# Preliminary report on behavioural assessment 40 orang-utans reintroduced into Meratus protected forest, East Kalimantan

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## Introduction

**As the natural populations of orang-utan (*Pongo pygmaeus*) are believed to have been in severe decline over the last 30 years, major efforts have been expended to save this species from extinction (Tilson *et al* 1993). The reintroduction of orang-utans into the wild is considered to be one crucial part of these efforts to help to conserve this endangered species. Success in training the orang-utan to survive in the wild depends on how much of the natural behaviour is learned, such as how to find food, to make a nest and to avoid predators by sleeping in trees (Brambell 1977). However, many people believe that the majority of orang-utan that have been kept and trained in the Centre may never be fully rehabilitated or returned successfully into the forest (Yeager 1997). On the contrary, the pre-release training and post-release monitoring system are still continually being evaluated in order to achieve successful reintroduction (Siregar 1999).**

**The Wanariset Orangutan Reintroduction Project was established in October 1991 to help care for, and prepare, confiscated young orang-utans for re-introduction to their natural habitat (Smits *et al.* 1992, Siregar *et al.* 1998). To date, more than 300 orang-utans have been reintroduced two release area, Sungai Wain (81 animals) and Meratus protected forest. Some animals are still seen in both areas (including 4 mothers and infants in Sungai Wain forest) as good indicators of initial success of the programme. It is calculated that the numbers that have been released in Sungai Wain reached 50% of the estimated carrying capacity. In Meratus, it is estimated that 10,000 can be reintroduced (Smits pers. comm.).**

**Although a considerable progress has been made in the development of clinical care and rehabilitation techniques, evaluation and validation of the rehabilitation procedures remains an area of special concern. More animals will be released and the need for a thorough and standardised method to evaluate the effectiveness of the current rehabilitation and reintroduction procedure is a critical aspect of this conservation programme (Siregar 1999).**

## Objectives

**The following paper summarizes the preliminary result on post release monitoring the release of 40 orangutans into Meratus forest in November 2001.**

# Method

## *Subject*

**Subjects were two groups of juvenile orangutans, aged between about 5 and 6 years old. The first group was from the Halfway House (16 animals) and the second group was from the 3rd Socialisation Cage (24 animals). The behaviour of 8 of the 24 orangutans in the 3rd Cage were not completely assessed before release while 16 animals were fully assessed, since they were juvenile at the Halfway House. They were not released in September 2001 and had their behaviour assessed for longer at Wanariset . There was no major problem when the 16 animals from the 2nd Socialisation cage were introduced into the 3rd Socialisation Cage and they seemed to show good interactions with the 'old residents'. Data on 16 cage animals were collected from 9-17 months (Juvenile, 1st and 2nd Socialisation Cage) and, before they were released all together (24 animals), they were placed in the 3rd stage for about two months. Data on the Halfway House candidates were collected for between 2 and 12 months.**

## *Candidate selection*

**There are some conditions that each animal must meet prior to release: 1) minimum age 5 years, 2) minimum weight 13 kg, 3) spending more than 50% time in social interactions with conspecifics, 4) spending more than 50% time at the top of the cage and playing with devices, and 5) a clear medical record (Smits, pers.comm.). These conditions are sometimes not followed properly, however, due to lack of technical evaluation that the animals were mentally and behaviourally ready for release. The behavioural standards for release still need to be developed carefully due to lack of knowledge in formulating the issues. In this 10th release, the principal investigator and the team decided to give all candidates the chance to be released and monitored carefully post-release behaviour in an attempt to develop a standardised behavioural profile that each orang-utan must meet prior to reintroduction. The project team (medical and observation groups) choose medical factors as the first priority in selecting the release candidates. Weekly meetings were held two months before the release date to discuss the animal's progress both in medical and behavioural aspects.**

## *Release group*

**Final selection was made one week before release; 40 of 49 animals were selected and 9 animals were unsuccessful on medical grounds (table 1). They were still infected by parasites (Coccidia, Balantidium) and worms (Ascaris sp.). The parasites and worms scores varied between 2 and 3, which affected their chances to be released as the medical condition of each individual was very important, to avoid the transfer of diseases in the forest.**

## *Description of the release area*

**Meratus forest, also known as the Meratus (Beratus) forest block, has been used since 1997 as reintroduction sites for orang-utans from the Wanariset Orang-utan Reintroduction Project. This area covers 60,000ha; it obtained the status of protected forest in 1996 (for an area in 28,261ha, as noted in BIPHUT report, 1998) from the Indonesian Ministry of Forestry (Smits, pers.comm.). The forest consists of pristine lowland and hill forest, including several swamps, which provide excellent natural**

