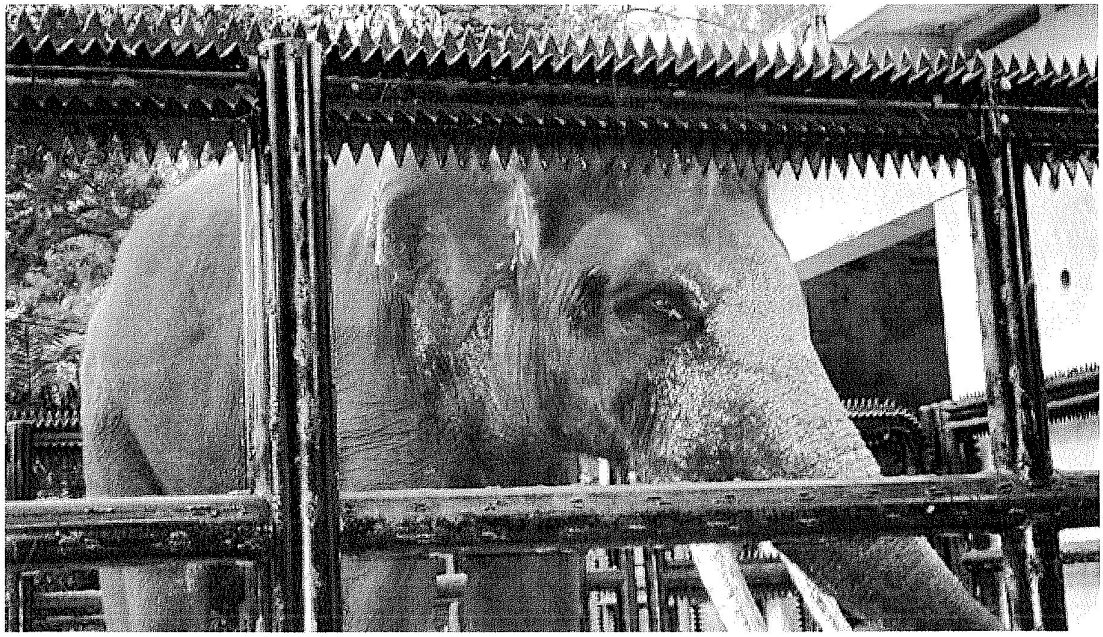
An Evaluation of Five Zoos in Indonesia

World Society for the Protection of Animals (WSPA) & KSBK (Animal Conservation for Life)



by

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Biographical Sketch

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Siân Waters received her B.A. from the University College of North Wales, Bangor and her M.Phil. from the Department of Biological Sciences, University College of Swansea.

Ms. Waters has a wealth of experience working with animals. She is the former Scientific Officer of the Bristol Zoological Gardens, where she was responsible for daily management of the mammal section, including a team of up to 16 keeping staff. She was also Chair of the PSGB Conservation Working Party, Chair of the European Tapir and Hippo Taxon Advisory Group, core member of the UK Zoo Research Group and consultant to zoos in Belize, Vietnam, Laos and Cambodia.

Ms Waters left Bristol Zoo for an appointment as Mammal Curator at the former Rome Zoo in Italy when it changed management. There, she was a member of the senior management team responsible for redeveloping and rejuvenating the new Bioparco into an educational resource for the city of Rome. Her other duties included the development and implementation of animal husbandry and management programs, environmental enrichment programs and keeper workshops.

Most recently, Siân Waters has served as a Scientific Consultant to the Cochrane Ecological Institute in Alberta, a consultant to World Wildlife Fund International regarding their projects database for large carnivores and is currently a member of the IUCN/SSC Tapir Specialist Group.

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1. Introduction

1.1. Zoos and Animal Welfare

Zoos in the developed world have changed enormously over the last 30 years with the welfare of the animals in their care now receiving far more attention than in the past. Many zoos now appreciate the need to at least try to cater for the behavioural and physical needs of the species in their collections. Indeed millions of dollars are spent annually by the zoo industry on updating animal exhibits (unfortunately not always for the benefit of the species within).

This is in contrast to many zoos in the developing world, which are the habitat countries for many of the species housed in zoos of the developed world. These zoos in the developing world are also in regions that host important biodiversity hotspots. Such zoos are far more important than those in the developed world for the part they can potentially play in promoting awareness about the conservation of natural resources in their own regions. They also attract far more visitors than zoos in the developed world and thus have an excellent opportunity to aid in the conservation of their region's fauna and flora.

The Belize Zoo and Tropical Education Centre in Central America is an excellent example of how a small, well-run zoo can become the public and media focus of many conservation issues in its region. However, for much of this to be realised the zoo has to have an active educational programme for schools and the public, and the species exhibited should be able to demonstrate as much of their natural behaviour as possible in captivity.

1.2. Indonesian Zoos and Animal Welfare

Indonesian wildlife protection organization KSBK (Animal Conservation for Life), in association with the World Society for the Protection of Animals (WSPA), conducted evaluations of 10 Indonesian zoos during September and November 2000 and June to July 2001 (KSBK, 2001). Their report of the investigation detailed various shortcomings in animal accommodation and care at each of the 10 Indonesian zoos. This report is the second report on the welfare of Indonesian zoo animals and documents animal welfare in five of those zoos in more detail.

The South East Asian Zoos Association (SEAZA) recognises the educational role of zoos in the region and has published a Code of Ethics for the exhibit of animals by its members. This code has been discussed in the above-mentioned report on the welfare standards of Indonesian Zoos (KSBK, 2001).

To recap briefly, it sets out standards for the keeping of wildlife in captivity and is clear on the subject of exhibits providing a natural setting resembling the animals' habitat that also provides for behavioural and physical well being. This code also states the need to provide environment enrichment for captive zoo animals in order to reduce the incidence of stereotypic behaviour.

The SEAZA Code of Ethics was produced by the Ethics and Welfare Committee. The committee has evaluated zoos in the region before (Agoramoorthy, 2001) and uses standard evaluation forms to be completed by members of the team during a zoo evaluation.

A report was carried out by a SEAZA group on three Indonesian zoos in June 2001. The three zoos evaluated were Surabaya Zoo, Gembiraloca Zoo and Taman Safari. The report concluded, after the statistical analysis of the results, that all three zoos were of an "above average standard" (Agoramoorthy, 2001). Paradoxically, all three zoos scored highly in the category of "Animal welfare/zoo's responsibility" but scored poorly in the category of "Freedom to express normal behaviour" (Agoramoorthy, 2001).

This present report will also evaluate two of the zoos documented in Agoramoorthy (2001) - Surabaya Zoo and Gembiraloca Zoo.

The KSBK report (2001) concentrated on the welfare of three mammal groups - primates, carnivores and elephants. This does not mean that these groups are more important than any others. They are, however, useful as "indicator groups" because if the welfare of these groups is poor then it can be assumed that a zoo does not place much importance on the welfare of other animal groups in its care. The present report focuses mainly on these three mammal groups but observations were also made on miscellaneous animal groups or species. These were commented on either, because the conditions they were kept in were worthy of comment, or, because they were a highly endangered species endemic to the Indonesian archipelago and a potential focal species for educational purposes.

1.3. Captive Conditions, Research and Abnormal Behaviour

Much literature has been published regarding the effects of captive conditions on the behaviour of mammals (see Carlstead, 1996 for a review). Carnivores and elephants readily demonstrate stereotypical behaviour because of an inadequate environment. Stereotypies are defined by Mason (1991) as "repetitive, invariant behaviour patterns with no obvious goal or function". There are a number of reasons why animals demonstrate stereotypic behaviour but it is usually in response to the inability to demonstrate natural behaviour and the chronic long term stress that this provokes.

A typical stereotypic behaviour for cats, bears and small carnivores is that of pacing, where the animal repeatedly paces back and forth along a chosen path in its enclosure. Bears also demonstrate head bobbing and turning and paw rolling. Elephants also have species-specific stereotypies in the form of head weaving and head nodding. They also locomote or "dance" on one spot.

In many species in captivity, stereotypic behaviour becomes more pronounced when feeding time approaches. This has been documented in black bears (Carlstead *et al.*, 1991) big cats (Lyons *et al.*, 1997) and elephants (Friend, 1999). Other factors include a reaction to being separated from conspecifics or their access to a hiding place has been cut off (Meyer-Holzapfel, 1968). Inability to escape sources of disturbance can also result in the phenomenon, (Meyer-Holzapfel, 1968) and so can the presence of visitors too close to the cage (Inhelder, 1955). The small size of the space available to the animal does not necessarily cause abnormal behaviour. It is the way that the available space is utilised and the frequency and methods of food presentation that will cause behavioural problems if inadequate.

