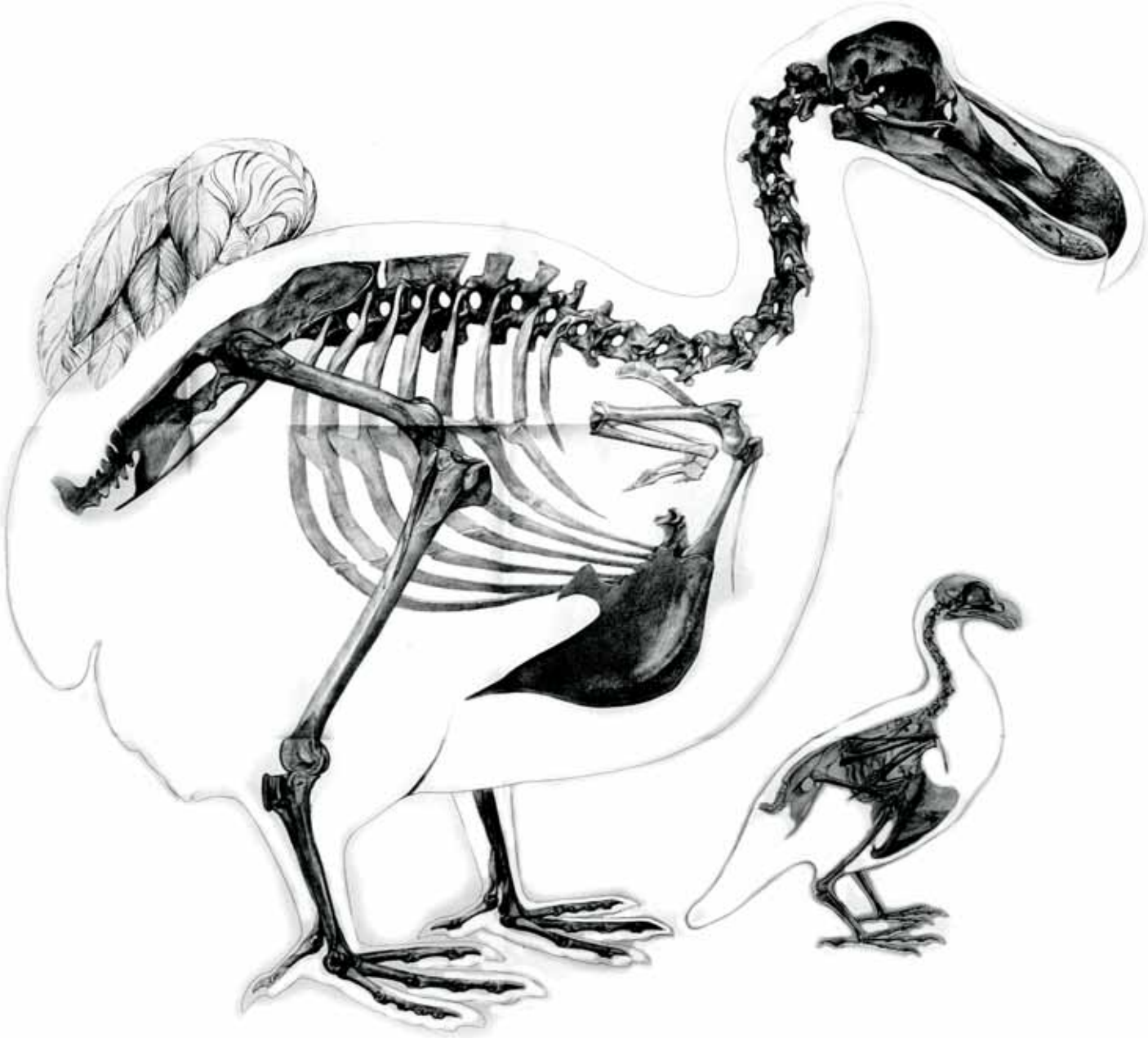

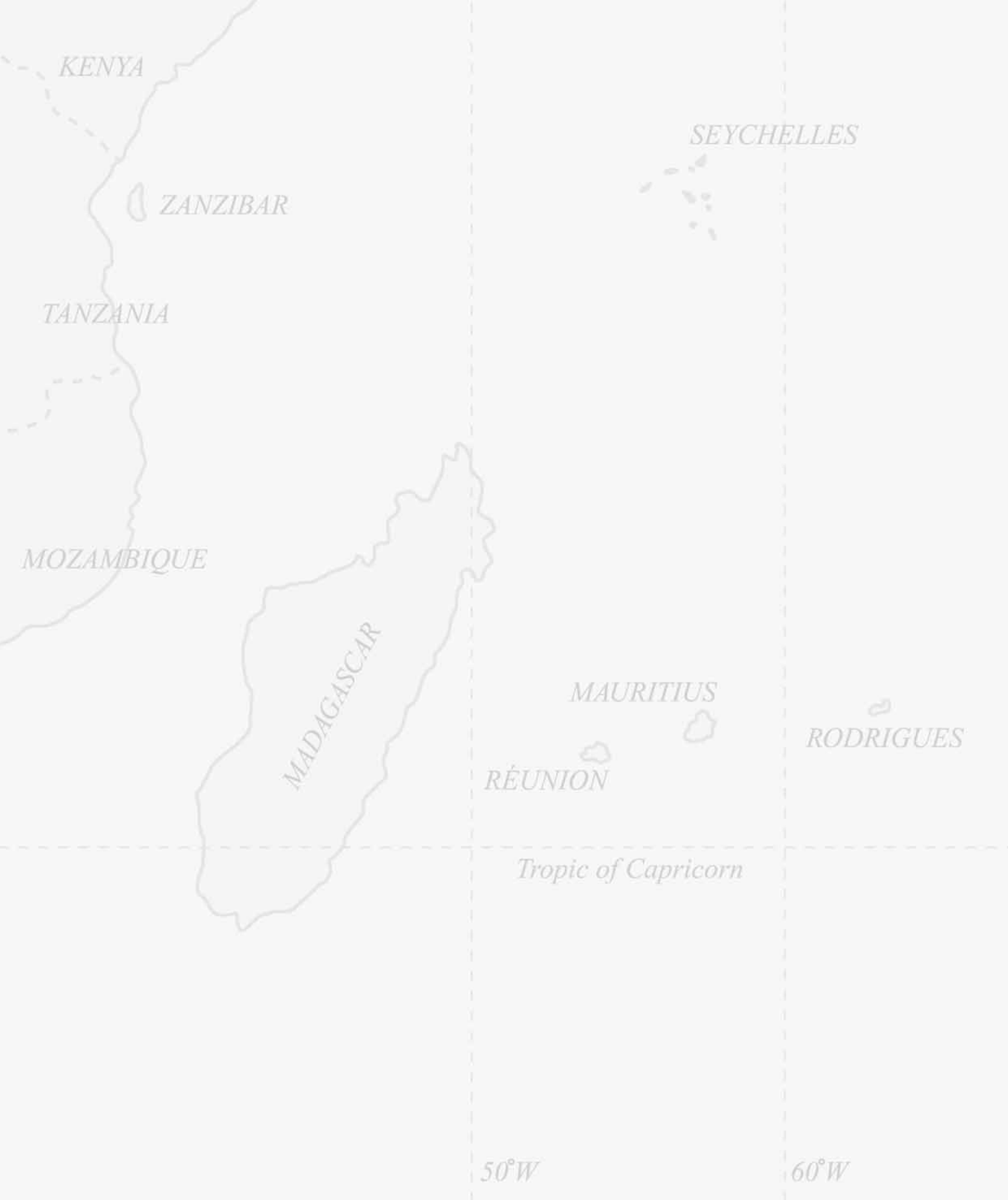
KENYA
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MOZAMBIQUE
MADAGASCAR
MAURITIUS
RODRIGUES
RÉUNION
Tropic of Capricorn
50°W
60°W

