Report on Zoo Husbandry Workshop on Hoolock Gibbon at Dhaka Zoo

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On *19 February 2005, following a Population and Habitat Viability Assessment (PHVA) Workshop on Hoolock Gibbons held in Dhaka, Bangladesh, Alan Mootnick, Founder and Director of the Gibbon Conservation Center, Santa Clarita, California inspected the facilities at the Dhaka Zoo and gave a seminar on captive management of hoolock gibbons.*

Alan has been studying captive gibbons almost exclusively for the last 29 years and has specialized in gibbon taxonomy and in gibbon behaviour. His facility in California is devoted to housing and propagation of all four genera of gibbons. Contact or learn more about Alan, his centre and gibbons at gibboncenter@ earthlink.net and www.gibboncenter.org <http:// www.gibboncenter.org/>

The following report is a sampling of Alan's remarks during his inspection and lecture which followed. Alan also contributed a great deal to the PHVA for Hoolock Gibbon on its husbandry and breeding, which will be available in the Report of the PHVA for Hoolock Gibbon in due course.

Alan spent almost two days after the seminar working with the Dhaka Zoo staff, first helping them enrich the Hoolock Gibbon enclosure by putting up lengths of bamboo in the outdoor enclosure for the gibbons to climb and jump on, and by installing an elaborate rope device in the gibbons indoor enclosure for them to swing from rope to rope. He also drew diagrams for the zoo staff to follow in similarly enriching the Capped Langur and other langur enclosures.

Some days later, the writers visited the Dhaka Zoo and were very happy to see the gibbons' unhibited activity on the bamboo lengths and ropes. Even the young gibbon which formerly had clung to its mother almost throughout the day, was making frequent forays on the bamboos, having a wonderful time. It was great to see the results of Alan's seminar taking effect in just a week's time in Dhaka Zoo. Immediately following this seminar Allen travelled to Chittagong where he saw the Chittagong Zoo. Alan spent a day at the Dulahazara Safari Park which holds two Hoolock Gibbon, giving advice on how to develop an open air enclosure with trees for them and also in their husbandry and upkeep. Before leaving Chittagong, Alan gave a one day seminar at the Chittagong Veterinary College, which runs a course in Zoo Management for their veterinary students.

Selections from Hoolock seminar at Dhaka Zoo

Habit : Gibbons live in the upper canopy of forest and rarely come to the ground, even for water, unlike macaques who spend most of their time on the ground. In the wild, gibbons generally obtain liquid from the food they eat, moisture in the morning from the leaves, or a hollow in a tree. In captivity gibbons water needs are to be provided..

Sub-species : The sub-species of gibbons, like all other subspecies, have different genetic qualities so hybridization of gibbons should not be done. There are two subspecies of Hoolock Gibbon, the Eastern Hoolock Gibbon *(Bunopithecus hoolock leuconedys)* which occurs in Myanmar east of the Chindwin River, and in SE China, and the Western Hoolock Gibbon *(Bunopithecus hoolock hoolock)* which occurs in NE India, Bangladesh,and Myanmar west of the Chindwin River.

Health check: The health of captive animals has to be monitored continuously.

Housing: A large area with numerous branches and vertical ropes spaced far enough apart and at various heights will allow the gibbons to utilize the entire enclosure, and is more suitable for Hoolock gibbons. The outdoor enclosure needs approximately 1/3 of the roof to have sheet metal attached to protect the gibbons from the weather.

Gibbons are monogamous. Housing two adults of the same sex with another adult of the opposite sex should not be done in one enclosure.

It is strongly recommended to separate the additional adult male at the Dhaka Zoo and pair them with a suitable female in it's own enclosure or at another facility, that has good veterinary and captive care practices, proper enclosure, and a suitable mate.

In the visitor area, a thick hedge planted between the hand railing and the enclosure is recommended. The hedge in the Dhaka Zoo hoolock enclosure should be regularly watered to insure that visitors cannot approach the cage mesh too closely and pass eatables and other items to the gibbons, which will make them sick.

Alan also suggested placing signboards on at least two different locations on the enclosure, both in the front as well on the sides, to warn all visitors not to feed the hoolocks, and inform the negative (often fatal) impact of visitors' feeding on these delicate primates. If the visitors persist in feeding the gibbons then a small mesh wire should be attached to the enclosure, six feet high.

Gibbons in the forest utilize the upper canopy by leaping from one branch to another i.e.: brachiation. From their first leap they can travel up to 15 feet, and eventually take leaps up to 50 feet at speeds up to 35 miles per hour. So keeping this in mind, the Dhaka Zoo needs to place some ropes and bamboo poles in the hoolock enclosures to allow them to utilize the entire enclosure. It will also give additional enrichment to the enclosure which will keep them more active and allow their offspring to spend time away from its parents.

Food Preparation: Alan commented on the food preparation area requiring plenty of light, so that the individual preparing the food could see clearly whether the food had signs of spoilage by fungus or bacteria. He also suggested using a plastic board as a cutting area to chop up the fruits and vegetables. This should be cleaned thoroughly after every use, and cleaned with bleach three times a week. He recommended the use of fine grit sandpaper for cleaning the cutting board when needed, especially on the cutting area to smooth in the areas where the knife made small cuts on the board, where bacteria could lodge and hide. A trash can in the food preparation area is preferable so that the unused cuttings can be all collected and disposed immediately. This will help prevent flies and other disease-spreading vermin from being attracted to the feed area.