Stereotypic behaviour can be significantly reduced if its cause can be identified. This has been the case in some bear species when significant reductions in the amount of time spent pacing have been achieved due to enriching the environment through varying the means of food presentation (Carlstead *et al.*, 1991; Ames 1993; Waters, unpub. data). Although primates do demonstrate stereotypic behaviour (Marriner & Drickamer, 1994), they are more likely to demonstrate inappropriate sexual behaviour and self-directed stereotypies such as hair plucking and arm biting due to an inadequate social environment (e.g., Fritz *et al.*, 1992). Apart from being housed with conspecifics, primates also benefit hugely from differing and frequent methods of food presentation (Reinhardt & Roberts, 1997) and most zoos now ensure that their primates are fed frequently and in ways which challenge them cognitively as well as physically. The great apes are particularly prone to weight gain if their activity levels are low (Waters, pers. obs.).

The effects of chaining on the stereotypic behaviour of elephants have formed the focus of recent research in circus and zoo individuals (see Gruber *et al.,* 2000; Brocket *et al.*, 1999). It was found that penned elephants demonstrated a significant reduction (69%) in stereotypic behaviour compared to when the same individuals were chained (Gruber *et al.*, 2000; Friend & Parker, 1999; Schmid, 1995). Elephant handlers also reported that the elephants were generally more relaxed and their motivation to work did not decrease. The rear feet of the elephants were healthier because they were not standing in their own faeces and urine and daily cleaning of the elephant areas was easier (Friend & Parker, 1999). Many UK zoos no longer chain their elephants for long periods and have not done so for many years. Elephants have benefited enormously from this change in management.

2. Methods

All five zoos were evaluated according to the same criteria, based on the Five Freedoms (see KSKB report, 2001). Animal enclosures were evaluated according to how well they met the physical and behavioural needs of the animals; the potential risk of contact, injury or disease transmission between the animals and the public; the public's behaviour; and education provisions. When possible, off-exhibit areas were also examined and evaluated, as were the animal shows and training methods. A new primate centre situated on the Ragunan Zoo site in Jakarta is also discussed but does not form part of this evaluation.

3. Results

3.1. Surabaya Zoo, East Java.

Surabaya Zoo underwent two evaluations by two different groups in 2001. These were by KSBK (2001) investigators in September to November 2000 and June to July 2001 and the SEAZA group in June 2001 (Agoramoorthy, 2001). Comparisons with their findings are made when applicable in this report. This most recent evaluation took place over two days on the 5-6th February 2002.

3.1.1. Primates

Surabaya had one female and two male chimpanzees in two separate cages. These were adjacent to one another so that the single male had, at least, visual as well as vocal communication with the pair. Both cages were small, barely furnished and public feeding was rife. The male of the pair had badly plucked arms and shoulders, which could have been self-inflicted or a result of over-grooming by the female. In either case, it was abnormal.

The other cages were similar to the chimp areas and were inhabited by orangutans, all kept singly. There were two very fat adult males and a younger female. The female was a spitter who could spit for quite long distances. Diseases such as TB are transmitted by saliva so this was a risk to public health. These cages are too small for great apes, in contrast to Agoramoorthy's (2001) findings in which they are described as a "spacious area" (pp.6.).

During the time the male orangutans were observed they were always at the front of their respective cages begging for food from the public. Again feeding was rife. No attempts were made by any staff at Surabaya Zoo to prevent public feeding. There was no sign of any new ape accommodation being constructed as reported in Agoramoorthy (2001) pp.6.

There were a number of single, mostly male gibbons housed in circular, sparsely furnished cages near the great ape area. The public barrier was completely inadequate so it was very easy to reach over and achieve physical contact with many of the gibbons. Two very young males were housed together. Their coats were matted and dirty but they spent some time playing together. All the cages had food placed in dirty mangers and insufficient water in stone troughs, which was liable to be soiled by faeces. Some old ropes were provided but furnishings were very poor. Circular cages meant that the animals were subjected to public visibility all round. No separation areas and no safety doors were available to prevent the animals escaping when a keeper entered.

There were two siamang islands on the small lake. The larger island had taller trees and the siamang could be seen playing in them. The smaller island housing two males had less vegetation. There was however, no way to manage the animals and to check on their health and well being. This was to be a common factor for the lake island exhibits at Surabaya. In fact, a cassowary was observed on one siamang island. This species is notoriously aggressive and keepers may well have been in danger of being attacked by the bird if they set foot on the island. These islands did allow the siamang to exhibit a more normal behavioural repertoire but they did have the above drawbacks. In addition, a single siamang was seen housed in a small rectangular wire cage on one island. This was probably due to the lack of adequate management and separation facilities. To keep a large animal such as a siamang in such a cage for even a short time is unacceptable.

Most of the monkey species were housed in similar accommodation, which consisted of an island separated by a wide water moat with separation facilities in a main building off-exhibit. These islands needed more ropes and climbing frames in order to make better use of the

available space, as was also suggested by Agoramoorthy (2001) and KSBK (2001). Public feeding was rife as was begging behaviour particularly by the pair of Hamadryas baboons. Separation facilities were available but it could not be ascertained whether the animals were routinely shut inside for cleaning to take place on the island and for their health and general well being to be checked. No fresh water appeared to be available and the water in the moats was filthy. There was also litter in the moats, most notable of which were plastic water bottles. A solitary capuchin and a gibbon inhabited an island each. Breeding groups included long-tailed macaques, Javan ebony langurs and pig-tailed macaques.

A breeding group of proboscis monkeys occupied a large island that had many mature, tall trees. The monkeys apparently swim occasionally but are very nervous of the pleasure boat, which takes trips around the lake. There is a management facility, which looked in good repair, and the animals are apparently used to entering as they are fed there. The second group is housed in a cage off-exhibit but occupies less space than the group on the island. However, none of the groups are near the public as the cage is not on public view and the monkeys on the island have plenty of opportunity to avoid the public.

A large breeding group of squirrel monkeys is held in a cage adjacent to birdcages. Cage perching was adequate but improvements needed to be made. The management of this group could be problematic should an animal need to be separated from the rest of the group. The food presented was fresh and of good quality. Primates should not be housed next to birds due to the risk of psittacosis transmission.

The tarsier(s) was not observed as it was kept in a small cage within a larger cage. There was also a cage housing sugar gliders in the same area. There was no apparent reason why the tarsier(s) should have been enclosed thus as the larger cage appeared to be secure. The cage floor was packed with various workmen's items at the back.

3.1.2. Carnivores

All the big cats observed were very thin. The cat cages were very clean but bare, apart from a few rotten logs in some cases. The cages were of a reasonable height but the space was not being utilised. More cage furnishing was recommended by both KSBK (2001) and Agoramoorthy (2001) in previous reports. The size of the water tanks enabled the cats to bathe but not swim. Public barriers were often inadequate. The big cat cages measured 8 x 8m deep and 3.5 to 5m high at the apex. The leopards were observed pacing.

There were two fishing cats housed in a good exhibit. The enclosure had a soil substrate and therefore plenty of vegetation. There was running water with fish in the stream. The exhibit needed more hiding places for this shy species. Otherwise, it was one of the best enclosures in the zoo and certainly the best enclosure seen for this species.

The bears were housed in concrete pit enclosures with no enrichment. No fresh water was visible. Four sun bears were held in one area and three in another smaller, similar area. There was also one black bear in a small bare, barred cage. Most of the bears observed were begging and public feeding was common.

The Arctic fox was not visible during the evaluation as it had a place to hide. Regardless, animals from the tundra and polar regions are not suitable for zoos in the tropics.

3.1.3. Elephants

The elephants were observed over both days of Surabaya Zoo's evaluation. An account of those observations follows:

Day 1: A young male of five years was observed with both forelegs chained together, being photographed with young children on his back. Food had been provided for this individual.

The elephant enclosure consisted of a paddock that had once had a pool which was now filled in. It also had a mural of a tropical forest as a backdrop. This looked very nice but had no actual benefit to the animals in the enclosure. An adult female had access to the paddock and was unchained and moving freely. Inside one stall was a young, possibly female elephant and it was impossible to see whether she was chained. An adult bull was chained to a central chain and both his forelegs were chained together. This animal did not react to our presence in the off-exhibit area. His psychological state was cause for concern. Another adult female was housed under cover in a very small stall with a concrete floor. This covered area was opposite the main enclosure. It was noted that a local firm was sponsoring one of the adult females.

Day 2: The bull elephant observed inside the day before now had access to the outside enclosure. He was unchained and was banging at the stall door the entire time I observed him. The young elephant was chained and could be heard as she moved. The adult female had access to two stalls and was unchained. No water or food was available to any of these elephants.

At about midday, the young male was ridden back to his stall after the photo session. His front forelegs were again chained together and he was then chained to a central area. This left him little room to move. He was fed with grass which was immediately taken by the adult female in the adjacent stall. The keepers told us he was from the wild (Lambung in Sumatra) and had only been at the zoo for two months. He was routinely chained up in that manner as he was still untrained. This animal is used for photo opportunities with small children, an irresponsible action on the part of zoo management. There were five elephants in total, one adult male and two adult females and one young male and another young, possibly female individual. It has been previously reported that these animals have been beaten (KSBK, 2001).