'Bones to Bronze'

Extinct Species of the Mascarene Islands

Sculptures

by

Nick Bibby

Gallery Pangolin
2004

Introduction

Shivers must surely go up the spine of anyone who visits this exhibition, for the eleven bronze sculptures all represent creatures that have vanished from the face of Earth. There is something unnerving about the fact that they are gone forever, driven out of existence by the carelessness and greed of mankind. The reconstructions take up very little space, yet they have positively global significance, since they represent the latest initiative in an ambitious and imaginative campaign to slow down the tide that is sweeping thousands of species towards extinction.

These birds and reptiles once lived on the Mascarene Islands – Mauritius, Réunion and Rodrigues – way out in the Indian Ocean to the east of Africa. Easily the most celebrated is the dodo, flightless and comically misshapen, which disappeared in the 1660s, and one of the most recent casualties is the lesser fruit bat, which hung on until the middle of the 19th century.

The idea of making reconstructions came from Dr Carl Jones, the biologist who for the past 25 years has worked as director of the Mauritian Wildlife Foundation, running the island's unique fauna conservation programme. Together with Rungwe Kingdon and Claude Koenig, directors of the Pangolin Editions sculpture foundry at Chalford, near Stroud, he conceived the notion of recreating lost species, and deploying the bronze sculptures on the Ile aux Aigrettes, a 35-hectare islet off the south-eastern shore of

Mauritius, which is now a nature reserve and has become the Foundation's showpiece.

The little island has been cleared of exotic vegetation, and the indigenous flora, such as ebony trees, are being re-established. Alien creatures like rats, rabbits and wolf-snakes, thoughtlessly imported by early sailors, have also been removed, and some of the original inhabitants have been restored, among them the pink pigeon and the Mauritius kestrel - both retrieved from the brink of extinction by careful breeding programmes. Yet in all there are fourteen species which can never be brought back to life and eleven of the bronzes are already sited on the islet as part of a trail which visitors can walk.

What cannot be immediately apparent, either on Mauritius or here, is the astonishing amount of research that has gone into the recreation of each bird and animal. The Pangolin team, supported by Nick Arnold of the Natural History Museum, author Errol Fuller and the independent experts Anthony Cheke and Julian Pender-Hume, went to extraordinary lengths in search of authenticity, researching early reports of the various species, and hunting down the scant remains. The pooling of their scholarly research enabled the sculptor Nick Bibby to model the creatures in clay, from which the bronzes have been cast.

The blue pigeon was relatively simple to visualise, for three stuffed specimens of the bird survive, and the sculptor could not only see and measure them, but could count every feather – which he did. As for the dodo – no body exists, and the only physical relics the team had to work on were a mummified head (once in the Ashmolean Museum, and now in the Science Museum in Oxford), and some bones. There is also the cast of a foot (formerly in the British Museum, but now missing), and numerous drawings done by early visitors to the islands.

From these scraps, and from their own sketches of the remains, the researchers painstakingly built up a three-dimensional picture of what they believe the dodo must have looked like. The cast yielded information about the scales on its feet, and the shrunken head revealed much about the gape of its beak, the shape of its nostrils and

the skin over its eyes. "The dodo is so much in everybody's consciousness that we absolutely had to get it right," says Rungwe Kingdon. "We've tried to make all the replicas as exactly like the originals as possible, so that they have some scientific credibility."

Still more shadowy was the giant gecko, of which only a skeleton was available. Yet from study of a smaller gecko, a close relative which survives on Round Island (another islet of the Mascarenes), Nick Bibby was able to reconstruct the larger reptile, going into such minute detail that he furnished it with 35,000 scales.

Of all the lost birds, none impresses Rungwe Kingdon more than the broad-billed parrot – a giant, with the biggest, most powerful beak of any parrot in the world. He has the lower jaw of one, which he describes as "like a JCB shovel." With awe he holds up a seed from a tambalacoque tree – once the bird's staple food. "I put one of these in a vice," he said, "and it took five full turns of the handle before it would crack. The strength in the parrot's beak must have been phenomenal."

And yet, more than any strange individual characteristics, it is the idea of extinction, and the finality of it, that gives this exhibition its particular power. The bronzes should arouse feelings of outrage at what humans have done to the planet, and strengthen determination to curb further destruction of our environment.

