

PRESENT SITUATIONS & PROBLEMS IN KOREAN ZOOS



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1

First Investigation (2012-2013)



1.1. Introduction

The Menagerie, which means a collection of captive animals kept for display, has more than 5,000 years of history. The first modern zoo, Tiergarten Schönbrunn, opened in Vienna, Austria in 1752. After London opened a zoo in 1828, big cities such as Berlin, New York, Washington D.C. and Amsterdam also opened similarly styled zoos. This is the start of the modern zoo.

The first modern zoo in Korea was Changgyeongwon Zoo, which was opened in 1909 followed by Busan(1965), Daegu(1970) and Gwangju(1972). Currently 22 zoos are registered at the Korean Association of Zoos and Aquariums (KAZA). The function of these early zoos was mainly focused on providing entertainment to the public. Due to limited budget and various demands of people, these early zoos did not typically consider the welfare of the animals they kept. After modern society started, the severity of destruction of the environment and extinction of the wild animals became a huge issue. During this time, the problem of captive animals also began to emerge. Keeping animals from different climates and environments in the same place threatens the health and welfare of animals.

A group 'HAHO' of Korean Federation for Environmental Movement released reports in 2002 and 2004, both titled 'Sad Zoo'. These reports were the first attempt to bring to public attention the welfare problems experienced by Korea's zoo animals. In 2002, the documentary movie Farewell by Yun Hwang, about the lives of captive animals, was released. This movie generated some public attention, but it didn't last long. Since then, the situation has not improved much and no one has properly monitored the changing situations and environments of zoos in Korea for about 10 years.

However, in 2012, the release to the wild of Jedol, an illegally caught Indo-Pacific bottlenose dolphin brought renewed attention on zoo and show animal issues in Korea. This was facilitated by the development of the Korean animal society movement and, during the past 10 years, increased public interest in animal rights. It also generated interest in the NGO sector to reinvestigate current issues and conditions in zoos in Korea. Action for Animals was established in 2012 and started monitoring Korean zoos. The group's goal was to increase the animal rights movement and to develop the professional animal protection movement by improving the welfare of animals in captivity and stopping animal shows. Then in December 2012, a story of Crane, a tiger kept in a neglected captive environment became a major social issue and Action for Animals started to investigate and publish field reports about Korean zoos.

Action for Animals believes that zoos in Korea should aim to protect endemic endangered species, provide shelter for neglected, abused and abandoned wild animals and offer proper animal welfare education to children. After an extensive 10 month investigation, the group found that most Korean zoos still prioritize animal shows and experience programs, and that public zoos are in crisis. Since Korea's natural ecosystems have largely been destroyed, if nature is to be part of the Korean landscape in future, it is incumbent upon progressive citizens to take up the task of protecting existing natural areas and expanding them for future generations. Zoos need to aid in conserving and restoring endangered species and rebalancing Korea's wild ecosystems. Zoos have the potential to play a role in establishing ethically correct ideas of relationships be-

tween humans and non-human animals for future generations. But poor zoos with outdated or substandard conditions can have the negative effect of encouraging the development of negative perspectives about animals and the environment, such as contempt of life.

People love the animals they keep as pets or companions but they also accept the use of animals for various purposes, such as display in zoos and aquariums. Viewing caged animals in zoos can affect attitudes toward animals generally. For example, according to social ecologist Stephen Kellert, people who have visited barren, cell-like animal enclosures with bars show increased disinterest and fears toward animals. This is the opposite of what zoos say they want to achieve.

If Zoos and other wildlife in captivity facilities want to do what they claim, they have to change. If they were to offer viewing of animals in much bigger, more natural conditions, it could mitigate against visitors forming discriminatory points of view towards animals and may shift the visitor experience to one that is more positive and productive. Action for Animals is focused on improving the public's understandings of animals through campaigns and education. This report's aim is to improve the welfare status of captive animals and to raise awareness about the existing problems in animal shows and animal experience programs in the hope that public opinion will shift towards a more animal-friendly perspective. Action for Animals aims to not only improve the welfare of captive animals but also to play a role as a foundation for preventing animal abuse.

1.2. Target & Criteria of Investigation

The investigation was carried out in five zoos which are located in Seoul and Gyeonggi-do Province. These areas are densely populated, which means everything is concentrated. We found these areas suitable for researching the current trend and development direction of zoos. We also looked into other zoos in Wonju, Cheongju and Gwangju. Additional investigations in these three cities were for comparing situations in different areas and drawing a comprehensive conclusion. The investigations were carried out from June 2012 to March 2013. Zoo visits occurred from summer to the following spring to properly determine how animals were being housed and cared for in different seasons and to check the behaviors and attitudes of visitors during multiple seasons and during spring school excursions and family picnics.

Since the zoos had varied live collections with a broad range of species and different kinds of housing environments, determining the investigation/assessment criteria was challenging.

The kinds of animals to be assessed and the number of species was narrowed down to mammals and some bird species. In addition, the plans for the management and budget of each zoo, and its position in the community, would be investigated. We also considered which items need urgent change. After reviewing these factors thoroughly, a decision was made as to which zoos would be investigated further.

The criteria for assessments was based on the Five Freedoms of Animal Welfare articulated in the United Kingdom's Secretary of State's Standards of Modern Zoo Practice of DEFRA Department for Environment, Food and Rural Affairs and modified accordingly for the present situation of each zoo in Korea.

- ① Provision of food and water
 - Are food and water maintained hygienically?
 - Is feeding from visitors allowed?
 - If visitors can feed animals, is it controllable?
- ② Provision of a suitable environment
 - Does each enclosure satisfy each animal's physical and mental requirements?
 - Does each enclosure have enough space?
 - Does each enclosure meet each species' ecological characteristics?
 - Is each enclosure designed and controlled to be properly species-specific in relation to temperature, ventilation, humidity, light and noise?
 - Are enclosure substrates natural and is there sufficient drainage to prevent flooding?
 - Does each enclosure have enough hideouts?
- ③ Provision of animal healthcare
 - Do animals on display look reasonably healthy?
 - Does each enclosure look clean?
- ④ Provision of an opportunity to express most normal behavior
 - Does each enclosure have suitable features, furniture and substrates for expressing natural movements and behaviors?
 - Are various enrichment programs, including object, food and temporal enrichment, in place?
 - Does each group of animals have social structure to behave naturally?
 - Are there opportunities for natural foraging behaviors?
 - Are any animals displaying relatively abnormal behavior, such as stereotypies, hyperactivity, hypoactivity or excessive inter-individual aggression?
- ⑤ Provision of protection from fear and distress
 - Are animals taken care by qualified and skilled keepers?
 - Does each enclosure have acceptable numbers of animals?
 - Does each zoo have solutions for controlling numbers of animals?
 - If there is a petting program in operation, has it ever considered the animal welfare aspect?

Since there was a high diversity of animal species and many factors that needed to be examined, focus was placed on the higher mammals and on the points outlined below.

First, the dimension of each enclosure was estimated by sight and if needed staff were asked for specific data at each zoo.¹ Animals in captivity live in very small spaces compared to the

¹ We requested the dimensions of enclosures to Seoul Zoo, Seoul Children's Grand Park Zoo, Theme Park Zoozoo and Everland Zoo. We received the information except Everland Zoo. Since Everland Zoo is run by a private company, it's not their obligation to disclosure of information. We need a law that states standards, legal grounds and main agents with rights to inspect and evaluate suitability of each animal exhibiting facility.

wild so we need to make sure zoos are providing environments with maximum space, as close to natural as possible, and that this is the guiding principle of animal welfare. We refer to minimum enclosure dimension standards from the government of New South Wales, Australia and other information from care manuals from EAZA^{European Association of Zoos and Aquaria} and AZA^{Association of Zoos and Aquariums}. Observation time at each enclosure was a minimum of 30 minutes and aberrant behaviors and other items of interest were noted.

Second, the overall conditions of features in each enclosure was examined. They are an indicator as to how much time, energy and financial resources have been provided to each species.

Third, since the zoos make most of their profits from programs they operate, we checked the details of any kind of animal encounter/experience programs and animal shows run by each zoo.

The Zoo Exhibit Quick Audit Process from WSPA^{World Society for the Protection of Animals} suggests that cats, bears, elephants and primates should be examined closely and more carefully. These animals are all highly intelligent, social, active and wide-ranging in the wild. In captivity, they can become frustrated and bored very quickly. They often display the most severe abnormal behaviors, including stereotypies, especially when their environments are impoverished.

According to studies, Korean zoos mostly fail to provide opportunities for animals to express normal movements and behaviors or for animals to live in suitable environments. This means that providing environments aimed at satisfying the physical and mental needs of the animals, large spaces to roam and explore, natural substrates and privacy areas for security and comfort are among the most urgently necessary requirements. Korean zoos have operated by experience and judgement from management without proper standards and guidelines and, seemingly, without properly considering the behavioral ecology and natural history of the animals they display. Korean studies show that animal enclosures do not have enough space and are designed for easy maintenance and not to satisfy the needs of the animals.

Since the management of these zoos considers their basic duties to be feeding and treating diseases of animals, malnutrition and severe sickness do not seem to be problematic. Not having to deal with widespread basic medical issues should help Korean zoos facilitate a refocus to improving animal environments and living conditions. To that end, some Korean zoos, especially public facilities, have started introducing enrichment programs for animals.

1.3. Results

A. Seoul Children's Grand Park Zoo

a. No shelter/Hideout

Enclosures for lions, Bengal tigers, Asiatic black bears and primates have climbing structures and other furnishings that are exposed to visitor viewing and not enough trees or facilities, visual baffles to provide privacy opportunities to the animals. Specifically, the Asiatic black bear exhibition area is a traditional pit-design in which spectators look down at the bears.

Exhibition areas need to have more trees, vegetation and other kinds of visual baffles so animals



| Traditional bear pit structured exhibition area



| No hideout

have opportunities to remove themselves from the view of visitors. The managers of zoos appear at times to avoid putting natural substrates in the enclosures because the animals get dirty and, if the substrate material is spread around, it can look unsightly. Public notice boards explaining why privacy areas and natural substrates are important to animals should help reeducate visitors as to how exhibits should look.

b. Small Space

Many mammals, such as spotted hyenas, red foxes, black-backed jackals, pumas, servals, lions, tigers and elephants typically live in expansive home ranges or territories in the wild. In captivity, they should be provided with the largest spaces possible, but their enclosures are often extremely small. Primates are highly intelligent and very social. They need complex environments that incorporate various kinds of physical enrichment. As well as proper social contexts. Also in different stages of their lives, the amount of living space need to be increased. We compare the current size of enclosures of animals to suggested minimum enclosure dimensions of New South Wales, Australia.

Guidelines from New South Wales are basic minimum dimensions. Enclosures must be large enough that all requirements (such as cage furniture) can be met. Also, the number of animals should be considered. For enrichment, periodic change of features and furniture is also required.

	New South Wales	Seoul Children's Grand Park Zoo		
	Minimum width(m)	Minimum length(m)	Surface area(m ²)	
			Indoor	Outdoor
Lar Gibbon/Black Gibbon ²	6.0	9.0	17.5	
Common Squirrel Monkey	3.5	5.5	31.5	
Pigtail Macaque	5.5	8.5	19.2	137
Guinea or Western Baboon/ Olive Baboon ³	7.0	10.5	19.2	115
Rhesus Macaque	6.5	9.5	19.2	80
	Surface Area(m ²) ⁴	Surface area(m ²)		
		Indoor	Outdoor	
African Wild Dog	400(50)	56	102	
Fennec Fox	60(10)	8	20	
Bears/Asiatic Black Bear	300(30)	23.5	142	
Polar Bear	-	70	226	
Lion	300(30)	110	400	
Serval	85(15)	30	84	
Jaguar	200(30)	26.8	216	
Spotted Hyena	-	21.36	125	
Leopard	200(30)	40	200	
	Surface Area(m ²)	Surface area(m ²)		
		Indoor	Outdoor	
Puma	200(30)	53.5	110	
Small-clawed Otter	100(10)	8	32	
Meerkat	60(10)	21	76	
Asian Elephant	-	128	645	
Coati	-	8.8	52	

² We compared guidelines for Lar Gibbon from minimum enclosure dimension of New South Wales to Black Gibbon at Seoul Children's Grand Park Zoo. These are different species but they are close so we compared these two. The enclosure of Black Gibbon at Children's Grand Park Zoo has indoor area only. It also has artificial floor without natural substance. There is a structure for hanging but it's very simple. It needs to be changed often for improved enrichment.

³ We compared figures of Western Baboon from New South Wales to Olive Baboon at Children's Grand Park Zoo.

⁴ Figures in brackets (second column) represent the minimum surface area for medium-term holding enclosures for one pair.

c. Exhibition Area Issues

First, visitors can easily throw food or garbage into the animal enclosures. In busy seasons like spring, because there are so many visitors and limited numbers of zoo staff, it is impossible to properly monitor all visitors and prevent all public animal feeding. In addition, visitors don't seem to pay attention to information boards at enclosures, which means physical distance and barriers are required to stop zoo visitors from feeding animals. The carnivore exhibition areas have transparent barriers, but some of the primate enclosures don't provide enough separation distance from the visitor viewing which allow visitors to feed animals very easily.

