

SUGGESTIONS HOW TO IMPROVE THE BEARDED VULTURE AVIARY AT BELGRADE ZOO

As the sub-adult pair of Bearded Vulture housed at Belgrade zoo could show next breeding season first evidences of reproduction, Belgrade zoo asked the EEP coordinators their advice to improve the Bearded Vulture aviary. For that Nadja Radovic from Belgrade zoo sent pictures of the aviary for its evaluation.

Introduction:

Belgrade has a young pair from 2010. The male was transferred in November 2011 and the female in July 2012 at the zoo. Following the information of the zoo, the pair seems to harmonize well, sitting beside each other without sings of aggressions as we could appreciate from the pictures.



The Bearded Vulture aviary:

The Bearded Vulture facility has an optimal size for housing a breeding pair, big enough for giving the birds the necessary escape distance from the visitors and not too big preventing to obtain a dangerous flight speed. It's covered with an intertwined elastic wire mesh (mesh size 4 x 4cm) with a vault form roof. The cage made of thin iron frame, it's closed on the back with a 3m high artificial wall of stone, which includes in the middle a fountain (fresh water is always available for the birds), and on the top there is installed a wooden covered nest-platform, closed on three sides. Only on frosty days, water is additionally offered in a plastic bowl.

The ground is a smooth slope covered with grass, which prevents the accumulation of water by bad weather. This helps keeping the ground dry and reduces the presence of aspergillus spores. Furthermore in the middle of the aviary there is a second nest-platform sustained by an iron pillar. In the middle of the aviary some wooden pillars are installed which support several branches -with a diameter around 20cm- as perches. Two huge trees are planted as environmental enrichment (picture 1 & 2).



Picture 1: The Bearded Vulture aviary closed on the back with an artificial wall of stone, with round wooden perches and two trees as environmental enrichment.

The wooden nest-platform, provided with a video-camera, tries to imitate a cave. The huge platform is 2/3 covered by the roof and at the highest point about 2m tall.



Picture 2: On the top of the artificial wall of stone a huge wooden cave provided with a video-camera is placed. On the ground a fountain with a bath offers the bird's always fresh water.

Additionally there is a second video-camera (webcam) for following the birds in the facility.

Conclusions and suggestions:

Following are exposed the possible suggested improvements by the aviary facilities.

- Bearded Vultures as cliff breeders use small caves in the wild (about 90cm height), and well protected from bad climatology. Cave with a huge enter are avoided. Additionally Bearded Vultures abandon the clutch if the nest becomes wet.
- ✓ To give the pair the feeling of cave, we suggest **build a second platform 1.5 x 1.5m at 0.9m from the roof**, in that corner where the sun shines during the morning. **On this platform build a nest 1.3 x 1.3m** exactly as is described in the guidelines for housing BV in captivity.



- ✓ To assure that the nest doesn't become wet by stormy and windy weather, it will be necessary to **enlarge the wooden roof covering minimum the full platform**.
- Obstacles like perches in the middle of the aviary or trees by other facilities have already caused the loss of several individuals because of collisions. One stuck a branch deathly into the chest. To prevent this kind of accidents we **recommend removing both trees** or change them for small bushes (max. 1m high).

- Bearded Vultures are soaring birds of prey and are impossible for many of them, especially females and older birds, to access perches through flapping flight. Steps make it much easier for the birds to transport material to the nest (an important behaviour during the breeding season that reinforces the pair bond) and to bring food to the perches, where it can be handled more easily than on the floor. Spiral steps (20cm wide, 4-5cm thick, 120-150cm long, and with a height of 45-50cm between them) are the best option to **allow Bearded Vultures to access perches and nest platform**.



- **We suggest removing the branches which are installed as perches.** Bearded Vultures as cliff breeders, the perches need to be adapted to suit the anatomy of their feet. For assuring to maintain its balance on it is recommended to install **flat perches, around 20cm wide, 4-5cm thick** and also need to be **rigid enough** to prevent them from bending during copulation on the perch. It is recommended to install a **holding arm perches system which avoids collisions** with it.



For preventing collisions by flying against the fence is recommended to **install perches around the aviary** (60cm away from the mesh and **never higher than the nest**). This gives them the possibility to move around the cage without getting on the ground, especially when the nest must be controlled by the keepers.



- To avoid collisions with the iron pillar of the second nest is recommended to **recover it with a thick wooden trunk** (min. 25cm thick). For a better visually it can be covered with a **climber plant**.
- Bearded Vultures develop the peculiar habit of bathing in mud rich in iron oxide. Although the reason for this behaviour is still unknown, they must be kept in captivity in good physical and psychological condition, offering them all available means of developing as many innate behavioural patterns as possible. Therefore it is recommended to **install a mud bath** where mud rich in iron oxide can be provided every 15 days (1m in diameter, and 10cm deep). The best location is **near the entry**. Use only mud **free of any toxic substances** (heavy metals or other organic contaminants).



- To prevent that water freeze is recommended to install a continuous closed water circuit. This prevents the loss of eggs due to anxiety caused by staff entering aviaries every day to clean and fill drinking bowls.



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Dr. Alex Llopis Dell, VCF Bearded Vulture Programme Manager
Centre de Fauna Vallcalent, Ptda. Vallcalent 63, 25199 Lleida, Spain
Tel: 00 34 657 47 33 78 email: a.llopis@4vultures.org