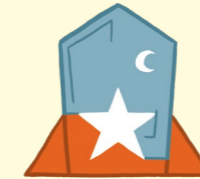


Dedicated to all the creatures great and small
that sat atop a rocket in the name of progress and politics;
to those that returned, and those that did not.
May we learn from our mistakes,
and remember your stories,
always.



CONTENTS

Foreword by Dr Stella Phant	1
Introduction	2
Fantastic firsts	15
Mammal-nauts.....	29
Slimy-nauts, scaly-nauts and feathery-nauts	54
Aqua-nauts	79
Teeny-tiny-nauts	102
Afterword	142
Glossary	143
Index.....	146



FOREWORD

If you ask anyone which animals have been to space, you'll generally get the same answer: monkeys, chimps and dogs.

But those aren't the only ones.

Did you know that spiders have been to space?

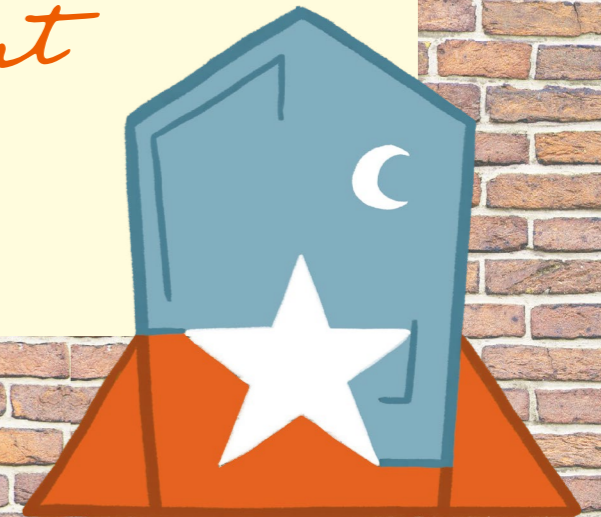
So have bees and butterflies; bullfrogs and bobtail squid; quails and koi; geckos, guinea pigs, goldfish; and a single solitary cat.

Dozens of species have been to space in the last eighty years. In fact, the very first Earthling astronauts weren't even human.

My name is Stella. Join me as I guide you through the fascinating history of amazing astro animals!