**habitat for orang-utans. The highest peak (1,200m ) is a volcano-shaped mountain, which is dominated by Fagaceae near the top and below 900m is dominated by Dipterocarpaceae. (Soward, 1997).**

**Eight cages have been used since 1997 as 'holding cages' for animals that have been brought into the release area. The animals were housed for one day while they became accustomed with surrounding forest.**

**Cages 1 and 2 were chosen as the holding cages for 40 animals (16 animals in cage 1 and 24 animals in cage 2). The distance between cages is about 1700m. Survey was conducted in August 2001, to ensure that each cage area contained enough natural food sources for the animals. Survey results calculated the early fruiting season as starting in November so there would be enough food for the released animals. Food trees around the cages and along transect were identified and marked (RX1-RX510).**

**The chronology of events during the preparation for release and behaviour assessment is given in table 2.**

## *Post-release monitoring and behavioural data assessment*

**For post-release monitoring, the newly-reintroduced orang-utans are monitored daily by the researcher and assistant to assess behavioural parameters, such as ecological skills (i.e. foraging/feeding, locomotion/travelling, nest building), social integration and their adaptation to the natural habitat. Calls were also noted, although rare. Nearest neighbour was noted within distances of 1m, 5m and 10m from from the focal animal. Arboreality or height used was categorized as: 1) on the ground, 2) <5m, feet were not touching the ground, 3) 5-10m, 4) 10-20m, 5) > 20m. Notes were also taken on the animal's condition, presence/absence from the feeding platform or if they were found sick or wounded. The 40 animals reported here were released into the Meratus protected forest and 16 of them passed through forest training and 24 animals directly released from the cage. Behavioural data were collected by following the animals from dawn to dusk (06:00-18:00), or until the animals would rest for the night.**

**Two systematic data collections approaches were used: 1) Focal animal sampling and 2) Scan/instantaneous sampling. In addition, ad-libitum note were taken to record special or rare behaviour occurred during the observation. Behavioural data were collected with 'animal follow' method from dawn to dusk (0600-1800h), or until the animals built nests for sleeping in trees or on the ground. Three teams, each of two persons, observed on each cage. Data were taken on one animal each day , unless the team observed a pair of animals that were friend and travelling together from dawn to dusk. Data on animals that have a 'close friendship' were determined since the animals were in the Halfway House or Cage. Some pairs stayed together and some changed . If there was no animal presents at the cage, then the technicians searched along the established transects and surrounding area, and then follow any animal located (Siregar *et al.* 1998).**

**Surveys is conducted for four to six days every month to locate the 'missing' animals. The food-plants were checked once a month, as well as an assessment of food availability. Food-plants were marked along the transect to each cage, and covered 25 meters on each of the transect side. New food plants were marked and given tags afterwards on the assistant's day-off. Food was provided until 1 month after release, because after that food abundance in the area was sufficient and the animals were wandering away to obtain their food from natural sources.**

## Preliminary Results

**Preliminary results indicated that, the animals from both group were able to forage extensively for forest food immediately after release although some of them still depended on the food provision by the project. Against the expectation, it was noted that the animals had gone through previous forest training period (group 1) were less self-sufficient than those released directly from their socialization cage (group 2). The latter spent more time above the ground, ate less food provision, built more and better nests and avoided humans (figure 1&2). Their nest construction was not as the old resident's, such as Bento, Maya, Garong and Jimmy, but looked good enough for an overnight shelter. It was obvious that each orang-utan adjusted differently to the new life in the forest. There were eight old residents appeared (five orangutans) both in Camp and cage area (three orangutans). Moreover, there was no aggressive behaviour shown in the interaction between the old resident and the newly released. One big male, Bento, even brought the newly released (four animals) to the Camp area.**

## Discussion

**The approximate arrival age was determined, using the standard developed by Harrisson (1962), by the Veterinarian or assistant on the first general check-up and continued in monthly check-ups (A, B, C, D, E, M1, M2&M3). Sometimes the arrival age was not properly verified, however, so it did not correspond with the length of stay in the cage in order to estimate the approximate release age. Moreover, there is a big gap between E and M1 (from 10 months to 4 years old), which is very important to determine acceptably in order to estimate the approximate release age associated to the length of stay in cage. In this case, we created a formula to determine the approximate age on arrival of each animal by calculating the length of stay in cage and the approximate age at release (M1=48 months). The birth date was formulated as approximate arrival age - arrival date at the Centre (Smits, pers.comm.). A total of 40 animals, both from Halfway House and Cage were in the same approximate release age of 48-58 months (M1) while the other (10 animals) were in the age range of 63-100 months (M2).**