3.1.4. Miscellaneous

Surabaya Zoo was famous in the 1980's for having a large herd of babirusa. However, only one pair and a female with three young was observed during this evaluation. All individuals seemed in good physical condition. The pair was the easiest to observe and were housed in a small square paddock, which had a shelter over a manger and a large raised pool, which unfortunately had steps leading up to it. The animals could not access this pool. When the keeper arrived to feed them and turn on the tap, water began to overflow from the pool and the female immediately drank copiously from it. The food was presented in only one place so the female had to wait for the male to finish before she could feed. The public barrier was inadequate and the public could reach into the enclosure. The cage was clean but would benefit from additional mud wallows. The male showed no fear of the keeper. The food looked fresh and both animals appeared to be in good bodily condition.

There were far too many camels and they appeared very thin. A thin adult female paced the periphery of the enclosure continuously. The public barrier was extremely inadequate allowing camels and public to interact without impediment. Camels are potentially dangerous and bite.

Two animals were separated into a smaller paddock and one repeatedly chased the other into a corner. The substrate was very slippery and the pursued animal slipped and fell on one occasion. In general, the ungulates were thin and many had a patchy coat condition. There was overcrowding in some of the deer paddocks. An American bison was observed to have difficulty walking.

There was a breeding group of pelicans in an extremely overcrowded cage as reported by Agoramoorthy (2001). Varied collections of lorikeets, mostly from Irian Jaya, were exhibited. However perching was almost non-existent for these birds, as was any opportunity to nest.

Three large adult green turtles were observed in a very small pond. The animals had just been fed and were eating the greens, which were spread on the water. The water was fresh and not saline. In my opinion, the quantity of food offered was not sufficient for these three adults. These animals should be released back into the sea as soon as possible before their metabolism is compromised by the lack of salt water and inadequate diet.

3.1.5. Hospital.

The hospital was not evaluated for this report.

3.1.6. Animal Show.

There is an animal show at Surabaya and although we did not see it, we were invited to look behind the scenes. The off-exhibit area was clean and four short-clawed otters were housed in long narrow cages which were empty except for small plastic bowls of water. Two young sun bears were housed singly in small cages with no bedding, water or enrichment, as described by Agoramoorthy (2001). The same was to be observed for the orangutans. There was a sub-adult female whose cage was slightly wider than the others. She was housed alone. Two 3-4 year old orangutans were housed together and "Pronki" a 5-year-old male was housed alone. We had observed "Pronki" the day before walking around the zoo with his trainers. This is to encourage photo opportunities for which a charge is made. The male was led out of his cage. I was able to examine his physical condition and found him very thin, with a distended stomach and with over-developed thigh muscles from walking bipedally. The back of his head, neck and shoulders were a mass of raised scars and there was a fresh scar between his shoulder blades. The trainers openly admitted that the animals were beaten so that they would perform. Whilst out of his cage, "Pronki" tried to escape but was caught by a trainer. He demonstrated fear when he was caught by this man and curled up with both arms over his head. I did not observe any ill treatment at that time. "Pronki" had been trained to ride a tricycle, demonstrate he is hungry by rubbing his stomach and to play the guitar. This show had a total of four orangutans in training.

Situated near the centre of the zoo was a nursery building holding three very young orangutans, the eldest being three years old. One had been born in the zoo whilst the other two were confiscated in Kalimantan and sent to the zoo. These animals were destined for the animal show. They were all housed in small, rectangular crush cages on legs with bars on all sides, including the bottom of the cage. No bedding or enrichment of any kind was provided for them and they were all held separately. Only staff were allowed access to this room. The eldest animal was brought out of his cage by the keeper. This young male was in good physical condition but seemed somewhat withdrawn. He would apparently start being trained at the age of around four years. The keeper on request showed us a ball and a teddy bear, which are sometimes given to the youngsters. Their diet consists of fruit, salad and occasional rice with milk every day.

3.1.7. Education

The signage was rather haphazard. On some cages, such as the Arctic fox, there were handwritten signs in English, which had copious amounts of information about the species. Other cage labels gave only the name of the animal within. There was no special treatment for those animals endemic to the archipelago.

3.1.8. The Public

The public were very well behaved and observed security notices even when they were inadequate. However public feeding was rife, especially for primates and bears. Vendors sold peanuts, etc. specifically to feed the animals within the zoo. Noisy music and announcements were ever present. There were plenty of litter bins but not many people used them, so the zoo was much littered towards the end of the afternoon.

3.1.9. Recommendations for Immediate Action

- Stop the animal show immediately as it is inhumane and not of an educational nature. Re-home the animals in suitable accommodation. Integrate the young orangutans from the show facility and the nursery facility into one group.
- Re-evaluate elephant management protocols. Re-evaluate chaining protocols whilst the elephants are confined to stalls for long periods. Initiate an environmental enrichment programme.
- Environmental enrichment programmes should be put in place for apes, big cats and bears.
- An intensive work programme needs to be put in place for the furnishing of all enclosures with branches, ropes, logs, etc. in order to give the animals more employable space in existing accommodation.
- Re-evaluate food presentation for all primate and bear species and ensure they are fed more than once per day.
- Regularly place logs and tree trunks in all cat and bear cages so that their claws can be kept in good health.
- Re-evaluate dietary requirements and initiate a parasite screening and worming protocol for all big cats and ungulates, as they are too thin. Also initiate parasite screening and worming protocols for primates and bears.
- Feed all animal groups in more than one place so that dominant individuals cannot control access to the food source.
- Provide laboratory water bottles for the monkey species to prevent soiling of their drinking water.
- Provide more hiding places for all species.
- Construct holding areas on the island exhibits similar to that on the main proboscis monkey island and develop a management routine for all primates.
- Construct separation facilities or double doors on those cages with no separation facilities to prevent escapes of the inhabitants.
- Construct new great ape, gibbon and bear accommodation.
- Test all primate species for contagious diseases such as TB, hepatitis B, etc. All zoo staff having contact with primates should also be tested.
- Control breeding in those animal species that are overcrowded and housed in inadequate accommodation. Preliminary observations suggest that pelicans, most primates, sun bears, camels and many deer species should be prevented from breeding immediately.
- Species such as Arctic fox and black bear, should not be replaced when they die, as species from the colder regions are not suited to a tropical climate.
- Remove cassowary from siamang island.
- Release the surviving green turtles immediately as the conditions they are being kept in are inhumane. Do not keep this species in the future.
- Put a public feeding ban in place and ensure it is enforced.
- Construct, replace and repair standoff barriers where they are either lacking or in bad repair or too close to the animals (e.g., gibbons).
- Develop a keeper-training programme with international assistance.

- Develop a zoo guide and identification labels for every species with international assistance.

3.1. 10. Recommendations for the Future

- Develop a collection plan for the future and concentrate on specialising in certain groups or species of animals.
- Develop an educational programme involving local schools. International assistance would be available for this.

3.2. Gembiraloka Zoo, Yogyakarta

A spacious, pleasantly situated zoo on the banks of a river. This zoo was also evaluated by the SEAZA committee (Agoramoorthy, 2001). Our evaluation took place on a Thursday 7th February 2002. This was a weekday and so the noise levels and public attendance were not at their maximum.

3.2.1. Primates

Adult orangutans were observed in small, very dark cages, which smelt strongly of urine. No separation facility could be observed so these cages probably have to be cleaned by hosing down from outside. This means they would never be disinfected in a satisfactory manner. Two animals could be observed – an adult male and another unidentifiable small individual. Baskets were attached to the cage fronts for food provision. The cages measured 3 x 3 x 2.5m high and were equipped with a small skylight in the roof. There were tires in some cages, otherwise no enrichment was provided. The animals begged for food.

The chimpanzees are breeding. Unfortunately, as observed previously in Asia the male is separated from the female when she gives birth (Waters, 1997). This is unnecessary, as normal chimp males do not commit infanticide. The adult male was held in the small, dark indoor cage. The adult female with her 5-6 month old infant had access to the barred exhibit cage and a young male of approximately three years old was in a small adjacent cage measuring 2 x 2.5 x 2.5m high. Chimp offspring stay with their mothers for some time after a younger sibling is born. This group could have been kept together without problems and this would have enabled the youngsters to play with one another. The infant chimp was playing with a small plastic bag, which had been thrown into the cage. He was also small enough to squeeze through the bars of the cage. The public barrier was sufficient to keep the public away from the animals but feeding was taking place.

A pair of mandrills occupied the cage next door to the chimps. The male mandrill was one of the most obese primates I have ever seen. The cage measurements were 2 x 2.5 x 2.5m high. No enrichment or cage furniture was provided

There was a row of cages containing primates, which were much too small at 2 x 2 x 2m high. This situation was also reported in the previous two reports (Agoramoorthy, 2001; KSBK, 2001). There was no enrichment and there were no identification signs for any species. There were no separation facilities and no double doors for keeper access. The species included a siamang housed alone, two groups of Javan ebony langurs. Two pairs of white-cheeked gibbons and a group of three Tonkean macaques who were locked into a holding cage. There was also a group of pig-tailed macaques. The public did not officially get too close to the cages, which were to be viewed from the paved road below. However there was a well-used "unofficial" path, which lead to the back of the cages. This was extremely close to the primates leading to worries about injury and disease transmission for the primates and the public and high stress for primates, especially langurs, particularly on a Sunday when the zoo is at its busiest.