Dr Stella Phant

CEO and Founder of
Stellarphant Aerospace



INTRODUCTION

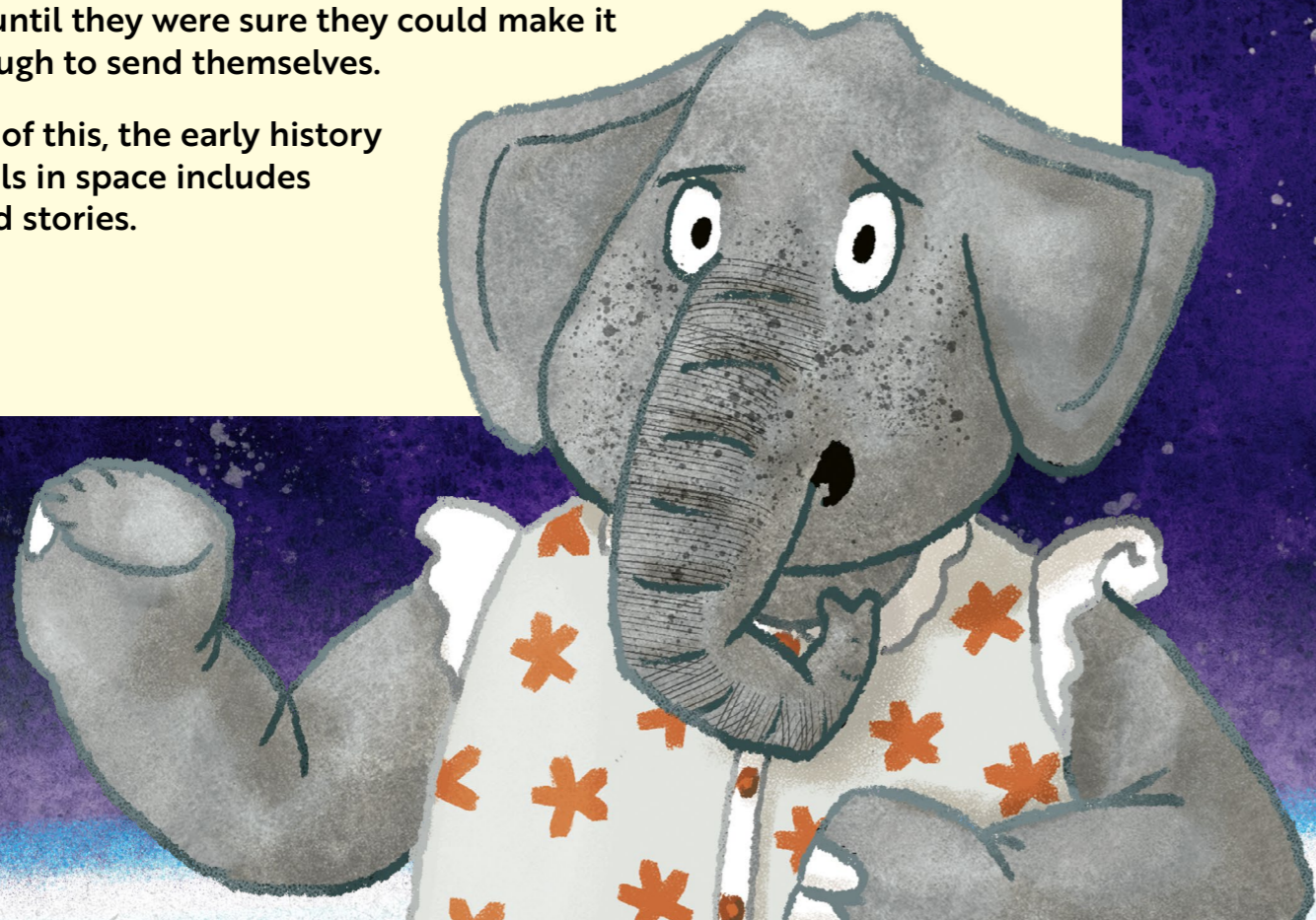
Why send animals to space?

Humans have been flying into space for several decades, and have learned a lot along the way. But when they started building rockets in 1945, the technology wasn't particularly safe or reliable.

Sometimes the rockets exploded on the launchpad before lift-off; sometimes the parachutes failed on re-entry. The first rockets weren't very big either: scientists didn't yet know how to build a rocket big enough for a human to fit inside. Humans didn't even know if the experience of rocket travel or the conditions in space would be harmful to them.

So, humans decided to send small animals in their rockets until they were sure they could make it safe enough to send themselves.

Because of this, the early history of animals in space includes many sad stories.



The Space Race

The United States of America and the Soviet Union were the two most powerful countries in the world in the 1950s and 1960s.

One way they competed with each other was by trying to get to space first – seeing who could build the strongest rockets, who could launch the first satellites, who could send humans to space first, and who could land on the moon first.

This was called the 'Space Race', and scientists from both countries sacrificed many animals in their experiments. Winning the race was unfortunately seen as more important than the animals that died along the way.

Fact File

The Soviet Union was a very large country that existed from 1922 to 1991 and was made up of a group of republics. Russia was the largest republic in the Union and was in charge of the others. Because of this, Russian was the most common language. After the Soviet Union broke apart, it became modern-day Russia and fourteen other countries.

The Soviet Union was also known as the **USSR** (Union of Soviet Socialist Republics) or, in Russian, the **СССР** (Союз Советских Социалистических Республик).



Modern space research

Eventually, humans figured out how to build bigger rockets and how to get to space and back more safely. But there was still so much more to discover. If humans were to live in space for long periods, they would need to learn more about how being in space affects living things in a range of situations through their lifetime.

But because it's considered unethical to experiment on people, and because there are many animals that have shorter lifespans and quicker reproductive cycles than humans, it made sense for the scientists to continue to learn from the experiences of animals in space.