**Knowledge of the background on each orang-utan was essential, since it helped to assess the animal's competence to be released. One example is Gauri, that arrived at the Centre at a very young age (about 6 months old), and seemed to be less competent than the other animals in the forest. Gauri performed a stereotype behaviour (self-clasping) and readily attached to a specific individual, but was afraid of the 'unfriendly technicians' who twice tried to separate him from Victor when they were at the Halfway House. Gauri was found under the family house somewhere near Sebulu, neglected and living with chickens, dogs and other animals. He did not want to play with other orang-utans, sitting quietly self-clasping in the corner of the cage. He was given much care for a while, until he gained enough self-confidence to be placed in the next stage. Nobody knows how to treat properly this kind of animal, although some examples appeared at the project. He was doing well at the Halfway House, except for his self-clasping behaviour when scared or when he met the 'unfriendly' technicians. Another example, Joshua, who was treated as an adopted child by his previous owner in Sangatta, adapted well to the forest compared to the other animals. He showed no interest to be near people and spent more time foraging high above the ground with his best friend, Alf.**

**The two cases cannot be used as a 'standard' for predicting their competence, but more be able to assist in formulating a careful assessment and training needed for each animal to survive in the real forest. Each animal has its own background so that people cannot generalize as the animal has its own way too to cope with its life either in the Cage, Halfway House or the forest.**

**Close contact with people during the time in the Cage or Halfway House also needs to be considered. For example, the animals from the Halfway House are used to human presence and always approach the technicians who observed their behaviour. They have shown no fear, with the exception of some animals with an unfortunate background (Gauri). It is difficult to explain this issue since there were no continuous data on each animal at every stage of reintroduction at the Centre either the exact evidence to prove the 'presumption'.**

**Thus, the preliminary findings indicate that age; history, pre-release training and degree of human contact play the important role in the successful adaptation to orang-utan forest life. These findings are likely to bear big impact on the future methodology of orang-utan reintroduction.**

## Preliminary conclusion

**The animals looked to be well adapted in the release area and nutritionally independent, from their appearance (pers.obs). Some bonds between animals have remained (5 pairs) while others changed friends (3 pairs) and traveled together from the time of release. Moreover, some learning skills are found between orangutans, especially in foraging for food and nest building. Several general observations have been noted on the adaptation of the orangutan, but there remains a need for detailed data collection to determine the readiness of the animals to be released. Further details will be described in a PhD thesis. There may be a problem, which lies more in finding the animals that quickly disappear throughout the area, although surveys are conducted in every month.**

**Release age differences between 40 animals (16 animals from Halfway House and 24 animals from 3$^{rd}$ Socialization cage) showed no marked differences in behavioural adaptation, since the animals vary in coping with life in the forest. It is important to ascertain whether a release age of 4-5 years is adequate for independent forest life, since the wild juvenile orang-utan will stay with the mother until the age of 5 and start to travel and forage independently from her at about 7 years of age.**

**Besides the approximate age at release, the reality of the animal's background will provide useful information in order to prepare the animal's competence to be released. Something to consider is how to ascertain the true background of confiscated animals from the previous owner, such as how the animal was caught, the approximate age when caught, length of stay with the owner, how the owner cared for the animal and as much additional information as possible for the animal's profile later in the Centre. A careful, continuous and long-term assessment of behaviour related to age, temperament and background appeared to play a significant role in determining the animal's readiness to be released, together with the skill training for survival. Moreover, those issues will be significant in predicting the animal's likelihood of success upon reintroduction to the wild.**

**The behavioural assessments in this release programme have shown more progress compared to the previous releases. The extensive behaviour data collections in pre-release and post-release monitoring (which will be continued at least 12 months after release) are expected to lead to good recommendations to develop carefully a standardized protocol in future. The animals, which appear to have adapted well in the natural habitat, will be a 'model' for other candidates for release.**

## Acknowledgment

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**Figure 1. The percentage of time spent in activity budget**