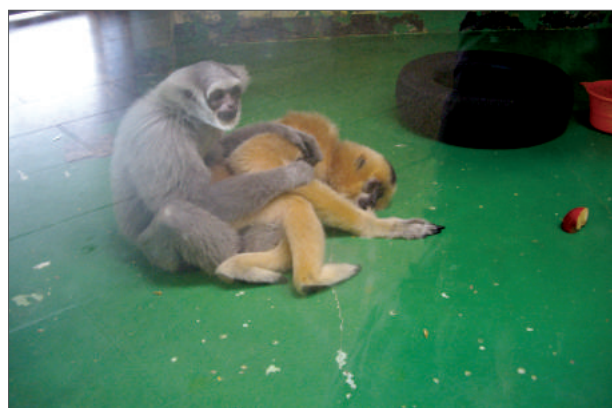


| Close distance from visitor viewing area

Second, indoor areas are more smaller and more barren than outdoor areas. Almost every zoo in Korea has similar problems. When it's cold, many animals are forced to stay indoors, especially exotic animals from tropical regions. Management needs to consider this factor for future operation plans.



| Indoor area for ring tailed lemurs



| Indoor area for black gibbons

Enclosures for primates and indoor areas for most species require renovation. Outdoor areas must have shelters and privacy areas in numbers capable of accommodating all the animals at the same time, if required, and a sufficient distance between spectators and animals so that the animals feel safe and secure. Since many animals stay inside during winter time, indoor areas should be equipped with natural substrate areas, structural enhancements, furnishings, and proper environmental systems that ensure appropriate temperature, light, humidity and ventilation.

d. Small and Low-height Bird Enclosure

The height of the enclosures is very low. Birds cannot move and fly freely. In particular, large birds like vultures may suffer more since they have long, wide wings, often measuring more than three meters from wing tip to wing tip, which are made for soaring.

Bird enclosure renovations must consider the size of the bird and provide enough space for them to achieve flight.



| Vulture enclosure



| Small and low-height bird enclosures

e. Feeding by Visitors

There are vending machines which sell animal food. Visitors can purchase food items and then feed the animals without supervision. Uncontrolled public feeding of animals can disrupt regular diets, lead to obesity, create behavioral issues, such as begging or aggression between individual animals, along with various health issues. Uncontrolled public feeding of animals should be stopped immediately. Even if the food is safe for animals, public feeding is not a good idea. As well, it promotes the wrong idea that feeding animals is acceptable. The management of the zoo needs to educate visitors that feeding animals is not appropriate and is bad for animal health and welfare.



| Animal food vending machine

f. Experience Programs

Various types of animal encounter and experience programs are conducted for visitors, including children. These activities feature simple explanations about the animals but also feature petting and feeding sessions as well. Petting and feeding programs can negatively impact animal welfare and should be avoided with non-domesticated animal species.

g. Animals from Different Climates

The polar enclosure bear has been renovated quite recently, but the renovations seem to have geared toward achieving better spectator viewing and, not to benefit the polar bear. The polar bear didn't appear to use the interior accommodation very often and, instead remained outdoors. At times the outdoor temperature was over 30°C. This means the polar bear, who is physically and behaviorally adapted to life in very cold conditions, will suffer from hot and humid weather during the summer season. The keepers introduced fish into the water area for enrichment. This is a positive change and the zoo needs to introduce more programs of a similar nature to help keep the polar bear occupied. Immediate measures, such as expanding the roof to provide more shade, and providing refrigerated water and misters for cooling would help. But ultimately, the enclosure should be renovated properly. If that's not possible, then transferring the polar bear to another facility should be considered.⁵



| A polar bear in summer time

h. Effective Population Control is Required

There are domestic animals such as rabbits and goats. All rabbits kept in one enclosure. Some of them appeared small and weak, conceivably a result of poor nutrition or competition for food, because of the dense concentration of animals. They need to be separated properly to reduce

⁵ This polar bear died in 2014.

competition and stress from overcrowding. In February 2013, a pregnant goat was observed, even though the zoo already had more than enough goats for exhibition. Efforts should be made to prevent the production of surplus livestock, so a proper, effective population control program including spaying and neutering should be initiated.



| All rabbits are kept in the same enclosure,



| Uncontrolled breeding of goats

i. Animal Show

The main animals of the show are birds and seals. This show has a storyline for children, and animals come out onto the stage during the show. Primates make an appearance wearing human clothes, seals perform various tricks including jumping through rings and diving into the pool. In 2012, domestic cats were a part of the show and in 2013, primates were coming down from the



| A primate with human clothing. Showing unnatural behaviors and making fun of animals is not educational.

roof via rope were featured. Prior to 2013, there was also a number game with seals. From April to October a show takes place every hour from 11:30 am to 5:00 pm on weekdays and from 11:30 am to 6:00 pm on weekends. From November to March there's a show every hour from 11:30 am to 4:00 pm on weekdays and from 11:30 am to 5:00 pm on weekends but it can be canceled if there's not a sufficient audience. In addition to animal welfare concerns, a significant issue is that presenting animals engaged in unnatural circus-like behaviors can promote a distorted perspective of animals to the children who watch them.

This show is run by an animal performance company through a contract with the zoo. This company claims they schedule the frequency of the performances appropriately, consider each animal's natural instincts, behaviors, and don't engage in any unreasonable animal training. However, as we can see from the time table, there is a show every hour and each show features very loud music and spectators who often shout or scream out. This is not the kind of environment to put animals if their best interests are a priority. It may be stressful or cause suffering to them. Therefore, the animal shows in their current form should be terminated.

B. Seoul Zoo

After two zoo reports from HAHO, the environment of Seoul Zoo has been improved considerably. Seoul Zoo is also introducing various enrichment programs. Since the decision to release Jedol, the Indo-Pacific bottlenose dolphin, the zoo management has made future development plans and is looking to make positive changes.

Seoul Zoo opened newly renovated tiger enclosures in 2015 and is planning to improve other facilities. However, it is difficult to fully deliver on the goals of exhibition, education, research and conservation all at the same time. As well, the termination of the profitable dolphin show, with a million visitors annually, put a dent in the zoo's budget making some aspects of the operation harder to support. Second, the zoo exhibits too many species from all over the world and caring for them all properly is a difficult and costly challenge for the zoo. Some current enclosures have grossly inadequate conditions. Third, the zoo runs an education program for 70,000 people each



| Very old wolf enclosure is waiting for renovation.



| Enclosures for small animals⁶

⁶ This photo was taken in 2013. Renovation for this area was done in 2015.

year, but the contents, suitability, and effectiveness of the program are questionable.

Seoul Zoo is an ex situ conservation center for 22 endemic species and plays a key role in conservation and restoration of the Asiatic black bear and Korean red fox. For successful performance, it needs to put more time, energy and resources into these projects.

a. Flamingo Exploration

A flamingo show has changed to an ecological information session. The previous flamingo show caused a lot of controversy. The flamingos were pinioned, eliminating their ability to fly. The flamingos also performed a forced dance show with music. The ecologic information session doesn't include dancing.

New better, and larger exhibition aviaries that allow these birds to fly need to be designed.



| Flamingos cannot fly.



| Flight feathers have been cut out to make them stay in one place

b. Enclosures for Birds of Prey

The enclosures for the raptorial birds were small and did not allow for flight. Condors and vultures require extensive spaces since they are large, soaring birds. As well, some bird enclosures were too close to visitor viewing areas, which made feeding by visitors possible by throwing food. The distance between the exhibition area of white-tailed sea eagles and spectators was only 1.6 meters. Information given by Seoul Zoo indicates the dimensions of enclosures for cinereous vultures, condors, Steller's sea eagles, white-tailed sea eagles, common kestrels and common buzzards are all the same at seven meters high and 54 m² of floor surface area. The individual species-specific needs of these raptors have been ignored. While they inhabit different kinds of

environments in the wild, they have been given identical conditions in captivity.



| Small, low-height bird enclosure



| Steller's sea eagle (Korean natural monument No. 243-3, Korean endangered wild animals and plants class I)

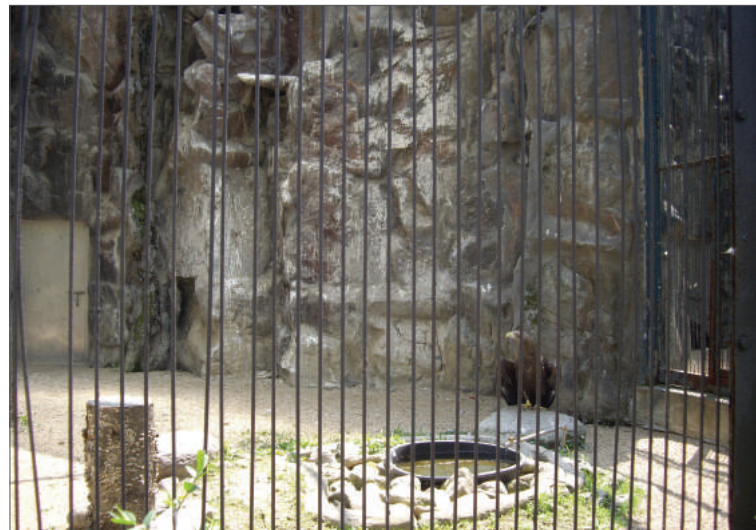


| This enclosure doesn't have enough space for flying.

Secretary of State's Standards of Modern Zoo Practice suggest enclosures should provide suitable vantage points for the species, as many raptors prefer to be up high. Perching should be appropriate for the species housed. Sizes should reflect the flying capabilities of the species. For example large vultures are unable to land lightly and so need enough space to land without causing injury.⁷



| Cinerous vulture (Korean natural monument No. 243-1, Korean endangered wild animals and plants class II)



| White-tailed sea eagle (Korean natural monument No. 243-4, Korean endangered wild animals and plants class II)

⁷ DEFRA, 2012, Secretary of State's Standards of Modern Zoo Practice, pp. 53

c. Programs of Children's Zoo

Seoul Zoo has a children's zoo for animal encounter experience programs. The zoo exhibits more than 30 species, including guinea pigs, donkeys, hedgehogs, rabbits and even dogs. Visitors can buy food to feed to sheep, black goats and rabbits. The zoo also runs ecology information sessions and a program showing a Border Collie engaged in sheep herding behaviors. It is very simplistic with sheep moving back and forth from one area to another as they try to avoid the dog. There are no particularly complex interactions between the animals. This part of the zoo's purpose is showing animals to children more closely. However, the zoo has failed to control its animal population, and has even resorted to disposing of animals to slaughter houses multiple times.



| A poster for animal encounter and experience programs for children



| "Don't feed the animals fruits and vegetables brought from home."



| Visitors feed carrots to rabbits without any restrictions.

Seoul Zoo also operates an education program for children that claims to teach love for animals. It involves presenting animals to children, followed by petting and feeding. Children tend to prefer touching animals to just watching them. Instead of using petting programs for education, Seoul Zoo should adopt a different approach, such as teaching children about each animal's ecological characteristics by showing animals in more natural environments. The zoo should also explain why wild animals should not be touched and raised at home and teach



| Feeding sheep with no supervision

children that keeping an animal takes a great deal of time, energy and commitment. Petting and feeding programs are not educational. These simple experiences cannot teach children about the difficulties and duties of raising animals.

Seoul Zoo should control the numbers of animals in the zoo and change its program to a proper education program rather than focusing on petting and feeding.



| Lots of animals make disease control difficult.



| Too many animals are kept in the same space.

d. Improvements for Indoor Areas are Required

Seoul Zoo has animals from all over the world which means they have to provide suitable environments to each species from different climates. Animals from tropical regions stay inside for every Korean winter season, so they should be provided with species-appropriate indoor areas. However, that is not the case and most of the indoor areas are small and barren.

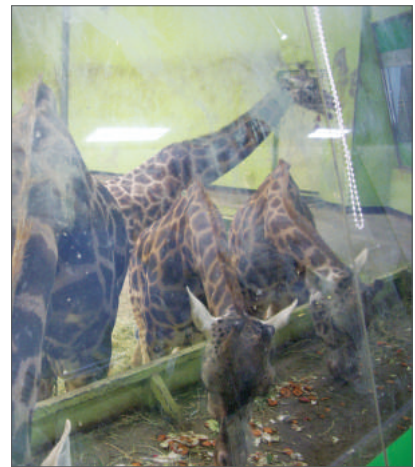
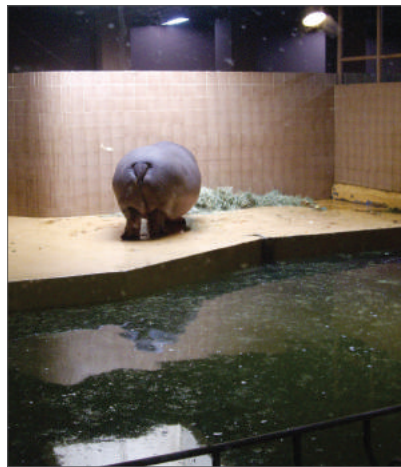
	Indoor Surface Area(m ²)	Outdoor Surface Area(m ²)
Giraffe, Grant's Zebra, Waterbuck, Springbok, Gemsbok	1,851	21,487
Pygmy Hippopotamus, Hippopotamus, Scimitar-Horned Oryx, Nyala, Sitatunga	1,742	22,810
African Buffalo, Asian Elephant, Rhinoceros	2,730	33,058

Enclosure dimensions given by Seoul Zoo show all indoor areas more than ten times smaller than outdoor areas. Indoor areas for animals from hot climates should be bigger than listed above since the animals stay inside for quite long periods, especially during cold seasons. Also, indoor areas have hard floors for easy cleaning and maintenance but standing on hard surfaces can lead to joint problems, foot issues and other health issues, and they are also boring for animals because they do not provide the behavioral opportunities that soft substrates do.