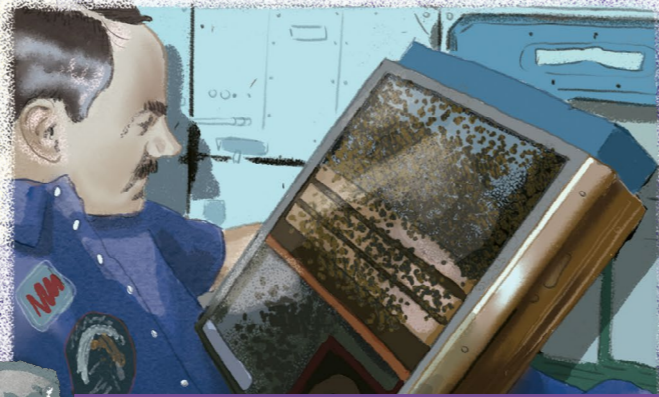
Thankfully, human scientists are now much more careful with animals under their care in space, and most animals now return to Earth safely.

Before we talk about which animals have been to space, it's important to know what we mean by **ANIMAL** and **SPACE**.

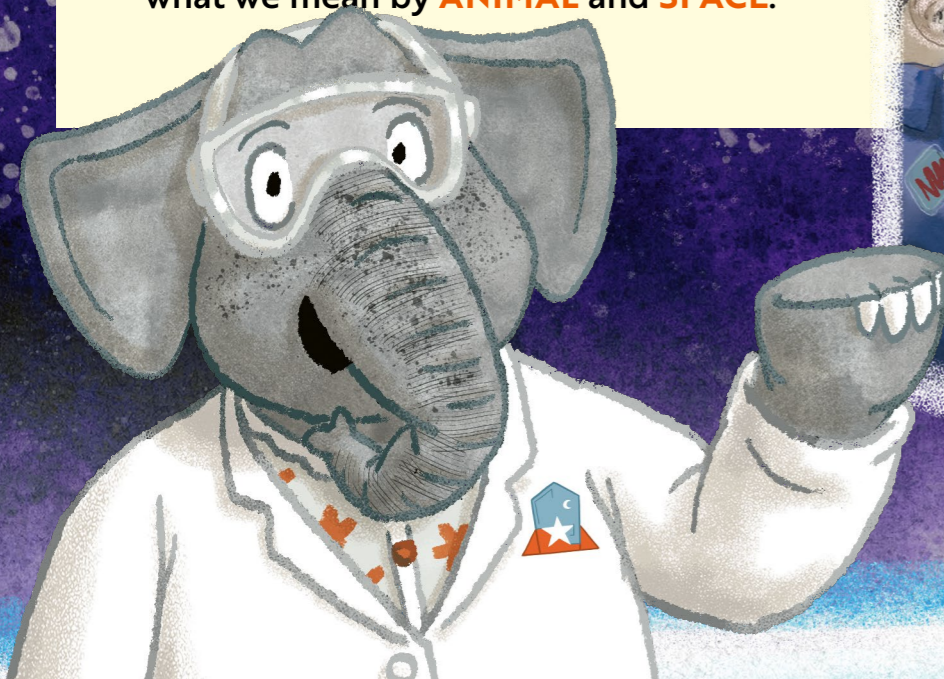
Japanese fire-bellied newt on board Space Shuttle Columbia, July 1994



