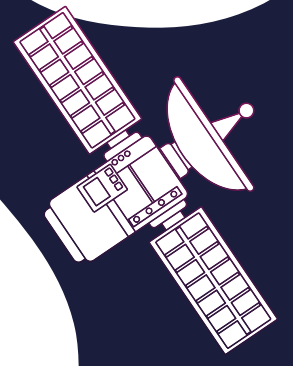




HOW MANY PENGUINS?



Google Earth Pro, Image © 2022 Maxar Technologies

Penguins nest in colonies. Scientists like Dr Heather Lynch and her colleagues at Stony Brook University study penguins in Antarctica and use **satellite images** to find new colonies because brown/pink guano (penguin poo) stains show up on photos

Antarctica's exposed land is ideal for surveying penguins from space as there's nothing blocking the view

The gap between penguins in a colony is roughly the distance one bird can reach to peck



Knowing this **density**, we can estimate the number of penguins in a colony from the size of the guano stain

Scientists also count penguins with in-the-field observations from **boats** and from images taken by **drones** that fly over the colony



Adélie penguins live in the Antarctic

Although counting from satellite images is a little less precise than observations from boats, it means a much **bigger area** can be surveyed. This means more **data** to understand and conserve Antarctic penguins!



THE WONDERS OF GUANO!

What is it?

Penguin guano is **poo**. Penguins live together in colonies that are so big, you can see them from **space**! We can use penguin guano for many things!



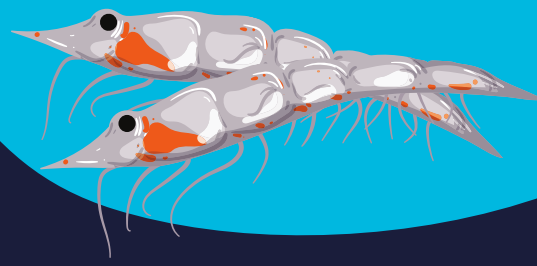
Stress levels

When the penguins are stressed, the chemicals in guano can change. Studying this helps us learn what we can do to take better care of penguins.



Stressed when:

- **Bothered** by humans.
- The **weather** is bad.
- **Food** is low.

