

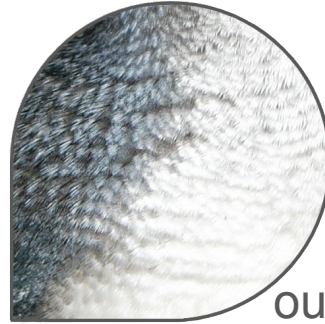
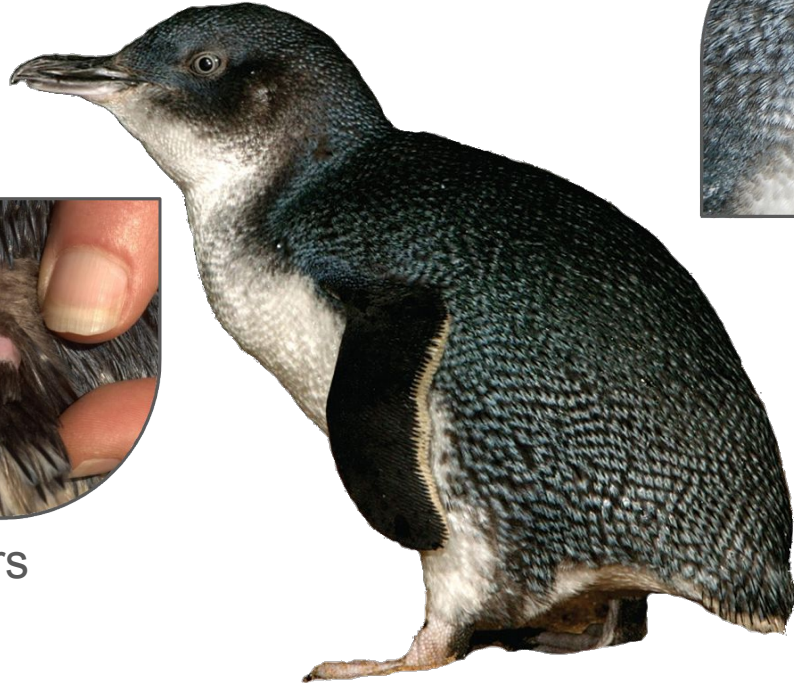
Design for Nature



Problem: The little penguins' environment is getting warmer

Climate change is creating more extreme heat events on Phillip Island, and our little penguins are paying the price.

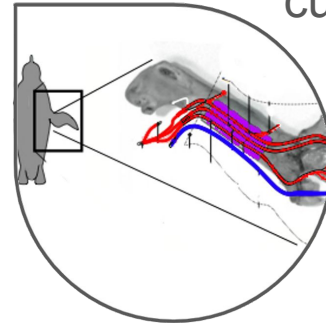
Thanks to their marine life style, little penguins have a lot of ways to stay warm...



A slick, waterproof outer layer of feathers



A layer of soft fluffy feathers next to their skin



Counter current heat transfer in flippers

...but cooling down is a lot trickier. They don't sweat like humans or pant like dogs, so if they need to cool down they go swimming!



However there's a time when little penguins can't go swimming. Instead of moulting gradually like most birds they undergo a 'catastrophic moult'.

Over about 17 days the penguin's new feathers push out the old feathers from beneath. This means they have twice as many feathers.



It also means they aren't waterproof and are stuck hiding in their burrow.



If their burrow gets too hot, they can suffer from heatstroke, become disoriented and leave the safety of their burrows.

In March 2019 Phillip island experienced a cluster of days over 35°C while little penguins were moulting.

Despite draping many burrows in shade cloth, and placing delirious penguins in the fridge to revive them, Nature Parks staff found hundreds dead in the days afterwards, the greatest known loss to date.

Solution:

Climate smart artificial penguin burrows

Climate change is predicted to make Phillip Island hotter and drier, so Nature Parks in collaboration with La Trobe University, is testing 50 artificial burrows, in five different designs, to better protect penguins during extreme hot weather.

The research director at Phillip Island Nature Park, Dr Peter Dann has devoted his 40-year career to studying penguins, and oversees one of the world's largest colonies of the smallest member of the family, the little penguin.

When Dr Dann first began studying penguins in 1980, scientists already knew climate change affected their breeding cycles but no-one anticipated humans would change the climate so rapidly.

THE  **AGE**

Read
more
here!

We don't really want to have to have every penguin living in an artificial box to survive.

I see it as buying us time as we get the more central problems of climate change and what we're doing to the earth under control.



Challenge:

Design an artificial burrow that helps penguins stay cool in a warming environment



Check out these resources for hints on cooler design.

How are you going to present your design? You could use...



Share your design!

Once you've finalised your design share it with the team at the Phillip Island Nature Parks. Send your design through to schoolbookings@penguins.org.au and we'll share your design with our rangers and researchers.

