

Biodiversity important for life

By KAT PIPER
Epoch Times Staff

With some scientists predicting that species loss is happening so fast we are heading for another mass extinction, ecologists have been trying to work out just what effect this loss of biodiversity would have on our lives and why conservation could be important.

While scientists have known for a long time that ecosystems with many plant species in them—those with a high biodiversity—are better at removing pollutants from the water and soil than ecosystems with fewer species, no one has understood why.

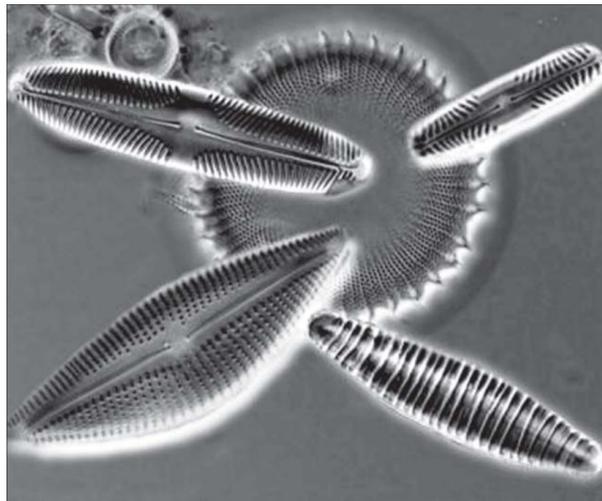
In a study on algae biodiversity and water quality published in the April 7 issue of *Nature*, ecologist Bradley Cardinale, an assistant professor at the University of Michigan, says he has recently solved this mystery.

In an experiment, Cardinale found that streams with a high biodiversity of algae were much more efficient at removing nitrate—a common pollutant found in fertilizers and sewage—than streams with a single algae species.

This is because each algae species occupies a different “mini-habitat,” or niche, in the stream, for example fast-flowing water or calm pools. So as biodiversity increases, each niche is filled by a different species of algae, biomass increases, and more of the overall stream habitat is able to be cleaned.

“This is the first study that nails the mechanism by which biodiversity promotes water quality. And by nailing the mechanism, it provides solid evidence of a cause-and-effect relationship between biodiversity and water quality that was previously missing,” Cardinale said in a press release.

To find this out, Cardinale set up 150 miniature model streams in small, enclosed plastic flumes to simulate the various environments found in real streams. To each model stream he added one



Streams contain a variety of types of algae that remove pollutants from the water. This microscope image shows several species of algae similar to those used in the University of Michigan biodiversity study. DANUTA BENNETT

to eight different species of algae commonly found in streams in North America.

He then added nitrate to the systems and measured how quickly it was removed. Cardinale found that as the number of species increased, so did the speed of nitrate removal. On average, the streams with eight species of algae removed the nitrate 4.5 times faster than those with one species.

In a further experiment, Cardinale set up model streams that had only one type of habitat in them. When several species of algae were introduced, one species became dominant and the effect of species diversity on nitrate removal disappeared. This, he says, supports the idea that “niche partitioning” is the mechanism behind biodiversity and improved water quality.

“The primary implication of this paper is that naturally diverse habitats are pretty good at cleaning up the pollutants we dump into the environment, and loss of biodiversity through species ex-

tinctions could be compromising the ability of the planet to clean up after us,” Cardinale said in a press release.

“It’s just one study, but it’s part of a growing body of scientific evidence that is now clearly showing that the modern mass extinction of species is going to affect humanity in some big, and important ways,” he added.

Cardinale recently led a team of nine researchers in a larger analysis of biodiversity data collected over the past 20 years, published in a March special edition of the *American Journal of Botany*.

The meta-analysis looked at the bigger picture of how the loss of plant biodiversity could affect the Earth’s ecosystem.

“Nearly every organism on this planet depends on plants for their survival,” Cardinale commented in a press release. “If species extinction compromises the process by which plants grow, then it degrades one of the key features re-

quired to sustain life on Earth.”

The team analyzed the results of 574 field and laboratory studies from five continents that measured changes in productivity. They found that plant communities with a high diversity both on land and in water are almost 1.5 times more productive than single-species communities. They are also more efficient at capturing nutrients and light.

“This summary provides unequivocal evidence that declining diversity of plants and algae in the world’s ecosystems will decrease the biomass of plants in natural ecosystems, and degrade their ability to use biologically essential nutrients from soil and water,” Cardinale said. “Preliminary evidence also suggests that declining diversity may reduce the ability of natural ecosystems to produce oxygen, and to remove carbon dioxide from the atmosphere.”

From their findings, the researchers suggest that a small loss of biodiversity may only have a minimal effect on ecosystems, but once the number of extinctions reaches a “tipping point,” the effect could be quite dramatic.

More research is needed, though, note the researchers.

“We need to translate the insights gained from simple experiments into the ‘real-world,’ where things get considerably more complex,” Cardinale said. “But infusing more reality to experiments will greatly enhance our ability to predict the impacts of extinction.”

“We’ll then be in a position to calculate the number of species needed to support the variety of processes required to sustain life in real ecosystems,” he added. “And we don’t mean ‘need’ in an ethical or an aesthetic way. We mean an actual concrete number of species required to sustain basic life-support processes.”

Watch a webcast in which Cardinale talks about his research at <http://1.usa.gov/hvvUqg>.