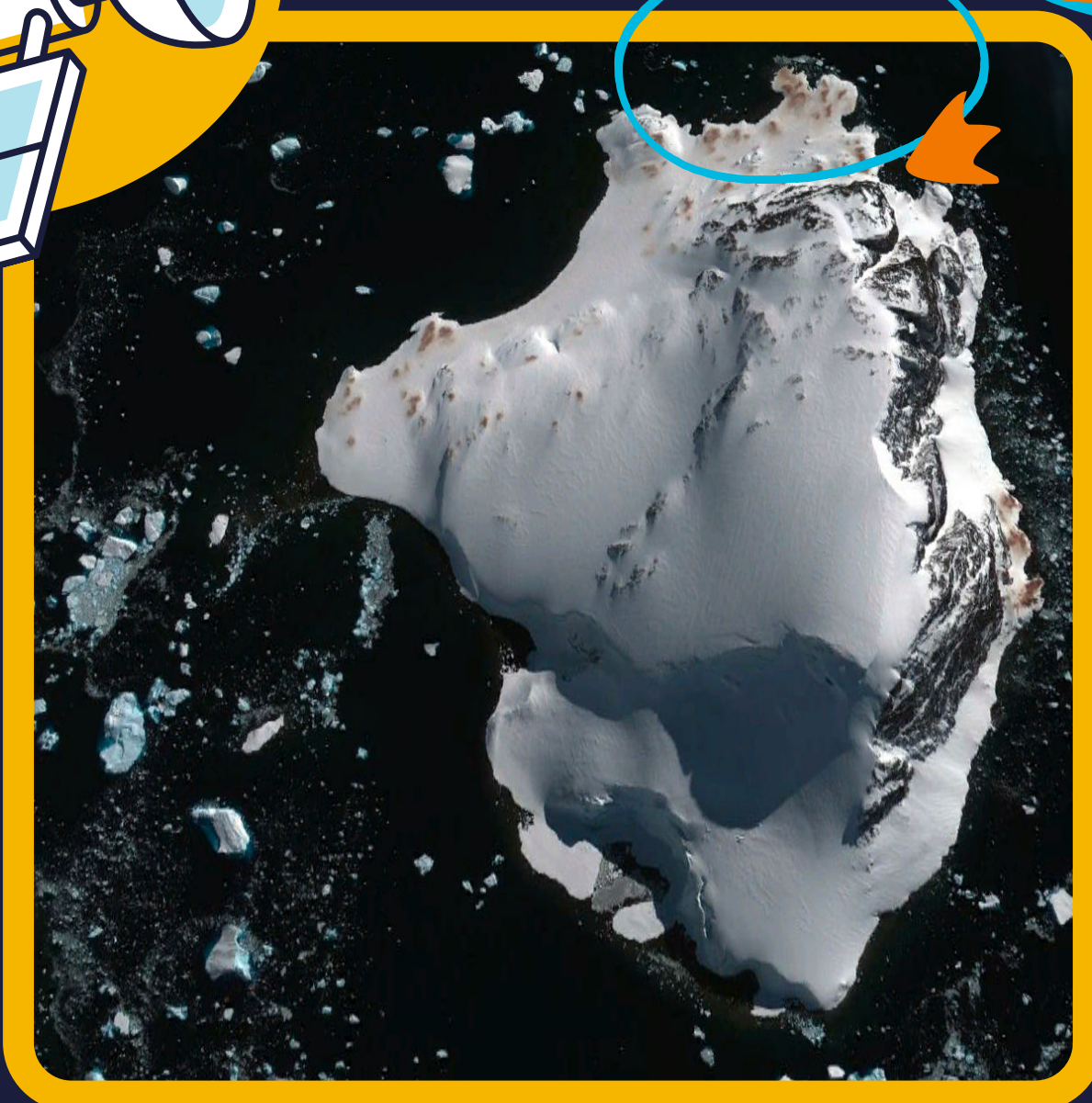


A gentoo penguin saying hi!

Penguin watchers can find colonies from **satellite images**. The guano shows up as pink stains.



Antarctic penguins eat mostly **krill** and this makes the guano **pink**! So we can find out about the penguins' diet from it.

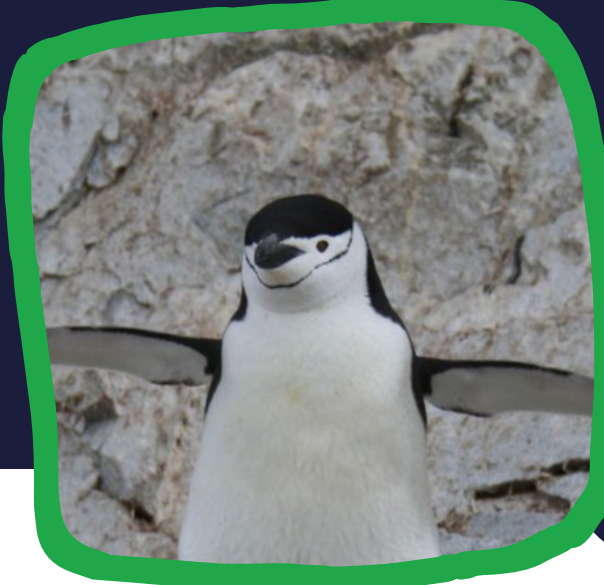


Curious?
Keep reading
to find out
more!



GET INVOLVED

Want to take care of penguins? Here's how!

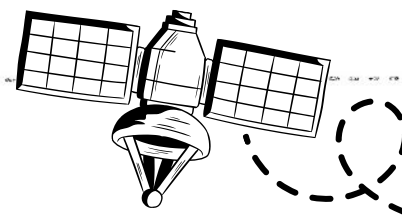
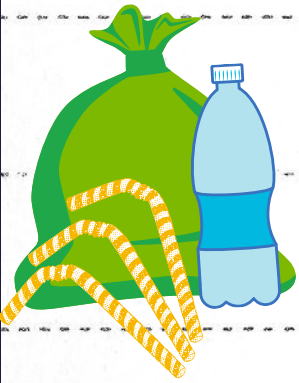


Help penguinologists by **counting**

penguins online through Penguin Watch.