Just up some steps from this area was a working area in which single monkeys in various very small, very dirty cages on the ground were held. This area was open to the public as there was no barrier and it was, in fact, on the way to the public lavatories. The animals had no way to escape from the public and the cage wire allowed the possibility of an adult's fingers or a child's arm to be inserted. The animals included a female pig-tailed macaque, a female Tonkean macaque, an aggressive male Tonkean macaque, and a long-tailed macaque who demonstrated displacement behaviour by arm biting. Right at the back in a wooden cage, which had a mesh front so small it was difficult to see out or in was a bald, adult pig-tailed

macaque. These animals were apparently ex-pets donated to the zoo. Primates, which have been kept alone with only humans for company, can become very aggressive towards humans and other primates once sexually mature. This is probably the reason why they were brought to the zoo in the first place. However, it is extremely irresponsible of zoo managers to place them in such a publicly accessible place. There is, of course, the ever-present risk of disease transmission between non-human and human primates.

A male mitred leaf monkey was held alone in a tall, circular cage, which had public viewing all the way around it. This cage was reported to hold more of this species in June 2001 (Agoramoorthy, 2001). The individual seemed stressed by proximity to the public. Water was provided in a bowl on the floor, as was the food. The food provided looked fresh and consisted of banana, carrot and a green leafy vegetable. However, the animal was thin. The public barrier was inadequate as it was possible to touch the animal. Another male mitred leaf monkey was being held in a small cage with little cage furniture.

There were two young siamang held in small cages. The branching was poor; there was a rudimentary shelter and a water bowl. One Mueller's gibbon was exhibited in a cage measuring 2.5 x 1.5 x 3m high. One horizontal steel bar was the only cage furniture. The food dish was fastened to the wire outside the cage. The cage was dirty and there were no separation facilities or double doors. A male Mueller's gibbon was being held in a similar cage except for the provision of a rudimentary shelter. The public barrier for these latter two cages was extremely inadequate and there was public access to all sides of the cage. Siamangs were held on two islands with wet moats. Two concrete structures resembling fire towers were the only shelter. There were a few short trees and shrubs on one island and the other was bare. There was no provision made for these animals to climb or brachiate.

Although not on public exhibit, a single proboscis monkey individual was seen from a distance in an off-exhibit cage. We could not gain access to this area, so we have no idea how many individuals there were or where they had come from.

3.2.2. Carnivores

Two leopards were observed in a cage 4 x 2m deep. Tigers were also housed in similar sized cages. The animals seemed thermally stressed and no water was provided. No enrichment was provided. The animals were in good body condition. The standoff barrier was inadequate.

A large pit exhibit with a grass and soil substrate and a water pool housed one female tiger and two cubs. The female apparently had 24-hour access to the separation facilities as meat had been thrown into the pit from the public viewing area. The meat was still in its plastic bags. The female appeared in good bodily condition and carried the meat to the off-exhibit separation area followed by the cubs.

One female sun bear housed in a double shallow pit type exhibit of concrete with concrete steps as the only cage furniture. Indoor access was provided and at the time of observation, the exhibit contained three cats that were feeding on the bear's food, which was provided in a pile on the floor.

3.2.3. Elephants

Four elephants were chained at the back of the main elephant paddock. There was an adult male on exhibit who had both forelegs chained together and was then chained to a pillar on hard standing under a shelter in the paddock. This male had had the tips of his tusks removed and was standing in his own faeces. A young male and female were chained on a concrete substrate on the right hand of the paddock area. The male was chained by one foreleg and the

female had both forelegs chained together and was then chained to a central spot. These animals were in sight of their food, which was placed just out of their reach. All animals exhibited severe stereotypic behaviours, including dancing and head weaving. No food or water was provided to the young male and female and the adult male. The other four could not be observed well. All animals were later observed feeding but if foodstuff is placed within sight of elephants in preparation for feeding this will induce stereotypic behaviour. The body condition of those animals, who could be observed closely, was satisfactory. The young male and female had raised scars on their rumps.

3.2.4. Miscellaneous

One very sick civet was held with the ex-pet primates near the public toilets. Other civets were displayed in a line of cages with concrete substrates. These cages were very close to the public and had nowhere for the animals to hide. The cages were decrepit and in very bad repair. Binturongs were exhibited in small cages. The diet was presented with peeled bananas and all food chopped very small. This is usually done to facilitate cleaning and gives no thought to the fact that animals need to process their food so that it takes longer to eat.

Pygmy hippo, Malayan tapirs and various suids were observed from above. A big problem with these exhibits was that the same water ran through each area. This meant that the animals in the last exhibit drank and bathed in water, which had run off from the baths of the other individuals in the row. This is not hygienic as pygmy hippos and tapirs will defecate in the water. A young male Malayan tapir demonstrated stereotypic pacing and another individual had a very pink bald patch on its back and smaller abrasions or lesions on its head or neck suggesting some kind of skin disease to which this species is prone in captivity.

3.2.5. Hospital

A closed off-exhibit quarantine area was not accessible to the public. It was observed that it held numerous primate species in very inadequate accommodation. These included a sub adult orangutan female in a small transportable crush cage. A young gibbon was held in a very small rectangular cage, which was filthy. The animal itself was also filthy with a very dirty, heavily matted coat. The vet explained that it was difficult to catch the animal when it had to be treated, which is why its coat was dirty. No branches of any kind were available for this animal. It supported itself on part of the cage in order to stay off the ground. The primates are being blood tested for hepatitis and tuberculosis.

There were also three young orangutans in very inadequate cage accommodation. Other primates included a young pig-tailed macaque held in a small crush cage and two young pig-tailed macaques held together. Two albino long-tailed macaques were also housed in this area. There were also various macaws, cockatoos and a Komodo dragon. The vet said the zoo participated in conservation programmes for Komodo dragons, primates and Bali starlings.

3.2.6. Animal Show

There was an animal show at Gembiraloca Zoo as we saw a public arena and a stage. The area was heavily locked and we were not able to attract anyone's attention in order to gain entry. The mural decorating the arena outside showed otters, orangutans, bears and cockatoos performing various tricks of a non-educational nature.

3.2.7. Education

Education was provided by identification labels for the species.

3.2.8. The Public

The public were well behaved but again public feeding was rife. Vendors sold peanuts etc. specifically to feed the animals within the zoo. There were frequent, high volume announcements from a loud speaker. These were unnecessarily loud and very stressful.

3.2.9. Recommendations for Immediate Action

- Stop the animal show immediately as it is not of an educational nature. Re-home the animals in suitable accommodation.
- Re-evaluate **ALL** elephant management protocols particularly chaining protocols. Initiate an environmental enrichment programme. There are too many elephants for the current level of accommodation.
- Re-house all ex-pet primates and if this cannot be done immediately then ensure the animals are kept off exhibit to the public.
- Reintegrate the chimp family immediately.
- An intensive work programme needs to be put in place for the furnishing of all enclosures with branches, ropes, logs, etc in order to give the animals more employable space in existing accommodation.
- Provide more hiding places for all species.
- Resolve the problem of water passing through too many enclosures for the tapirs, hippos etc.
- Environmental enrichment programmes should be put in place for primates, tapirs and the sun bear.
- Regularly place logs and tree trunks in all cat and bear cages so that their claws can be kept in good health.
- Re-evaluate food presentation for all primates, small carnivores, tapirs and the sun bear and ensure they are fed more than once per day.
- Feed all animal groups in more than one place so that dominant individuals cannot control access to the food source.
- Provide laboratory water bottles for the monkey species to prevent soiling of their drinking water.
- Construct holding areas on the siamang island exhibits and develop a management routine.
- Construct separation facilities or double doors on those cages with no separation facilities to prevent escapes of the inhabitants.
- Construct new primate, big cat, small carnivore and bear accommodation.
- Test all primate species for contagious diseases such as TB, hepatitis B, etc. All zoo staff having contact with primates should also be tested.
- Initiate a parasite screening and worming protocol for all primates, big cats, bears and ungulates.
- Control breeding in those animal species that are in surplus. Preliminary observations suggest that most primates, camels and many deer species should be prevented from breeding immediately.
- Put a public feeding ban in place and ensure it is enforced.
- Construct, replace and repair standoff barriers where they are either lacking or in bad repair or too close to the animals (e.g., primates).
- Block the "unofficial" path to the back of the primate exhibits near the river.
- Develop a keeper-training programme with international assistance.
- Develop a zoo guide and identification labels for every species with international assistance.

3.2.10. Recommendations for the Future

- Develop a collection plan for the future and concentrate on specialising in certain groups or species of animals.
- Develop an educational programme involving local schools. International assistance would be available for this.