Indoor enclosures housing animals from tropical regions, require urgent renovation. Standards and principles need to be established for conservation breeding initiatives, and uncontrolled breeding must be avoided to prevent the production of surplus.



| Winters for animals from tropical climate are tough.



| Small and barren indoor areas



| Winter of Asian elephants

| Winter of rhinoceros

e. Enclosures for Nocturnal Animals

The interior of the nocturnal animal exhibit is kept dark. There is some modest illumination of the animal enclosures that allows visitors to see the various creatures on display. The whole area is small, old, outdated and the interior of the animal enclosures lack natural furnitures or furnishings of any kind. This nocturnal species exhibit would be better closed.



| Enclosures for nocturnal animals

f. Population Management is Essential

Seoul Zoo is the biggest zoo in Korea and plays an important role in conservation and restoration of endemic animals. They should set scientific and systematic principles for conservation and restoration and reduce the numbers of other non-native species.



| Uncontrolled breeding produces surplus animals and it is hard to keep them all. Implementing scientific population control program is essential.

C. Theme Park Zoozoo

Theme Park ZooZoo is a petting zoo with feeding programs and animal shows. They have no full time on-site veterinarians, but rely on a contract veterinarian for regular checkups and medical care. When the zoo has an emergency situation, the animals visit a vet clinic nearby. Since the zoo has around 1,000 individual animals, a full time veterinarian is recommended.



| A sick looking otter (Korean natural monument No. 330)



| A monkey with an injured hand was still on display to the public. The monkey requires treatment and should not be on display.

a. Unrestricted feeding and petting

Visitors are able to feed animals at any time of the year. The zoo claims that it sells a limited amount of food, but each section sells food separately. People bring food from their homes to feed to the animals as well, which means there is no actual control over the type or quantity of food fed to animals. Zoo visitors were observed throwing chips, crisps and popcorn into cages and enclosures. After a few hours it seems the animals are so full they stop responding to food that visitors present to them. Public feeding also makes it difficult for visitors to understand and learn about animals, as it can cause abnormal behaviors, such as begging and hyper-aggression. And feeding may also cause children to look at wild animals as nothing more than pets. Uncontrolled public feeding can also disrupt normal diets and cause nutritional imbalances.



| Feeding carrots to rabbits



| Food remained in the orangutan enclosure.

Various animals are available for petting programs. Since the distance separating the enclosure from the visitor viewing area is minimal, people can easily touch the animals. Some animals share the same space as visitors, and there is a specially designed area for feeding by children. Petting happens everywhere and is not restricted. Handling and petting of animals can be stressful, especially if the animals have no relief from it. There are no hand washing facilities or signs notifying people of the potential health concerns associated with touching animals. Staff at the zoo carry animals in their arms and walk around. If they pass by a cafeteria, children can pet the animals and then continue eating without washing their hands. Though any person is potentially susceptible to disease as a result of such exposure, there is a higher potential for young children, the elderly, and individuals with weak immune systems to contract disease.⁸



| Children are petting sheep.



| Petting llamas



| Visitors can even pet a pregnant llama.

While feeding and petting programs designed for drawing the attention of children can be performed safely, the zoo does not have adequate protocols for controlling children at all times. Children can feed and pet animals without proper supervision. The zoo management needs to set a proper diet plan and stop unregulated feeding by visitors for the benefit of both visitors and animals.



| Pig enclosure in winter



| Pig enclosure in summer

⁸ A publication of the Director General, NSW Department of Primary Industries, 2008, Standards for Exhibiting Animals at Mobile Establishments in New South Wales, pp. 17

b. Small Sized Enclosures

	Indoor (m ²)	Outdoor (m ²)
Asiatic Black Bear	9	56
Bengal Tiger	12	200
Lion	12	200
Rhesus Macaque	12	30
Hamadryas Baboon	12	30
Japanese Monkey	12	30
Crab-eating Macaque	9	-
Coati	-	15
Malayan Porcupine	3.36	15
Mexican Prairie Dog	1.5	15
Korean Raccoon Dog	1.5	12
	Surface Area (m) (Length & Width)	Pool Water Volume (m ³)
Harbor Seal	7 × 7	90
Walrus	5.5 × 5.5	154
Seal	4 × 10	35

Above measurements were given by Theme Park Zoozoo.

We compared received dimensions of enclosures for Asiatic black bears, Bengal tigers, lions and primates to minimum enclosure dimensions of New South Wales, and the zoo's enclosures are much smaller than suggested minimums.

Most of the enclosures at Theme Park Zoozoo are small and old. The worst are the enclosures for primates, which are exceptionally small and provide only minimal vertical space. Most primates are either fully or partially arboreal, so they benefit, both physically and psychologically, from being able to climb and move about at heights well above the floor surface. These archaic primate facilities require urgent improvement.



| Small and old enclosures for primates

The zoo claims it is implementing enrichment programs for rhesus macaques and Hamadryas baboons, but seems to have installed only a simple climbing tree structure and nothing else. The

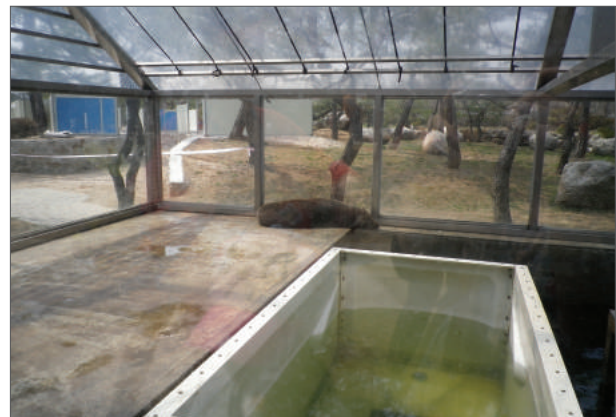
zoo management needs to develop a far better program of enrichment, that includes structural enhancements, furnishings, objects, food enrichment and management changes.

The distance between the primate exhibition areas and spectators is too small, so it's easy to feed animals. There was no proper public notices advising visitors not to feed animals and numerous people throwing different kinds of food to the animals were observed.



| The exhibition area is too close to the public viewing area. | Small windows on the enclosure wall | Small and barren enclosure

Enclosures for primates need immediate improvement. These need to be much bigger and higher than they are now, and they should be further from the visitor viewing points.



| Guinea pigs and rabbits are in the same enclosure. To prevent stress and conflict, the animals should be provided with opportunities to get away from each other. | South American fur seal enclosure



| Enclosures in poor conditions



| Barren enclosure with concrete floor



| Enclosures for birds

c. Animal Shows

Theme Park Zoozoo is known for its orangutan show which is entertainment focused. Orangutans wearing human clothing ‘act’ and visitors can have their photo taken with them. People can also touch the orangutans during the show while they are being paraded around. While some people may find this kind of animal use amusing, it is denounced by serious zoos. Orangutans are highly intelligent animals with very special needs. Forcing them to engage in shows and photo sessions often requires negative reinforcement training and is detrimental to the welfare of the individual orangutans involved. This show should be terminated immediately.

Until 2015, Theme Park Zoozoo had animal shows that featured crocodiles, Asiatic black bears, lions and tigers. These shows included staff chasing and holding the tails of crocodiles, ring and chin-up bar performances, an Asiatic black bear walking on a ball, tightrope walking, monkeys riding bicycles and walking on balls, and obstacle race featuring a lion and another with a tiger.

Bears in captivity can be trained to perform certain kinds of simplistic, unnatural movements and behaviors but they are not necessary to make bears interesting to humans. In expansive natural condition, bears already express a wide range of very complicated movements and behaviors.

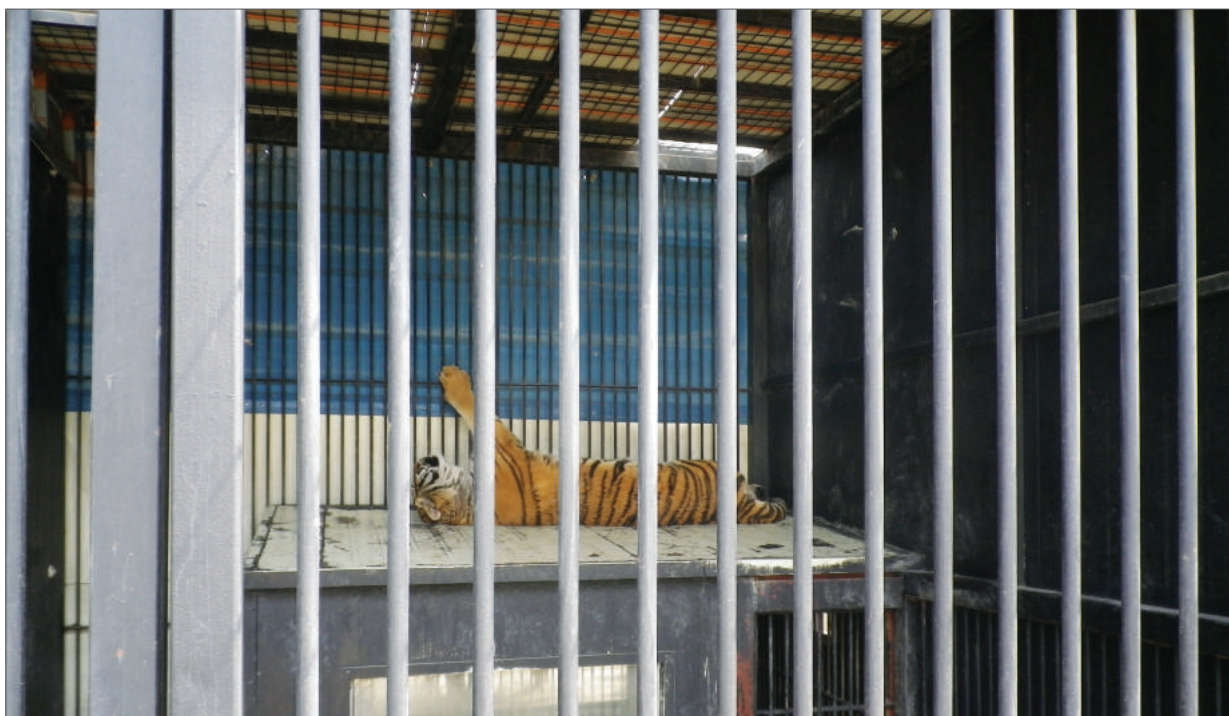
Animal shows are not educational in the way that many people think and that many zoos pro-



| Poor enclosures for show animals



| Lion enclosure



| Small and barren enclosure of a Bengal tiger

mote. Children who watch shows are usually presented with simple information factoids while the animals perform unnatural behaviors or are manipulated by handlers. Animal shows present a distorted and unrealistic picture of animals to visitors. Children may leave these shows with no understanding of the animal's natural biology, behavior, lifestyle or welfare. Instead, they may be led to think that using animals for recreation and amusement is fine. There is no legal regulation of animal shows in Korea. They should be regulated and restricted.

D. Everland Zoo

We visited Everland four times during the investigation period. The entrance fee at the point of research was 40,000 Korean won⁹ and the safari tour was not included in the price. Everland Zoo is a very popular, privately owned zoo in Korea. The entrance fee is quite expensive as it is reportedly used to fund the zoo operation. Some of the animal enclosures have more diverse features and facilities for enrichment than at other zoos in Korea. Everland also offers various attractions for visitors and is now becoming a hot spot for foreign travelers.

However, the zoo's parent company and the zoo itself are private for-profit business, so there seems to be an emphasis on revenue generation.

a. Marine Mammal Enclosures in Poor Condition

The enclosure for the polar bear is an outdated pit-style design, consisting of a barren concrete floor area surrounded by walls and a small pool at the front. Visitors look down into the exhibit and were observed throwing all kinds of food into the enclosure. There was a notice stating "no feeding," but each time we visited it seemed to be ignored by visitors. Additionally, the bears

⁹ The entrance fee in May 2016 is 52,000 Korean won.

were displaying begging behaviors. There was a public information session explaining about the ecology of polar bears and their feeding, but it didn't seem to have any effect on visitors who continued to throw food to the bears.¹⁰

There was a single fence between the enclosure and the visitor viewing area. Thus, spectators could easily throw materials into the enclosure. The pit is mostly devoid of features, is exceptionally small and lacks natural surfaces or substrates, furnishings, shelter, a proper sized pool and air conditioning during hot and humid weather.



| People can throw food easily into the enclosure.



| A polar bear with green algae in the fur

Since marine mammals are not a big attraction for the zoo, their enclosures are small and poorly designed. The exhibition areas for polar bears, sea lions spotted seals, and jackass penguins are all very small and close to viewing areas. The measurements of the frontal width of exhibition areas for sea lions and jackass penguins are only six and a half meters and three meters respectively. These enclosures are devoid of meaningful features, such as natural surfaces, substrates, structural enhancements, furnishings, shelters and privacy areas.



| Small and barren enclosure also close to the public viewing area

¹⁰ The facility had 2 polar bears before. One of them died in 2014, now has only one.