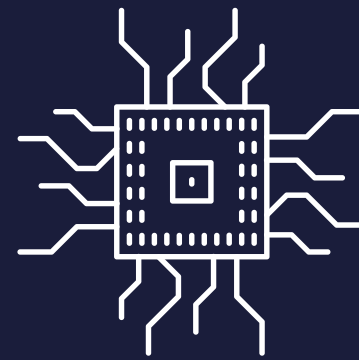
Beach Cleans: whilst Antarctica is far away, all the world's seas are joined up. Litter near you can end up in the Antarctic, so going to the beach and picking up rubbish makes a big difference to penguins!



Be a penguin detective!

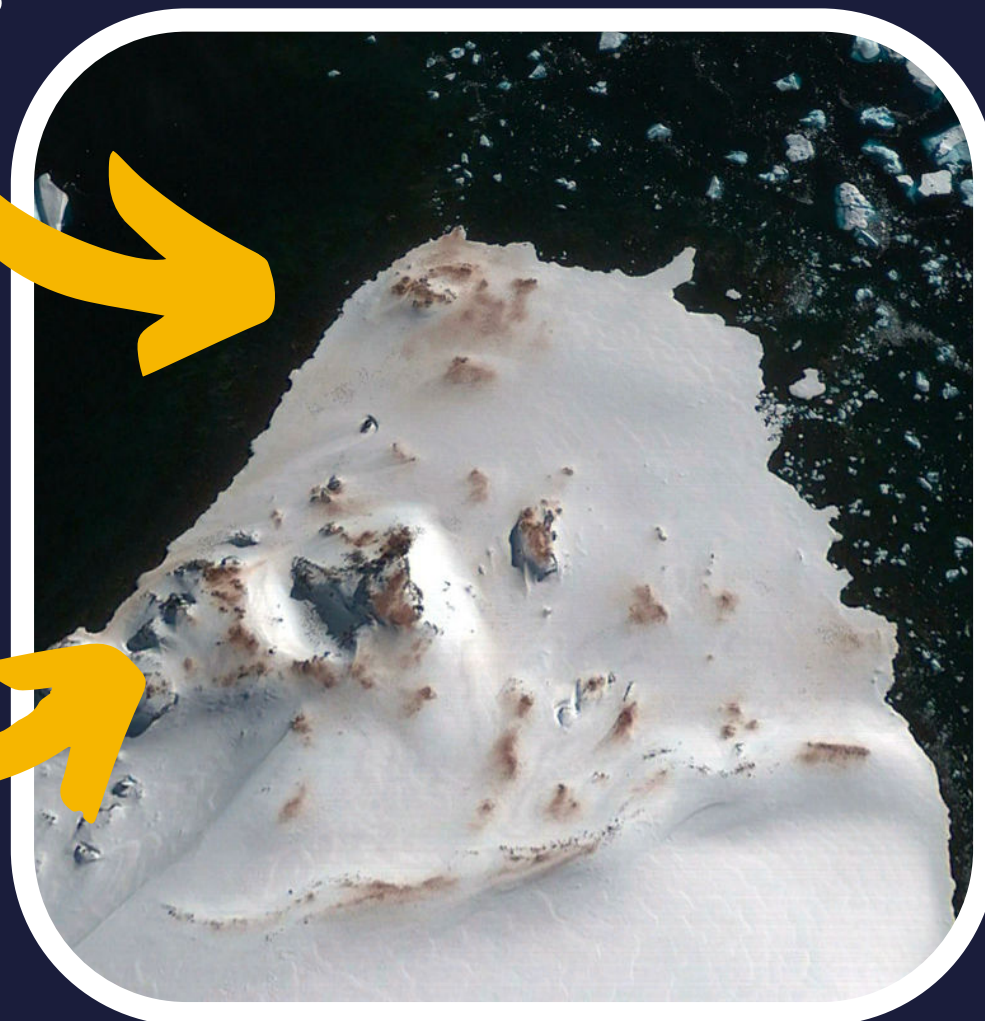
You can **find new colonies** by using Google Earth. Head to penguin mapping project MAPPPD if you fancy a challenge!