Duff Hart-Davis
February 2004

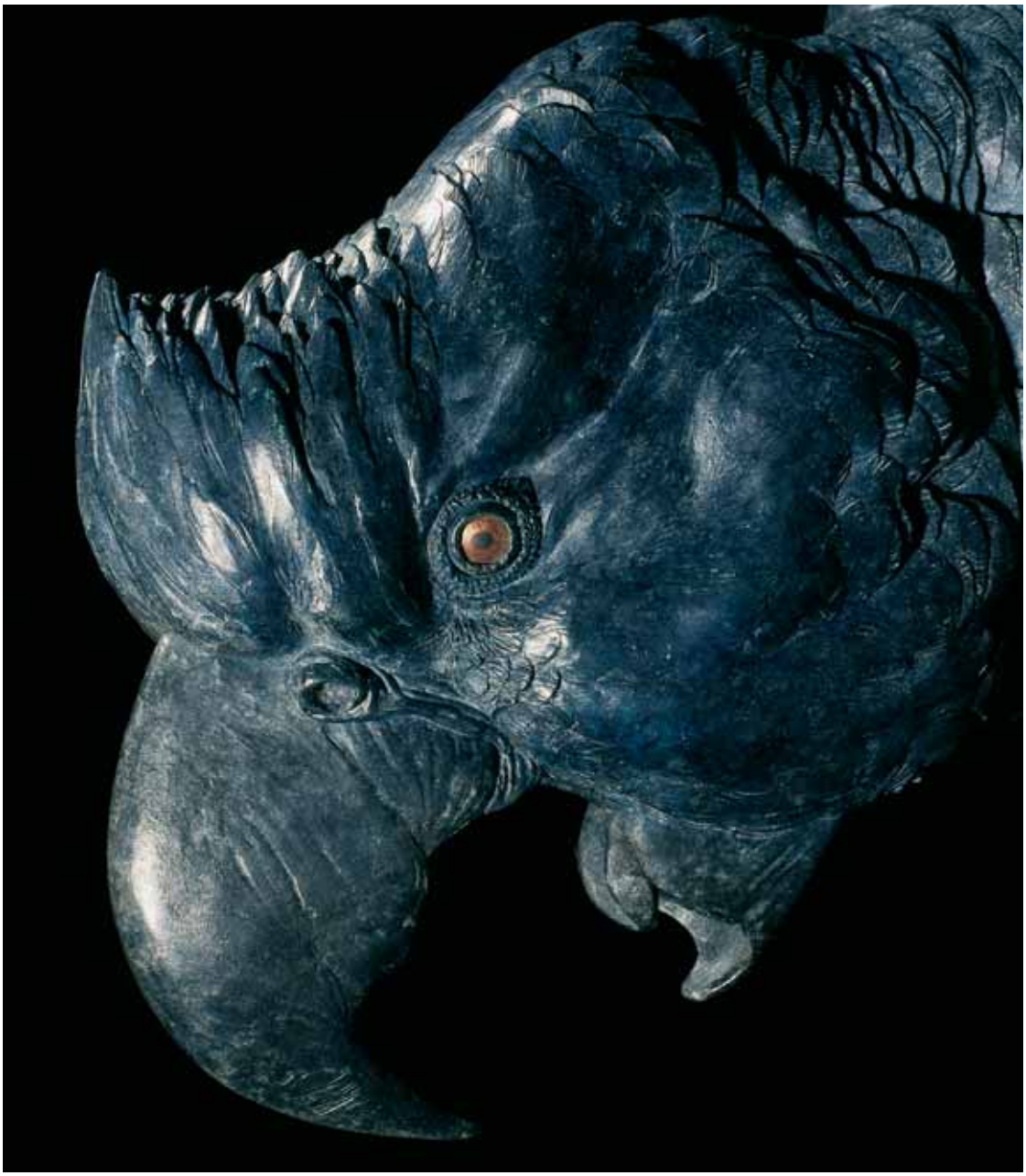
Dodo Head
Raphus cucullatus
35cm high

Red Rail
Aphanapterix bonasia
29cm high

Rogdrigues Giant Gecko
Phelsuma gigas
47cm high

Mauritius Scops Owl
Scops commersoni
40cm high

Rodrigues Giant Tortoise
Cylindraspis vosmaeri
122cm high



Broad-billed Parrot
Lophopsittacus mauritianus
42cm high

Mauritius Giant Skink
Didosaurus mauritianus
24cm high

Mauritius Blue Pigeon
Alectroenas nitidissima
42.5cm high

Lesser Mascarene Fruit Bat
Pteropus subniger
31cm high

Dodo
Raphus cucullatus
78cm high

Stepping into the Past

When the last Dodo became extinct on the island of Mauritius sometime late in the 17th century, it was the first time that mankind realised that we could cause the total demise of a species. Up until then it was assumed that species were inexhaustible and if a population disappeared from one area then another would be found elsewhere. With the death of the last Dodo we realised that we could cause the extinction of species and to avoid further losses we had to nurture wildlife. This was an important realisation; the death of the last Dodo saw the dawning of modern conservation consciousness.

Today Mauritius is seen as a paradise island, unspoilt beaches, verdant hills and exotic birds, the loss of the Dodo an inevitable consequence of development. The Dodo was a caricature of a bird, a dull, ponderous, flightless, stupid creature doomed to extinction. The reality however is that these views are hopelessly inaccurate. Mauritius may still be a paradise to many but it is a mere shadow of its former self, a fractured paradise that has lost important parts. Not only has the Dodo gone but Mauritius and the other islands in the Mascarenes have lost herds of Giant Tortoises, giant reptiles, flightless rails, large parrots, the Solitaire, owls and a host of other amazing creatures.

Damaged though the ecology of Mauritius might be, it is still possible to save some of the fractured pieces and to recover rare and endangered

species. The Mauritius Kestrel, once reduced to four birds including only one breeding pair, has been restored by careful nurturing, captive breeding and reintroduction to a vibrant population of about eight hundred.

The Pink Pigeon, reduced to just ten wild birds in 1990, has increased to a healthy, free-living population of three hundred and fifty. This has been achieved by releasing captive birds and caring for these and their wild relatives by feeding them and controlling their predators.

The Echo Parakeet, last of several parrots endemic to the Mascarene islands, declined to only eight known birds in the late 1980's of which only two were females. These birds were breeding infrequently and the odds seemed to be weighted heavily against them. There was a shortage of food, the native fruits on which they fed were being eaten by introduced monkeys and rats and when the parakeets did try to breed they often failed because predators took the eggs or killed the young. Again careful management has helped these birds. Some have been bred in captivity and their young released to the wild. The free-living birds have been helped by being fed and by controlling their introduced predators. Wild nests are carefully managed to ensure that most of the eggs result in fledged young. The wild population of this beautiful parrot has increased and this year the population has reached two hundred birds.

Slowly we have learned how to save the rarest species and this has driven the need to save the habitats in which they live. Areas of native forest are being restored and the rare plants that grow in these forests are grown in nurseries and planted out to boost their wild populations. The restoration of forest often involves the exclusion or control of the introduced exotic mammals such as pigs, deer, monkeys, cats, mongooses and rats that are so destructive to the plants and native birds.

It is virtually impossible to keep out all of the introduced mammals from forest plots so we have rehabilitated small islands where in many cases it is possible to eradicate all the exotic animals. The two most important are Round Island and Ile aux Aigrettes where many of the exotic mammals have been removed and where we have replanted native plants.

On Ile aux Aigrettes we have reintroduced the Pink Pigeon and Mauritius Kestrel and more recently a small population of the rare endemic passerine the Mauritius Fody. Ile aux Aigrettes has become a focal area for much of our work and the restoration of this and other small islands has been exceedingly challenging. How do you restore and rebuild the ecology of an island? What did these islands or the mainland of Mauritius once look like? And, how did the species that once lived there fit into the ecology? We know from early accounts that some of the tortoises grazed large lawn-like areas and others browsed trees. Parrots would have carried fruits around the forest thereby dispersing them and the extinct Lesser Fruit Bat may once have pollinated the palm trees. Putting together the different components is like imagining how all the pieces fit together in a dynamic, multi-dimensional jigsaw. The more we have worked on the restoration of these ecological systems the more we are beginning to realise the role that the extinct species may have played. That realisation has been hard earned through painstaking research.

