

Husbandry guidelines for the Northern Bald Ibis (*Geronticus eremita*)

(Updated version 2006)



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ENCLOSURE DESIGN

I Size and Space

5-10m² area per bird in an aviary is appropriate. As the NBI should be kept in groups not less than 6-8 birds the size should have at least 40-80 m² to start with. The height should be 2,5 3m and ca of course be higher. As the flying abilities of the NBI are excellent (they out manoeuvre ravens!!) big and even huge enclosures allow to present them perfectly. However as with catching and handling the birds the most severe and lethal accidents happen an area how and where to catch the birds should be considered well in big and especially high enclosures. An ideal enclosure is plain and has no pronounced slopes as the NBI avoid steep surface.

I.2 Winter enclosure

It is not necessary to keep the birds during winter inside if the aviary is southern exposed and ¼ or 1/3 of the aviary is covered by a roof. Frost free roosting, sleeping and feeding sites should be guaranteed. If an indoor enclosure is connected to the summer aviary the doors should be kept open during winter that the birds can choose where to stay. They will prefer to sleep warm but love to be outdoor during the day even it is only for a short time. Under those conditions the birds will do well and even better than kept exclusive indoor during winter.

I.3 Fencing, mesh

Acceptable diameter size is 50x50mm, however better experience is made with smaller sizes like 20x20mm or 15x15mm. If a bird crashes into the wire smaller sizes avoid severe hurting because its head and bill cannot go through the wire. In big aviaries soft wires are preferable. As the NBI is not a dangerous bird safety distances towards visitors are not necessary. Quite a number of going through aviaries have shown good experiences and no troubles with visitors as long as the visitors are kept on their trail.

1.4 Substrate

The NBI is a highly terrestrial Ibis species and prefers open areas with sparse vegetation. Sand and gravel in different sizes are most appreciated. Low vegetation like grass and small bushes should not cover more than 1/3 of the ground in an aviary. Grass should be kept short (15-20cm). Piles of twigs or stones and mud patches are used for foraging and give a good opportunity to hide insects (see behavioural enrichment).

1.5 Habitat structure and furnishing

Thick bushes may be used as a cover but normally 2-3 bushes in an average sized aviary are enough. Although the NBI in the wild is hardly seen using trees as roosting sites the birds like high perching sites. 2-3 big tree trunks with only a few but thick branches left are good habitat requisites in a NBI enclosure. Horizontal branches (>10cm thick) are appreciated for social preening, roosting and sunbathing. Branches attached from 0.5-2m above the ground are most preferred as well as such branches close to the nesting sites. Branches thinner than 10cm are much more difficult to access and will be avoided. Piles of stones are used as roosting sites or perches as well.

1.6 Bathing facilities should have a surface of 5-8 m². Shallow pool banks are recommended that the Northern Bald Ibis can enter and leave the water pool easily and safely. The **feeding sites** should be easy to access for several individuals simultaneously thus not allowing the dominant birds to feed exclusively there for longer periods.

1.7 Nest site

In the field the Northern Bald Ibis prefers ledges in steep rocks or cliffs as nesting sites (Fig. 4.1; 4.2). PEGORARO (1996) found 38% of the ledges covered. In aviaries boxes or better ledges with room for 2-3 nests have proved to be preferred nesting sites. One should allow 1 m² per nest in order to diminish quarrels about nest material and space.

