〔韓國造景學會誌 Vol. 14, No. 1, pp 81~92 (1986)〕

Employment of Animals in the Landscape Design

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造景設計에 있어서 動物의 導入

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요 약

현재까지 사용되어 온 조경설계의 두가지 소재 즉, 수목과 구조물 소재에 동물을 도입하여 경관의 질을 향상시키고자 함이 본 논문의 취지이다.

시초의 아이디어는 도심의 광장에 나르는 비둘기를 봄으로써 시작되었다. 그들이 주어진 경관에 말 할 수 없는 생기와 우아함을 부여함을 목격하고 이를 다른 동물에까지 연장하여 새로운 조경의 소재로써 사용되어질 가능성을 타진하였다. 적합한 동물을 고르기 위한 선택의 기준이 연구되었고, 이같은 기준에 따라 선택된 38종의 동물들을 그들의 형태적 특성과 도입되어질 수 있는 조경의 대상치, 즉 정원, 공원 혹은 광장등에 따라 기술하였다.

이들이 도입되어진 후에는 성공적으로 유지하기 위해 필요한 점들이 끝으로 연구되었다.

I. Introduction

In retrospect of the practice of selecting the landscape design material, it is resonable to state that the selection has been generally limited to the two categories, namely the plants and the structural material. After contemplating that the widening the choice of landscape design material beyond the categories mentioned above would enhance the quality of design and the resultant scenic value of the built landscape, the author attempted the introduction of animals as the new landscape design material. It could be called 'the live landscape' whereas the plants and the structures are commonly represented as 'the soft landscape' and 'the hard landscape'.

The first clue came to the author as simply

as watching the pigeons flying over the city plaza. The abillity of certain animals in livening up the given landscape was apparent enough to grant the inspiration and the justification to put them into the new category of landscape design material. In conventional landscape design, which is commonly associated with the use of plants and a series of structures, the general tone tends to be static and motionless however picturesque the landscape may be except the occasional employment of moving water as the design element. To this usually passive landscape the motion of animals brings the vitality and the liveliness that essentially changes the landscape into the active and dynamic one. Through this transformation viewers go through more interesting and heightened experience which is the key to successful design.

Beside putting the dynamic value to landscape the employment of animals indicates a variety of other positive and exciting effects. One of them is the acoustic aspect of animals. If the moving animals add the visual excitement to the viewers their songs bring the acoustical pleasure. Listening to the singing of skylarks is as inspiring and enjoyable as watching swans glide across the pond. Birds are not the only animals that bring the listening pleasure with singing. The frogs do the same.

Another experience of having animals in the landscape is the fun of petting and feeding them. Not only school children who tend to enjoy this activity most greatly but also any age group can share the fun of touching and giving food to them. In this process the participants can gain love and attachment for the living creatures as well as the better understanding of their behavior. Even the simple observation generates deeper awareness about the mananimal relationship and the knowledge about ecosystem. Such conservation oriented groups as the bird watching societies are gaining the support from general population in recent years and it implies that the public attitude toward the ecology is heading the right direction.

Because of their sheer beauty and elegance in motion the animals frequently become the objects of such artistic activities as the sketching, the painting, the photographing and the filming. It is one of the additional benefits of having the animals in the landscape. In foreign countries even the recordings of singing frogs are for sale to general public.

It became obvious that the inclusion of the animals in the landscape can greatly enhance the scenic value and enrich the viewers' experience but there remains a series of practical problems involved in the materialization of the theory proposed in this thesis. In the following chapter the criteria of selecting the suitable animals will be discussed in terms of their safety, beauty, availability, maintenance and visibility. It will be followed by the presentation of the selected animals which meet the criterial of screening set in the preceeding chapter. The animals will be classified into mammals, birds, reptiles, amphibians, fish and insects. Each individual animal is then investigated about the behavior and the resultant recommendation regarding the suitable sites for living such as a garden of a park will be set forth.