3.2. Taman Satwa Taru Jurug Zoo Surakarta, Central Java

This small zoo was generally in very bad repair with inadequate and decrepit cages. KSBK evaluated this zoo in July 2001 (KSBK, 2001). It was not evaluated by Agoramoorthy (2001). It had kept dolphins in the past (KSBK, 2001) but there were no signs of this species when we visited. As reported by KSBK (2001), the cages were dirty, small, and full of litter. KSBK also reported only one elephant but I saw three individuals. This evaluation took place on a weekday, Thursday, 7th February 2002. This small zoo needs complete renovation.

3.3.1.Primates

One large adult male orangutan was exhibited in a square pit. The moat of this pit was filled with rubble and litter (KSBK, 2001). There was a concrete block on which the animal spent his time with hand outstretched begging for food. The animal's coat was in very good condition. A concrete water trough was provided. The only cage furniture was a concrete "pipe" and a metal upright bar. There was no separation facility, which explains why the cage was so dirty. Male orangutans can be very aggressive and it would have been very dangerous to enter this area whilst the animal was alert. On our approach, this animal demonstrated extremely aggressive behaviour hurling large rocks around the dry moat area of the exhibit. The reason for this behaviour could not be ascertained.

Next to this exhibit was a square, barred cage housing a single sub-adult orangutan estimated to be between 6-7 years old. The cage measured 5 x 5 x 3m high and was dark. The only cage furniture was an old, upright tree branch bisected by another old tree branch. There were no separation facilities and no double door. The bars were wide enough apart for the orangutan to get its arm through and the standoff barrier was very inadequate.

A very small barred cage held an adult female orangutan with her young male infant. The female was smoking a cigarette, which had just been given to her by a visitor. The cage measured 2 x 1.5 x 8m high. No water was provided. There was no cage furniture and the floor consisted of broken lumps of concrete, food debris and soil. There was no separation facility and no double door. The bars of the cage were wide enough for an arm to poke through and although some smaller gauge wire had been fastened to the bars, this was full of holes.

An individual siamang was held in a square cage with a broken concrete floor devoid of any cage furniture except for a metal bar crosspiece in one corner.

A breeding group of long-tailed macaques was held in a cage similar to that of the siamang described above. The cage was dirty, wet and the water trough was filthy. A juvenile threatened us from the cage roof - he was outside the cage. There was also another old female sitting on the path nearby. A breeding group of pig-tailed macaques were held in similar conditions. There were numerous individuals, including an elderly male with a scarred lip, mentioned in the KSBK report. The animal had completely recovered from this wound.

Another area consisted of a number of small crush cages. There was no barrier to prevent public access. A young orangutan with a distended stomach was held in a barred, crush cage. An adult male pig-tailed macaque and a long-tailed macaque were held in a cage of similar size. Another male pig-tailed macaque was held alone in a crush cage. A female Javan bony langur was also being held alone in crush cage. No water was provided for any individual and food was placed on the bars of the cage roof where it either got eaten by the primates or fell through the bars to the floor beneath where it was out of reach of many individuals. There was no escape from the public for any of these individuals.

Only one Javan ebony langur was observed during this evaluation. This is in contrast to the KSBK (2001) report that observed four Javan langurs and a group of six langurs of an unspecified species.

There were two small spotted kittens in a small mobile cage opposite the monkey area. They looked stressed and had nowhere to hide.

3.3.2 Carnivores

One male tiger was exhibited in a cage measuring 5 x 6 x 3m high. There was very little water in the available pool. The cage had broken tiles on the floor and some very old logs were present. Two sub-adult tigers held as above. All tigers in good body condition and in this particular cage there were small pieces of fat and meat left on the floor suggesting that these cats were not as hungry as cats in other zoos. One leopard was held in a similar cage as those above but lacking a water pool. A male lion held in similar cage as above. A lioness was exhibited in a concrete floored cage measuring 5 x 5 x 3m high. A separation facility was available but there was no cage furniture. Her body condition was fair. The public barrier was broken and in any case inadequate. KSBK (2001) reported that a member of the public had had a finger bitten off by a lion at this zoo.

A sun bear paced continuously in a square cage with a concrete substrate similar to that of the lioness. There was no cage furniture provided. The public had all round access to the cage and the animal had no accessible hiding place. This individual paced constantly whilst under observation.

3.3.3 Elephants

The elephant area consists of a large paddock, which includes a large water pool. It appeared however, that the animals did not have access to this area. Three elephants were all chained by a forefoot on hard standing under shelter. A male held on the longest chain was "dancing" in stereotypic fashion. One female was head weaving. Dung, etc. was piled up on the back edge of the hard standing. The water troughs were dirty and were above the heads of the animals in recesses in the concrete platform of the shelter. An open staircase led down to the elephants and the gate to the paddock was wide open.

This was a rather dirty zoo and litter was very evident in the enclosures we saw. All the cages were dark and in need of repair with broken tiles, broken concrete, holes in the wire and standoff barriers broken. There was no animal show but the elephants gave rides on Sundays.

3.3.4. Miscellaneous

There were no other species of note at this zoo.

3.3.5 Hospital

We did not see the hospital during this evaluation.

3.3.6 Animal Show

There was no animal show as such but there were elephant rides.

3.3.7. Education

There was no education at all at this zoo. Not even an identification label for any species.

3.3.8. The Public

Not very many visitors on a weekday, but some were quite badly behaved giving an orangutan a cigarette. Vendors sold peanuts and other items specifically to feed to the animals in the zoo. There were no staff to check on visitor behaviour.

3.3.9. Recommendations For Immediate Action

- Immediately ensure that the primates in the small crush crates are off exhibit to the public. As soon as possible, find or construct alternative accommodation for them.
- Re-evaluate elephant management protocols, particularly chaining protocols. Initiate an environmental enrichment programme.
- Construct new accommodation for all mammal species. The great apes are housed in appalling conditions which should be rectified immediately.
- This zoo should not attempt to house any langur species until their husbandry and management has been completely re-evaluated.
- An intensive work programme needs to be put in place for the furnishing of all enclosures with branches, ropes, logs, etc. in order to give the animals more employable space in existing accommodation.
- Provide hiding places for all species.
- Environmental enrichment programmes should be put in place for primates and the sun bear.
- Regularly place logs and tree trunks in all cat and bear cages so that their claws can be kept in good health.
- Re-evaluate food presentation for all primates and the sun bear and ensure they are fed more than once per day.
- Feed all animal groups in more than one place so that dominant individuals cannot control access to the food source.
- Provide laboratory water bottles for the monkey species to prevent soiling of their drinking water.
- Construct separation facilities or double doors on those cages with no separation facilities to prevent their inhabitants escaping when the keeper enters
- Test all primate species for contagious diseases such as TB, hepatitis B, etc. All zoo staff having contact with primates should also be tested.
- Initiate a parasite screening and worming protocol for all primates, big cats, bears and ungulates.
- Control breeding in those animal species that are in surplus. Preliminary observations suggest that most primates should be prevented from breeding immediately.
- Put a public feeding ban in place and ensure it is enforced.
- Construct, replace and repair standoff barriers where they are either lacking or in bad repair or too close to the animals e.g. primates and lioness.
- Develop a zoo guide and identification labels for every species with international assistance.
- Develop a keeper-training programme with international assistance.

3.3.10. Recommendations for the Future

- Develop a collection plan for the future, preferably in coordination with other zoos, and concentrate on specialising in certain groups or species of animals.
- Develop an educational programme involving local schools. International assistance would be available for this.

3.4. Ragunan Zoo, Jakarta

Ragunan Zoo was inspected briefly by KSBK (2001), but not by the SEAZA group (Agoramoorthy, 2001). The current evaluation took place over the weekend of 9-10th February 2002. Despite it being a weekend, the zoo was very quiet, probably due to the flooding which was affecting large parts of the city.

3.4.1. Primates

The majority of orangutan enclosures on exhibit to the public consisted of partially moated and walled areas with some climbing equipment. One such enclosure held about six young orangutans who were observed playing. Two other similar exhibits were seen, one of which held four very obese adults and the second which held four individuals. This group contained a female and infant.

There was also an off-exhibit area of two blocks of four purpose-built, barred cages to house surplus orangutans. Each cage contained one individual. The cages were dark, wet, dirty and smelt of urine. The animals ranged from a juvenile to adults but the majority were males. The cages measured 4 x 4 x 2.5m high and had little in the way of enrichment. Some ropes and tires had been provided. The animals were in good physical condition and when we arrived, were being fed biscuits by a member of the public who said she felt sorry for them and came to feed them about once a month. There was no impediment to public access as there were no standoff barriers and people could easily have put their arms in through the bars. Ragunan obviously has a serious problem of orangutan overcrowding which needs to be addressed with urgency. There are over 50 individuals within the zoo itself and breeding of this species should stop immediately. This species lives for many years and it is unacceptable that they should live out their lives in the poor conditions described above.