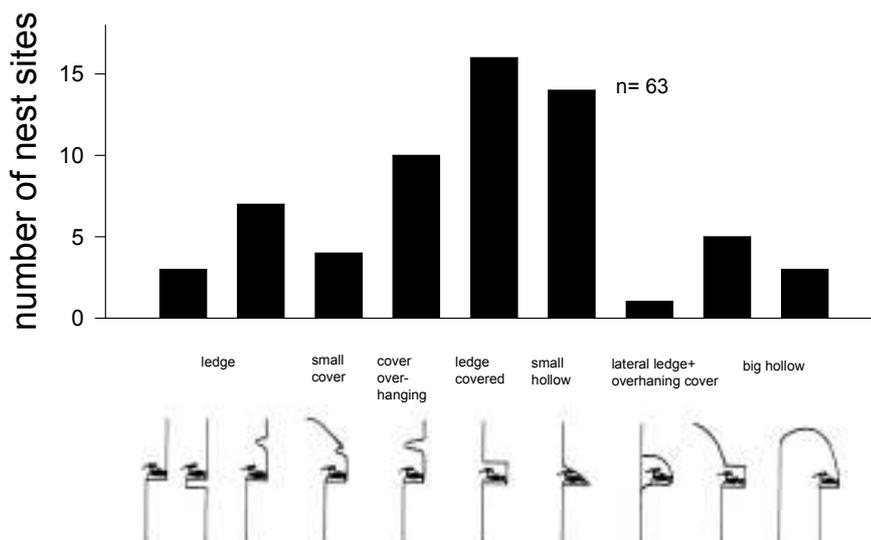


Fig. 1: Variation and preference of nest sites of the NBI in Morocco. Data PEGORARO 1996

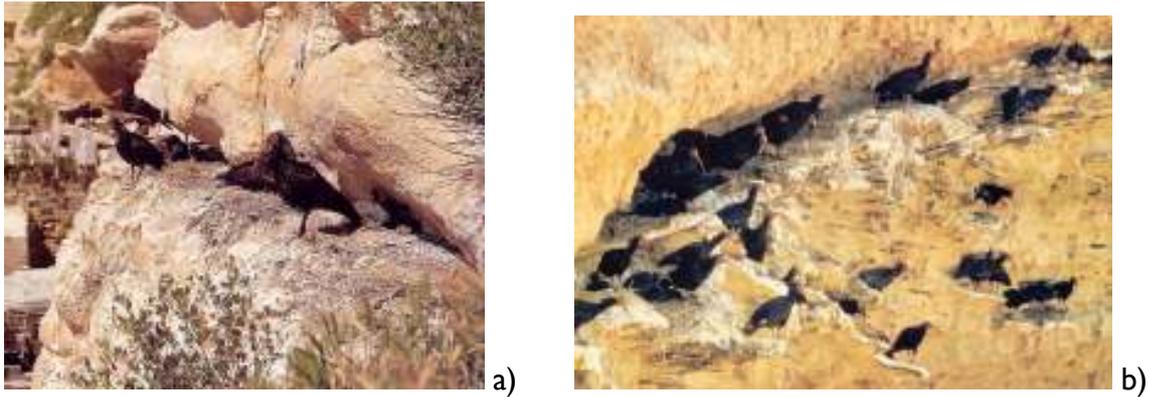


Fig. 2: NBI nest sites in Birecik (a) and Morocco, Souss Massa NP (b)

2 FOOD

The Northern Bald Ibis lives in dry habitats it usually feeds on terrestrial insects, spiders, scorpions, snails and even small vertebrates. The taste of the NBI seems rather “open” for quite a number of different prey.

A basic daily diet of minced meat and one-day-old chicken (without the yolk) in 1:1 proportions and cottage cheese mixed with dried insects work well. The ratio should be 2/3 minced meat (beef, horse, rat) and 1/3 cottage cheese. If the birds avoid the cottage cheese mixing it with meat or insects make it more appreciated. Some colonies are fed with fish as well especially when kept together with spoonbills. However it seems that an amount of over 30% fish in the daily diet may cause liver damage. Therefore fish feeding should be reduced, 10% fish sounds reasonable.

Mice (adult ones are better because each bird needs more time to swallow them and thus more birds reach at least one mouse!) and insects (Mealworm, crickets, beetles) are an appreciated as additional food. Fruits such as bananas and watermelons are liked and can be given as a variation 2-3 times a week.

In the non breeding season feeding twice a day is sufficient (in the morning between 9-10 am and 2-3 pm), however during breeding season food should be offered ad libitum which is guaranteed by feeding 3-4 times a day.