Penguin Watch and MAPPPD help train computer programmes to identify penguin colonies from images



Look for pink/brown guano (penguin poo) stains

You can tell guano stains apart from rocks because rocks have straighter edges



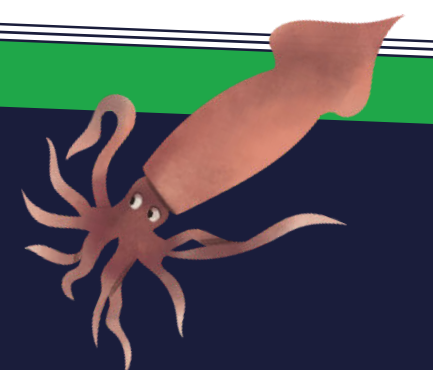
What a beautiful home!



A couple of chinstrap penguins chilling out!

Hint

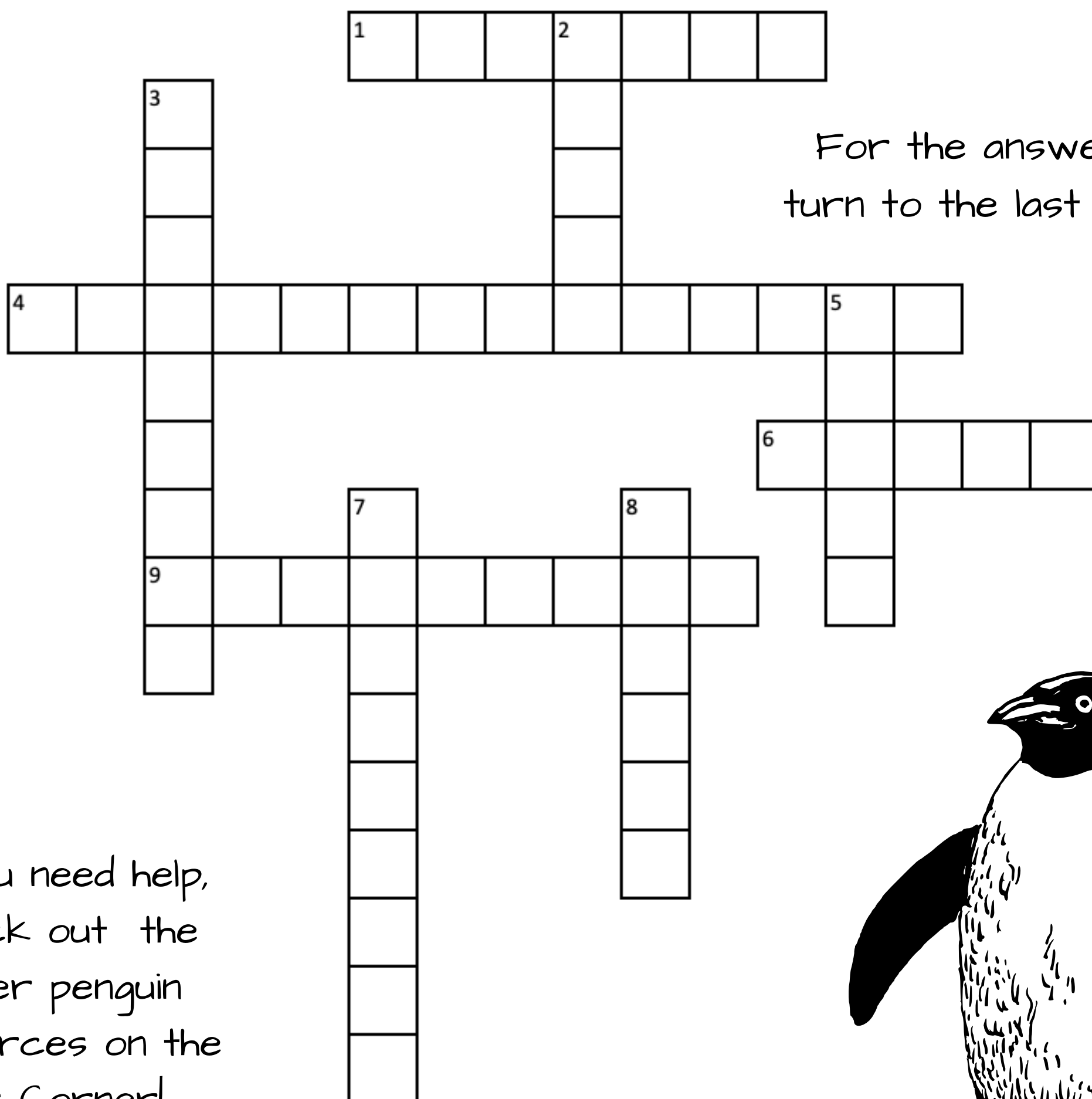
Antarctic penguins eat mostly krill, fish or squid, so colonies will be near the sea.