The marine mammal enclosures require renovation. They are grossly undersized and pit-style in design, allowing visitors to inappropriately look down on the animals. The enclosures require substantial amounts of enrichment that provide opportunities for the animals to engage in natural movements and behaviors.

b. Feeding and Petting

The zoo runs a guinea pig feeding program for children. Children can also feed and pet other animals, including sheep and snakes. No public notices warned visitors of the potential for transmission of zoonotic diseases or advising people to wash their hands after contact. The staff said they regulate these programs to minimize the stress on the animals.



| A notice for the guinea pig feeding program



| Petting a snake

These programs, including petting and feeding play a very important role in private zoos owned by individuals and companies. Zoos like them because they believe they attract customers and generate revenue, while zoo visitors enjoy the opportunity to get close to and contact animals. There were no hand washing stations at petting sites and no notice of the potential disease risk as a result of such exposure. There is a potential for visitors pick up disease pathogens from animals and then transferring them from their hands to their mouth or eyes or via food that is consumed later on. The zoo management should, at the least, inform visitors of the potential for transmission of zoonotic diseases from animals.

c. Bird Enclosures

Most birds are displayed in landscape immersion exhibits in open spaces, without overhead wire netting. However it appeared that some birds in these exhibits had their wings clipped or pinioned, thereby eliminating a broad range of natural movements and behaviors and negatively impacting on their welfare.

Enclosures for exotic birds are much bigger



| Birds on display are not flying.

in size and also have abundant features inside, compared to enclosures for the white-tailed sea eagle (Korean natural monument No. 243), Eurasian tawny owl (Korean natural monument No. 324-1) and Eurasian eagle owl (Korean natural monument No. 324-2). The measurement of enclosures for the Eurasian tawny owl and Eurasian eagle owl are about three and a half meters wide by two meters high.



| White-tailed eagle enclosure



| Small sized enclosures for Eurasian tawny owls and Eurasian eagle owls

d. Contents and Programs for the Sake of Arousing Interest

Everland Zoo operates various small-sized, short term exhibitions with different animals for attraction and entertainment purposes. Everland also presents three different animal shows with birds, seals, guinea pigs and other animals. Each show is approximately 20 minutes long and is conducted 11 times during weekdays and 13 times on each weekend day.

Privately owned zoos are focused on making maximum profit and animal shows are thought to be the attraction. However, animal shows are in decline in many countries because of animal welfare issues associated with the use of performing animals. Typically shows present unnatural movements, stunts and behaviors that often have nothing to do with the natural biology and behavior of animals. In addition, negative reinforcement may often be required to convince animals to perform and during performances, loud background noise (both presenter commentary and music) can cause a great deal of stress.

e. Safari

People think the safari area of Everland zoo has no boundaries and animals can roam about freely. Visitors take a bus or a car to look around and get close for feeding experiences, depending on the programs they choose. The safari area has the appearance of being expansive, but it has a concealed electric fence that reduces the area available to the animals to a degree where the amount of space provided is not that much different from other conventional enclosures. Some animals perform dances or tricks, presumably kinds of begging behaviors. Also prey and predator animals are displayed in close proximity. The zoo guide said it is okay because both of them had been born in captivity, but there is no scientific basis for that claim. Even if predators are

captive—bred, their natural instincts can still be present and powerful. The same is true for the flight response of prey animals. So placing predators and prey in close proximity must be done with great care, to avoid causing unnecessary frustration and stress.



| A liger

White tigers and white lions are exceptionally rare in the wild, but relatively common in zoos. Most of the white big cats in captivity are inbred members of just a few founder animals. They are not separate species and have no legitimate conservation value. Zoos should stop producing these animals for exhibition purposes. There are a large number of tigers, lions and bears in each enclosure which means the space per animal is very small. Overcrowding can lead to heightened degrees of inter-individual aggression. Prey and predator animals should be separated at a distance that allows the prey animals to feel safe and secure.

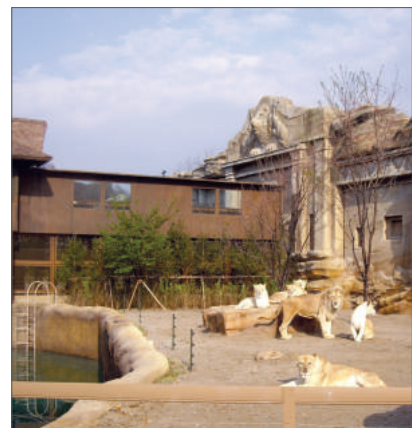
Everland should stop animal performances in the safari area. However, the management is reluctant to do so and claims that visitors prefer a tour with a feeding session. Everland Zoo is the biggest among company operated zoos and people are highly responsive and put value on their programs. However, it should be noted that Everland could easily change the format and content of their shows and of programs and still attract visitors.



| Dancing Asiatic black bears



| The distance between giraffes and lions is too close.



| Lost valley area

E. Zoos in Noncapital Region

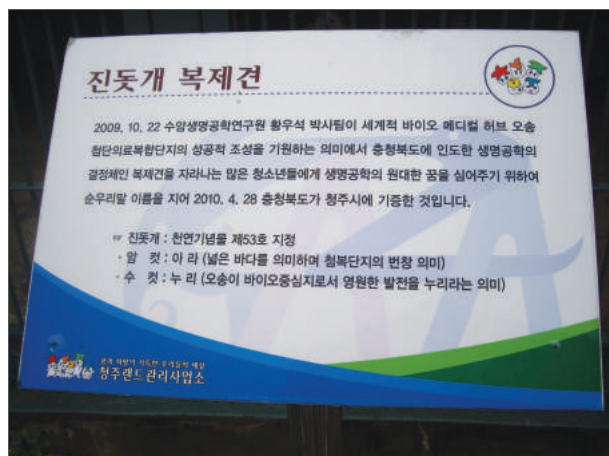
a. Cheongju Zoo

Cheongju Zoo opened in July 1997 and has had one expansion in 2000. Since then there has been no over-all renovation. Animals live in small, old enclosures, most equipped with concrete floors.

Cheongju Zoo is currently planning to move to a new location. The new facilities should be designed with larger, more complex, natural enclosures with better enrichment features. Private capital investments could once again cause an unreasonable emphasis on animal shows and experience programs. Therefore, the zoo should incorporate animal welfare principles into the fabric of their operation and every decision should consider animal welfare impacts.



A notice states stop feeding animals with food intended for humans. There are animals suffering from chronic diarrhea and loss of appetite because of consuming human food.



Jindo dogs were donated from a research institute — a typical example of a questionable exhibition.



Small and poor conditioned spotted seal enclosure



Concrete floored small enclosure of wolves



Small and barren enclosure for Siberian tigers

b. Gwangju Zoo

Gwangju Uchi Park Zoo displays about 120 species and 600 individual animals. Since opening in 1992, there has been no renovation at all. Enclosures are outdated, old and small. Exhibition areas are designed to be easily accessed by people, and many visitors were witnessed feeding animals from viewing areas. Enclosures for Asian elephants, bears, birds of prey, wolves, giraffes and hippopotamuses need to be gradually renovated. Improved enclosures must have larger areas with natural substrates, features and furniture. In addition, proper enrichment programs should be implemented.



| A Steller's sea eagle with compulsive repetitive pecking



| The height of bird enclosure is 1.7 meters only. Birds on display are not able to spread their wings properly.



| A giraffe is plucking grass on the ground. Higher features for plucking is required.



| Vulture enclosure



| Small and old enclosure for marine mammals



| Visitors easily can feed the animals



| Less popular animals are in worse conditions,



| Small and old enclosure for hippopotamuses



| Poorly designed indoor area for hippopotamuses. It is only made for easy cleaning and maintenance.



| The enclosure for the chimpanzee doesn't have enough features and furnitures for enrichment. This urgently needs an improvement.



| Higher order animals, including primates, require more special treatments,



| Old and outdated facility



| The enclosure for Asian elephants is too small for them. They move extensively in nature.



| The sized tiger enclosure with concrete floor and not enough shelter area



| Small lion enclosure without proper shelter

c. Wonju Dreamland Zoo

Wonju Chiaksan Mountain Dreamland Zoo had financial difficulties for many years and closed down in October of 2015 due to expiration of contract. Animals that had been neglected for a long time were transferred to other facilities.



| Enclosure in poor condition



| Very small and barren enclosure of Asiatic black bear



| A Eurasian brown bear



| Poorly furnished indoor area



| A Père David's deer is licking a bowl repetitively. This is a kind of stereotypic behavior.

d. Present Situation and Future Prospect in Zoos in Noncapital Area

Since budgets for zoos from local governments are very small, overall conditions of zoos in noncapital regions are much poorer than conditions in the Seoul metropolitan area. The attitudes of visitors are also very different from those in the Seoul metropolitan region. Cultural facilities are concentrated near Seoul, and people who live in this area are more exposed to issues such as animal welfare. Zoos in smaller cities are more likely used for just recreation since there are not many attractions to visit. Citizen's strong wish for a zoo in Busan made the Samjung The Park zoo opening possible. In 2012, one Chinese company showed its intention to open a zoo in Gyeongsangnam-do Province. This means foreign capital has an interest in entering the Korean zoo business. Zoos run by local governments are always short on operating budget. Politicians who don't understand the character of public influence of zoos push local governments to bring private capital investments into public zoos. This can generate unreasonable animal experience programs and shows to increase profits. These kinds of programs can never be compatible with animal welfare. Taking care of animals from different parts of the world costs a large amount of money. Once private investors are involved, zoos tend to put more weight on making profits than on animal welfare.

2

Second Investigation (2013-2014)



2.1. Introduction

Most public zoos¹¹ in Korea have not changed substantially since opening. These zoos are approximately 30 years old and there seems to be consensus regarding the necessity of their renovation. However, budgeting for the renovation is not easy. Since public zoos are funded by local governments using taxpayer funds, there seems to be a public expectation that entrance fees should be low or that zoo admission should be free. That has made it challenging to increase entrance fees to increase budgets for operation and renovation. So public zoos have taken it upon themselves to generate revenue in other ways. This situation has made it difficult to implement animal welfare practices which are often seen as optional and not within the purview of zoo budgets.

There is no comprehensive zoo law or regulations governing the establishment and operation of zoos in Korea.

This absence of regulation has led to numerous small-sized petting zoos opening, and their numbers are on the rise. The petting zoos usually offer animal encounter and experience programs, including petting and feeding animals, under the guise of education. Another zoo trend is the increase in commercial programs in traditional zoos.

This report's second section looks at issues of captive animal welfare and suggests solutions for solving current problems in Korean zoos.

2.2. Target & Criteria of Investigation

Target zoos are public zoos in Daejeon, Daegu, Jeonju and Jinju and company operated private zoos¹² in Busan, Ilsan and Jeju Island. Cheongju Zoo, Theme Park 2 Zoozoo and Gwangju Zoo were also revisited to conduct follow-up research.

Criteria for assessment of animal welfare was based on what was done during the first investigation. However, since each zoo had different background and format, applying the same standards in every case was challenging. Therefore various other factors and situations in each zoo were also assessed.

However, the basic principles of animal welfare were still used to guide the assessment process. For the welfare of animals in captivity, it is preferable to provide conditions as close as possible to the natural habitat of each species. Additionally, various facets of each animal's environment, as well as other conditions, must also be considered.

¹¹ A Public zoo is run by a local or a central government.

¹² A private zoo is run by a private company or an individual.

2.3. Results

(1). Private Zoos

A. Theme Park Zoozoo

The Park Zoozoo is one of the more famous petting zoos in Korea. Visitors can buy carrots on the premises and feed the animals with no staff supervision. The facility is also known for its various live animal shows. We visited there in 2012, 2013 and 2014, and observed some positive changes to the animal enclosures. For example, primates who used to be housed exclusively indoors, had outdoor areas as well. Bokdol the orangutan's enclosure had a climbing facility inside, while the enclosure for the Bengal tiger was larger than before.



| Enclosures for primates. Now they have outdoor areas.



| The Bengal tiger enclosure became a little larger than before.



| The enclosure for Bokdol has a climbing facility, but there is no shelter to obtain privacy from spectators.