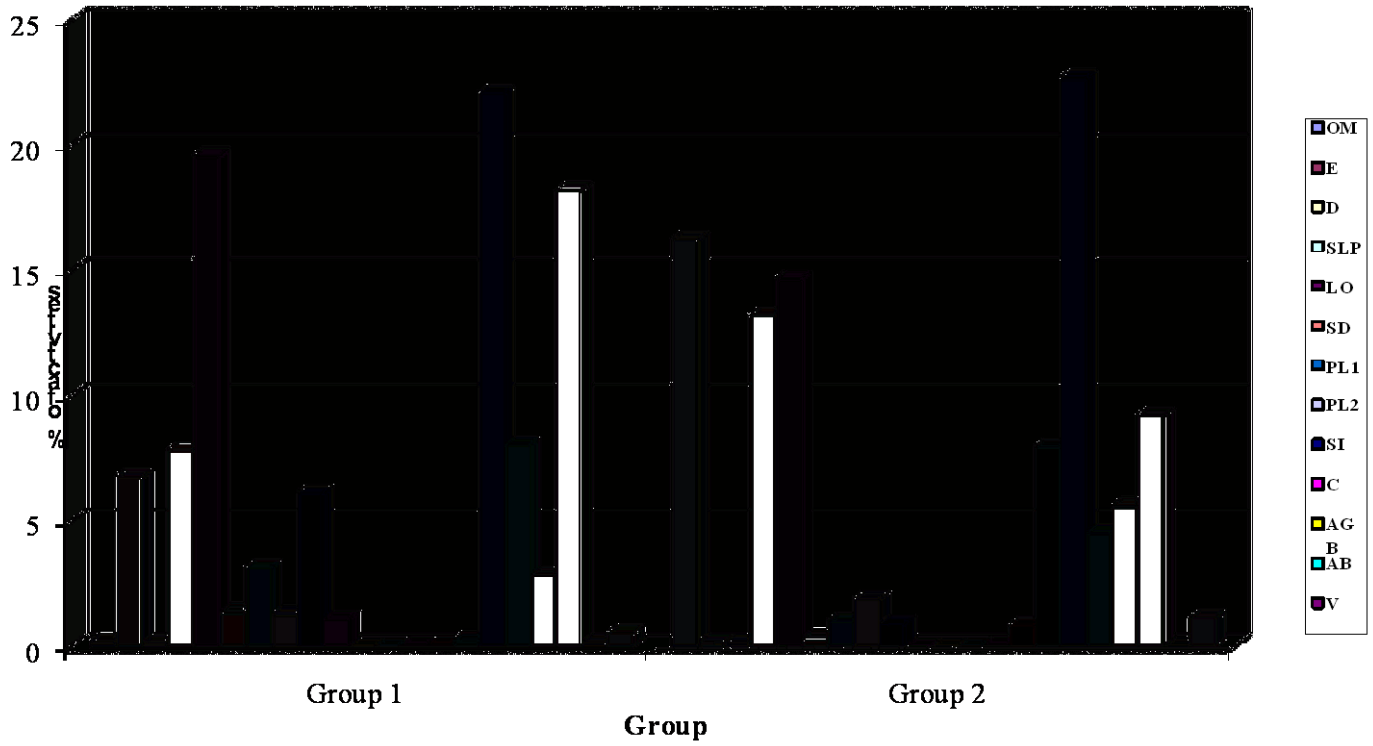
