The Linnean Learning UPDATE

#002
31/05/2022

Welcome to the second edition of the Linnean Learning Update.
This bi-monthly newsletter is our way of engaging with our community of educators, and sharing insights into our projects and the natural world.

The theme for this update is "evolution, everywhere!" because evolution can be seen in every part of nature, always. In this very moment, selective pressures and random chance are colliding to challenge and change the world as we know it.

Petunia Peacock's POSE

"Tonight we have an extraordinary diversity of QUEENS!" Yass henny, male peacock spiders spell out every letter of 'fabulous' with their courtship dances and dazzling ornamentations.

Last September the Linnean Society produced a limited series exploring the evolution of peacock spiders' leg waving, body popping and go°ood vibrations. The series provides a fun insight into evolution through sexual selection and is based on new research published in a Society research journal.

Transcripts and an activity worksheet are available to download on our website.

The Tree Solution

Did you ever have to pretend you were a tree in a Drama class at school? When it comes to evolution, you might expect trees to exist in just one part of the evolutionary... tree - i.e. some plants gained the ability to become big, tall and woody. This would be divergent evolution, where a species becomes uniquely different from its close relative. But that is not the case.

Your drama teacher was right, we can all be trees! Many plant species throughout history have undergone convergent evolution to become tree-like. Very different plant species have discovered the same solution to an environmental pressure, in the same way that a shark and a dolphin converged on the same body plan but are very different classes of animal.

Activity suggestion

NATURAL HISTORY NOTE
Charles Darwin took a trip to the Galápagos Islands in 1835.

Charles noticed that the beaks of the finches (above) were well matched to the available food sources on the islands - i.e. the birds with the most appropriate beaks for the food were the ones that flourished over time.

We walk into a school with a small bag containing plastic cups, a collection of spoons, pegs, and chop-sticks, and small boxes filled with elastic bands, paper-clips and raw pasta - we are ready for the Battle of the Beaks!

See evolution in action with our Battle of the Beaks activity. Transform your students into birds with different 'beaks', where some students will struggle to feed on the 'food' available while others will find the job much easier.

We've done this activity with groups as young as 6-years-old, up to 18-years-old; increasing the complexity with data collection and visualisation, or monitoring population changes over time by adding limits on survival.

Does being naked make you social?

In a recent Linnean Society talk about naked mole rats, we learned more about the highly-social, and very intriguing, naked mole rat.

They can be found in colonies underground that may contain up to 300 individuals working together and breeding with one 'queen', just like you might expect in an ant colony.

The speaker discussed the evolutionary history of the mole rat family and pointed to later-evolved species which are also social, indicating that sociality can emerge in a species when the environment requires it.

So here we find it again, species converging on the same solution.

Evolution & *Special species*

One of the best things about our educational game, *Special species*, is challenging learners to think about what different environments their fantastic creations might have evolved to adapt to.

In this particularly inventive example, Leila, age 10, from St Albans, imagines an alien species, adapted to live on Mars.

Leila considers what adaptations a creature evolving on a cold desert planet, under a different gravitational pull and with different levels of sun, would need. An awesome example of some creative astrobiology there! Read Leila's own description below:

Phytoserpens martius, aka the Martian leaf snake.

The Martian leaf snake has developed green scales to act like leaves, and a protruding snout to sniff out sources of water. When it senses water underground, the snake burrows like a warm into the Martian soil and spreads out octupus-like tentacles from its snout to absorb the water. Like camels, it can store water to be used later. It's 'leaf scales' absorb carbon dioxide from the atmosphere and uses light from the sun and the stored water to generate sugar and oxygen.

Final word

Talking about evolution is a big test of IMAGINATION. We talk about 'common ancestors' without knowing what they would have looked like - we just know that they must have existed and evolved over time to what we see today, due to selective pressures, and random chance!

Linnean Learning believes that we protect nature by understanding and valuing it, and so we provide resources, training opportunities, and grants to encourage the sustained engagement of young people with nature.

Title of the upcoming issue: Going Outdoors

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