PENGUIN PUZZLES!

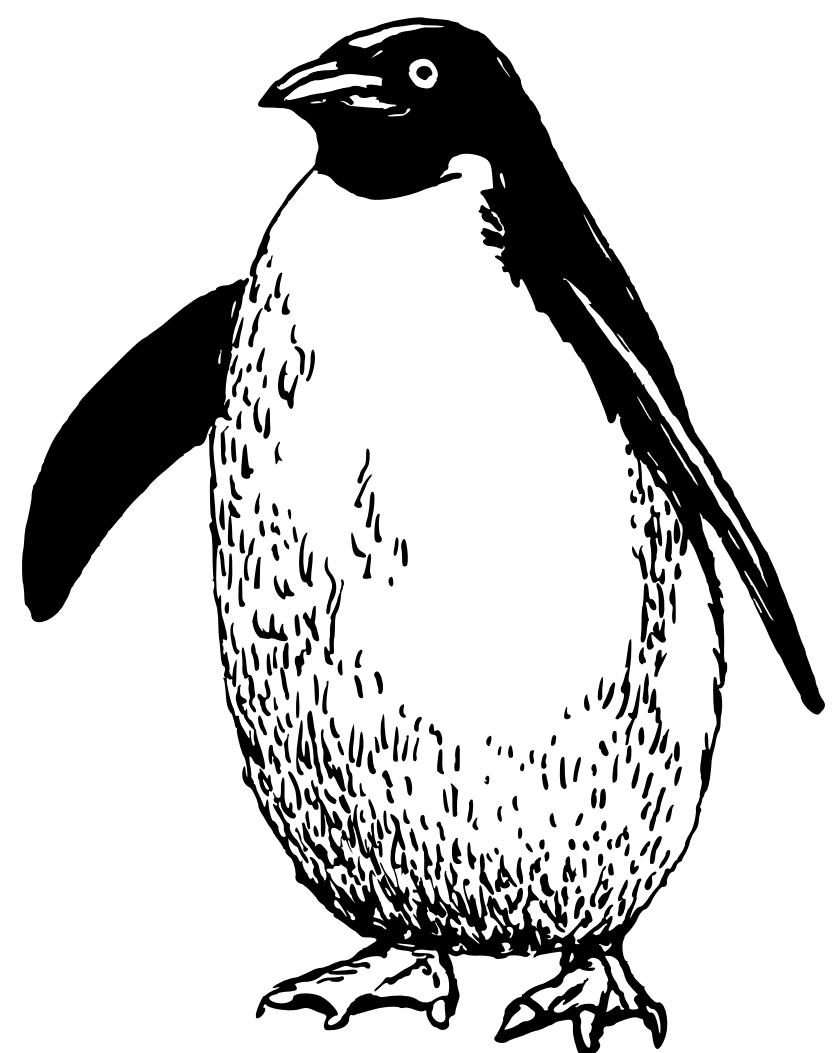
Try this crossword puzzle to test your knowledge!