African clawed frog on board Space Shuttle Endeavour, September 1992



3,400 honeybees on board Space Shuttle Challenger, April 1984

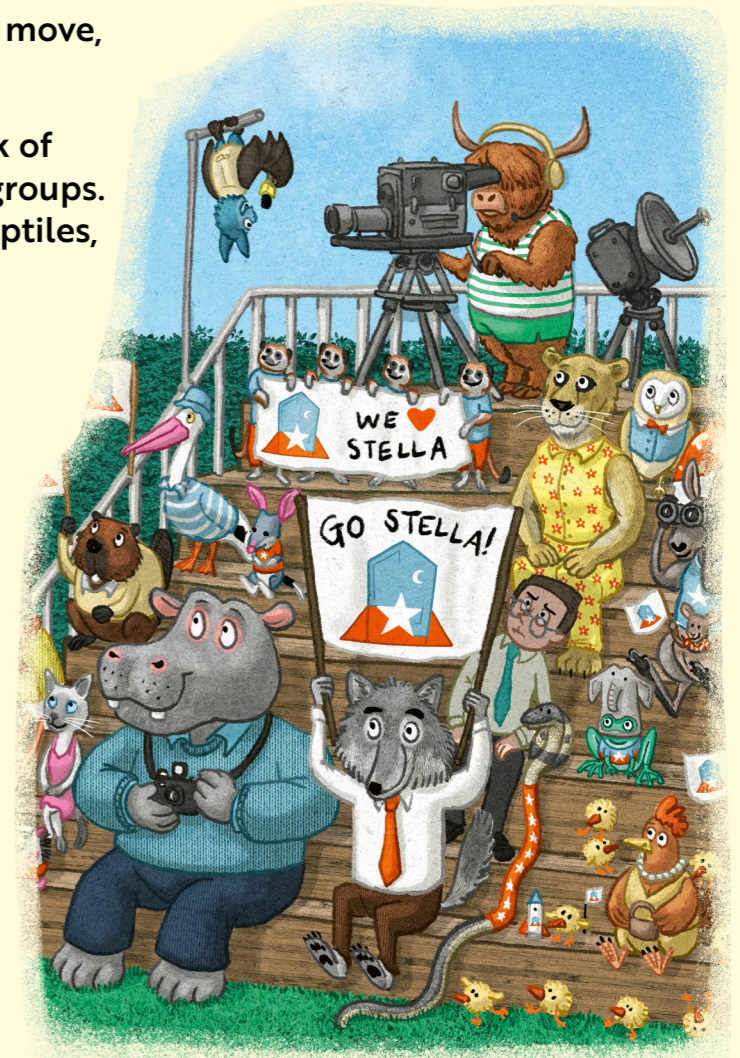
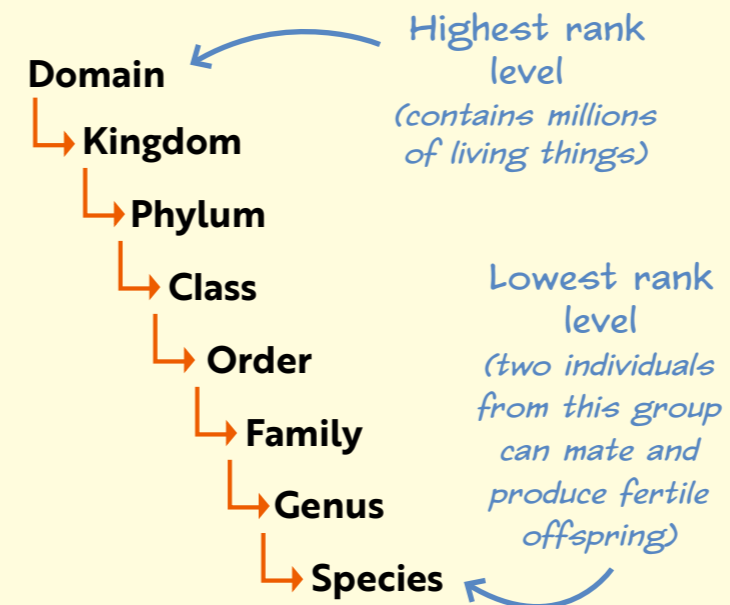


What's an 'animal' anyway?

Animals are multicellular organisms. They can move, eat, breathe oxygen, and reproduce.

But there are so many types — so to keep track of them all, scientists have organised them into groups. There are insects, arachnids, mammals, fish, reptiles, amphibians and many more.

This process of sorting is called **taxonomy**. There are eight rank levels in animal taxonomy, which are:



You can remember these rank levels with a mnemonic based on their first letters: **D**ear **K**ing **P**hillip **C**ame **O**ver **F**or **G**reat **S**paghetti.



All animals belong in a kingdom called **ANIMALIA**. Turn the page to see how the kingdom is organised.