Theme Park Zoozoo is planning to move a part of the zoo to Pocheon. We encouraged them to move some animals to Pocheon and to make each enclosure larger and more natural than it is now, but we have not yet received a clear response from the zoo.



| Concrete floor for easy maintenance



| Small and barren enclosure environment



| Leftover food should be removed right away as it can attract rodent and insect pests.



| No place for mud bath



| Barren lion enclosure





| Easy access for feeding



| Feeding wild animals can encourage children to think of them as pets.



| Feeding a banana



| No supervision and restriction for feeding



| There is no shelter for obtaining privacy from spectators.



| A child is petting a goat.



| Visitors can touch snakes after the snake show.



| Orangutan show



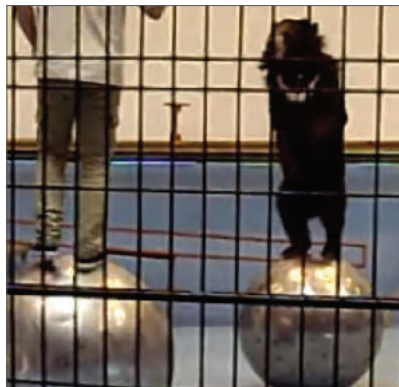
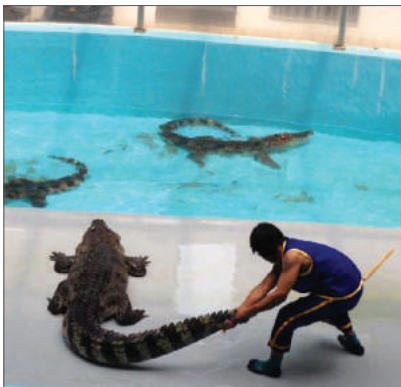
| Enclosure for Japanese monkey.



| This monkey requires immediate medical treatment.

The zoo's animal shows have been controversial ever since the zoo first opened. Animal welfare groups and the zoo have very different perspectives about animal housing and care, so negotiating improvements in the future may not be easy. Also, there is no legal standard to regulate animal shows, so zoos and show operators conduct them however they want. The zoo claims its animal shows are ecological explanation sessions. However, these programs are not natural encounters with animals. Instead, they are scripted shows performed in unnatural settings with trained animals doing unnatural things.

Prior to 2015, Theme Park Zoozoo conducted multiple animals shows that featured monkeys, lions, tigers, Asiatic black bears and crocodiles. Today, they operate a different set of animal encounter and experience programs, including petting and feeding sessions.



| Animal shows with crocodiles and Asiatic black bears

B. Hanwha Aqua Planet Ilsan

Hanwha Aqua Planet Ilsan, which features both a zoo and an aquarium was opened in 2014 in Goyangsi. The aquarium component of the facility features marine mammal displays, as well as an assortment of fish exhibits. Hanwha Aqua Planet has several locations, all of them featuring large marine mammals.



| A 'Touch Pool' with small sized fish and starfish. Visitors can touch the animals without supervision, a practice that is potentially stressful or damaging to the creatures.



| Entrance fee for aquariums for adults in Korea starts at 22,000 Korean won (US\$20,00), Hanwha Aqua Planet Ilsan is 29,000 Korean won for adults (August 2016).

The walrus is a large marine mammal housed in a very small pool. There is no hideout or shelter to obtain privacy from spectators, which means that during operating hours the walrus is exposed to visitors on a full-time basis. The walrus was swimming back and forth in what seemed to be a stereotypic fashion. The aquarium operates a walrus show, calling it an ecological

explanation session, with the walrus doing various movements and behaviors, such as sit-ups. The space for the session is noisy with spectator sounds reverberating throughout, so hearing the explanations from the keeper is almost impossible. This program, consisting of rudimentary behaviors and simplistic facts has little educational merit.



| A walrus is doing sit-ups.

Part of the zoo is named 'The Jungle' in Hanwha Aqua Planet Ilsan. This area is located indoors which means the animals receive no natural sunlight. The jaguar enclosure is comprised of glass walls on all sides except the back, exposing these rather secretive big cat to constant visitor viewing.



| The jaguar is reacting to a child.



| The jaguar enclosure is overly exposed.

Pigeons in the display area cannot fly. They just walk between visitors. Bird enclosures look dirty from feces and urine.



| Walking pigeons



| Bird enclosure with dirty floor



| Parrot feeding area. Because the bird food is not properly contained, it falls to the floor, so the parrots move to the floor to eat. This is a potential risk to the birds. Staff members were observed collecting the food from the floor occasionally.



| A sick sloth in a cage next to the parrot feeding area. A staff member said the sloth is not well and cannot be displayed to the public. However, the sloth was still in public view and not in a dedicated medical isolation area for the care and treatment of ill animals.

C. Pacific Land

Pacific Land is an aquarium that runs animal show programs. Separate shows feature monkeys, sea lions, and dolphins.

The monkey show is similar to other monkey shows in Korean zoos. Japanese monkeys in costumes play instruments, use hula hoops, and stand on their hands. Sea lions perform dives, fin stands, and are available for photos with visitors.



| Monkey show



| Visitors taking pictures with a sea lion.



| Sea lion fin stand performance

The dolphin show features four dolphins performing backstrokes, leaping and spinning in the air and lifting their bodies and fins from the floor. The highlight of the show is the trainers swimming with the animals. Two dolphins and two trainers holding onto dorsal fins swim in a circle and then one dolphin pulls a trainer across the pool. After the main show, dolphins perform small tricks in front of the pool's glass wall for spectators.

Dolphins are used in shows because they are popular animals with faces that appear to be smiling and can be easily trained. They are also capable of physical acts with a high level of difficulty, such as jumps and tail walks.



| Dolphin show at Pacific Land

Dolphins have a high degree intelligence and sense of identity. In captivity, they require expansive conditions and a great deal of stimulation. Unfortunately, most captive dolphins are kept in small, often barren, conditions, and that can lead to both physical and psychological difficulties and suffering. In most captive circumstances, the stresses that dolphin experience cannot be entirely prevented.

The documentary film *Blackfish*(2013) tells the story of Tilikum, a captive orca who killed three individuals, including two trainers. Tillikum spent decades in captivity in a small tank. Captive orcas like Tillikum have no opportunity to perform most of their normal, natural movements and behaviors. They also live in an abnormal social context and may suffer from boredom, frustra-

tion, fear, anxiety, depression and other negative emotional states and are extremely dangerous as a result.



| Leaping performance of dolphins

Primates cetaceans are highly intelligent and have a broad range of emotions. Because they are so smart, they can be trained and used in shows. But intelligent, active animals require a great deal of stimulation and many of them are emotionally sensitive, easily distressed, and prone to struggle. Show animals can easily experience depression and feelings of helplessness and fear. According to psychologist G.A. Bradshaw, nonhuman animals have the ability to think and feel in complex ways as we do and are capable of experiencing psychological trauma and suffering.

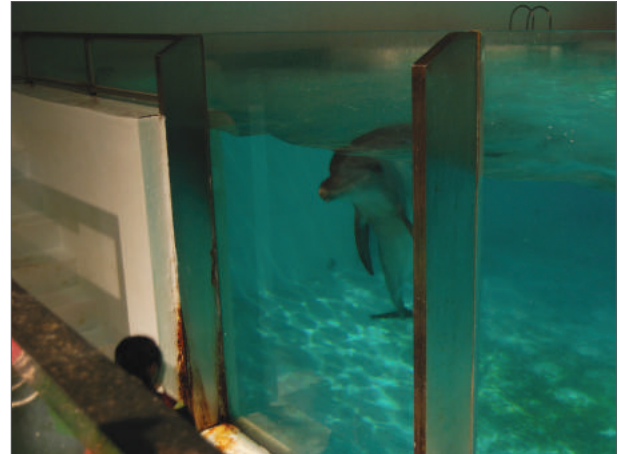
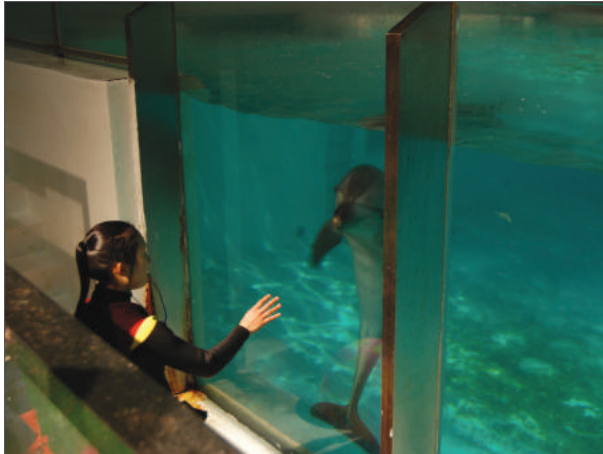
There is no government authority or department that regulates and provides oversight to the show animal industry. How show animals are housed and treated is solely up to the business owners and operators.

Pacific Land has used illegally caught IndoPacific bottlenose dolphins for its show. After confiscation of four dolphins, Pacific Land purchased two dolphins from Taiji, Japan, and put them in their show. Taiji is notorious for its annual mass slaughter of dolphins each September to March.

In March 2014, a bottlenose dolphin at Whale History & Experience Center in Ulsan gave birth to a male calf. It was the first dolphin birth in captivity in Korea and was extensively covered by Korean media. Three days later, the calf died, a common occurrence for infant dolphins in captivity. Since captive breeding is not yet capable of keeping the demand for dolphins, most facilities use wild caught animals for their show programs. All dolphins used for the show at

Pacific Land are wild caught dolphins.

The show stadium of Pacific Land is very small. There is high chance of dolphins colliding into each other during the show since they swim and jump at high speed. In fact, an accident in 2004 involved one female landing on the concrete floor outside of her pool and dying. We assume the size of the pool dolphins are staying in when they are not performing is even smaller than the show pool.



| The show's main goal is to entertain visitors.

After a show, visitors can come close to the pool and take pictures with the dolphins. Trainers direct the dolphins to stay and to position themselves in different ways for the public's amusement.

D. Jumbovillage

Jumbovillage was opened on 1999 in Jeju Island and features the last elephant show stadium in Korea. Both the elephants and their caretakers are brought in from Thailand. The show program includes movements and behaviors, such as headstands and hula-hooping on a small chair. The audience can feed bananas to the animals. The elephants perform scripted acts in costumes and their tusks have been cut to blunt them. Cruel training for show animals has previously been investigated and is known to occur.

Thailand is one of the very famous tourist destinations in Southeast Asia and has abundant wildlife. They have a considerable number of animal show and encounter/experience programs for tourists from all over the world. Jumbovillage represents an influx of this kind of show into Korea.

Jeju Island is the biggest and most specialized tourism spot in Korea. Most of the audiences of the elephant show are tourists from China, middle aged Korean tourist groups, and families with children. Tickets are sold very cheaply through travel agencies and are included in tour packages. The shows are just add-on entertainment.



| Feeding elephants



| Hula hooping



| Standing on small chairs



| Headstand



| Elephant show at Jumbovillage



| A role play of an elephant nurse gives an injection to a patient elephant.

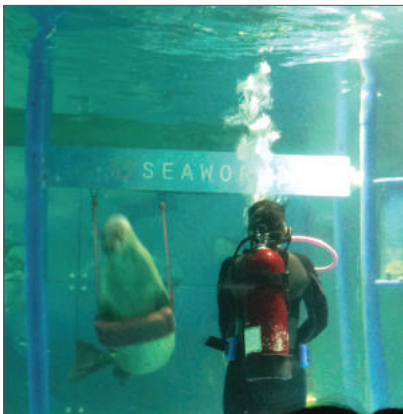
E. 63 Seaworld(Hanwha Aqua Planet 63)

63 Seaworld is the very first aquarium in Korea. It consists of three exhibition floor areas of 3,563.64m² and 3,500 individual animals of 250 species in 800 tons of water.

The main problems of 63 Seaworld are detailed below:

The exhibition area for sea lions is small and very shallow. This is also where shows are performed. The distance from one end of the pool to the other is minimal, which restricts the movement of the sea lions and encourages engagement in repetitive behavior. The distance from the viewing area to the exhibition area is very close, and there is no other barrier other than the glass wall of the tank. The animals are therefore exposed to constant view during public visitation hours. Numerous people knocking on the wall of the tank to get the animal's attention were observed. During the show, people can sit on a raised spot just in front of the tank to watch. Ideally, this should be removed and a physical barrier between the tank and the viewing area installed. During the performance, people sit on the floor since there are no proper chairs to sit on. This means there is no actual limit to the number of people admitted to the show. During the show, an emcee explains the performance with a microphone but the sound is muddy and almost impossible to hear properly.¹³

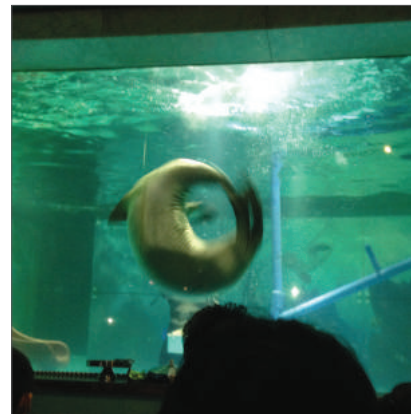
Harbor seals perform tricks, such as swinging on a swing and playing basket ball, unnatural movements that have nothing to do with their natural biology, behavior of lifestyle twice per day. 63 Seaworld's show programs are highly commercialized and focused on entertainment. However, facility management knows that the public find this kind of show entertaining, so they use it to attract customers and increase revenues.



| Swinging

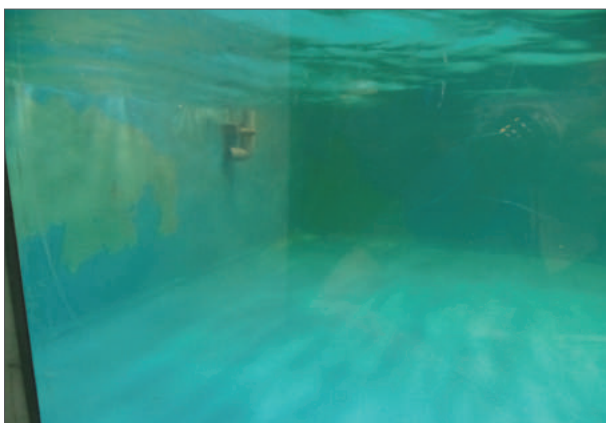


| Playing basketball



| Spinning

¹³ Sea lions were transferred to a different facility and the show with them is no longer performed.



| Depth of the sea lion tank is very shallow.



| A sea lion is reacting to noise from viewers.



| Visitors were sitting on a raised spot in front of exhibition area.



| Viewers were sitting on the floor watching a sea lion show.



| There were many visitors knocking on the glass wall of the tank and shouting to get attention from sea lions.