One island enclosure similar to those described above for the orangutans exhibited one male and one female chimp. However, in the off-exhibit cages we observed another four adults in small cages with very little cage furniture. Two animals were housed singly whilst another male and female were housed together giving a total of six chimps observed at Ragunan– too many for the amount of outdoor accommodation that is available. An attempt to integrate these individuals should be made.

There were four primate houses at Ragunan, all identical to one another. They were circular in shape with cages radiating from a central circle (which formed the service area). Each cage had a separation cage at the back at ground level although the one house did have separation facilities at the upper level. Water was available in a concrete trough placed on the cage floor. The cages were gloomy with algae covered concrete walls. The tiled floors were clean but the cages needed a good scrub. Each triangular shaped cage measured 5m wide at the front, which decreased to 1.5m at the back. They were approximately 5m high and 3m deep. In some cages, there was some rudimentary enrichment in the shape of nylon ropes and some tires. However, the cages had a great deal of employable space, which was not being utilised. The standoff barrier was inadequate and it was very easy to touch the primates. There were 15 species observed in these four structures many of which were held alone. The species exhibited were one white-cheeked gibbon, two Moloch gibbons held singly, one agile gibbon, one pair and one single siamang, one proboscis monkey, three single mitred leaf monkeys, one trio and one pair of Bornean silver langurs, one banded langur, one Sulawesi macaque, three groups of Tonkean macaques, one of which was breeding, one group of pig-tailed macaques, one group of long-tailed macaques, a pair of Japanese macaques, a pair of overweight De Brazza monkeys and one male capuchin.

The food for each group or individual was presented on the floor in one pile so that the dominant animal could control it until it had finished eating. In one house, a keeper had fed the animals and was then splashing copious amounts of very strongly smelling, undiluted disinfectant all over the cage floors. Although he was trying not to splash the food, some of the disinfectant did splash over food whilst the animals were still eating. The disinfectant was also strong enough to burn the primates' skin on their hands and feet. The keeper said that he was told to do this by veterinary staff in the office. The effects of this disinfectant are rather negated by the fact food is presented on the floor and rats were very evident in every primate area.

Primates spend on average 70% of their day foraging in the wild and this means that food is an important highlight of their day in captivity. To have that food polluted to such an extent that it becomes almost inedible seems to be unintentionally cruel. It may be a misguided and useless attempt to overcome the disease problems inherent in these monkey areas.

One squirrel monkey was exhibited in the small mammal house. The cage was glass-fronted with a concrete substrate. Some branching was provided, but furnishing was poor.

Primates were also held in a children's play area for which a separate ticket had to be purchased. The cages in which the animals were held were grossly substandard and placed both children and primates in danger from one another. In fact, one male siamang made a grab at me whilst I was observing his cage. This particular cage was 2.5 x 2 x 3m high and one hanging chain was the only item of cage furniture. The male was much bigger than the female and she spent a lot of time on the floor in order to avoid his aggressive behaviour.

A young gibbon was housed in a cage measuring 1.5 x 0.9 x 2m high. This animal was very frightened and had nowhere to hide in such a small cage. Another cage held eight long-tailed macaque juveniles, one of whom was very sick and had a bloody wound to its head. The cage holding these eight animals measured 2 x 1.5 x 2m high. The water dish was filthy and one animal demonstrated a stereotypical drinking behaviour. A female De Brazza monkey was also held in a barred cage measuring 2 x 1 x 2.5m high. All these cages had barred or wired floors so that faeces and stale food fell through to the concrete substrate beneath. This was then hosed away by the keepers. This is not hygienic in any case but in an area designed specifically for children it is inexcusable. Even small monkeys are capable of inflicting serious bite or scratch wounds, so they are not suitable for this type of area. It is obviously very stressful for young primates, such as gibbons, to be subjected to crowds of children around their cages when they have no means to avoid them. The standoff barriers were completely inadequate.

The animals currently housed at the new Primate Centre (see below) have originally come from the zoo. Before arriving at the Primate Centre, these individuals were tested for tuberculosis, hepatitis B, etc. Of around 35 gibbons, siamangs and langurs, only 11 of these individuals were free of any of these diseases. This in itself is not so surprising,but what is scandalous is that Ragunan Zoo management knows that all of the gibbons, siamangs and langurs being exhibited are positive for one or more zoonoses and no attempt has been made to shield the public from these diseases. The public can touch the animals freely and the animals can potentially spit or urinate on them. Even worse is the exhibition of gibbon and siamang in the children's' play area. It may well be the case that some of these primates became infected after contact with the public. These animals tested positive for any of the above zoonoses should not be allowed to breed as this will just increase the number of potentially infectious animals. All contact between people and primates must be stopped.

3.4.2. Carnivores

Two leopards and a jaguar are housed in rectangular cages on two levels. These areas measure 8 x 6 x 5m high. A pool takes up most of the lower level of the enclosure. There is little enrichment provided. The jaguar was suffering from some sort of minor skin lesion. It was also missing one upper canine and was obese. The leopards were being kept separately. Another new cage for cheetah was alongside and was very similar to the above but had a much smaller pool.

The zoo has island exhibits for most of its cat species, some of which are new. They are moated and walled islands with a soil substrate and so the older islands have vegetation, which provide both shade and hiding places. However, due to overcrowding of tigers and lions the animals go outside on a shift system. This means, for example, that the Sumatran tigers only go out about once every three days. The rest of the time is spent in very small holding cages inside the service building. The inside of the Sumatran tiger holding area was very clean and smelt of disinfectant, which may have stressed the cats inside. There were a total of six tigers in this building including a female who had given birth in January and who was shut away from disturbance. There were two 18-month-old juveniles housed together. The keeper told us that the two born in January were to wild-caught parents.

A new area and facilities are in the process of being constructed for the Bengal/white tigers at Ragunan. White tigers are merely a colour phase of Bengal or hybrid tigers and are of no conservation importance whatsoever. At least 10 individuals were seen. One animal was observed in a very small off-exhibit holding cage measuring 1 x 2m. This animal was pacing. The islands on exhibit were still rather new and the vegetation had not had much chance to take hold. Shade was provided and the animals had access to the water moat in the form of a path made of stones leading down to the water. This is important, as tigers should be given the opportunity to swim.

A conversation took place with a tiger keeper and our group where he said he would certainly be able to help us purchase a tiger from the zoo for the traditional medicine market.

There were two lion exhibits. A well-vegetated island exhibit held two sleeping males and a female. The second was less satisfactory and little shade was available. This held a single lion and we also saw two more males housed singly in the off-exhibit holding cages. One of these individuals appeared elderly.

There were two areas of bear exhibits. The first had a European brown bear, two black bears and two enclosures were holding pairs of sun bears respectively. The exhibit was a concrete pit type with a moat and concrete rocks. It seemed to have been designed for apes as it had two very large concrete chairs and a table in one of the sun bear exhibits. The climbing frames present also looked as if they had been put there with apes in mind. Water pools were available. Severe stereotypic behaviour of pacing and head turning was observed in the smaller black bear. The sun bears begged constantly whilst observed. Public feeding was rife.

The second area had been recently constructed, which is unfortunate as it was not really a suitable bear exhibit. There was a row of four concrete floored exhibits – two smaller exhibits flanked two larger ones. There was little shade available in the latter three exhibits. A dry moat was situated at the front of the exhibit and the bears were exhibited above the moat so at least they were at the same level as the public. No attempt had been made to satisfy the behavioural needs of the sun bears. One tree in an exhibit had a steel collar half way up its trunk, beneath the steel collar the tree had been debarked but no attempts had been made to provide tree trunks for these animals to use. Water pools were available. One female bear had been de-clawed at some point, not necessarily at the zoo. One male was blind in one eye. Many animals were exhibiting stereotypic pacing whilst others begged for food. I

counted at least eight bears and we saw one in the small, dark separation facilities which were off view.

3.4.3. Elephants

A new elephant exhibit had been constructed. This had two spacious paddocks. The public have access to the stable area, which is potentially dangerous if animals are free ranging inside. There were two fairly large stalls, one of which held a female and her offspring. The female had both her forelegs chained together but not to the floor. There were two more adult elephants in the adjacent stall, both chained in the same way as the female. There was a young elephant in the outside paddock and a group of four elephants in a second paddock. None of these animals were chained. Apart from the fact that the animals were quite thin (apart from the lactating female), they seemed healthy. No stereotypic behaviour was observed but the animals were feeding at the time of observation.

In another elephant area, a female elephant was able to move freely in a paddock, but there were two individuals shut out of a large paddock and chained. All these individuals were rather thin.

3.3.4. Miscellaneous

There was a small mammal house containing various mongoose and civet species. The cages were glass fronted with bare concrete floors and very sparse cage furniture. A fishing cat was also observed. All mongoose individuals were pacing stereotypically. These small carnivores require deep litter substrates and at least some old logs and other materials to explore.

3.4.5. Hospital

The Ragunan Zoo hospital was not evaluated during this visit.