One of the most successful example of introducing animals into the designed landscape is the deers in Nara Park located in Nara, Japan. About one thousand Sika Deers pasture freely within the compound of the park and nearby Kasuga Shrine. By the end of a day the deers are called to their stall at the sound of a flute. It becomes the inspirational sight to the landscape architects who envision the

Photo 1. Roaming Sika Deers in Nara Park, Nara, Japan.

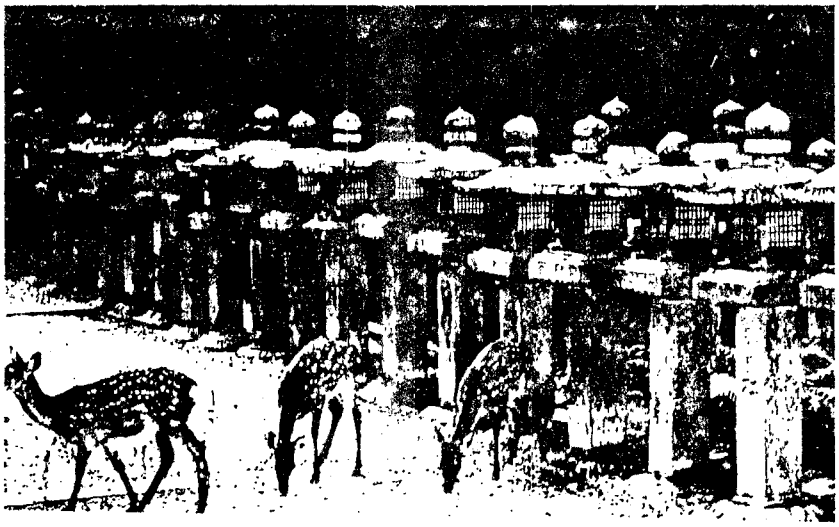

Photo 2. Deers in Kasuga Shrine, Nara, Japan.

wider horizon in the realm of their craft.

Ⅱ. Selection Criteria Of The Suitable Animals

The fact that animals can enhance the scenic value of landscape doesn't mean any species may be put into use. For example tigers would pose great danger to people, let alone they are the rare species to obtain. Therefore they are not suitable to be utilized in the landscape no matter how beautiful they are. So there must be a series of conditions upon which the selection of the suitable species are to be made. Following are the criteria for the selection.

A. Safty:Any species that are potentially dangercus to people should be excluded. It

means that certain species of animals are so ferocious that they can inflict physical harm to the humans. They could be such mammals as the tigers, the lions, the bears and the gorillas, and reptiles as the poisonous snakes and the crocodiles. Beside the sheer viciousness of certain species that can cause the fatal injuries some animals are known to propagate disease. The parrot causes the fever to the people who kiss their beaks by communicating the virus. The rat is the notorious carrier of deadly contagious disease.

B. Beauty: It is reasonable to say that all animals are beautiful but some species tend to be more filthier than others, look nastier than others and small worse than others. It is hard to state that pigs are as elegant as deers and rats are as cute as chipmunks. Most people would surely be disgusted at the sight of wriggling snakes or the foul smell of skunks. Such animals are better to be excluded from the candidates for the landscape components. The recommended species should be limited to the ones that have the aestheric value in their shape and motion. The aesthetic value includes being elegant, stout, cute, exotic, colorful, mysterious or vocal. For example the Sika Deer is stout and elegant both in its shape and motion. The rabbit is cute and the swan is graceful. The goldfish and the butterfly are colorful, and birds are loved also for their singing.

C. Availability : Any species that are difficult to obtain cause problems. The problems are range from the rareness in number to the purchase price. Some animals are in danger of extinction and their poputation is so scarce that it is almost impossible to capture or purchase. Also these types of species are commonly under the wildlife conservation program and the seizure is prohibited by the law. On the other hand some animals are available but their price is too high to afford. The price is expensive because it takes a lot of effort to catch them or they have to be imported live from foreign habitats. These kinds of animals are mostly found in zoos, which should be regarded as the exceptional case in the association of animals and landscape. Most birds and insects are lured into the sites with food instead of being seized or purchased.