The most recent part of the story, to recreate the extinct species in bronze, starts deep in a cave on Rodrigues. I was part of a team helping to dig up the remains of extinct species that had fallen into the cave and perished there. It was a very powerful experience handling the bones of tortoises, the Solitaire and other birds; I felt I was touching the past. Some of the tortoise remains looked as if they had only been there a short while; the carapaces were intact and the bones looked fresh. I handed tortoise remains to Dr Nick Arnold from the Natural History Museum, London and he started to interpret the finds, ageing the tortoises and explaining what all of the different shell features meant.

There were two species and they had lightweight shells making them very nimble (for tortoises!) and one species had an elongate giraffe-like neck for browsing. As I listened, the animal started to come alive in my imagination. I could marry these facts with what we knew of the tortoises from the accounts of 17th century sailors and I could imagine how they fitted into the pristine ecology of the island. I was driven by these mental images and wanted to know how these tortoises really looked in life. I questioned Nick further and he

mentioned that they had enough remains to give us all the information to make an accurate model.

Eager to make my own model tortoise I decided to discuss the project with Rungwe Kingdon and Claude Koenig who would be able to advise me on how to make one. Claude patiently told me some of the modelling techniques while Rungwe butted in "we will cast it for you in bronze" followed by a thoughtful pause and then emphatically "I'll tell you what we will do, we'll get a sculptor to do it and while we're at it we'll do the Dodo and all the extinct animals." I tried to reason but there was no going back. The project to make the extinct species had started to take shape and within days Rungwe and Claude had the whole project planned and Nick Bibby was hired as the best sculptor for the job.

We all knew that the reconstruction of these extinct species was going to be a challenge. Some such as the Lesser Fruit Bat and the Blue Pigeon would be relatively straightforward to make as there were preserved specimens to copy, while others such as the Owl, Giant Skink, and the Broad-billed Parrot would be more challenging since all we had to go on were early drawings or a few bones. With these we had to refer to closely related or similar species to fill in the missing details and there were many heated discussions between the various experts. What was the shape of the Dodo's nostril and was the Broad-billed Parrot really a type of cockatoo? Rungwe made sense of all the information, did the drawings and acted as arbitrator.

As the drawings emerged and Nick Bibby transformed them into three dimensions many previous ideas were challenged. We realised that previous reconstructions in two dimensions had oversimplified many features. The Saddle-backed Tortoise from Rodrigues had a reach of four feet making perfect sense of the fact that some of the native plants have various defence features up to a height of four feet! The Broad-billed Parrot, often considered to be flightless, had a wing structure and tail that suggested it could fly. The reconstructions also made us think closely about some of the features. Did the Blue pigeon have a bare face to feed on large soft fruits? And why does the Red Rail have such a strong

beak, did it feed on lizards or was it a snail specialist?

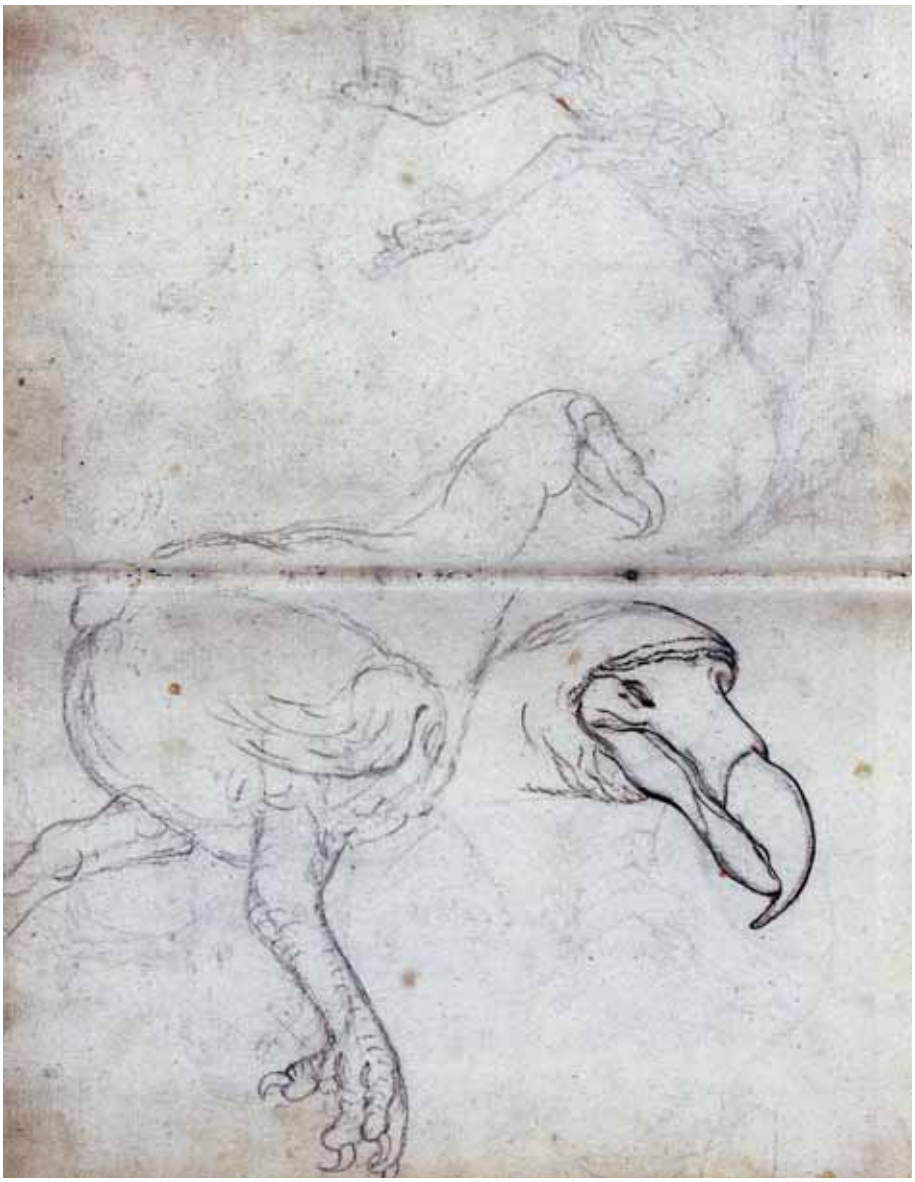
These last three years have brought several Mascarene biologists and artists together as we have attempted to step into the past and really understand what these amazing creatures looked like. It is likely that we have not modelled all of the species completely accurately but we have produced what are the most accurate reconstructions ever made. They stand as our visual interpretation of these creatures and are displayed on Ile aux Aigrettes next to many of the living species we are helping to restore. Not only are they a keen reminder of what has been lost but by using the information these sculptures give us we can also take the process to a further exciting stage.