1. The name for a penguin nesting colony.
2. Something the penguin eats, it turns the guano pink!
3. A type of penguin with a dark line under their chin.
4. A zoologist that studies penguins.
5. Another critter the penguin eats.
6. Penguin poo.
7. We can use this thing to take pictures of penguins from space.
8. How Antarctic penguins catch their food.
9. A part of the world where some penguins live.



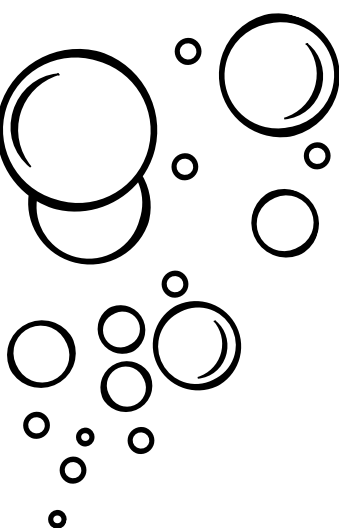
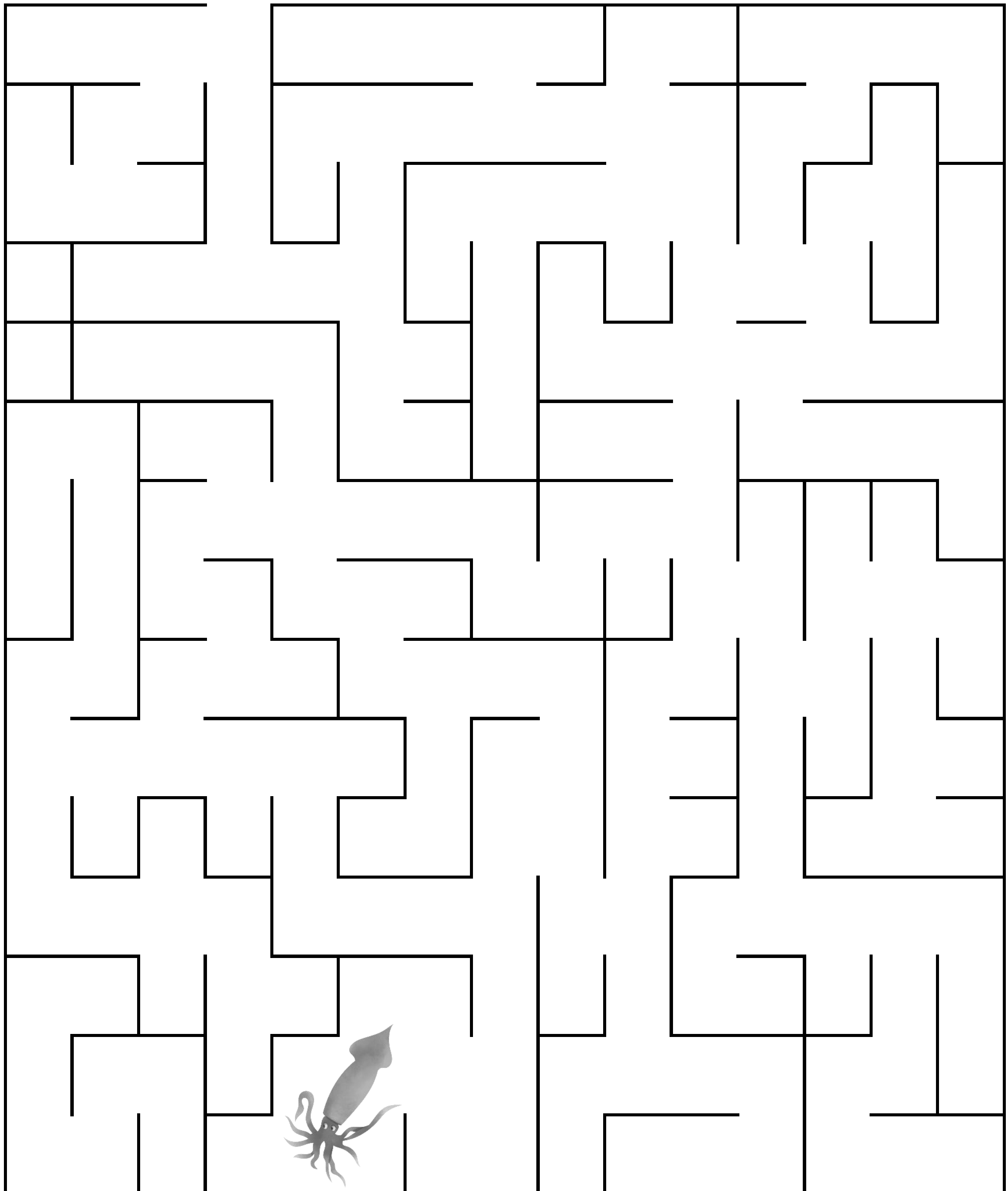
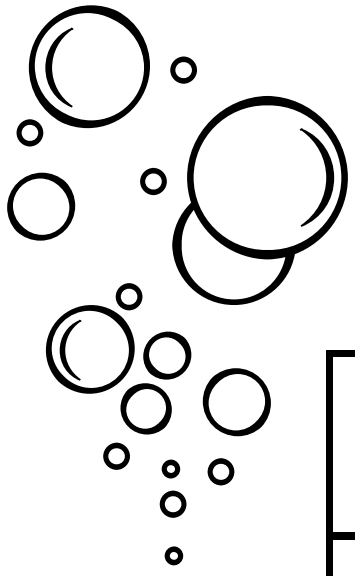
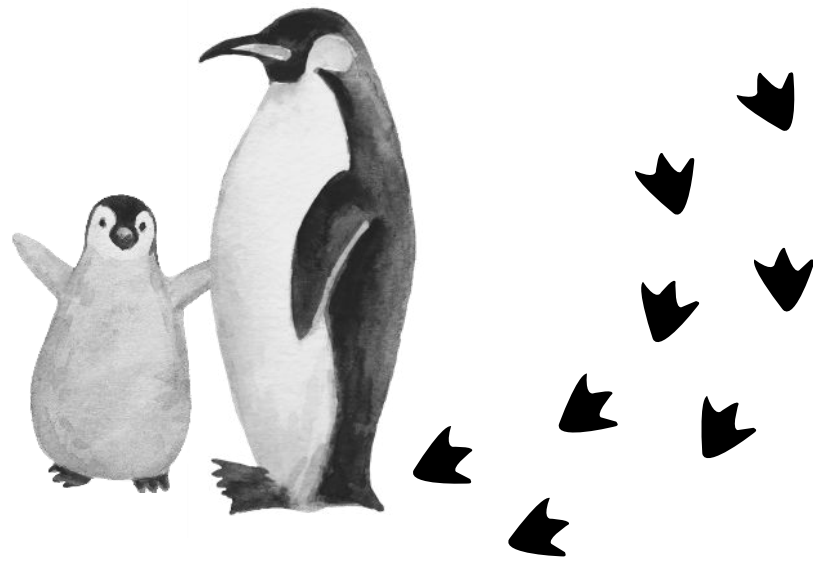
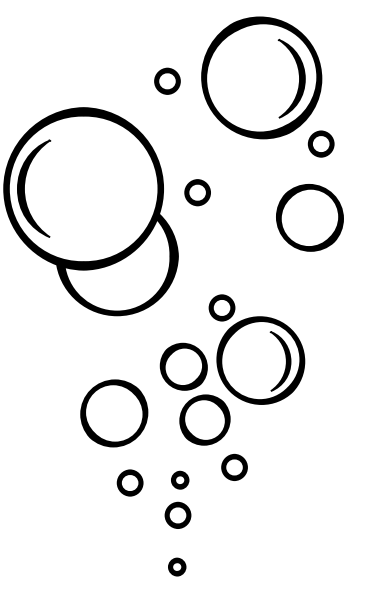
For the answers,
turn to the last page