D. Maintenance: only the animals that are easy to maintain should be considered as the suitable species. They should be able to take rough food and stay healthy. The species that take only exotic and expensive food are not apt in terms of maintenance because of the difficult in finding the food and the price involved. Also the ones that are disease-prone and short-lived create the problem of frequent replacement and the frequent replacement means extra effort and expense. If the shelter needs to be built elaborately and equipped with heating system and so on it imposes burden to the maintenance. The animals that build their own shelter of need only simple structure are desirable. Cleaning is one of the problems. If the species tend to produce large quantity of excrement they should be reconsidered as the suitable ones because of foul odor and cleaning effort involved.

E. Visibility: Animals are recommended to be kept in landscape in order to be appreciated by viewers. There are certain species that are easily scared by the presence of people. This kind of animal is usually wild, cautious or shy type and when approached by people they tend to disappear from the viewers' sight. On the contrary some species are friendly to people and even allow to be petted or fed. It is

1) Kim, Hoon Soo et el. Latest zoology(in Korean). Seoul, Jip Hyun Sa Publishing Co., 1979, page 97.

needless to say that the latter is better in terms of visibility. Same thing applies to nocturnal animals. The species that sleep during the day and go about after dark are virtually invisible and not very benefitial in enhancing the scenic value of landscape. The owl is the typical case. Another aspect of visibility is the matter of looking interesting and exotic. Some species, such as most domestic animals, are too common in their existence to become the interesting components in the landscape. In this sense the dog and the cat are eliminated and so are the horse and the cow even though they may appear exciting to the urdan dwellers who rarely have the chance to encounter live animals in their barrer landscape.

Ⅲ. Selected Animals And Their Application

According to the selection criteria discussed in the preveous chapter 29 suitable species have been chosen and they are classified in the categories of the mammals(class Mammalia of phylum Chordata), the birds(class Aves of phylum Chordata), the reptiles(class Reptilia of phylum Chordata), the amphibians(class Amphibia of phylum Chordata), the fish(class Osteichthyes of phylum Chordata) and the insects(class Insecta of phylum Arthropoda)[1]. The behavioral characteristics are investigated according to each species which is labeled in both common and scientific names. The possible application of each animal to the designed landscape is dicussed as the end result. It is important to designate the proper sites to each animal because certain species are not suitable to the specific landscape. For example raising ducks in golf course pond will surely contradict with the function of golf game because the ducks become nuisance when crossing fairways or greens on the way to another ponds or somewhereelse. Prospective sites are typically described as gardens, parks, plazas, campuses, golf courses, marinas and so on.

A. Mammals

Sika Deer(Cervus nippon mantchuricus): The sika deer inhabits Korea and Manchuria. Their habitat is the wood in plains and mountains. The shoulder height is about 100cm and weighs 100Kg. The ear and the nose are very sensitive but the sight is dim. The horn of male species is used in the oriental medicine as a tonic. They live in group and like sunny places. People have been attracted to their graceful form and fast running ability. Leaves, twigs, moss, tree barks, acorns, chestnuts, buckwheat and millet seeds are their diet. The prospective sites are such gardens with abundant trees as botanical garden, temple, palace and royal tomb.

2) Roe Dee(Capreolus capreolus): The roe deer is the native species of Korea and China. The habitat is the wood in hills and mountains. The shoulder height is about 70cm and male deers have horns. They are fast runners and like to dwell in shady spots whereas the sika deer prefers sunny places. Leaves, wild fruits, buds and wild grass are their food. This species can be placed in similar spaces as the sika deer. The gardens with thick vegetation are the ideal spots.

3) Korean Water Deer(Hydropotes inermis argyropus): This species is the native of Korea as indicated in its name. The favorite habitat is the south slope of a mountain with a lot

1) Kim, Hoon Soo et el. Latest zoology(in Korean). Seoul, Jip Hyun Sa Publishing Co., 1979, page 97.

trees. The shoulder height is about 50cm. Neither male nor female species has horns. They like to feed on tree roots and leaves. The Korean water deer is not frightened at the presence of pople and easy to be petted. The suitable sites for this species are the large gardens and the parks with heavy vegetation. Also resorts, hospital complexes, college campuses and sightseeing farms are the possible habitats depending on the density of people and vegetation.