We cannot bring them back from extinction and probably never will be able to since even if DNA technology allowed us to reconstruct them, for most of these creatures no DNA exists. However, we know that species exist not only in their own right but also as ecological units and it is quite feasible that for many we may be able to introduce other species with the same or similar ecology. Hence we may be able to replace the niche occupied by extinct species with their closest living relatives. The Aldabra Giant Tortoise has already been introduced to Ile aux Aigrettes and one day perhaps the giant gecko from Rodrigues may be replaced by the large Guenther's Gecko from Round Island. There are many other possibilities and as we learn more about extinct species and their role in the pristine ecology, the more we can accurately reconstruct the ecosystem that once existed on the pristine islands of the Mascarenes.

Dr Carl Jones MBE
February 2004

Reconstruction

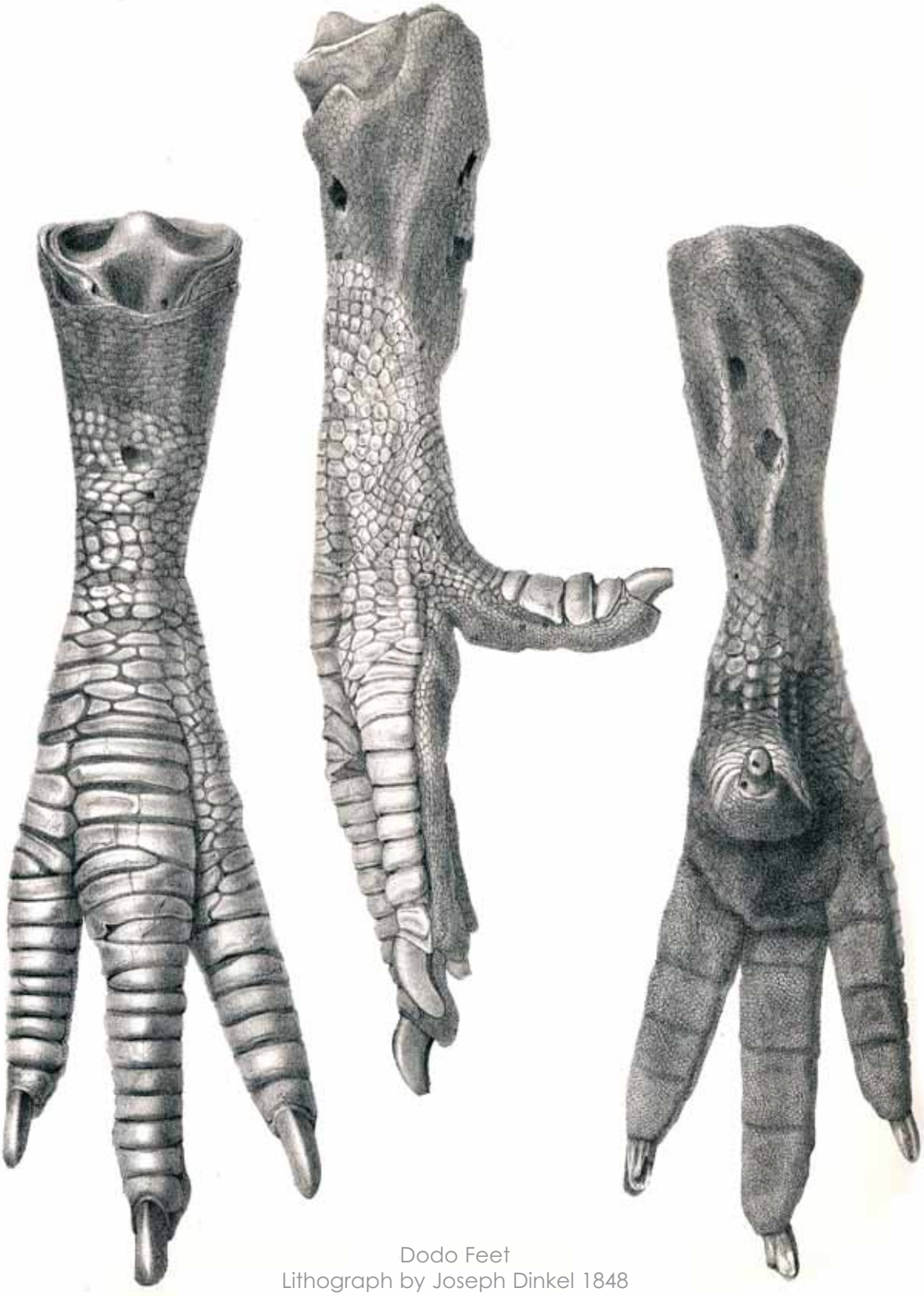
References and process



Drawing from the journal
of the Gelderland voyage
to the East Indies 1601-3

'Birds in the Menagerie of Jahangir'
Ustad Mansur 1625
Moghul miniature

Engraving after
Roelandt Savery 1626

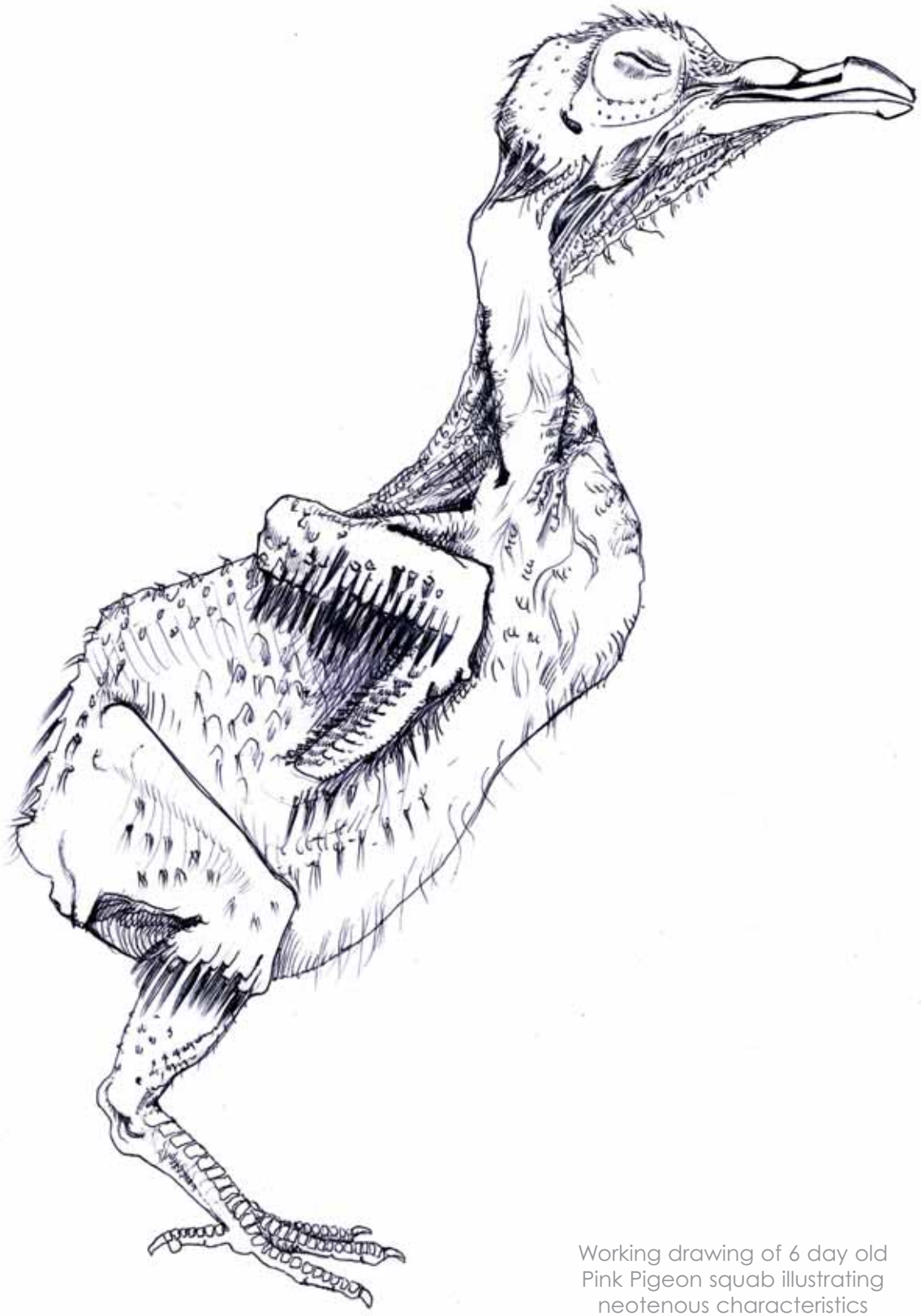


Dodo Feet
Lithograph by Joseph Dinkel 1848
Strickland & Melville

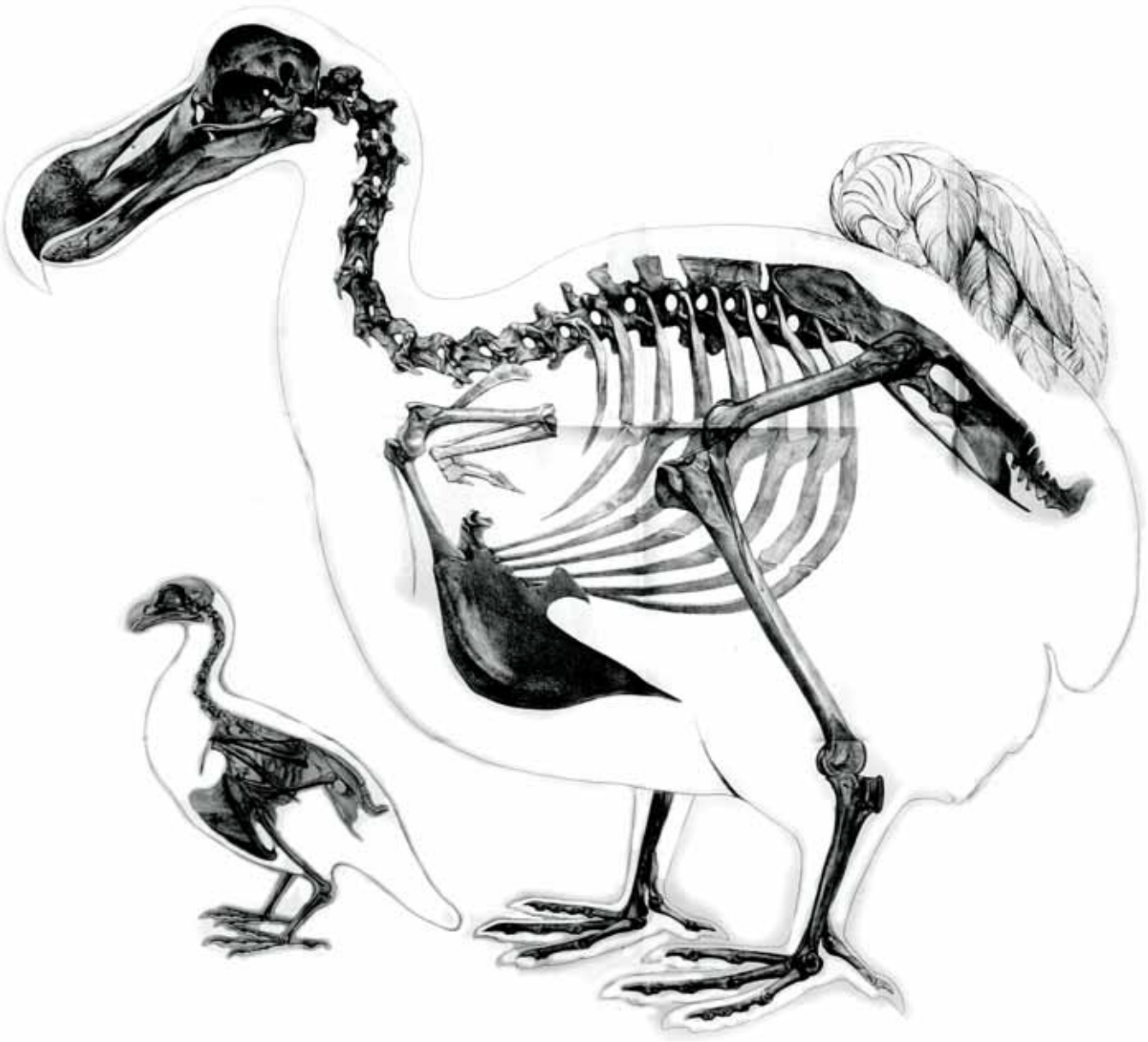
Dodo foot bones
Collection Oxford University Museum