F. Samjung The Park Zoo

After Seongjigok Zoo closed in 2005, construction started for a new zoo in Busan. However, construction stopped in 2011 due to financial difficulties. With the help of the Busan city council, the construction resumed and the zoo finally opened in April 2014.

Samjung The Park Zoo identifies itself as a walking safari because there is a path alongside the exhibition areas. However, the word 'safari' is not appropriate for this zoo, as safari typically means a zoolike place where visitors, usually in vehicles, can observe freely roaming animals. Samjung The Park Zoo is a conventional form of a modern zoo, not a safari.

One of the problems of Samjung The Park Zoo is that the exhibition areas do not have enough grass and, trees to provide shade and privacy areas and to make the enclosures more natural and complex for the animals.



| A border collie was constantly chasing sheep, an activity that can place undue stress on the sheep.



| Barren enclosures. Animals can suffer from boredom.

Additionally, the distance between the visitor viewing area and the exhibit is quite small. Notice boards asking visitors to respect the animals have not stopped visitors from screaming at the animals and throwing food into their enclosures. The structure of the visitor viewing stations needs to be changed to make it more difficult for visitors to harass the animals.

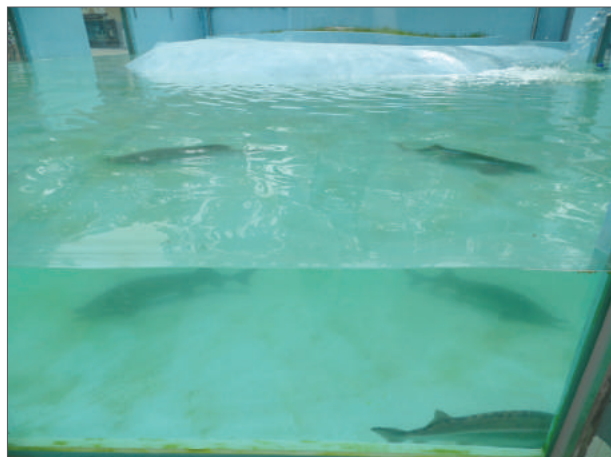


| Pit styled enclosure. Easy structure to throw food to the animals.

Samjung The Park Zoo operates multiple animal encounter and experience programs, including petting turtles and chicks. There was no supervision at the time of our visit. Children were holding chicks and several were observed being dropped to the ground.



Samjung The Park Zoo is relatively new and clean and the enclosures are somewhat larger than in other Korean zoos. However, since they have very large variety of species, the level of care for each individual animal does not appear different from other facilities. Most of the enclosures are not designed for the needs of animals or the expression of natural movements and behaviors.





| The trees in the Japanese macaque enclosure are not available to the monkeys as they are hot wired(i.e., electrically fenced). The enclosure facilities and furniture are insufficient for encouraging a range of movements and activities.



| All cacti are fake. This is for decoration, not for animals.

| A very small and poorly made house.

| Entrance of the house is blocked and animals are forced to stay outside for exhibition purposes.



| No shelter for sleeping and resting



| Even though elephants are among the most social animals in the world, a single Asian elephant is kept on display in a barren enclosure.

G. Bukyung Zoo

Bukyung Zoo is located in Gimhaesi, Gyeongsangnamdo. This zoo is privately owned and operated by an individual and well known for its animal encounter and experience programs.

Many species at Bukyung Zoo are housed permanently indoors, including Bengal tigers and lions. The indoor enclosures are very small with concrete floors and they lack proper furniture and facilities. Outdoor areas for some animals are small, barren and dirty.



| Small and barren indoor exhibition areas

The lack of space for animals is not the only problem in this zoo. Public feeding of almost all species is allowed. There are holes in the glass walls through which visitors can feed animals. Even though the size of each hole is small, the fingers of children can still reach through and, in some cases, contact the animals inside. This situation is potentially dangerous to both animals and human visitors and should be stopped immediately. In addition, uncontrolled public feeding can cause nutritional imbalance in the diets of the animals, it may encourage unwanted begging behaviors and it can distort the way that visitors see animals, by making them look more like pets than wild animals.



| Feeding animals can cause multiple problems.



| Walls of indoor areas have holes for feeding.



| Small, barren and filthy looking enclosures for reptiles



| Dirty pool water



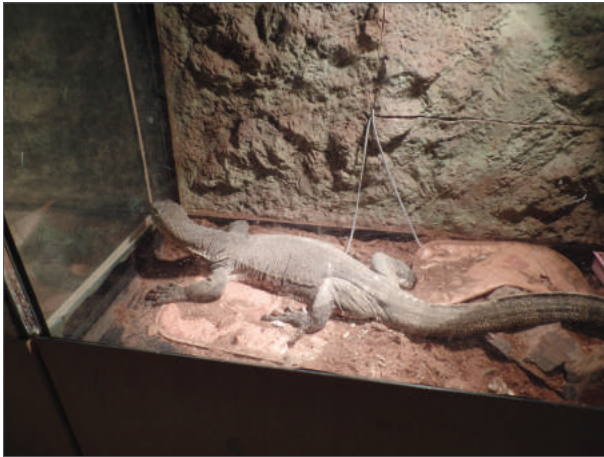
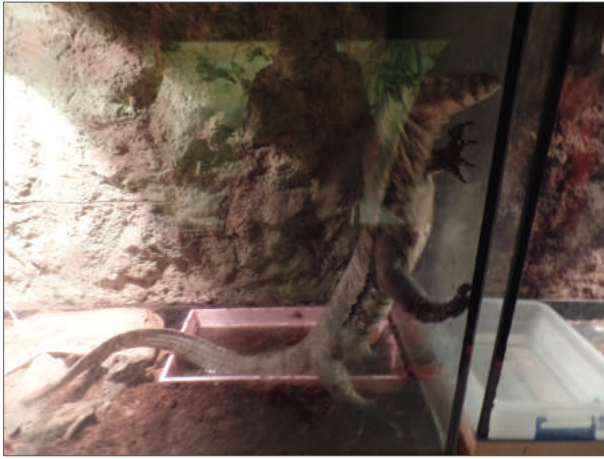
| Dirty drinking water



| Barren and dirty enclosures



| Ostriches without feathers



| Small and barren reptile enclosures



| Barren and shoddy looking exhibition areas



| Barren and shoddy looking exhibition areas

The zoo also operates multiple petting programs, involving gibbons various reptiles and other animals. Wild animals require special environments and may experience stress and suffering from being handled. Under these circumstances, it is impossible to guarantee animal health or the safety of visitors.



| Gibbon enclosure



| Petting program with a gibbon



| Due to easy access, low maintenance, and relatively low cost with similar effect, zoos increasingly display domestic and farm animals. However, since there are no guidelines for exhibiting these animals, there is a possibility of easy disposal of unwanted and surplus stock. There is a need for regulations governing the housing, care and exhibition of these kinds of domestic and farm animals as well.

Animal encounter, experience and petting programs are very common at privately owned and operated zoos in Korea. These programs are widespread because people enjoy getting close to animals and touching them. Having these kinds of visitor programs can result in increased visitor satisfaction, even if conditions in the zoo are poor. Commercial benefits and public demand for these programs make implementing some animal welfare measures more difficult. Therefore establishing national animal welfare standards and ensuring that zoos meet these standards and operate properly is required.

(2) Public Zoos

A. Daegu Zoo

Daegu Zoo was opened in 1970 and is located in Dalseong Park. Admission to Dalseong Park is free, which means all facilities in the park, including the zoo, are free.

The zoo displays 25 species of mammals and 53 species of birds, including a Korean natural monument. Due to its old facilities and infrastructure, many problems have arisen since 2000, so the zoo is planning to move to another as yet undetermined location. Daegu Zoo was visited in January 2014 and numerous problems were observed.

a. Old Enclosures

Daegu Zoo is very old and there has been no substantive renovation since it opened in 1970.



| Old fashioned exhibition areas from 1970. These areas are designed for ease of public viewing, and for convenient maintenance. Species-specific requirements of the animals are not considered. All display areas consist of similar square exhibition enclosures, a design style that is often referred to as the “cookie-cutter” method of design because all of the cages are the same. The enclosures are made of metal frames and prodigious areas of rust were observed.



| Birds of prey have substantial wingspans, but enclosures for them are not spacious enough for them to fly. A much larger aviary space that allows the birds to achieve flight is required.



b. Small and Barren Enclosures

Sacred baboons, coyotes, Malaysian sun bears and wolves are in very small spaces. The walls and floors are hard and there is no enrichment or facilities to encourage the animals to express normal movements and behaviors or to prevent boredom, frustration and other negative emotional states.

Enclosures for bears, Bengal tigers and marine mammals don't have natural features^(e.g., trees and other vegetation in the terrestrial enclosures), and they apparently barren. Additionally, no privacy areas are provided.



c. Stereotypic Behaviors and Health Concerns

Barren environments that fail to provide activities for animals to engage in can lead to health and welfare issues. The animals were not expressing normal movements and behaviors, such as exploring, foraging, normal social interactions, etc. An elephant was engaged in a repetitive pacing routine that involved walking from one end of the enclosure to the other.



Daegu Zoo was opened in 1970, so it is an old fashioned zoo with cages and enclosures that reflects a time when animal welfare was not a priority. Before deciding on relocation, Daegu Zoo must commit to incorporating animal welfare as one of the key principles of the zoo operation. It should not be focused entirely on its role as a possible tourist attraction.

B. Jeonju Zoo

Jeonju Zoo was opened in 1978. It has a total of 105 species, including 44 species of mammals and 660 individual animals in 17,061.5m². The city council is planning a renovation and a transformation of Jeonju Zoo to an “ecological zoo” with a 40 billion won budget.

a. Old Enclosures



Most of the enclosures have not been renovated since its opening. Buildings have cracks in the walls and bars are rust laden.

Bears are curious and they display a broad range of extremely complex behaviors in the wild. The zoo's bear enclosures don't provide enough space, furniture, facilities and enrichment. The enclosure's concrete floors are inappropriate and contrary to bear welfare. The public viewing areas are too close, and visitors are easily able to throw food into the enclosures.



| The zoo recently repainted the facilities, but made no actual facility renovations that would benefit the animals. This may be due to a lack of budget, but it also suggests the management is focusing more on making things presentable for visitors, than, they are on animal needs.

b. Stereotypic Behavior

Wolves, giraffes and Asian elephants displayed repetitive stereotypic behaviors. The wolves and Asian elephants were constantly pacing from one end of their enclosures to the other. Giraffes were engaged in oral stereotypies, including continuous licking the metal bars of their enclosure. Both giraffes and Asian elephants are highly popular animals, but providing suitable environments for them is extremely challenging, since they require large spaces and an appropriate, warm climate. In addition, elephants are exceptionally social animals, but the Asian elephants are kept separately reportedly for safety reasons.



c. Purpose of Renovation is Not Clear

The previous enclosures for wolves and Bengal tigers were problematic due to the small spaces, inappropriate hard substrates, and lack of furnishings, shelter and privacy. The zoo renovated these enclosures, but no actual improvements were made that benefited the animals. In fact, the distance between animals and spectators was reduced.



| Enclosures for Bengal tigers, wolves and jaguars.



| Exhibition areas for Siberian tigers and lions. This type of enclosure is very typical in Korean zoos in the provinces.

d. Easy Access for Feeding

A few notice boards stating that no feeding is allowed are installed in front of some enclosures, but feeding animals is not entirely prohibited. Visitors still can feed some of the animals and members of the public were observed throwing food to the animals, with the worst instance being at the mandrill and baboon enclosures.



| A notice board states, “We hate rice puffs, cotton candies and snacks. We like fruits including apples.” This shows that management felt it would be impossible to stop visitors feeding animals, so it chose the second best plan. It reflects the knowledge level of visitors. However, zoo management seems to have ignored the dangers to the animals posed by uncontrolled public feeding and the fact that it makes proper monitoring of animal diets almost impossible.

| A visitor is throwing food to a sacred baboon.



| Enclosure for birds of prey



| Chimpanzee enclosure. The enclosure is barren and has no privacy areas.



| Old facilities



| Barren reptile enclosure



| Asian elephant



| Small and barren hippopotamus enclosure

C. Daejeon Zoo

Daejeon O-World is a multi-purpose facility with zoo, amusement park and flower garden. The zoo displays 600 individual animals representing 130 species.

a. Stereotypic Behaviors and Health Condition

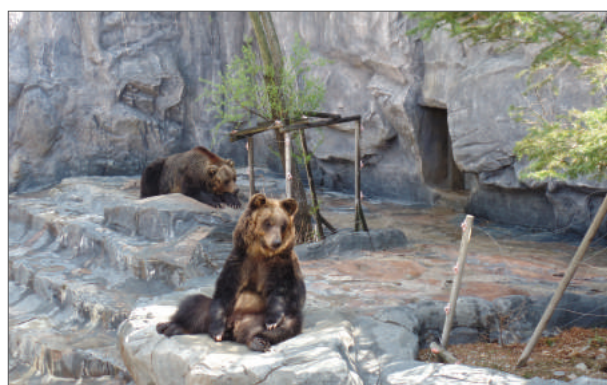
The polar bear displayed the most pronounced stereotypic behavior of all of the animals observed at the zoo. The bear was constantly pacing from one side of its enclosure to the other. The bear also had green algae growth in the fur, an indicator of living in an environment that is too warm.



| Giraffes engaged in stereotypic licking of walls.

b. Problems with Ways of Display

There is a bear food vending machine in front of enclosures, so anyone can buy food to feed the bears. Bears were looking at the viewing area and waiting for people to come and feed them. The idea behind the vending machine is that instead of visitors throwing their own food to the bears, they can purchase a more appropriate food from the machine. However, this is not an acceptable strategy for addressing the issue of public feeding. Structures at the viewing and exhibition areas need to be changed to prevent visitors feeding the animals and there needs to be a zero tolerance policy for public feeding. If visitors are caught feeding animals, they should be asked to leave the zoo.