4) Asiatic Chipmunk(Tamias sibirica): It is also called a squirrel and one of the most favorite animals of children. The asiatic chipmunk inhabits all parks of Korea. They love to climb trees and make dens underground. The body lenght is about 15cm and the tail reaches about 10cm. The chipmunk can be raised in captivity as a pet in cages. Acorns, chestnuts, seeds, fruits and chrysales are the favorite diet. They can be introduced to the wide variety of spaces including urban parks provided that there are enough trees. They are not afraid of the humans and approach people easily when food is given.

5) Goat(Capra species): There are a number of species under the genus Capra including the wild mountain goat and the domestic goat. The domestic goat was imported from China and the mountain goat is under the threat of extinction. The domestic one is black in color. It is known to be exceptionally tough and able to syay healthy with rough food. The goat feeds on wild grass and tree leaves and are very resistent to disease. Its meat is also known to be delicious. This is the familiar animal in rural landscape and the suitable sites are suburban and rural gardens and parks. Also folk villages and tourist farms are the possible spots.

6) Sheep(Ovis aries): The sheep looks similar to the goat but it doesn't have the beard under jaw as the goat does. Raised as a domestic animal from the early stage of the civilization they are utilized for their hair, meat, milk and skin. Their character is gentle and timid. Grass, leaves, tree barks are the favorite food and the sheep is always herbivorous. It lives in group and make rural landscape even more peaceful with their characteristic appearance. The gardens and the parks with large meadow in rural setting will be the ideal spots.

7) Rabbit(Lepus species): There are more than 50 species under the genus Lepus. The house rabbit was domesticated from the wild hare. It is raised for its hair and meat. Children love to play with the rabbits which are also house pets. The rabbit feeds on grass, grain and bean-curd refuse, and is omnivorous. Residential gardens, school yards, folk village and tourist farm are a few sites among a variety of possible habitats.

Birds

1) Sparrow(Passer montanus): It is the bird that is most common in Korea. The sparrow lives both in rural and urban areas. If the food and the bird house are provided it easily comes to gardens. The installation of a bird bath which is a small bath tub for birds attracts bird species even more greatly.Grass seeds, grain and insects are their diet. They can be associated with any types of landscape with the possible exception of air ports. Any kinds of birds in large number pose a great danger to airplanes.

2) Magpie(Pica pice serica): The magpie is frequently sighted near villages. It builds a

nest on the branches of tall tree. The singing of magpie is believed to bring good news. Wild fruits, grain, insects and mice are the favorite food of the magpie which is omnivorous. To attract it tall trees are needed beside food and water in any gardens and parks.

3) Pheasant(Phasianus colchicus karpowi): This bird is better known as the favorite game for hunters. Its habitats vary from the vicinities of rural villages to woods and hills. It can be easily spotted in any parts of Korea and a male species has beautiful feather which is used as decoration material. The pheasant lives on the ground instead of trees and feeds on grain, wild fruits, grasshoppers and ants. The possible sites have a wide range including rural type gardens, parks, palaces, school campuses, resorts, folk villages and arboretums, each with thick bush.

4) Gull(Larus crassirostris): The gull is the indispensable component in the landscape of beaches, ports and marinas. It is widely distributed along the coastal regions. Grouping is the usual habit and the nest resembles a dish. The favorite food are fish and insects. The gull is omnivorous and frequently seen taking the kitchen refuse in port cities. It even comes up the Han river to Seoul area to feed. The gull is the most famous of all sea birds.

5) Great Tit(Parus major): This bird is the typical species of Korean forest. The great tit is widely populated and can be spotted even in the under the roof of a house. Insects and grass seeds are the favorite diet but it can eat peanuts and bread crumbs if given. It can be easily attracted to any gardens and parks with a little provision of food.

6) Oriental Greenfinch(Carduelis sinica): The habitats are the vicinities of rural villages and woods. It builds a nest on the branches of a tree. The population of this species is abundant. When they sing the sound resembles the ringing of a chime. The favorite food are grain, grass seeds and insects. Places with enough trees and food can become their new habitats such as gardens, parks, arboretums, folk villages and campuses.