3 GROUPING

3.1 Group size

The size of a captive Northern Bald Ibis colony should exceed 8-10 individuals. This number of birds is easy to manage in terms of the amount of food required, cleaning and observations of the group. Groups with less than six specimens have never bred (BÖHM 1999). The Northern Bald Ibis is –like all ibises – a very social bird and is gregarious in its breeding, roosting and feeding behaviour. Northern Bald Ibises previously occurred in remarkable flocks of hundreds of birds.

3.2 Enclosure mates

In the field mixed aggregations of the NBI with other species of ibises or herons have seldom been reported. However in captivity NBI are often kept in mixed-species enclosures, especially with herons and other ibis species. The experiences have been good and no severe problems have been reported yet but also not looked for. Competition for food, nesting or roosting places with other species may occur and lead to failure in breeding success.

Species with no reported troubles are other ibises, herons, galliformes and small passerines. A keeping with vultures works when the NBI has its own roosting and breeding sites which are not accessible for the vultures. On the other side NBI will feed on passerines smaller than Blackbirds and on newly hatched chicks of galliformes. Beside all behavioural troubles and consequences there is still nothing known of disease transfers that might occur. As a consequence it is more recommend keeping Northern Bald Ibises groups in single species enclosures or with only few species which hardly interfere with feeding, roosting, breeding etc.

3.3 Age structure

The age structure within the NBI colony is important for a moderate growing and stable group. Best is to have at least 2/3 of the colony of adult birds (3 years and older) and the rest of young birds. It is recommend to keep 1- 2 offspring per year or exchange the same number of yearlings to avoid age gaps within the group.

3.4 Pair bonding and pairs

A well balanced sex ratio (1:1) works best. The Northern Bald Ibises are faithful to their partners (at least during one breeding season) and nesting sites. Males as well as females switch on the average between not more than 1-3 partners within the group.



Fig.3: NBI pair defending its nest

In Alpenzoo Innsbruck 61.5% of the pairs remained together for one, 19.2 % for two, 15.4 % for three and 3.9 % for four years within 12 years of observation (PEGORARO 1996). However, if there are more females in the colony, males often copulate with non-paired females, when their own females are already breeding (PEGORARO & THALER 1992). In the colony of Zoo Zurich none of the offspring were from other parents than the behavioural ones. "Egg dumping" may occur but could not be proved (SIGNER et al. 1994). Therefore pair bonds should be as well considered and good breeding partners should not be separated in most cases even if this seems desirable for genetic reasons.

3.5 Parent-offspring relationship

Both parents care about the nest and nestlings. Male and female brood, feed and guide the offspring. Social preening of the nestlings and cleaning of the nest are common parental behaviours (Fig.4.4). After fledging the contact remains very close. The first flight attempts are guided by the parents and they defend their offspring against colony members which are too curious or aggressive (THALER et al. 1981). The young are fed by their parents

another seven weeks after fledging (PEGORARO 1996). The contact decreases during autumn and winter but increases again at the beginning of the nest breeding season.



Fig. 4.4: Females NBI preening its newly fledged offspring

5. RINGING

Ringling of zoo colonies will help a lot in following individual histories and establishing a satisfying pedigree for many locations. It is thus strongly recommended that Northern Bald Ibises in zoo colonies are individually identifiable. Coloured aluminium or Darvic rings are best for ringling. The recommended size is 14mm in diameter. The EAZA offers ringling in that quality and size.

When transferred in a new colony birds should be ringling. The best time to ring young birds is when still in the nest. When the oldest chick is about 8-10 days old and start to stand up the feet are already big enough for ringling. At this age the nestlings stay in the nest and do not start to walk along the ledges and build up kinder gardens with other chicks. As about 80-90% of the behavioural parents are genetically the parents you will get well informed about family lines and bonds by the ringling. (The unique black patterns on the heads help to distinguish birds on an individual basis however it is rather difficult to get familiar with these features.)

6 KEEPING

6.1 Cleaning

Cleaning of on a daily basis is only necessary for the feeding and bathing sites. Cleaning the whole aviary once a week is sufficient. As the NBI is a very sensible species and disturbance at the nest sites lowers breeding success cleaning close or of the nest sites during the breeding seasons should be avoided as well as daily nest controls. The breeding pair clean the nest and exchange nest material (there fore dry grass should be given daily) regularly which is sufficient.