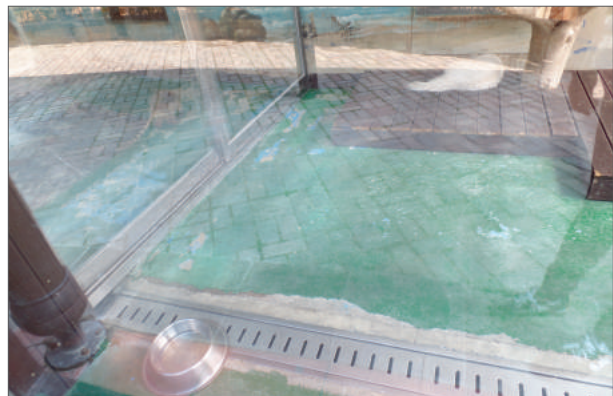
A ride is located near the bear enclosures, making it very noisy from people screaming.



Siberian tigers are in old style, undersized, barren steel bar enclosure that lacks proper features and furnishings.



Exhibition areas for less popular animals are small and old. Enclosures for birds of prey don't have enough space for birds to stretch their wings and fly.



c. Safari

Daejeon O-World has the most diverse safari program in Korea. The Africa safari area offers a bus tour for visitors. Exhibition areas for bears and tigers are bigger than the areas for others animals. However, this program includes a bear performance induced by the tour guide. The guide throws food to the bears and they perform tricks. Safari areas don't have obvious physical

barriers between animals, so there is an impression of spaciousness. However, the safari areas are actually subdivided by electric fence barriers, so the spaces allocated to the animals are much smaller than they appear.



The wolf safari is divided into separate areas, based on the makeup of each wolf pack, and their ages. If the zoo management were to successfully control the numbers of wolves through surgical or chemical sterilization, this wolf safari has the potential to be one of best wolf enclosures in Korea.



d. Problems of Feeding

Public feeding of domestic animals, such as sheep and goats is common in Korean zoos, and Daejeon Zoo is no different. There is a food vending machine for sheep and goats near the exhibition area, so visitors can purchase and feed the animals without staff supervision.

e. Dangerous Structure

Exhibition areas for jaguars and Amur leopards are made of coarse net shaped bars which can cause safety accidents when visitors reach and place their hands too close to the bars. The exhibition area was very close to the visitor viewing area, separated only by a low fence that children could easily climb over. There are cross-over bridges for the animals that are low enough that they can be reached by an adult.



Exhibition areas are too close and the space between bars is wide enough that fingers can get through, creating a potential for human injury.



D. Gwangju Zoo

a. Old and Barren Enclosures

Overall facilities of Gwangju Uchi Park Zoo are old and require urgent improvements. Renovations would require a substantial budget and presumably cannot be done all at once. The city council must set a vision and plan the renovation step by step.¹⁴



| Very old and doesn't look safe.



| Bear enclosure without natural substrates, trees and other vegetation. Bears are highly mobile, very active, curious and engage in a broad range of behaviors on a daily basis. Bear enclosures must offer large spaces, natural substrates, complex environments equipped with proper furnishings, shelter and privacy areas, and enrichment programs must be in place.



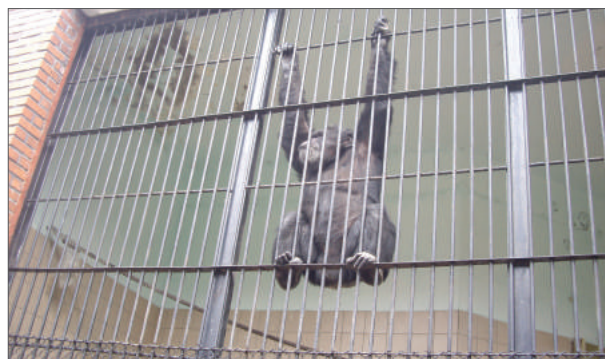
| Food on the floor



| Mice in the enclosure



| Enclosures for primates are very old, rusty and barren. Primates are highly intelligent and socially complex. These areas do not provide a proper environment for primates.



¹⁴ The renovation process started in 2014 and is still in progress in 2016.



| Enclosure for less popular species such as raccoons, wolves and coyotes are even worse.

E. Cheongju Zoo

a. Relocation Discussion at Standstill

Cheongju Zoo was opened in 1997. There have been relocation requests since the zoo's opening because the zoo is located on a slope, which is not an ideal location.

Cheongwon-gun was located next to Cheongju-si and in 2014 Cheongwon-gun became a part of Cheongju-si. The idea of moving the zoo from its current location to the Cheongwon-gun area is included in the Development Plan for Coexistence, which was agreed to by these two cities. A zoo relocation task force has been formed for detailed research and further discussion of a new location. However, some say moving the zoo to another location is not feasible. The direct expenses for consolidation of two cities costs about twenty billion Korean won, and the costs of implementing the agreement are even higher. Thus, getting a budget for zoo relocation would be difficult. If the city cannot obtain enough financial help from the government, the city council may have to implement budget cuts. The estimated relocation expense is about nineteen billion Korean won and it is not a priority at the moment. The current zoo has an area of 104,786 m². Plans for this space after the zoo's relocation need to be discussed, as well. Even though the city council has already launched a task force, nobody knows how long the relocation process is going to take. If the city seriously considers relocation of the zoo to be mandatory, planners must commit significant thought and effort to the move. Moving a zoo is not a simple endeavor. There are many interests that need to be considered, such as city planning, tourist attractions, commercial supremacy, and budget allocations, to name just a few. It takes considerable time, energy and resources from the initial planning stage to actual execution.

b. Development and Stagnation

Because of the ongoing relocation discussion, the existing zoo facility renovations are effectively on hold. However, there have been a few positive changes in some enclosures. The vulture enclosure was renovated in 2010, so it is now more spacious than similar enclosures in other zoos. In addition, the slope of the zoo property allows the vultures to fly downward in a more natural way.





| Cheongju Zoo hasn't changed much since its initial opening in 1997. Enclosures are small with concrete floors and walls,



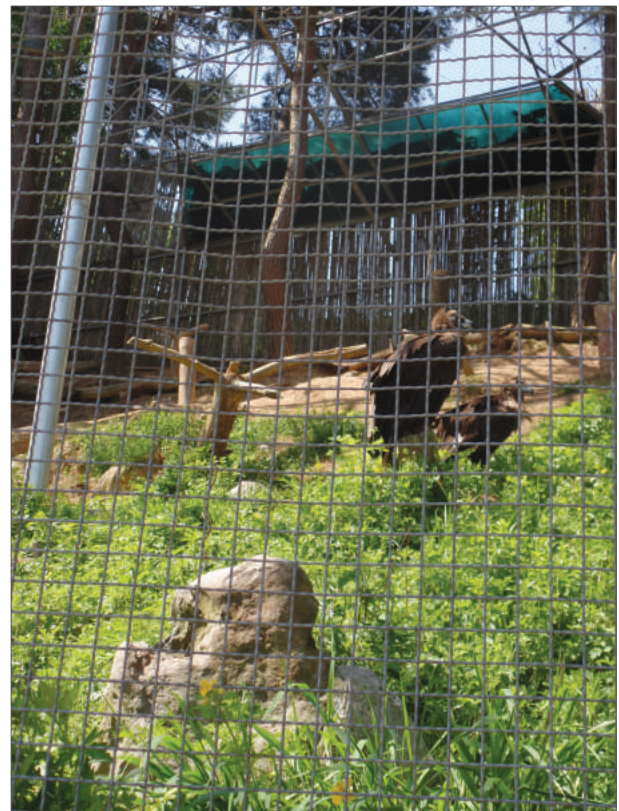
| Wolves display severe stereotypic behaviors,



| Primate enclosure is small and barren,



| Enclosures for tigers and lions are very small. Both need to be much bigger.



| The vulture enclosure is in relatively good condition. Vultures express a variety of behaviors and visitor responses are positive.

F. Jinju Zoo

Jinju Jinyangho Zoo is a part of Jinyangho Lake Park and was opened in 1986. It is one of the public zoos in Korea and is managed by the Jinju city government. On November 29, 2014, a Eurasian brown bear managed to get into the lion enclosure and a lioness was found dead the next morning. This incident received huge public attention at the time. An insider said the bear was born at the same zoo, but his parents neglected him. So the zoo created a small space for the bear next to the lion enclosure, and the animals lived next to each other for quite a long time. The bear broke into the lion enclosure to retrieve some leftover chicken. Visitors witnessed the scene and the zoo staff cut in and separated them again. The lioness was found dead the next morning. The lioness was 20 years old and the zoo claimed it was a natural death. The problem is that these two enclosures were separated by only by an old steel bar door, which was not strong enough, thus allowing the bear to break into the enclosure next to it. These types of enclosures that keep different, sometimes competing species next to each other can cause discomfort, tension, stress and negatively affect animal welfare.

There was another incident just a few days before. An Asiatic black bear cub attacked his mother, and she died due to shock from excessive bleeding. These bears had fought multiple times before, but zoo management did not take proper measures to mitigate the aggression, which led to two horrific accidents.

Jinyangho Lake Park is a beautiful park with abundant trees. The original intention of the park was to offer people a natural area for relaxation, along with entertainment at the zoo. However,

the zoo doesn't serve the purpose properly. The facility is very old—style, with outdated, ugly concrete and steel bar cages and enclosures. The interior of the primate enclosures were unclean. It is thought that looking at animals in dirty environments can encourage visitors to think less of animals, including the idea that they are lower beings than humans. Keeping animal environments clean is very important for other reasons as well. Leftover food can attract mice, rats, insects, and other pests and may cause health issues in animals. It is also essential to operate proper heating and cooling systems for animals, along with ensuring proper lighting and humidity.

The wolf enclosure is very small, hard, unnatural floors and lacks proper shelters and privacy opportunities. Instead it contains a simple dog house structure.

The Asiatic black bear cub who had attacked his own mother displayed a severe pacing stereotypy, which involved moving from one end of the enclosure to the other, over and over again.



| Old and barren bear enclosure



| The Asiatic black bear cub who attacked his mother



| The Eurasian brown bear who broke into the lion enclosure



| The dead lioness's enclosure



| Everything is old and rusty.



| Beautiful Jinyangho Lake Park



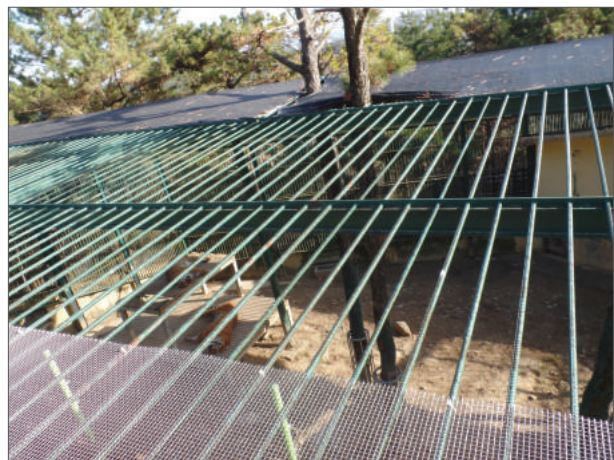
| Just a heater, no other heating system



| Very dirty looking primate enclosure



| A dog house for the wolf



| Very old and look down structured Bengal tiger enclosure



| Otaria(South American sea lion) enclosure



| Sheep exhibition area is located along the path,

3

Problems & Solutions in Korean Zoos



3.1. The Limits of Law

The Korean Association of Zoos and Aquariums^{KAZA} currently has 22 members facilities. However, the association does not provide any meaningful oversight and does not ensure that Korean zoos and aquariums operate at a professional standard as it does not have any of its own policies and regulations. Any zoological institution in Korea can become a member of the association and there is no mandatory evaluation process.