7) Meadow Bunting(Emberiza cioides): Its population is large and inhabits the agricultural fields in plains and the woods in mountains. It can be raised in captivity as a pet bird in a cage. Grass seeds and insects are favorite diet. The body length reaches about 17cm. The possible sites are similar to the oriental greenfinch.

8) Pigeon(Columba livia domestica): Perhaps it is the only bird that can associate with such urban core spaces as the downtown plazas, the pedestrian malls and the forecourts of public and and commercial buildings. While other birds require the considerable density of vegetation for their food and shelter the pigeon doesn't necessarily need the trees because they are fully domesticated. Coops and food are provided by people. To such an unusual site as a roof garden the pigeon can become the ideal component of the landscape. Feeding them requires such food as corn, millet seeds, wheat, rice, vegetables, salt and water. The homing instinct of the pigeon is so strong that a variety called the carried pigeon has been used to send messages since ancient time. Also sports complex and stadia are the suitable sites for the pigeon.

9) Brown-Eared Bulbul(Hypsipetes amaurotis): Its habitat is woods during summer but during winter the bulbul comes to villages. Its nest is built on the branches of a shrub and it rarely comes down to the ground. The population of this species is large and frequently

sighted. It forms groups and when it sings the sound becomes almost noisy. This is one of a few birds which sing in winter. The body length reaches about 20cm. In summer it feeds on insects and in winter wild fruits. This is the suitable bird for winter gardens, parks, campuses, arboretums, palaces and folk villages.

10) Japanese White-Eye(Zosterops japonica): This is the suitable bird for the gardens and the parks in southern provinces and islands. It incessantly moves around atop trees and builds a suspended nest from a branch. This species is easily domesticated as a pet bird and feeds on flying insects and spiders. During winter it loves to eat the camellia flowers. The body length is about 11cm. This bird is the ideal species to be introduced to southern gardens where the camellia grows.

11) Skylark(Alauda arvensis)– This bird is famous for its beautiful voice. The skylark announces the arrival of spring by flying high above wheat and barley fields. It is distributed widely over the Korean region and builds nests on the ground in agricultural field or meadow. This species is omnivorous and feeds on grain, insects, and grass seeds. The sites which have the large grass field, such as golf courses, cemeteries and campuses are suitable for the skylark.

12) Grey Starling(Sturnus cineraceus)–It is the species which can easily dwell in the heart of a city. The population is wide spread and abundant in number. The feeding habit is omnivorous and the grey starling likes to eat harmful insects, grain and mice. The body length is about 21cm and it makes nests in the holes of tree trunks. Most of it go to the south Asia for winder but a portion stays in Korea through winter. Urban parks, gardens, school yards and palaces are the suitable sites.

13) Bush Warbler(Cettia diphone): the busy warbler makes nests in shrub and dwells stop trees in woods. Main diet is insect. If food is given it easily come to gardens and parks. This species is very sensitive and doesn't like to be agitated by people. It is the suitable species for the quiet places as residential gardens, cemeteries and temples.

14) Mute Swan(Cygnus olor): The swan's original habitat is the northern Asia. It migrates to Korea in October, spends Winter and goes back to its native land in March. The one we see in parks is the domesticated type called the mute swan. It likes wild ponds and feeds on aquatic plants and insects by putting the long neck into water. Its graceful shape and snow white feather make it on the indispensable components in water related landscape, especially in the ponds of European palaces and parks. It is a very attractive animal for any facilities with wide ponds but not recommended in the water hazards of golf courses. Same thing applies to ducks, They should stay out of golfers way.

15) Goose(Anser domesticus):The wild goose inhabits Siberian region and migrates to Korea to spend winter. It lives in marshes and swamps alone coastal area from October to March. When migrating wild goose flies in formation and decorates the sky. The house goose is a domesticated species from the wild goose. It has the reputation as a good house Keeper and warns strangers by quacking loudly. It is omnivorous and feeds on grain, grass, potatoes and vegetables. The house goose endures the cold weather, rough food and disease. The life span is approximately 40 years. It is a very good bird for residential gardens and parks.