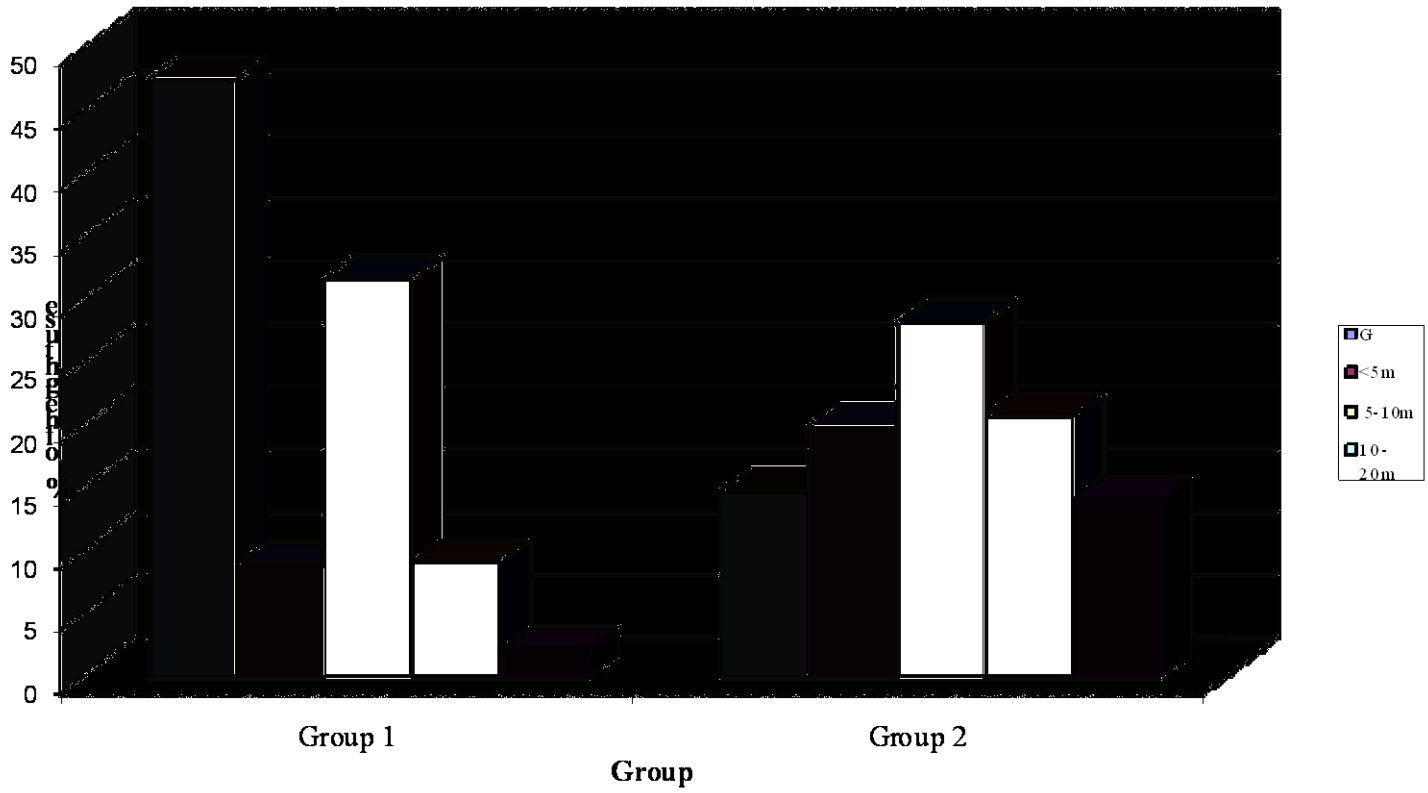