In the wild, gibbons start eating in the morning and almost continuously throughout the day. After their evening feed they

rest and sleep until next day morning. Alan suggested that the zoo increase their feeding time from twice to three times a day, at 8:00 & 10:30 am and 3:00 pm.

He stressed the importance of removing left-over food items in the evening so the gibbons would not eat spoiled food the next morning, and to reduce the incidence of rats and other vermin from being attracted to the enclosure. If there are rats, the zoo should set traps and remove the rats or squirrels and then clean the traps with bleach. Food should be fed on a clean surface a minimum of 3 feet above the ground.

Diet : Epil-Epil leaves belong to the leguminacea family and has high protein in its root nodules. This is very close to the leaves they eat in the wild and small amounts should be given daily. Food items should be placed in different areas of the enclosure so that the dominate gibbon can't take over the feeding area and prevent other gibbons from eating. Nuts of all kinds except peanuts or groundnuts are a good source of protein. Sunflower seeds are also good and will provide enrichment for the gibbons as they have to pick them up individually to eat them. Citrus fruits cause diahorrea and this should be avoided.

Cage cleaning : The cage should be cleaned thoroughly twice day. One cleaning could be wet cleaning with water and cleaning solution, and another may be dry sweeping.

Log Book: A log book on feeding should be maintained which would record what was offered and what was actually consumed. When monitoring the enclosure, this log book makes it possible to give a clear report on whether all of the food has been eaten. If all the food has been eaten, it indicates that the quantity is correct for the gibbons. If a portion of the food is left, it means the amount is too much and can be reduced. If the food is consumed too quickly then additional food needs to be added.

Diet in pregnancy : When gibbons are pregnant they need to be supplied with a balanced diet, such as ficus, fruits, or leaves as this is similar to what they eat in the wild. Before giving the ficus leaves, clean and wash them to make sure that they are free of pesticides or other noxious matters on them. The good proportion is 15% ficus leaves and 5% ficus fruits.

When changing the diet, care should be taken as this sometimes causes diahorrea. Grapes, tomato, orange, pineapple, melon, mango, and jack fruit can cause diahorrea and should be given in very small quantities if at all. Cauliflower is a better source of vitamin C for gibbons than fruits such as oranges due to the acidic properties of the latter. The cauliflower should be steamed or boiled as raw vegetables such as carrot, broccoli, etc. is gas producing. Gibbons are particularly fond of long beans and can be given one per day. Sapotella and guava are also good fruits which can be given in good proportion.

In the diet of gibbons and any animals, zoo mangers should avoid overfeeding that could make the animals put over weight. White bread, for example, should be given in very small quantities if at all, as it will cause excess weight.

Gibbons have a very sensitive digestive system and is one of the very delicate primates. Even Gorillas, another delicate primate, eat, defecate and sleep in the same place, unlike gibbons who will eat and sleep in the same place but will not defecate in the same place.

Skin Problems: If there is a skin problem, provide proper amount of zinc, water soluble vitamin E and vitamin A every other day. Fish oil also can be given in amounts of 2 to 3 drops per day per individual mixed with the food. If a skin problem persists and seems serious, take a sample and send it to a laboratory for diagnosis. It may be from bacteria or fungus.

Island enclosure: (This is specifically about the large, as yet unoccupied island in the Dhaka Zoo). This is an excellent enclosure to transfer the gibbons to, but in all island enclosures certain aspects should be considered :

— the gibbons may destroy some of the vegetation on the island.

— a large enclosure should be kept in the island and feeding their daily ration should be done in the enclosure. This also trains the gibbons to come in for checking their health condition and other procedures. The enclosure should have a sliding door to assist in locking. Before release, the gibbons should be housed and fed in the enclosure for some time before released on the island. Then the gibbons will routinely return to the enclosure for feeding after release on the island.

-- The water in the surrounding lake should be tested at least once a year to check the quality of water for bacteria or protozoans. On the island provide two clean drinking areas. A small railing along the edge of the island, in case a gibbon falls in the water and a small electric fence to prohibit the gibbons from drinking the water surrounding the island, in case that water is contaminated. You should also check if there are any Monitor Lizards in the lake. It will pose a greater problem to the gibbons.

Fecal Analysis: It should be done at least once every three months for ova and parasite and fecal culture. There is a transport medium which is made by Meridian company, which has a preservative in it and the preservation time is up to 96 hours. It is very difficult to get rid of parasites and bacteria, and are easily transmitted through rodents.

Stress: Stress may create aggression, which may come from visitors, dogs, loud noises, fast moving vehicles, etc. Stress can cause abortion, and folic acid assists in reducing the incidence of abortion.

Viruses: The following viruses can affect gibbons. They are TB, Herpes simplex virus, Hepatitis B and Hepatitis C. People handling the animals should get vaccinated for Hepatitis B, and tested for the others. Gibbons should be vaccinated in the following ways if their cage mate has positive antigen for Hepatitis B : Day 1, Day-30 and 5 months later for Hepatitis B. Herpes simplex virus: is one of the more harmful viruses to gibbons. If infected, the gibbon with this virus could die within 4-5 days under extreme stress. The virus can be transmitted to the gibbons from humans passing their saliva to the gibbons by spitting or giving the gibbons food that a human ate.