16) Duck(Anas platyrhynchos domestica):

The duck is a domesticated species from the mallard which is a migratory bird from siberia and frequently seen in korea in winter. There are about 25 varieties under the duck species. The duck is omnivorous and feeds on various food including kitchen refuse. It is raised for eggs, meat and as a pet bird. It is one of the most widely recommended species for lakes and ponds with possible exception of golf course water hazards.

C. Reptiles

1) Soft-Shelled Turle(Trionyx sinensis): It is the native of korea and inhabits ponds and swamps. The feeding habit is omnivorous and the favorite food are fresh water fish, crabs, loaches and plants. It rarely comes out of water except when laying eggs in sand. The body length is about 20cm and the teeth in the pointed jaw is sharp enough to crack the shell of a crab. Turtle meat is regarded as a delicacy and the soup is famous. It is one of the animals that can make the edge of a pond look interesting. Gardens, parks, campuses, golf courses, palaces and arboretums and arboretums with ponds are the ideal sites. The small pools of indoor gardens are also suitable spots provided that food is given regularly.

2) Reeve's Turtle(Geoclemys reevesis):It is one of the only two fresh water turtle species living in korea including the one mentioned above. The habitats are ponds, streams and swamps. It reaches about 20cm in length but seldom exceeds 30cm. the feeding habit is omnivorous and it likes fish, crustaceans, insects, earthworms and aquatic plants. As long as the ideal habitats is concerned it is same with the soft-shelled turtle.

D. Amphibian

1) Frog(Rana species):There are 6 different species under the genus Rana in korea. The habitats are ponds, streams, rice paddies and meadow. It is an amphibian because as a tadpole it lives underwater and as a frog it dwells both in water and on land. The frog is one of the favorite objects of childrens play and also known to be the tenor of country. The croaking of the frog is sold as a record in some countries[2]. Its favorite diet is insect. Not only for its interesting appearance and behavior but also for its acoustic effect the frog is widly recommended in the gardens and the parks with ponds and streams. Comparing to the frog the toad is rare in number.

E. Fish

1) Carp(Cyprinus carpio):There are two varieties in this species. One is the native variety in grey and the other is the cultivated type in gold, white, red and pink. It is a fresh water fish and dwells in ponds. lakes and rivers. It reaches approximately 100cm in length and is omnivorous in feeding habit.
The carp searches the bottom of water for small aquatic animals and plants. The cultivated type is visually pleasing with its varying color and suited for various kinds of ponds, including the pools in the indoor gardens of shopping centers, office buildings and hotels.

2) Goldfish(Carassius auratus):The goldfish is a variety of the gibel. It is a fresh water fish and varies in shape, size and color that ranges from black, red, white to silver. The feeding habit is omnivorous and small earth worm is the favorite food. Large one sometimes reaches 25cm in length. It can be raised

2) Kim, Hun Kyu et al. Organism of korean Vettebrates(In Korean). Seoul, Il Shin Sa Publishing co., 1978, page 199

in ponds or in transparent containers for the interior. In the case of the latter frequent aeration and change of water is essential.

F. Insect

1) Butterfly(species of family Hesperiidae and papilinoidae):There are about twenty thousand species of butterfly under the family Hesperiidae and papilinoidae that belong to the order Lepidoptera. the typical life cycle of the butterfly is the changing process of eggs to worms, worrms, to chrysales, crysales to butterflies and butterflies to eggs. The butterfly we enjoy watching is the adult form in the cycle of four stages. the butterfly feeds on the honey in flowers. Sherever there are flowers the scenary looks even more beautiful with the presence of the butterfly. So long as the means of managing the above animals are concerned first thing to consider is the way to obtain them. Obtaining can be done by either capturing, purchasing or luring them into the desired sites. The ones that can be purchased include all the mammals, the swan, the goose, the duck, the pogeon, the turtles and the fish. The chipmunk, the frog, the turtles and the carp may be captured in the wild. However most of the birds and the butterflies are lured into the site with the provision of food. Birds are attracted to such common food as the grain and the animal fat strewn on the ground and butterflies are fond of flowers. Another method of attracting birds in the planting of fruibearing plants. The plants that birds like are, among others, privets, kousa Dogwood, Nandina, Camphor Tree, Camellia, Japanese Snowbell, Mountain Ash, Japanese Apricot, Japanese Spindle Tree, Japanese cedar, Japanese Aucuba, pines, Cherries, Yew, Oaks, Narrowleaf Firethorn, Winged Euonymus and Boxwood[3]. Some of these fruits are also consumed by mammals.