Swallowing of unsuitable objects is the second most often reported death cause (22%) in adult birds. NBI seem to have unfortunate affection for iron made small items and especially nails. Enclosures should be checked carefully for such things.

6.2 Breeding period

Before the birds start to build a new nest they try to remove the old nest material. Therefore the nesting sites should be cleaned during January or February. The birds first take thicker branches (15 - 40cm long, <0,5 cm thick) for the bottom (Fig. 4.5). They

finish the nest with remarkably huge amounts of dry or fresh grass as lining material for the hollow. Sufficient amounts of branches for the first two weeks and later thinner twigs and dry grass should be given every or every second day as the birds seems to be encouraged to build a better nest and because they are very choosy about the nest material. As Northern Bald Ibises replace the inner nest material during breeding constantly dry grass should be available the whole breeding season.



Fig. 5.: NBI nest (a) and nest sites (b)

6.3 Transport

Best transfer time is autumn and when the birds at least 3 month old. Although the parent-kinship relation lasts more than a year young birds cope well when transferred already the first autumn. At least two of a colony should be transferred together. Birds older than 10 years have severe troubles when transferred. About every third or fourth old bird which has been transferred cannot cope with the new environment and dies within in the next months. Therefore transfers of older birds should be avoided.

6.4 Hand rearing

Hand rearing should be avoided especially for producing more offspring. Hand rearing is time consuming, expensive and if not done properly produces sociable poor birds which will not integrate in a group and not breed. Hand rearing is not recommended except for scientific reason!

7 BEHAVIOURAL ENRICHMENT

The Northern Bald Ibis is a rather shy and anxious bird species which hardly accustoms to new structures brought into an aviary. Therefore it seems hard to imagine behavioural enrichment activities for such a behaviourally inflexible species when old. However, young birds up to 1-2 years of age are rather curious and love to get to know new objects and structures. As the Northern Bald Ibis seems to be able to learn only in its early year, yearlings should get to know as many structures as possible. Thereafter the bird will use these structures for its entire life.

In preserving a species for potential releasing programs it is not only important to maintain genetic variability but also behavioural variability. Therefore behavioural enrichment of the Northern Bald Ibis should encourage any ability of this species to accommodate as many as different structures and food types as possible.

Behavioural enrichment for the NBI is possible with habitat structure and food. To train the ibises to be more flexible in using new structures which are difficult to access one could offer different kinds of branches solid ones that vary in thickness and pliable ones which are not that easy to access. Further different surface structures encourage foraging behaviour e.g. different size of gravel, muddy areas, piles of stones or branches etc.

As the NBI spends more than half of his day foraging providing food encourage this behaviour even more. One can throw insects in the aviary on different times of the day, provide special structures like long tubes or coconuts with variable sizes of holes which are filled with insects (mealworms, *Zophobas morio* or crickets) or give whole fruits like bananas or watermelon (which also helps to keep the bills clean!).

REFERENCE

- PEGORARO, K. (1983): Weiteres zur Sozialstruktur des Waldrapp (*Geronticus eremita*) Beobachtungen aus dem Alpenzoo Innsbruck. Diplom. Uni Innsbruck.
- PEGORARO, K. (1996): Der Waldrapp. Aula Verlag, Wiesbaden.
- SIGNER, E.N., SCHMIDT, C.R & A.J. JEFFREYS, (1994): DNA variability and parentage testing in captive Northern Bald Ibis .Molecular Ecology3: 291-300.
- THALER E., S. Ettl & J. JOB (1981): Zur Sozialstruktur des Waldrapps (*Geronticus eremita*)- Beobachtungen an der Brutkolonie des Alpenzoo Innsbruck. J. Orn. 122:109-128.
- THALER, E., MASCHLER, S.& V. JOB (1981): Zur Sozialstruktur des Waldrapps *Geronticus eremita* – Beobachtungen an der Brutkolonie des Alpenzoo Innsbruck. J. Orn. 122: 109-128.
- THALER,E. & K. PEGORARO (1992): European Studbook for the Waldrapp Ibis *Geronticus eremita*.