Section 4

For my project on invertebrates, I chose to study tardigrades. These are microscopic — or to be more precise — (1) …….. There are well over a thousand known species of these tiny animals, which belong to the phylum Tardigrada. Most tardigrades range in length from 0.05 to 1 millimetre, though the largest species can (2)……. They are also sometimes called 'water bears': 'water' because that's where they thrive best, and 'bear' (3) ……... 'Moss piglet' is another name for tardigrades because of the way they look when viewed from the front. They (4) ……... in 1773 by Johann Goeze, who coined the name Tardigrada.

As I say, there are many different species of tardigrade — too many to describe here — but, generally speaking, the different species (5) ……. They have a body which is short, and also rounded — a bit like a barrel — and the body comprises four segments. (6) ……., at the end of which are between four and eight sharp claws. I should also say that (7) ……; what they have are discs, and these work by means of suction. They enable the tardigrade to (8) …….. or to grip its prey. Within the body, there are no lungs, or any organs for breathing at all. Instead, oxygen and also blood are transported in a fluid that (9) ……...

As far as the tardigrade's head is concerned, the best way I can describe this is that (10)……. — a bit squashed even — though many of the websites I looked at (11) ……., which isn't exactly very scientific. The tardigrade's mouth is a kind of tube that can open outwards to reveal teeth-like structures known as `styletsl. These are sharp enough to (12) ……...

So, where are tardigrades found? Well, they live in every part of the world, in a variety of habitats: most commonly, (13) ……., or on many kinds of plants or in very wet environments. There's been some interesting research which has found that tardigrades are capable of surviving (14) ……., and they're also able to withstand temperatures as cold as — 200 degrees centigrade. or highs of (15) ……., which is incredibly hot.

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It has been said that tardigrades could survive long after human beings have been wiped out, even in the event of (16) …….. If conditions become too extreme and tardigrades are (17) ……., they enter a state called cryptobiosis. They curl into a ball, called a tun — that's T-U-N — by retracting their head and legs, and their metabolism drops to less than (18) …….. They can remain like this until they are re-introduced to water, when they will come back to life (19) …… While in a state of cryptobiosis, tardigrades produce a protein that protects their DNA. In 2016, (20) …….. that had been tuns for more than 30 years. There was a report that, in 1948, a 120-year-old tun was revived, but this experiment (21) ……..... There are currently several tests (22) ……., to determine how long tardigrades might be able to survive there. I believe the record so far is 10 days.

So, erm, moving on. (23) ……., tardigrades consume liquids in order to survive. Although they have teeth, they don't use these for chewing. They (24)……., or extract fluid from seaweed, but some species prey on other tardigrades, from other species or within their own. I suppose this isn't surprising, given that tardigrades (25) …… and are coated with a type of gel.

Finally, I'd like to mention the conservation status of tardigrades. It is estimated that they have been in existence for (26) …… and, in that time, they have survived five mass extinctions. So, it will probably (27) ……., that tardigrades have not been evaluated by the International Union for Conservation of Nature and (28) ……. Some researchers have described them as thriving.

Does anyone have any questions they'd like to ask?

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