In recent years the number of mobile zoos and petting zoos has been increasing rapidly, but it appears the government doesn't have any statistical data about them.

At the time this report was researched there was no national Korean law regulating zoos and aquariums in Korea. And no facilities even needed to be registered with government. Then, in May 2016 a new law which supervises zoos and aquariums in Korea finally passed to become effective on May 30, 2017. However, this law is not very practical. The definitions of zoos and aquariums are ambiguous and the law does not cover all of the different types of zoos and aquariums that operate in Korea. It needs to be more comprehensive and include all forms of zoological businesses that use animals, including mobile zoos and petting zoos. Also the law's registration process is simplistic and easy, it should be more strict. A minor benefit however is that the law may play a role in reducing the number of Korean animal businesses that don't even meet the new law's minimum required standards.

Also, guidelines and standards for zoos and aquariums should be formulated in cooperation with the zoo industry, animal welfare organizations, independent expert consultants and assorted other specialists. Once the guidelines and standards are in place, they should be strictly enforced and any business that cannot meet them should not be allowed to operate. Authorities should have the power to implement this measure and to dispose of animals on closed premises. To achieve this aim, additional government officers who are capable of conducting inspections would need to be assigned to the relevant department.

3.2. Sharp Increase of Petting Zoos

Zoos with animal encounter and experience programs, including petting and feeding, are on the rise in Korea. Theme Park Zoozoo is famous to the public for their diverse and intensive set of experience programs. Small sized mobile zoos and petting zoos that visit daycares, junior schools, shopping malls and event locations, such as festivals, are also prevalent.

Petting zoos may have severe impacts on animal welfare. Some zoos have operation time schedules, but others like Theme Park Zoozoo make animal encounter and experience programs available from opening to closing. Programs without proper timeout for the animals can elevate animal stress levels and cause decreased welfare. Premises with time limits say they are there 'for minimizing stress of animals' which means they are aware that animals can be stressed during these kinds of programs. Also, many petting zoos allow members of the public to touch or hold

animals, which can result in scratches and bites to human visitors or animals being dropped to the floor by accident. Animal encounter and experience programs should always be conducted and supervised by trained staff members.

There are also significant human health risks associated with mobile zoos and petting zoos. Touching animals or the surfaces they have contacted can pose health-related risks to humans. Scientific research regarding the potential health risks associated with contacting animals has been long established.

Every zoo with petting programs should implement preventive measures to mitigate against disease transmission, including proper vaccination for all animals and a prohibition on the use of ill or injured animals. Also, proper hand-washing facilities should be available on the petting site with prominent, easy to read hand washing instructions for visitors.

Human food consumption in animal areas should not be allowed. Touching infected animals and/or the surfaces they have contacted can result in contamination of hands, so eating without prior hand washing can lead to disease transfer and human illness.

Every zoo should also post information for visitors about the potential health risks associated with animal contact, including the possible transmission of zoonotic diseases, such as cryptosporidiosis, leptospirosis, parrot fever, trichophytia, salmonellosis, tetanus, toxoplasmosis, toxocariasis, tuberculosis, septicaemia, encephalitis, etc.

Most notable among the disease risks presented by some types of animals, such as reptiles, is the transmission of *Salmonella* sp. *Salmonella* and other potentially pathogenic organisms are a natural part of the internal flora and fauna of nearly all reptiles and there is no accurate test for *Salmonella* in reptiles, so all reptiles should be treated as carriers. Amphibians are also potential carriers of a wide variety of zoonotic diseases.

The most reliable way to prevent the transmission of disease is to avoid all direct contact with reptiles and amphibians or surfaces with which they have come in contact.

Birds are also known to shed more potentially pathogenic organisms than many other animals. Chlamydiosis and parasite infected birds should not be used in petting programs. Avian tuberculosis is generally considered to have very low zoonotic potential to the general public. However, it can present significant risks for people with weak immune systems.

All mammals are considered at risk for infection with rabies, so they should be vaccinated accordingly. Wild-caught animals should be subject to a minimum of three months of quarantine to help ensure they are not harboring disease. Even then, some species such as skunks, foxes, raccoons and bats may still represent a greater risk after six months of quarantine. Also, individual animals displaying any type of skin lesion compatible with dermatomycosis should be evaluated and treated properly with extra caution in order to prevent transmission to those in direct contact with them.

Primates are genetically close to humans and may have a higher risk to human health, in addition to the primates themselves being susceptible to human diseases. Primates should not be used in petting programs.

Small ruminants, such as sheep and goats, that are greater than six months of age and used in contact areas should be tested for tuberculosis, brucellosis, and leptospirosis. Also, any animals

with lesions compatible with sarcoptic mange and contagious erythema should be tested and removed from contact until proven negative. Calves should be screened for *Cryptosporidium* sp. and other infections. Additionally, recent reports indicate that infection with Johne's disease may present zoonotic concerns, primarily in goats.

Pigs should be checked for gastrointestinal infection with *Balantidium* sp. for reducing the risk of possible transmission. Additionally, a regular vaccination program should be considered for minimizing the risk of any possible infection.

Due to the potential for bites, small carnivores should be used in contact areas only with extreme caution and also should be tested and found free from *Toxoplasma gondii*. Small rodents also have the potential of biting should be handled with extra care.¹⁵ Before and after every contact with animals, proper hand washing is necessary.

Proper hand washing means:

- Using soap and running water(warm to hot water is best).
- Wetting hands thoroughly and lathering with soap. • rubbing hands vigorously for at least 15-20 seconds as you wash them.
- Paying attention to back of hands, wrists, between fingers and under fingernails. • rinsing hands well under running water for 15-20 seconds.
- Drying hands with disposable paper towel, clean towel or air drier.
- Turning off the tap with the used paper towel, if applicable. Exhibitors are encouraged to display a sign that outlines this information.¹⁶

Petting zoos are entertaining, but there is no substantive body of empirical evidence that they are educational. Children are very curious and have a tendency to like more interesting and exciting activities. They also prefer seeing animals up close, rather than from a distance. Educational programs for kids should be educational and should be designed to teach that nature, environment, ecology and animals are not just there for our recreation. Touching, holding and playing with animals may result in children believing that it is appropriate to keep animals as pets or for our amusement in other ways. Currently, petting programs are just offering fun activities for kids and they do not teach children about life, death and the responsibility of keeping animals.

¹⁵ Association of Zoos & Aquariums, 2011, Accreditation Standards and Related Policies, pp. 38–40

¹⁶ A publication of the Director General, NSW Department of Primary Industries, 2008, Standards for Exhibiting Animals at Mobile Establishments in New South Wales, p. 17

3.3. Population Control & Uncontrolled Breeding

Every public zoo in Korea is run by a local government which means they are funded through the tax base. In 2014, we requested animal acquisition and disposition information from six public zoos. The reasons for acquiring animals or shipping animals out are ‘exhibiting more various species of animals’, ‘controlling numbers of animals’, ‘for pairing^(breeding)’, ‘balancing out the ratio of male to female’, ‘exchanging’, ‘selling surplus animals’, ‘donated for free to other facilities’, etc. Exchanges often happen because zoo managers believe zoos should have certain species on display and in sufficient quantities. If Korean zoos decide to keep exhibiting a wide variety of exotic animals, importing and exchanging animals among zoos will be continued. However, limited budgets and space often make it challenging to accommodate an especially diverse range of species, especially in old facilities that are in need of renovation. Since zoo renovation is costly, many zoos cannot afford to do very much, but they continue to acquire and maintain large numbers of animals in less than ideal conditions regardless.

Uncontrolled breeding results in the production of surplus animals who are then sold or donated to other facilities. Seoul Zoo even sold animals, such as deer and black goats, to slaughterhouses.

Presumably privately-owned zoos, especially the ones operating petting programs with domestic animals, also face surplus animal problems. Not using livestock for exhibition purposes should be considered. Additionally, proper population control programs and measures need to be implemented in each zoo to prevent the production of surplus stock.

3.4. Solutions for Animals Requiring Extra Care

Asian elephants and polar bears are among those animals most prone to problems in captivity, including poor health, repetitive stereotypic and other aberrant behaviors, and breeding difficulties. But preventing natural movements and behaviors in many animals can cause problems and give rise to a variety of issues, such as stress, frustration and impairment in the development of brain regions that are involved in behavioral sequencing, thereby reducing the animal’s ability to behave flexibly and appropriately.

Animal Behaviour Research Group, Department of Zoology, University of Oxford observed and calculated the mean frequency of stereotypic pacing by 35 species of caged carnivore. The result of their research shows that animals with large home ranges in the wild display more severe stereotypies and higher infant mortality in captivity.¹⁷ This finding indicates that wide-ranging animals have difficulty in captive situations

Particular attention should be given to bears, apes, big cats and elephants¹⁸ and their keeping of these animals should be either fundamentally improved or phased out.

¹⁷ Ros Clubb, Georgia Mason, 02/Oct/03, Animal Welfare: Captivity effects on wide-ranging carnivores, *Nature*, Vol. 425, pp. 473–474

¹⁸ WSPA, Zoo Exhibit Quick Audit Process, p. 2

3.5. Assessing Zoo Animal Welfare – “Zoos should aim to minimize risks of poor welfare.”

We can draw conclusions from the investigations and research that has been conducted so far.

Every animal species has its own distinct requirements for space, type of living environment, food, social context, etc. If those requirements are not satisfied, then animals may suffer.

In undersized and behaviorally impoverished conditions, environmental enrichment is a necessity as it can help mitigate some of the problems experienced by animals, such as boredom, anxiety and frustration. Environmental enrichment programs consisting of the provision of furnishings, objects, food and sensory enrichment and, temporal enrichment should be mandatory. It should be considered a part of the daily management regime, an institutional priority and must be appropriately supported at the institutional level.

Environmental enrichment is far more than just installing a few play facilities or providing several objects to an animal. It is a dynamic process that involves observing, planning, managing, recording and assessing, all of them are crucial to the success of an environmental enrichment program.

If animals cannot be provided with appropriate, species-specific housing and care, including enriched environments, that actually satisfy their biological, behavioral and social needs, then zoos should reexamine whether those animals should be kept at all.

4

Final Conclusion



Most traditional modern zoos claim to have four primary objectives: conservation, education, research and recreation. How these are viewed and defined may change somewhat with the times and with the views of society.

The concept of animal welfare has become universally accepted and Korean zoos should be required to step up to ensure that animals are treated humanely. Each zoo needs to establish a long-term plan for improvement of their animal environments. But that's not enough.

The Government of Korea also needs to establish mandatory captive animal welfare standards. The law which can regulate Korean zoos and aquariums passed in May 2016 and will be effective from May 30, 2017, but it should be revised for actual application. Also, the Government of Korea should establish a unified administrative standard that applies to every zoo in the country and they should be the main agent for administering it. Without this measurement, zoos will continue to focus on providing entertainment to the public.

Also, there are many facilities keep not only wild animals, but also livestock due to easy access and maintenance. However, domesticated animals are not under control of the law. Every animal held in zoos and aquariums should be included in the law.

Animal shows and other programs involving animal performances should be stopped. Many zoos claim these programs are educational, but most of them just entertain visitors with animals doing simple tricks and stunts. Rather than construct costly stadium-type facilities, many Korean zoos operate smaller animal experience and encounter programs, with feeding and petting sessions. These types of programs may severely impact animal welfare and miseducate the public and must also be regulated.

In addition, there is no data about animals in Korean zoos and animals shows. Authorities need to conduct actual field research to find out the current situation in these facilities and a regular zoo audit program should be implemented. Securing enough numbers of government officers makes all of this feasible.

And the Korean Association of Zoos and Aquariums has no standards and no meaningful regulation of its members at the moment. Any zoological institution or business can become a member. The association needs to establish its own guidelines and ensure that their members meet or exceed them.

Korean zoos have animals from around the world. Providing suitable, species-specific environments to animals from a variety of different climates may be beyond the ability of some zoos to provide, thereby making it difficult to achieve good animal welfare. For that reason Korean zoos should be required to focus on displaying and conserving endemic wildlife species.

More complex, natural environments should be provided for all animals, especially species that are highly active, intelligent and extremely social. If zoos are not capable of providing appropriate conditions they should gradually phase out those species that are most problematic.

Natural habitats of animals have been decimated throughout the world and many animal species have vanished from the earth. Zoos must do more than just offer recreation to their visitors. Modern zoos should be more focused on animal welfare and on conserving wildlife in meaningful ways. Viewing animals in barren, inadequate conditions or doing simple tricks and stunts accomplishes little of value. In fact, it may actually impede true learning and encourage regressive

attitudes in the public that are not good for animals, the environment or for the people of Korea.

Due to the development of social movement and growth of mature civic awareness, the demand for improving the environment for animals in captivity is growing. We should all recognize that we have an obligation to offer a better life to the animals in our care and to create an understanding about the value and dignity of life to the next generation. It is time for Korean zoos and aquariums to change.

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