3.4.6. Animal Show

The animal show is not actually owned by the zoo but is managed by an outside contractor. There had been no show that day (Saturday) and we were shown inside the holding areas where the animals are kept all the time when they are not performing. The area forms a half circle and the cages, which form the half circle, face out on to the stage. Short-clawed otters were held in these half cages, as well as a cockatoo. The cages were barred and had hard substrates. There were two otters in two cages and an individual housed alone. All these otters screamed continuously whilst people were near the cages. The animals also tried to grab with their paws if someone got close enough.

A very young sun bear of about four months old was being held in a barred cage on wheels, which was very low to the floor. This animal was pacing and had nowhere to hide. There was a larger individual to the left held in a slightly larger cage. This animal was pacing and bar chewing. According to the keeper, this animal had recently arrived from Sumatra and had been there for two months. The cub was about 6 months old.

Two orangutans were also held in small, barred crush crates. The eldest had a scarred head and shoulders with one fresh wound on the forehead. When questioned, the keeper gestured that the animal had been hit with a stick. The body condition of this animal was very poor and whilst walking about outside he tried to find food wherever he could. The other much younger orangutan frantically searched our pockets for food. The keeper said that as there

had been no show that day the animals had not been fed but they would be fed at the next show which was Sunday. All of the animals were very hungry and had no water. No bedding had been provided for either of the bears or the very young orangutan. The older orangutan had a piece of sacking. The noise of the screaming otters was intolerable and probably contributed to the already high stress levels suffered by the bears and orangutans. Ragunan zoo management should ask itself does it really want to be associated with this kind of animal cruelty. The owner of this show also offered to obtain four wild adult sun bears for a colleagues Chinese restaurant. This man had no qualms about being filmed during this conversation, but then he had no need to be worried as the eldest orangutan had been returned to him after having been confiscated recently because he did not have the requisite documentation to own the animal.

3.4.7. Education

The only educational service provided by Ragunan Zoo is the provision of species identity labels on cages.

3.4.8. The Public

The public were not much in evidence, even on the Sunday of our visit. As mentioned earlier, this was probably due to the severe flooding being experienced in parts of Jakarta at the time. Vendors sold peanuts and other food items specifically to feed the animals in the zoo.

3.4.9. Recommendations for Immediate Action

- The apparent ease with which it was possible to buy tigers or sun bears is alarming. It should be investigated and all those involved with this trade should be ejected from the zoo.
- Stop the animal show immediately as it is inhumane and re-home the animals in suitable accommodation. Integrate the young orangutans into an existing group if possible.
- Remove all primates from the Children's Play Area for health, safety and welfare reasons.
- Make all contact between primates and public impossible for health reasons.
- Stop the practice of splashing strong disinfectant into the primate cages. There are products on the market which can be used against viruses, as well as bacteria and are much safer for both primates and people.
- An intensive work programme needs to be put in place for the furnishing of the Monkey houses and other animal enclosures with branches, ropes, logs, etc. in order to give the animals more employable space in their existing accommodation.
- Environmental enrichment is a matter of urgency for all bear and small carnivore species.
- Attempt to integrate the chimps into one group.
- Re-evaluate food presentation for all primate, bear and small carnivore species and ensure they are fed more than once per day.
- Regularly place logs and tree trunks in all cat and bear cages so that their claws can be kept in good health.
- Re-evaluate elephant chaining protocols when they are in the stalls. Make public area safe from unchained elephants, which are in their stalls. Initiate an environmental enrichment programme. Re-evaluate the elephant diets.
- Initiate a parasite screening and worming protocol for all primates, big cats, bears and ungulates.
- Feed all animal groups in more than one place so that dominant individuals cannot control access to the food source.

- Provide laboratory water bottles for the monkey species to prevent soiling of their drinking water.
- Provide more hiding places for all species.
- Construct separation facilities or double doors on those cages with no separation facilities to prevent escapes.
- Continue testing all primate species for contagious diseases such as TB, hepatitis B, etc. All zoo staff having contact with primates should also be tested.
- Ragunan Zoo has far too many species and individual animals and cannot satisfactorily house many of these animals. This is especially true of the primates. There are too many primates housed in the zoo and many of the gibbons and monkeys are housed alone which is unacceptable.
- Control breeding in those animal species that are in surplus. Preliminary observations suggest that all primates, tigers and bears should be prevented from breeding immediately.
- Species such as brown and black bear should not be replaced when they die, as species from the colder regions are not suited to a tropical climate.
- Develop a keeper-training programme with international assistance.
- Put a public feeding ban in place and ensure it is enforced.
- Construct, replace and repair standoff barriers where they are either lacking or in bad repair or too close to the animals.
- Develop a zoo guide and identification labels for every species with international assistance.
- Develop a keeper-training programme with international assistance.

3.4.10. Recommendations for the Future

- Develop a collection plan for the future, preferably in cooperation with other zoos, and concentrate on specialising in certain groups or species of animals.
- Develop an educational programme involving local schools. International assistance would be available for this.

3.4.11. The Primate Centre

This brand new centre had not yet been opened to the public, but some animals were already housed there. These included siamang, Mueller's gibbon, Moloch gibbon, Kloss's gibbon and a pair of Javan ebony langurs. The cages are quite well designed although a little more thought might have gone into designing areas to better demonstrate the brachiation behaviour of gibbons and siamangs. Public feeding will not be a problem, as the public will be leaving all bags at the entrance area. Most importantly, there will be an education centre on the site. An exhibit was being constructed for a group of orangutans, which will come from Ragunan Zoo itself. A very large and well-designed exhibit is now ready for four male gorillas, which will come from Howletts Zoo in the UK. Much controversy surrounds this import and I am sure that the irony of housing four male gorillas in such surroundings while the endemic ape species are housed so badly has not been lost on anyone. However, there is no doubt that the gorillas will be well cared for. Historically, however, gorillas do not do well in southeast Asia for a variety of health reasons. Hopefully, this will not be the case here as every precaution has been taken to safeguard these animals' health.

The primates currently housed at the Centre have originally come from the zoo. Before arriving at the Primate Centre, these individuals were tested for tuberculosis, hepatitis B, etc. Of around 35 gibbons, siamang and langurs only 11 of these individuals were free of any of these diseases and these are the individuals currently housed at the Centre.

The primate accommodation at the Centre is vastly superior to anything Ragunan Zoo has to offer. However, the current management will only continue to manage the Centre for three

years when it will then become the responsibility of Ragunan Zoo management. Given the inferior primate management techniques in place at Ragunan, this does not bode well for the future of the Primate Centre.

3.5. Medan Zoo, North Sumatra

This zoo was inspected in July 2000 and six species were assessed (KSBK, 2001). The present evaluation took place on Monday 11th February 2002. There were few visitors in the zoo and it was quiet. This probably contrasts favourably to Sunday which would be its busiest day. This zoo was in bad repair and needed complete renovation.

3.5.1. Primates

A female orangutan was held near the entrance in a small barred cage raised off the ground. It measured 2 x 2 x 2m high. On our arrival, the cage was full of litter and the animal was suffering from diarrhoea. During the observation, the cage was cleaned by throwing buckets of water onto the cage floor and then picking up the litter that was left between the bars. All water and debris from the cage, including faeces, was washed onto the ground. The cage had no separation facility and no double door so was impossible to clean or maintain with the animal inside it. Next to this cage was a water canal from which arose a very strong, noxious odour. Disease must be a high risk in proximity to such dirty water. No water was available for this animal and shade was inadequate. There was one tyre suspended from rope. The animal herself was very overweight.

One female orangutan with her young male infant were held in a barred cage with a concrete floor. Separation facilities were available. No enrichment was provided. The infant was small enough to climb between the bars of the cage and at one point almost climbed onto the bars of the tiger enclosure next door. Two young orangutans, aged about four years old, were exhibited on a partially moated and walled enclosure. The substrate was grass and some small thin branches were provided as enrichment. There was also a large concrete wallaby in the enclosure! No fresh water was available. There were separation facilities. An adjacent enclosure held seven young orangutans. There was a difference here in that attempts had been made to enrich the environment and ropes attached to upright tree trunks were being utilised by the youngsters. There was a lot of play activity taking place at the time of observation. Water was available.

One male siamang was exhibited in a cage measuring 2.5 x 3.5 x 3.5m high. No enrichment was provided and there were no separation facilities or double doors. The water trough was heavily soiled with faeces. Two young siamangs were held in a cage similar to the one previously described. The male's stomach was distended and the younger animal had diarrhoea. This cage was adjacent to a birdcage. There is always the risk of transmitting psittacosis to primates (and humans) from birds, so primates and birds should not be held close proximity unless the birds are known to be negative for psittacosis. Another male siamang was held in a chain link cage – the chain link measured 4" x 4". The cage itself measured 2.5 x 2 x 3m high. There were two old branches propped up in one corner, otherwise the animal had to sit on the floor. There was no separation facility and no double doors. The cage was dirty and the animal had runny faeces. Standoff barriers were inadequate for all siamang cages and the chain link in the latter cage was big enough for a child to get a hand through.