Dodo head
Collection Oxford University Museum

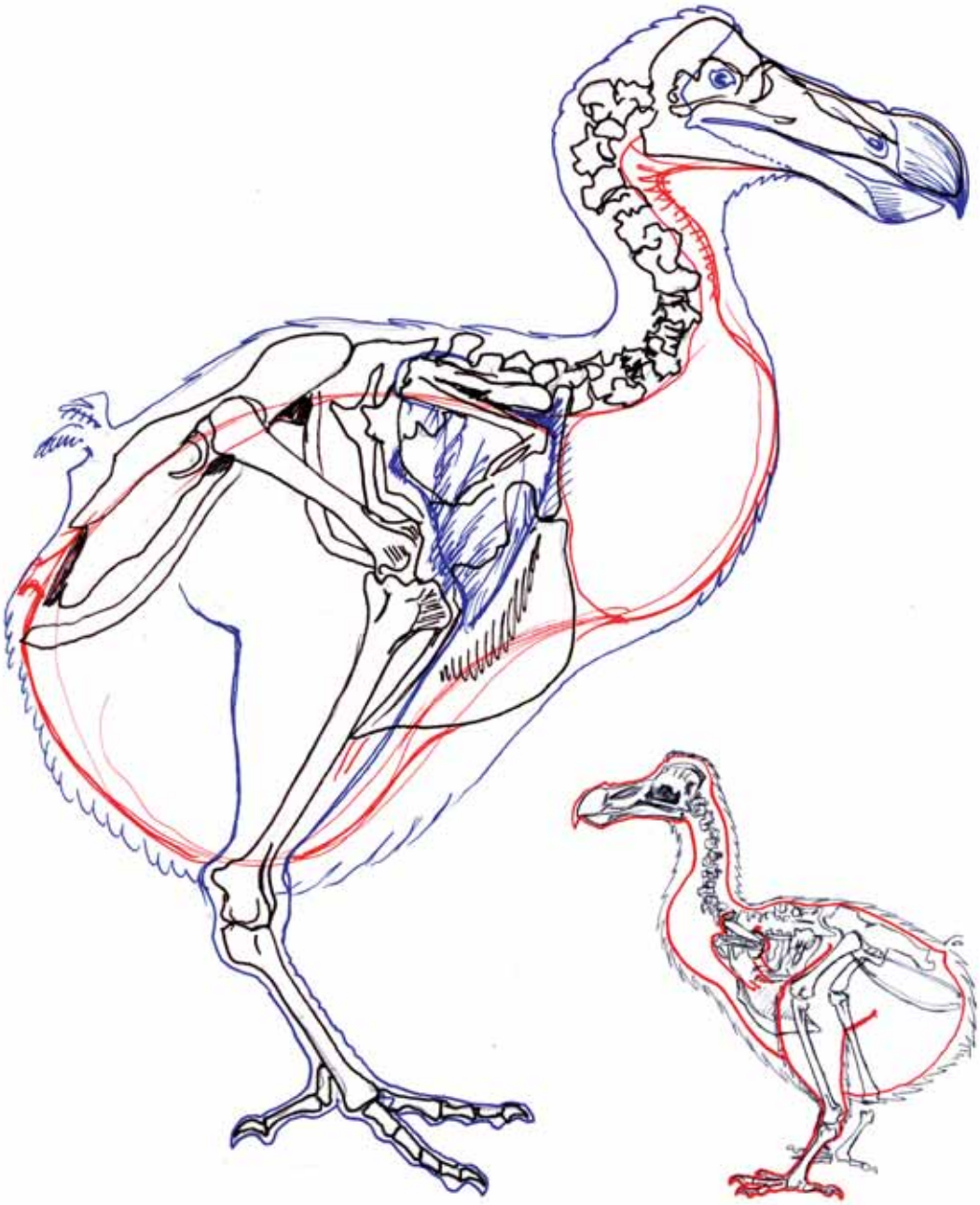
Working drawing of 2 day old
Pink Pigeon squab illustrating
neotenous characteristics



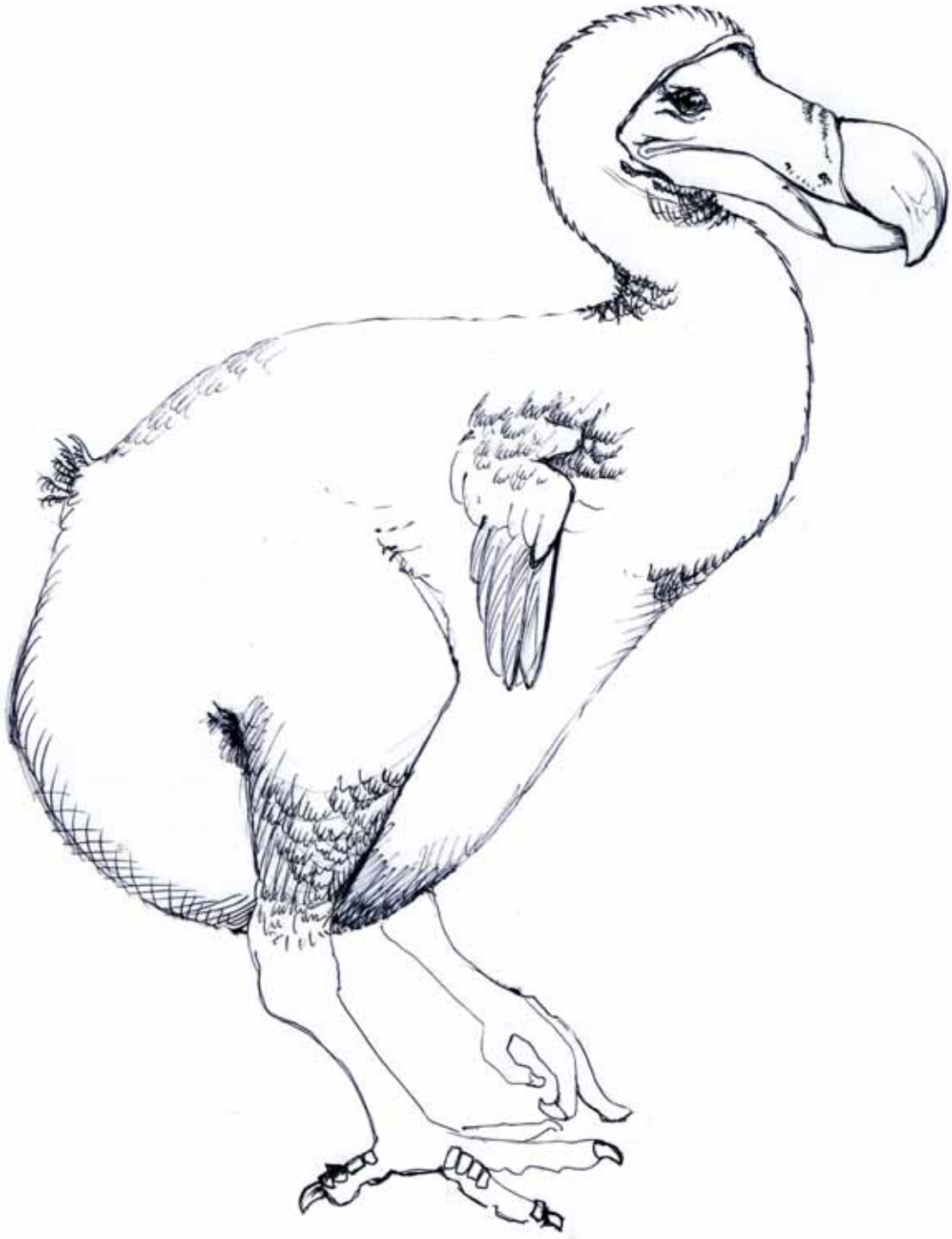
Working drawing of 6 day old
Pink Pigeon squab illustrating
neotenous characteristics



