26/4/2007 Preparatory workshop

| | | |
|---------------|---|------------------------|
| 14:00 – 18:00 | Cat Tien National Park (CTNP) meeting with International Rhino Foundation (IRF), WWF Ha Noi, Forest Protection Department (FPD) | Cat Tien National Park |
| 18:30 | Dinner | |

27/4/2007

| | | |
|---------------|--|---|
| 6:00 – 7:00 | Breakfast | |
| 7:30 – 8:00 | Welcoming | |
| | Opening session | |
| 8:00 – 8:10 | Introduction and expecting | Cat Tien National Park |
| 8:10 – 8:40 | Speeches of opening: | |
| | - Minister of Agriculture and Rural Development | Mr. Hua Duc Nhi, Deputy Minister, MARD |
| | - Dong Nai Province People Committee | Chairman, Dong Nai PPC |
| | - Lam Dong Province People Committee | Chairman, Lam Dong PPC |
| | - Netherlands Ambassador in Vietnam | Mr. Ben Zech |
| | Subject matter of workshop | |
| 8:40 – 9:00 | Status conservation and inhabitants pressure for Vietnamese Rhino conservation | Mr. Tran Van Mui, Director, CTNP |
| 9:00 – 9:15 | Stabilizing living for minorities people in Cat Loc, Cat Tien National Park | Mr. Huynh Van Dau, Chairman, Cat Tien district People Committee |
| 9:15 – 9:30 | The world experience for integrated Rhino conservation and rural development | Mr. Christy Williams, WWF's Asian Rhino and Elephant coordinator |
| 9:30 – 9:45 | Result of Vietnamese Rhino monitoring cooperate international experts | Mr. Gert Polet, WWF +IUCN-AsRSG expert |
| 9:45 – 10:00 | WWF's statement | Mr. Eric Coull, Director WWF Indochina Programme |
| 10:00 – 10:10 | Forest Protection Department's statement | Mr. Ha Cong Tuan, Director, FPD |
| 10:10 – 10:30 | Tea break | |
| 10:30 – 12:00 | Discussion | Chairmen |
| 12:00 | Lunch | |
| 13:30 – 15:00 | Discussion | Chairmen |
| 15:00 – 15:20 | Tea break | |
| 15:20 – 15:40 | To build up strategy and action plan for Vietnamese conservation in CTNP | Mr. Tran Van Mui, Director, CTNP; Dr. Nico Van Strien IRF + IUCN-AsRSG, Mr. Gert Polet WWF + IUCN-AsRSG |
| 15:40 – 16:45 | Discussion | Chairmen |
| 16:45 – 17:00 | To summarize discussed and agreed ideas Planning field trip on 28 – 29/4/2007 | Chairmen |
| 17:00 | Closing | |
| 18:30 | Dinner | |

ANNEX 2: JAVAN RHINO WALLOW AND MAIN FEEDING SITES IN CAT TIEN NATIONAL PARK

| No. | Name Wallow | Remarks |
|-----|--------------------|--|
| 1 | Bau Chim | |
| 2 | Bau Da | |
| 3 | Bau Dak Lo | |
| 4 | Bau Sinh | |
| 5 | Bau Trau | |
| 6 | Bau Da | |
| 7 | Bau Mum | |
| 8 | Bau Dinh Giang | Same as Dam Dinh Giang |
| 9 | Bai Lay | |
| 10 | Dam Cau | |
| 11 | Bat Cave 1 | At hilltop |
| 12 | Bat Cave 2 | At hilltop |
| 13 | Bat Cave 3 | 700 m. SE of Bat Cave |
| 14 | Bat Cave 4 | 1500 m NE of Bat Cave along Dimbo stream |
| 15 | Bau Dinh Rach | Same as Dam Dinh Zech |
| 16 | Dinh Vu stream | |
| 17 | Dinh De stream | |
| 18 | Suoi Sinh stream 1 | |

| No. | Main Feeding Sites | Remarks |
|-----|--------------------|---|
| 1 | Suoi Tre stream | Hill next to stream |
| 2 | Lua stream | Hill at beginning of stream, next to Bau Trau wallows |
| 3 | Bat Cave | 700 – 800 m NE of cave |
| 4 | Bat Cave 2 | 500 m SE of cave |
| 5 | Bau Trau 1 | On small hilltops next to wallow |
| 6 | Bau Trau 2 | 1 km SE of Bau Trau wallow |
| 7 | Suoi Chin luong | Near Bau Chim |

ANNEX 3: AVERAGE SIZES AND STANDARD DEVIATIONS OF FOOTPRINT AND FRONT-HOOF MEASUREMENTS (2001, 2003, 2005)

| Year | Footprint Measurement (mm) | | Front-hoof Measurement (mm) | | Up / Down / Level |
|----------------|----------------------------|--------------------|-----------------------------|--------------------|-------------------|
| | Average | Standard Deviation | Average | Standard Deviation | |
| 2001 | 208.8 | 7.4 | | | down |
| 2001 | 203.5 | 12.5 | | | down |
| 2001 | 177.9 | 11.5 | | | up |
| 2001 | 203.5 | 12.5 | | | down |
| 2001 | 184.8 | 11.0 | | | up |
| 2001 | 180.9 | 13.1 | | | up |
| 2001 | 198.2 | 13.1 | | | down |
| 2001 | 185.5 | 8.9 | | | level |
| Jul 03 | 177.5 | 10.9 | 85.1 | 6.8 | down |
| Jul 03 | 164.5 | 14.9 | 96.1 | 7.4 | up |
| Jul 03 | 172.1 | 16.8 | 94.7 | 5.4 | up |
| Jul 03 | 175.4 | 11.4 | 92.4 | 4.3 | up |
| Aug 03 | 185.0 | 4.1 | 85.0 | 8.2 | level |
| Aug 03 | 179.6 | 13.1 | 90.2 | 6.1 | level |
| Sep 03 | 181.6 | 9.2 | 93.9 | 6.8 | level |
| Sep 03 | 180.8 | 8.9 | 92.7 | 7.3 | level |
| Sep 03 | 187.7 | 12.5 | 99.6 | 8.0 | level |
| Sep 03 | 189.4 | 8.4 | 98.8 | 6.5 | level |
| Sep 03 | 191.6 | 11.3 | 90.8 | 13.3 | level |
| Sep 03 | 180.1 | 9.8 | 102.7 | 8.3 | mixed |
| Sep 03 | 191.9 | 8.0 | 107.8 | 9.8 | down |
| Sep 03 | 176.4 | 8.6 | 97.9 | 7.5 | up |
| Sep 03 | 178.2 | 8.6 | 98.3 | 5.3 | up |
| Oct 03 | 172.7 | 12.0 | 97.1 | 4.9 | mixed |
| Oct 03 | 185.1 | 9.6 | 102.8 | 7.1 | level |
| Dec 03 | 170.6 | 11.0 | 88.1 | 11.3 | down |
| Dec 03 | 173.6 | 9.3 | 92.0 | 7.1 | level |
| Sep 05 | 190.8 | 14.4 | 88.8 | 4.8 | level |
| Oct 05 | 218.7 | 12.6 | 90.8 | 6.0 | level |
| Dec 05 | 185.6 | 6.9 | 86.3 | 4.8 | down |
| May 06 | 227.6 | 5.6 | 90.6 | 4.8 | level |
| Aug 06 | 196.0 | 8.2 | 88.2 | 5.3 | level |
| Oct 06 | 198.4 | 2.3 | 90.6 | 2.4 | level |
| Nov 06 | 224.3 | 1.5 | 93.5 | 1.3 | level |
| Average | | 10.0 | | 6.6 | |