

Siberia's deep freeze saga

Tiny creature wriggles back to life after 24,000 years!

Recovered from soil samples taken 3.5 metres below ground. Permafrost has thrown up startling scientific discoveries in recent times.

A microscopic organism has wriggled back to life and reproduced asexually after lying frozen in the vast permafrost lands of northeastern Siberia for 24,000 years. Russian scientists found the tiny, ancient organism called the bdelloid rotifer in soil taken from the river Alazeya in Russia's region of Yakutia in the far north.

The bdelloid rotifer, a multicellular organism found in freshwater habitats across the world, is known to be able to withstand extreme cold.

Previous research suggested it could survive for a decade when frozen at -20 degrees Celsius.

This new case, which was detailed in a study in the journal *Current Biology*, is by far the creature's longest recorded survival period in a frozen state.

The organism was recovered from samples taken 3.5 metres below ground. The material was dated from between 23,960 and 24,485 years ago, the study said.

Land encased in permafrost - where the ground is frozen all year round - has for years thrown up startling scientific discoveries.

Scientists earlier revived microscopic worms called nematodes from sediment in two places in northern Siberia that were dated over 30,000 years old. REUTERS



ACTIVITY

If there is one extinct creature that you wish to revive, what would that be and why?

The bdelloid rotifer

Global warming is causing concern in Siberia where permafrost is throwing up whole new challenges. PHOTOS: REUTERS

What's permafrost?

Permafrost is soil that has remained frozen for years or centuries under topsoil. It forms in a climate where the mean annual air temperature is 0 degree Celsius or lesser and is generally characterised by long winters with little snow and short cool and dry summers. Such a climate exists in Siberia and a few other parts of Russia, the Tibetan Plateau, Alaska, Northern Canada, Greenland, and parts of Scandinavia. Hence permafrost forms in these regions. It covers about 24 % of the exposed landmass of the Northern Hemisphere.

Permafrost composition

It contains carbon-rich organic matter, including the remains of plants and animals that died and froze without decaying. A great deal of carbon has been accumulating this way for thousands of years. As rising temperatures cause permafrost to melt, the organic material will be decomposed by microbes, and carbon will be released into the atmosphere in the form of greenhouse gases - carbon dioxide and methane, leading to a vicious cycle of warming, thawing and further warming. Scientists estimate that the world's permafrost holds about 1,500 billion tonnes of carbon, almost double the amount of carbon that is currently in the atmosphere.

When the permafrost melts...

- 1) The ground becomes unstable and may lead to landslides, floods and coastal erosion.
- 2) Changes in the landscape will affect plants and animals that depend on them. The entire food chain and ecosystem will be affected.
- 3) People and animals will come into contact with harmful bacteria and viruses that have been lying dormant in the permafrost. Bacteria and viruses can survive in permafrost for hundreds of thousands of years.

GK SNIPPET

Behind a dolphin's smooth glide

The secret is in their skin! Come, let's find out...



PHOTO: ILDIGO / PIXABAY

You may have watched videos of dolphins gliding quickly and smoothly in the water. Any idea how they do it? The answer could be in their skin. Come, let's find out how exactly their skin helps dolphins swim well.

Like fish, dolphins too have streamlined bodies. A streamlined body is shaped in such a way that it reduces resistance between a fluid and an object moving through that fluid. The fluid can be air or water, and the object could be anything from fish to birds. In this case, it's water and the mammal dolphin. The dolphin does not have hands or legs sticking out to slow it down while it swims in the water. Further it has skin that is devoid of hair. These also help the dolphin gather speed in water. But, there's something even more interesting at play.

