

African Penguin Nests - Student project

In conjunction with

NZG/SANBI

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INTRODUCTION

As part of their curriculum, second year engineering students from the University of Pretoria (UP) have to complete a one-week community project and present the results to a faculty jury. The evaluation is added to the students year end marks.

Every year, numerous PAAZA facilities are asked by eager students for project ideas that they could help with. They offer to build, repair or revamp anything that could fit in their limited budget and time frame. This year, a team of four students were very keen to add value to the artificial nest project for African Penguins particularly for the *ex-situ* populations.

The team was supervised by a scientist throughout the whole project. The students needed to first learn the components and process before starting the building of the nests, in order to produce 'as developed' compliant nests.

The resulting manufactured nests will be distributed to PAAZA zoos and aquariums which are holders of African Penguins and which require artificial nests for their enclosures, starting with the facility who provided the facilities for the manufacture : the National Zoological Garden of South Africa (NZG), Pretoria.

PROJECT IMPLEMENTATION

The making of the nests strictly followed the guidelines described in the Penguin Nest Manufacture Manual compiled by PAAZA. The students were taught every step, from fabric measurements and cutting to unmolding the casting. It took a full day of experimentation for them to learn the ins and outs of artificial nest manufacture.



The students at work on NZG/SANBI grounds

Once the manufacture started, the students were able to build between 1 and 2 full nests a day, depending on weather conditions.

During the last day of manufacture, the students took an extra step to repair any visible minor imperfection on the outside and on the inside of the castings. It was a perfect opportunity to discuss the previous mistakes made during manufacture and understanding the consequences of each change in parameters.



The first full nest manufactured by the students

The manufacture gave a total of 6 full nests for the 5 days, of which 3 have been installed inside the penguin enclosure at NZG/SANBI. Given the interest from the students, additional manufacturing will take place in their personal spare time such that all PAAZA facilities can receive the new artificial nests.



New accommodation installed inside the NZG penguin enclosure on African Penguin day.

OUTCOMES

The 6 penguin nests will be used in PAAZA facilities for their captive populations. The aim is not only to provide the animals with a better home in terms of temperature and humidity regulation, but also to provide a means for facilities to display the conservation work done *in-situ* and to showcase the Artificial Nest project. Having a real-life penguin artificial nest model instead of a picture captures the attention of the general public, which makes it easier to encourage education around the African Penguin problematics.

To this effect, the team came up with a little pamphlet that can be used as printed material for visitors, either hung on the wall as a board, or given as a flyer (appended).

Giving the opportunity to students to work on conservation related projects is a formidable way to encourage the growth of conservation mentalities in younger generations. Their experience will be related to friends and family, and maybe will remain a landmark in their lives that will promote responsible choices towards nature. It doesn't yield immediate physical results, yet it is the most important outcome that will ever be remembered. Education of younger generations should always be seen as the most important and valuable work to be done by any animal facility in order to support other conservation work.

As part of their project, the students also had to publish and present a video of their work as well as a written report to faculty. The video can be viewed here : <https://youtu.be/TBwi14X21BE>.

What was of great excitement and value to the students was the opportunity of actually assisting NZG/SANBI staff with installing the nests on African Penguin day 2019.



The students participated in the nest installation inside the enclosure

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Thank you all for making this project a reality.

Penguin Nests Project



The African Penguin

(*Spheniscus demersus*) is the only naturally occurring species of penguin on the African continent.



Contrary to popular belief, these animals do not live in cold climates.



Their living quarters are located on rocky islands, where the summer temperatures can rocket up to 40°C !



African penguins nest in burrows. They dig into the guano layer deposited on the islands by generation after generation of penguins.

Burrowing protects the young penguins from predation, overheating and dangerous weather conditions.



Over the 20th century, guano was harvested from their natural habitats and used as a fertilizer.

Without the guano layer, penguins could not burrow, and had to nest in the open, leaving their young exposed to numerous dangers.



Here come the artificial penguin nests !

To replace the loss of natural burrows, we developed and built artificial nests. These artificial nests are as close to a natural burrow as possible. They maintain constant temperature and high humidity inside, are weather resistant and made out of recyclable and non-toxic materials.

Their triangular shape is an exact replica of a natural burrow, with a small entrance and a larger and higher back !



Although there have been many varieties of artificial nests over decades, none came close to emulating the natural burrow or completely satisfying the fussy African Penguin...