**Figure 2. The percentage of height use (m)**



## Table 1. Candidates release

| Name | Sex | Age on Arrival | Weight on Arrival(kg) | Age on Rel. to Meratus | Weight on rel.(kg) | Length of stay at WR(mth) | Position before release |
|---|---|---|---|---|---|---|---|
| **Putri** | **F** | **A/4.5 mth** | **1.5** | **M1** | **17** | **51** | **HH** |
| Boim | M | E/10 mth | 3 | **M1** | 18 | 49 | Sos3 |
| **Ayumi** | **F** | **E/10 mth** | **2** | **M1** | **15** | **48** | **HH** |
| Muri | F | E/10-11 mth | 2.6 | **M1** | 16 | 47 | Sos3 |
| Bendito | M | E/10 mth | 5,6 | **M1** | 16 | 44 | Sos3 |
| Faisal | M | E/10 mth | 2,5 | **M1** | 18.5 | 44 | Sos3 |
| **Rudy** | **M** | **B/7,5-9,5** | **2,8** | **M1** | **18** | **43** | **HH** |
| **Inez** | **F** | **E/1 yrs** | **4** | **M1** | **15** | **42** | **HH** |
| **Gauri/SAKTI** | **M** | **A/4.5 mth** | **2** | **M1** | **19** | **42** | **HH** |
| Claire/UCOK | F | D/ 8-9.5 mth | 3 | **M1** | 19 | 41 | Sos3 |
| **Janine** | **F** | **E/10 mth** | **2,6** | **M1** | **16** | **40** | **HH** |
| **Victor** | **M** | **D/8-9.5 mth** | **3,2** | **M1** | **18** | **37** | **HH** |
| **Budi** | **M** | **E/1 yrs** | **9** | **M1** | **20** | **36** | **HH** |
| Pirus | M | (M-1)/4 yrs | 7 | **M1** | 25 | 36 | Sos3 |
| **Itang/ARJUNA** | **F** | **E/10 mth** | **3,5** | **M1** | **14** | **35** | **HH** |
| **Alf** | **M** | **E/10 mth** | **6** | **M1** | **14** | **34** | **HH** |
| Ponco | M | E/10 mth | 6 | **M1** | 20 | 33 | Sos3 |
| **Jill** | **F** | **E/10 mth** | **3** | **M1** | **13** | **33** | **HH** |
| **Roslian** | **F** | **E/10 mth** | **3** | **M1** | **17** | **32** | **HH** |
| Goldi | F | **E/10 mth** | 5 | **M1** | 23 | 31 | Sos3 |
| Firman | M | **E/10 mth** | 15 | **M1** | 23 | 31 | Sos3 |
| Robbie | M | **E/10 mth** | 11 | **M1** | 15 | 31 | Sos3 |
| Tati | F | **E/10 mth** | 9 | **M1** | 20 | 31 | Sos3 |
| Didin | M | **E/10 mth** | 7 | **M1** | 24 | 31 | Sos3 |
| **Baron** | **M** | **E/10 mth** | **7** | **M1** | **17** | **31** | **HH** |
| **Luna** | **F** | **E/10 mth** | **8** | **M1** | **19** | **31** | **HH** |
| **Bogel** | **M** | **E/10 mth** | **8** | **M1** | **16** | **31** | **HH** |
| Androw | F | M-1 | 12 | **M1** | 21.5 | 29 | Sos3 |
| Rajuli | M | **E/10 mth** | 5 | **M1** | 21 | 27 | Sos3 |
| Tectona | M | **E/10 mth** | 10 | **M1** | 17 | 27 | Sos3 |
| Adun | M | M-1 | 6,6 | **M1** | 23 | 26 | Sos3 |
| Ronald | M | M-1 | 11 | M2 | 31 | 24 | Sos3 |
| **Joshua** | **M** | **E/10 mth** | **5** | **M1** | **15** | **24** | **HH** |
| Ninik | F | M-1 | 10 | **M1** | 23 | 22 | Sos3 |
| Sarmila | F | M-2 | 22 | **M2** | 20 | 16 | Sos3 |
| Venus | M | M-2 | 20 | **M2** | 25 | 16 | Sos3 |
| Bobok | M | M-1 | 11 | **M1** | 22 | 16 | Sos3 |
| Sonny | M | E/10 mth | 15 | **M1** | 21 | 16 | Sos3 |
| Fika | M | M-1 | 8 | **M1** | 14 | 15 | Sos3 |
| Darma | F | M-1 | 12 | **M1** | 22 | 15 | Sos3 |

**Note: Age/permanent dentition (developed by Harrison 1961)**

**A = 4,5mths**
**B = 7,5mths**
**C = 11-12mths**
**D = 9-9,5mths**
**E = 10-10,5mths**
**M1 = 4 yrs**
**M2 = 6 yrs**

**Table 2.Chronology of events**

| Dates/Years | Event | Number of animals | Remarks |
|---|---|---|---|
| Jan'00-May'00 | Preliminary Observation in in Juvenile cage | 20 | |
| April'00 | Moving animals to Halfway house | 10 | |
| June'00-October'00 | Behavioural Data Collection in Soc.1 cage | 25 | 10 animals from Juvenile Cage to join 15 animals from Soc.1 cage |
| Sept'00 | Moving animals to Halfway house | 6 | 16 animals total in HH |
| Sept'00-August'01 | Behavioural Data Collection in Soc.2 cage | 25 | |
| Oct'00-Oct'01 | Behavioural Data Collection in Halfway house | 16 | |
| Sept'01-Oct'01 | Behavioural Data Collection in Soc.3 cage | 24 | 16 animals from Soc.2 and 8 animals as 'old resident' |
| Sept'01-Oct'01 | Behavioural Data Collection in Halfway house | 26 | 10 new animals introduced into HH |
| August'01 | Survey to Meratus forest for food availability and suitable holding cage | | |
| 23 October'01 | Candidate selection | 51 | |
| 30 October'01 | Final Selection | 40 | |
| 01 November'01 | Advanced Team to Meratus | | |
| 02 November'01 | Placed animals into transportation cage | 40 | |
| 03 November'01 | To Meratus forest | 40 | |
| | Group 1 placed in Cage 1 | 16 | |
| | Group 2 placed in Cage 2 | 24 | |
| 04 November'01 | Released from both holding cage | 40 | |