A female siamang was being held with a male gibbon in a cage measuring 2.5 x 5 x 4m high. The gibbon had a heavily scarred head from an old injury. Food was presented in a dish on the floor. Next door, a male Japanese macaque was being confined together with a female pig-tailed macaque. The identification signs were incorrect for this exhibit. Next door was a female Sumatran silvered langur and a female mitred leaf monkey. There is a strong risk that the gibbon/siamang and Japanese macaque/pig-tailed macaque pairings may breed and produce hybrids. A pair of Japanese macaques was held in a large cage, which had some ropes and tires for enrichment. There was also a separation facility. Notably present in this cage was a weathered hammock of hessian sacking suspended by ropes from the cage ceiling.

Another siamang was being held with two long tailed macaques in a separation facility with no water and no enrichment. One group of pig-tailed macaques was being held in a small separation area with another group in the exhibit cage. This cage was very dirty and full of litter. No water was provided. One group included an infant. Another siamang was shut into a separation cage with no enrichment provided. The cage of this individual had no branches and the siamang was forced to support itself on the buttress of a wall and hang onto the wall with its hands.

A slow loris was housed in a birdcage at the entrance to the lavatories. There was a branch, which had, at some point, supported a rudimentary shelter, but both had fallen to the cage bottom. There was nowhere for the animal to hide from the public. Water was provided in a china mug, as were mealworms. When asked the keeper said fruit was also offered. Body condition was good.

3.5.2.Carnivores

Two very nervous tigers were being held adjacent to the female orangutan and infant. Both animals paced continuously and snarled at us. Some old logs and a bench were provided. The water pool was inadequate for bathing. The body condition of one animal was fair, whilst the other individual was thin. Two more tigers were housed in smaller cages with a concrete substrate. Very little water was provided. Shade had been added in the form of a tarpaulin over part of the cage top. One male lion had access to two small cages. This animal had a maggot infested wound.

The sun bears were all housed in similar areas. These consisted of concrete substrates with a water moat with a few old tree trunks and branches. There were two exhibit cages, which held one female, and two bears respectively. However, in the off-exhibit areas, which were easily accessible to the public, there were at least five other bears shut in these very small, dark cages. Many of the bears were exhibiting some of the worst stereotypic behaviour I have ever observed in ursids.

3.5.3. Elephants

One adult female chained by a foreleg. Another elephant, a sub adult male, was undergoing a training session, which appeared to be proceeding well. However, the trainer then began to work the animal without a bull hook. The animal, in my opinion, had lost concentration by this time (the training session had been going on for at least 45 minutes). The elephant disobeyed his trainer by wandering off to the periphery of the enclosure. At this point, the trainer then offered the animal a bunch of pineapples but the animal was not allowed to consume them. The animal put the pineapples down. The elephant was then chained by one foreleg. From this point on it became unclear to me what the trainer wanted. The elephant was then made to wrap the chain around a central stake to make the chain shorter. By this time, the first trainer had been joined by a second. The trainers simultaneously began to beat the animal. The first trainer had the bull hook (which in Sumatra is shaped a bit like a small pick) and was hitting the animal's forehead using the actual hook. The second trainer had a large stick, which had a long nail in the end of it. Eventually the elephant's other foreleg was chained to the first. At this point, the animal could barely move its front legs. The elephant began to vocalise and urinate at this point. In my opinion, the animal did not understand what the trainers wanted it to do. The second trainer beat the animal on its back legs and bottom with such vigour that he often had to wrench the nail and stick out of the animal's flesh so that he could continue to beat it. This continued for at least five minutes until the elephant lay down (with difficulty due to its forelegs being chained so tightly). The animal was then released from the chains and the first trainer got on its back and made the elephant go on its forelegs with its trunk bent in half and resting on the floor in a very unnatural position. The

training session then continued with the elephant placing a wooden hoop over the heads of the public standing nearby. On closer inspection, deep wounds could be seen on the elephant's forehead, which had been inflicted by the point of the bull hook. These wounds were bleeding. The animals back legs could not be inspected closely. What was noticeable was that although the animal urinated he did not defecate once which could mean that he had not been fed for some time in preparation for the training session. The female was feeding on grass. There was no fresh water available. The elephants are trained for a show and for elephant rides. Before the beating took place, the male was observed to sit back on its back legs in a begging position and carry a large tree branch.

3.5.4. Miscellaneous

A pair of tapirs was exhibited. The male was missing part of his leg due to having been trapped in the wild.

The observation of some enrichment in the cages, albeit a bit weather-beaten, was the result of an Australian volunteer's efforts whilst he was at the zoo in 2001.

3.5.5. Hospital

No hospital was observed during this visit.

3.5.6. Animal Show

Apart from the elephants there are no other animals being trained at Medan Zoo.

3.5.7. Education

The only educational service provided by Medan Zoo is the provision of identity labels on cages and some of these were incorrect.

3.5.8. The Public

Very few visitors were in evidence but in any case, the elephant beating took place in full view of the public. Vendors sold peanuts and other food items specifically to feed the animals in the zoo. Keepers were in evidence going about their duties.

3.5.9. Recommendations for Immediate Action

- Completely re-evaluate the elephant management protocols particularly regarding the training programme. Train the animal handlers. Re-evaluate chaining protocols.
- Find a more suitable cage for the slow loris out of reach of the public.
- Initiate an environmental enrichment programme.
- Construct more spacious primate accommodation.
- Separate the gibbon/siamang pair and the Japanese and pig-tailed macaque pair to avoid hybridisation occurring.
- An intensive work programme needs to be put in place for the furnishing of all enclosures with branches, ropes, logs, etc. in order to give the animals more employable space in existing accommodation.
- Environmental enrichment programmes should be put in place for apes and bears.
- Regularly place logs and tree trunks in all cat and bear cages so that their claws can be kept in good health.
- Initiate a parasite screening and worming protocol for all primates, big cats, bears and ungulates.

- Re-evaluate food presentation for all primate and bear species and ensure they are fed more than once per day.
- Feed all animal groups in more than one place so that dominant individuals cannot control the food source.
- Provide laboratory water bottles for the monkey species to prevent soiling of their drinking water.
- Provide more hiding places for all species.
- Construct separation facilities or double doors on those cages with no separation facilities to prevent the inhabitants escaping when a keeper enters
- Construct new siamang and bear accommodation.
- Test all primate species for contagious diseases such as TB, hepatitis B, etc. All zoo staff having contact with primates should also be tested.
- Control breeding in those animal species that are in surplus. Preliminary observations suggest that all primates and sun bears should be prevented from breeding immediately.
- Put a public feeding ban in place and ensure it is enforced. The diarrhoea observed in some of the primates is probably a result of public feeding on Sundays.
- Construct, replace and repair standoff barriers where they are either lacking or in bad repair or too close to the animals (e.g., gibbons).
- Develop a zoo guide and identification labels for every species with international assistance.
- Develop a keeper-training programme with international assistance.

3.5.10. Recommendations for the Future

- Develop a collection plan for the future and concentrate on specialising in certain groups or species of animals.
- Develop an educational programme involving local schools. International assistance would be available for this.

4. Discussion and Conclusions

All five zoos exhibited extremely serious shortcomings in the management and husbandry of the animals in their care which is why many of the recommendations are very similar for each zoo. This report does not agree with the conclusion of the SEAZA committee's report that Surabaya and Gembiraloca Zoos are of "above average standard" (Agoramoorthy, 2001, pp.3). The few changes advocated by the SEAZA committee, which were to be acted upon immediately, had still not taken effect seven months later.

There does not appear to be a coherent management strategy for any of these animal collections. It also appears that the veterinary staff and both senior and middle managers of all five zoos need to be trained in modern zoo animal management and collection planning. For this reason, there is the need for international contact with other zoos for technical support and training. The zoos may claim that in spite of their shortcomings, they are still attracting the public and making money, so there is no need to change the way in which the animals are kept and the way they are managed. However, European zoos commonly thought that way thirty years ago but they were forced to change due to pressure from animal welfare organisations and falling revenue from ticket sales. In any case, the way that animals are being kept and, in particular, the blatant cruelty of the animal shows and elephant training are not morally acceptable.

The role that some zoo personnel appear to be playing in the illegal trade of wild animals, which was also reported by KSBK (2001), is totally unacceptable and must be stamped out immediately.

Many of the recommendations in this report can be carried out cheaply and easily. If Indonesian zoos wish to change, they will find that there is plenty of help available from other zoos and organisations to help them do so. Funding can be found to send staff to the International Training Centre run by Jersey Zoo. There would also be foreign zookeepers willing to volunteer and assist with furnishing cages and in developing nutrition and environmental enrichment protocols. None of the problems are in any way insurmountable. However, the zoos' management are the people who make the decisions regarding the situation and it is they who must take the responsibility and accept the inevitable criticism that will result if they do not take steps to change.

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