If you need help,
check out the
other penguin
resources on the
Kids Corner!



PENGUIN PUZZLES!

Help the penguin find the squid!

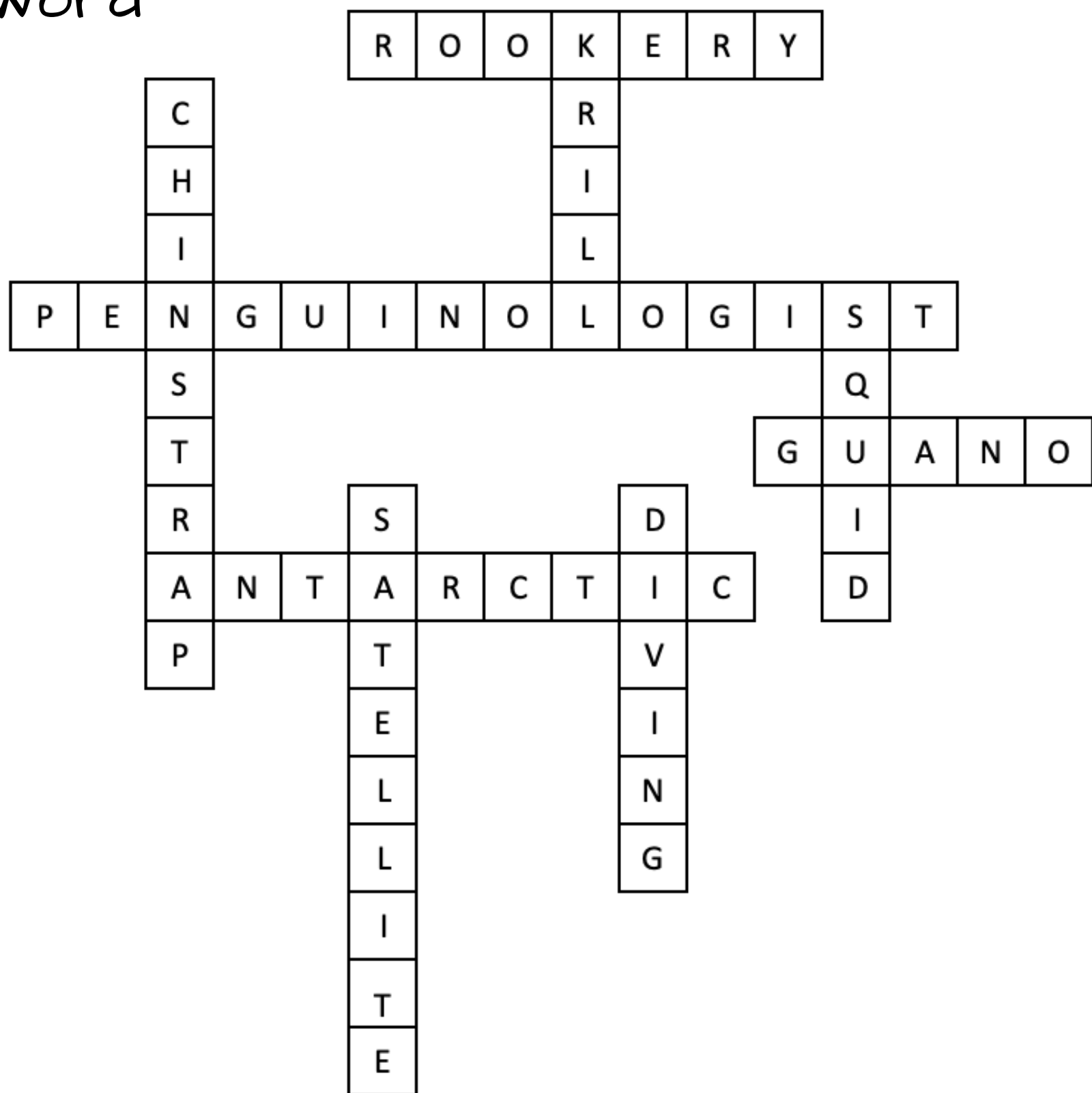


PENGUIN PUZZLES!

Did you get them all? Here are the answers!

Activity 1: Crossword

1. Rookery
2. Krill
3. Chinstrap
4. Penguinologist
5. Squid
6. Guano
7. Satellite
8. Diving
9. Antarctic



Activity 2: Maze