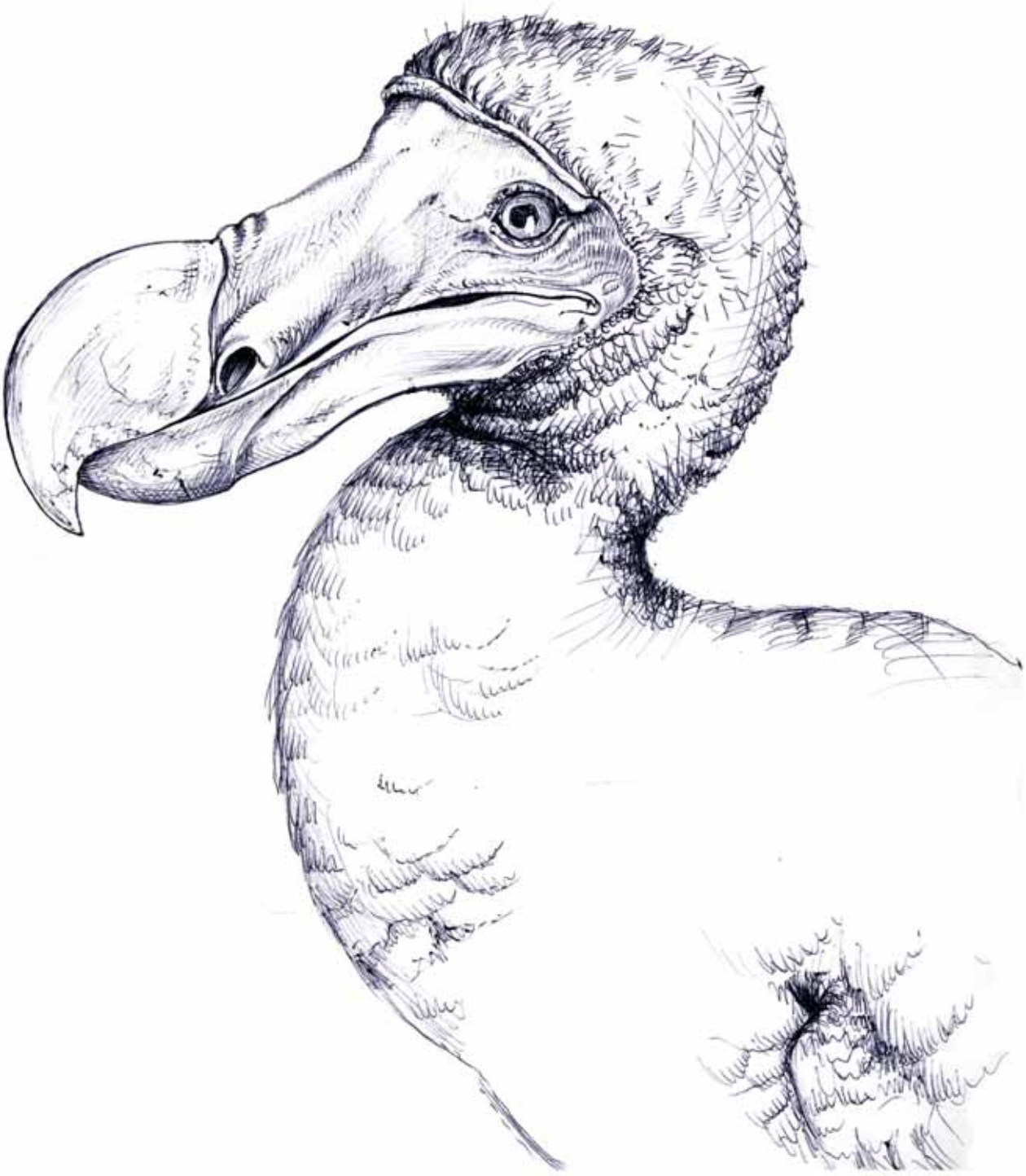
Lithograph illustrating comparative
proportions of Dodo and Didunculus
J. Erxleben 'The Osteology of the
Dodo' by Professor Richard Owen
Transaction of the Zoological Society 1871



Working drawing from Dodo skeleton
showing correct posture and proportion
of crop and stomach in adult



Final reconstructive drawing of Dodo



Final reconstructive drawing of Dodo head

Nick Bibby

Nick Bibby was born in County Durham in 1960 and spent much of his childhood wandering the Lake District and Cumbria and developing his abiding love of nature.

"I love to sculpt wildlife, to try to capture the character and vitality of the subject as I observe it going about its daily business."

He drew and painted from an early age and began sculpting commercially at the age of 16, producing small pieces in pewter and white metals. He began casting into bronze in 1992 and his meticulously detailed animal studies have become collectors' items.

Bibby is the perfect sculptor to carry out the painstaking reconstructive work for this project. His deep understanding of anatomy and his astonishing ability to render natural textures of feather, fur and scales in wax and clay has found unrivalled expression in this collection of sculptures.

"It has become incredibly important to me to 'bring these animals back to life', to try and produce sculptures that look as though they are just about to fly off, walk or crawl away the moment you turn your back, not some dusty, lifeless museum piece. Over the three years that I have spent working on this project, I have become increasingly aware of how close we came to actually seeing these wonderful creatures, only a few hundred years at most, less in some cases, an eye blink of geological time. I dream about them sometimes, but when I wake they are all still irretrievably lost."

Reconstruction of skeleton

Partly modelled head and armature
with historical references, cast replicas
of skeleton and preserved pigeon squab

Clothing the armature using historical
references and working drawings

Nick Bibby modelling the body using
historical references and cast
replicas of skeleton

Afterword

Bones to Bronze is the culmination of a long, exciting and tremendously rewarding collaboration. We are indebted to Dr Carl Jones, Dr Nick Arnold, Julian Pender-Hume, Anthony Cheke and Errol Fuller who freely shared their expertise, crucial to the realisation of the whole project.

We are exceedingly grateful to Nick Bibby for achieving the mammoth task we set him with such tireless dedication, patience and love. Special thanks must also go to Duff Hart-Davis for his sensitive and insightful introduction and also to Dr Andrew Kitchener, Dr Andrew Greenwood, Dr Sammy de Grave, Dr Wendy Strahm, Bob Thornycroft and Elena Kingdon.

The survival of this project has also depended upon the generous support of many individuals, in particular Owen and Mary-Ann Griffiths, Damien Hirst, Veronique Fromanger Des Cordes and Jacques Chalom Des Cordes.

Behind the scenes of such an undertaking there is, as always, a huge team of dedicated people working towards its realisation. We are therefore enormously grateful to everyone involved at the foundry and at the Wildlife Foundation in Mauritius.

Claude Koenig
Rungwe Kingdon
Jane Buck

Acknowledgements

Casting:	Pangolin Editions
Photography:	Steve Russell Dutton
Working Drawings:	Rungwe Kingdon
Catalogue Design:	Gallery Pangolin
Printing:	Healeys Printers Ltd

All work in this exhibition is for sale. A percentage of proceeds will be donated to the Mauritian Wildlife Foundation to further conservation work in the Mascarene Islands.

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