In order to retain the animals within the boundary of designated site peripheral fence or wall is needed around the compound for such mammals as the deers, the goat and the sheep. The swan, the duck, the turtle, the fish and the frog take a waterbody as their natural habitat and once they are brought to the pond these animals stay there. The pigeon and the goose are domesticated birds which return to their shelter at the end of a day. Rest of the birds and the butterflies are not controlled actively by a designer's will and passive measures should be taken in order to make them freguent the desired site log providing grain, animal fat, edible plants, water basin, birdhouse and abundant flowers in the case of brtterflies. To most mammals and birds shelter should be provided in the forms of a stall for the deer, the goat and the sheep, a cage for the rabbit a coop for the pigeon, the swan, the goose and the duck and a birdhouse for some wild birds. Shelter is not necessary for the turtle, the frog, the fish and the butterfly.

The pressure of people is critical to the wellbeing of the animals. If the site is private space the crowd control is not a problem but in the case of such public open space as a park, an arboretum, a folk village or a palace the the number of visitors may reach the point where the animal life is threatened. One of the methods that can alleviate this situation is limiting the number of viewers by charging enterance fee. Also the possibility of harming animals by giving dangerous food may be avoided by selling safe food to the visitors. It is the common sight in most European parks and plazas to sell the bird food to feed the

3) Editors of Illustration of Material for Landscape Design. Illustration of Material for Landscape Design(in Korean). Seoul, Korea comprehensive Landscape co., 1982, page 332

pigeons. One of the more active ways of assisting the crowd control will be the positioning of guides at major points to educate the visitors who show detremental behavior to the animals.

Ⅳ. Conclusion

29 animal species have been chosen through the screening process of the selection criterial of the suitable animals to be utililzed as the instruments to enhance the scenic value of the designed landscape. They are 7 mammal, 16 bird, 2 reptile, 1 amphibian, 2 fish and 1 insect speeies.

In order to maintain them within the designated sites in sound shape the intended designer needs to understand their behavioral characteristics regarding the food and the shelter. If a sound ecosystem exists around a site including the sufficient vegetative cover, enough waterbody for aquatic animals and abundant prey for carnivorcus species the introduced animals have good chance to be self-supportive and flourish. But that is an ideal situation and the instrusion of people is inevitable in the forms of users or viewers if the site is designed for the sake of people. In the species selection criteria the kinds of animals that can get along with people were chosen purposely but that doesn't mean those animals can take abuse and the agitation caused by the ill-educated visitors. The pressure of people should be avoided if the project is intended to be successful.

If the food in short in new habitat it should be supplied by people. It not only feeds the animals but also can act as a tool for invitation and making them the permanent residents of the site. The animals that are hard to be controlled such as birds and insects are easily brought into the desired sites with the provision of food. One of such methods is the planting of fruit-bearing plants. It is all too common to state that flowers attract butterflies. Yet it is the most representative case of blending animals into the landscape by the Provision of food, in this case, honey.

As discussed in the preceeding portions of the thesis the practice of lanscape design doesn't necessarily have to be confined in the employment of plants and structures as the sole materials.It is obvious that the introduction of proper animal species into the designed landscape can enrich the scenic quality and the users experience greatly. It clearly provides dynamic exitement, visual beauty and acoustic to the landscape. The practice of 'the live landscape' should be encouraged actively to supplement the soft landscape and the hard landscape of conventional design.

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* Interview with the staff of the laboratory of animal research in Seoul Grand Park March 15, 1968.