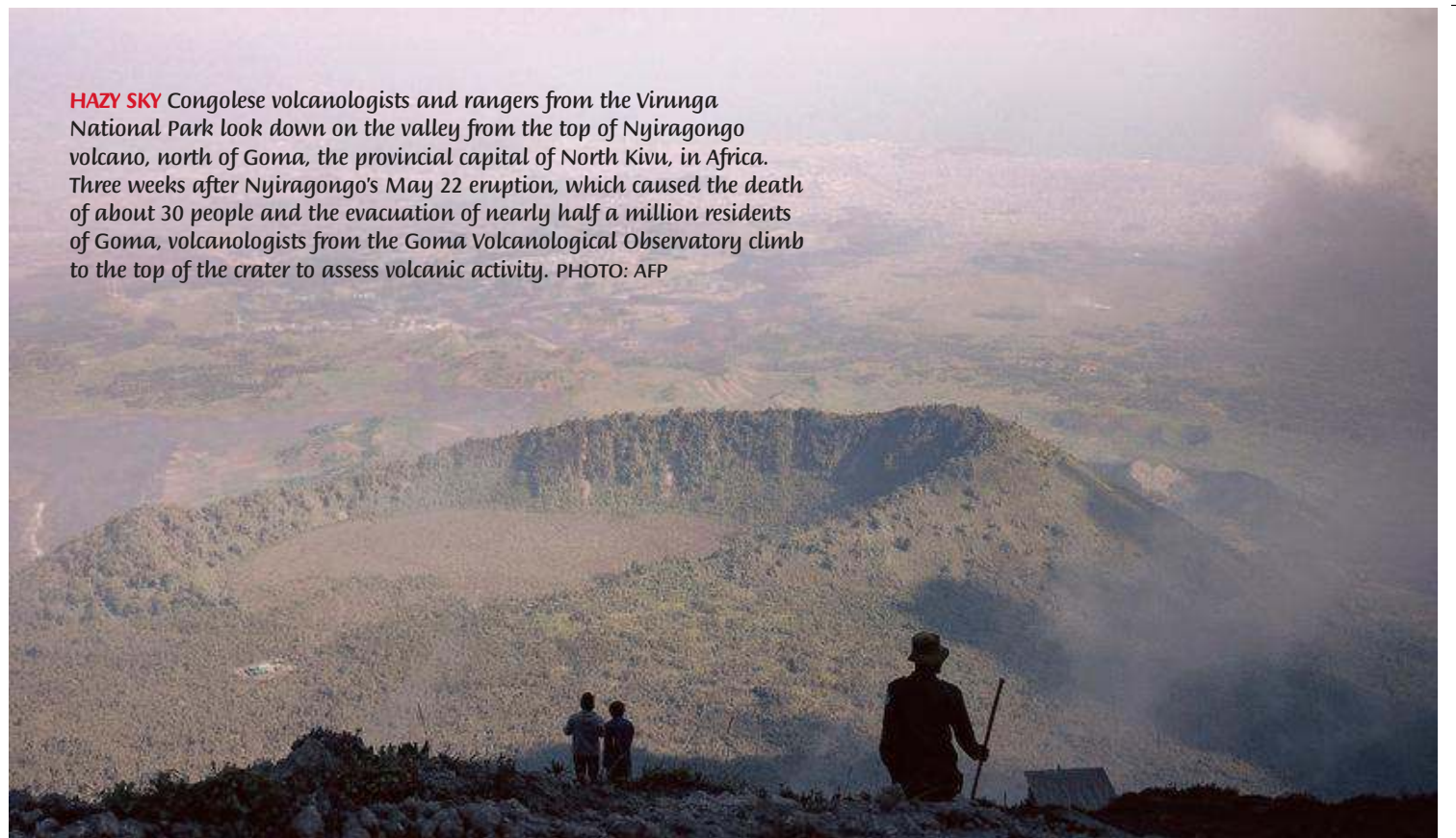
Dolphins shed skin. That by itself is not unusual considering humans do it too. But dolphins shed skin once every two

hours - that's a whopping 12 times every single day! To understand how the soft and flaky skin worked in the dolphin's favour, researchers from Japan devised a computer simulation, for a study many years ago. It modelled how water flowed over dolphin skin, representing every individual flake and the way it peeled off. The scientists discovered that "the 'softness' or 'waviness' of the skin helped reduce friction". They also found out that shedding skin reduced the friction by "disturbing tiny whirlpools of water" around a dolphin's body and "impact their gliding".

Despite shedding skin so often, dolphins are not immune to skin diseases. Since they're always wet, they do not have skin dryness. However, changes in salinity or the temperature of water can increase microbe production, leading to skin infection. Stranding is another aspect of concern because the sun can burn their skin.

ERUPTION AND AFTER...

HAZY SKY Congolese volcanologists and rangers from the Virunga National Park look down on the valley from the top of Nyiragongo volcano, north of Goma, the provincial capital of North Kivu, in Africa. Three weeks after Nyiragongo's May 22 eruption, which caused the death of about 30 people and the evacuation of nearly half a million residents of Goma, volcanologists from the Goma Volcanological Observatory climb to the top of the crater to assess volcanic activity. PHOTO: AFP



Suns complete sweep of Nuggets

Bucks roll over Nets to even Eastern Conference series

LOS ANGELES, USA: Chris Paul and Devin Booker combined for 71 points as the Phoenix Suns completed a four-game sweep of the Denver Nuggets on Sunday to reach the NBA semi-finals for the first time in 11 years.

Paul scored 37 points and Booker finished with 34 points and 11 rebounds as the Suns beat the Nuggets 125-118 to capture the Western Conference second round series 4-0.

"I have been waiting for this for a very long time," said Booker. "A lot of people say I haven't played meaningful basketball. This is my time to prove it."

Balanced attack

The Suns used a balanced attack to overpower the Nuggets and league MVP Nikola Jokic, who was slapped with a flagrant foul and ejected from the game in the



Chris Paul (right) scored 37 points and Devin Booker (left) finished with 34 points. PHOTO: AP

third quarter. Jokic finished with 22 points and 11 rebounds. "They beat us," said Jokic. "We have to hold our heads up. If someone beats you, accept it and try to get better."

The Suns will play either the Los Angeles Clippers or the Utah

Jazz for a spot in the NBA finals. Mikal Bridges scored 14 points, Deandre Ayton had 12 points and Jae Crowder had 10 rebounds for the Suns.

Antetokounmpo's best Elsewhere, Giannis

“A lot of people say I haven't played meaningful basketball. This is my time to prove it.”

Antetokounmpo poured in 34 points and grabbed 12 rebounds as the Milwaukee Bucks evened their Eastern Conference second round series with a 107-96 rout of the Brooklyn Nets, who lost Kyrie Irving to an injury.

Antetokounmpo delivered his best performance of the post-season, shooting 14-of-26 from the field and scoring 12 points in the third quarter for the Bucks, who have won two straight at home to level the best-of-seven series at two games each.

"This says a lot," Antetokounmpo said. "I am really proud of this team. We keep playing together. We put ourselves in a position to win two more games."

Khris Middleton chipped in 19 points as the Bucks made 44.3% of their shots. AFP