Science Matters

Vol. 13, No. 16

April 19, 2011

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We Canadians are lucky; all we have to do is vote

By DAVID SUZUKI

Every day we hear news reports about people risking their lives for the right to choose their leaders. Here in Canada, many people are saying “Meh.”

We shouldn’t be so complacent, and we should never take democracy for granted. True, the current federal election is frustrating. The carefully scripted talking points, the avoidance of controversial issues, the negative attack ads—none of it is very inspiring.

It’s especially difficult for the millions of Canadians who care about the environment. Scientists from around the world—from countries covering the entire political spectrum—are unearthing incontrovertible evidence that the natural systems that give us life are in trouble.

Pollution is affecting our children’s health and causing health care costs to rise. Human activity is driving animals and plants to extinction at alarming rates. And climate change is having a dramatic impact on many things that make our world livable, including weather patterns, water availability, sea levels, and our ability to grow food.

The economic implications of these environmental issues are immense. Despite the serious nature of these problems and the fact that many solutions would be as good for the economy as they are for ecosystems and human health, the environment is being all but ignored in this election. Environmental issues barely registered in the leaders’ debates, have not factored into most of the campaigns or platforms, and are not being covered by the news media.

Instead, we get the usual platitudes and regurgitations about tax cuts, the economy, jet fighters, and law and order. Of course, these are all important and deserving of our attention, but if we don’t protect the air, water, and soil that give us life, we eventually won’t be around to worry about the other issues.

So, yes, it may be difficult to get worked up about this election when so many politicians and pundits are ignoring the most important issues affecting Canadians and our country’s place in the global community. But every vote counts. It’s especially crucial for young people to get out and vote.

The last election had the lowest voter turnout since Confederation, in part because young people are not engaged with the political process. According to Stats Canada, close to 90 percent of people over 65 vote in federal elections, but fewer than 50 percent of voters under 30 cast ballots. Considering that young people have more at stake in the future of our country, this is bewildering.

Sure, it takes time to figure out where the parties stand on issues, but if candidates are willing to devote time to running and to representing us in Parliament, we can at least make some effort: visit a few websites, tell your candidates the environment is important to you, ask a few questions, vote if you’re young and encourage young people to vote if you’re an elder, and cast your own ballot. It’s a lot easier than taking up arms and risking your life for the privilege of living in a democracy.

Some issues may seem distant or abstract, but politicians make decisions every day that affect each of us where we live. Do you want a pipeline running from the tar sands to the B.C. coast? What can we do to make cities more livable and sustainable? Should we do a better job of protecting wildlife and habitat? How can we take advantage of opportunities in the green energy sector?

Every Canadian should be happy for what we have achieved in our relatively short history. We have one of the most tolerant and peaceful nations on Earth, and we’re blessed with an abundance of clean water and natural wealth. We have a great country because our democratic system allows us to participate in choosing the people and parties that lead us. The country we will have in the future, that we will leave to our children and grandchildren, will be shaped by the choices we make now, and by the people we elect to act on our behalf.

We can’t take this responsibility lightly. We enjoy freedoms and a quality of life that others are willing to kill and die for. At the very least, there’s one thing we must do to preserve those privileges: vote!

Written with contributions from David Suzuki Foundation communications and editorial specialist Ian Hanington.

Take David Suzuki’s Nature Challenge and learn more at www.davidsuzuki.org.

Multiple UFOs sighted in Japan the past month

Sightings coincide with natural disasters

By STEPHANIE LAM & IVAN PENTCHOUKOV
Epoch Times Staff

A number of UFO sightings, some coinciding with the natural disasters that happened, were videoed in Japan over the past month.

A week before the 9.0-magnitude earthquake, on March 3, four UFOs were filmed hovering over the Haneda Airport. The four objects, three appearing as individual lights and the other appearing as three lights closely next to each other, stayed still in the sky during the video while airplanes flew by.

During the devastating tsunami and earthquake on March 11, multiple UFOs were sighted. In live news footage of the tsunami, objects moving

rapidly against the advancing waves can be seen jetting off into the distance or ascending rapidly out of sight.

In addition, a live CNN news segment shows an object hovering close to the damaged nuclear reactor in Fukushima. The object hovers very low and close to the billows of smoke rising from the reactor, before slowly moving off and disappearing.

UFO sightings coincided with numerous eruptions of the Sakurajima volcano that also occurred on March 11. As seen from several angles of live streaming survey cameras, UFOs hover close to the volcano during its eruption, and bright lights travel at the base of the mountain. A similar sighting was spotted during the eruption on April 3, during which large blue and green orbs were also

seen appearing from time to time.

Similar footage of large UFO formations from the same cameras was posted following the volcano’s previous eruptions in November and December of 2010. Bright orbs can be seen descending toward the volcano and hovering above it for extended periods of time.

While filming an aftershock around 5 a.m. local time on March 12, a YouTube user saw a diamond-shaped bright light moving in the sky in a way that’s different from helicopters. The user commented on YouTube that he or she observed the sky the next day, and couldn’t find a star at the place where the UFO was spotted.

On March 21, a black object was seen in the sky, seemingly rotating and changing shape, sometimes being round, sometimes donut-shaped, and sometimes like a spiral wing.

A cluster of bright objects was seen hovering low in the sky on March 26 and 31. In the March 26 clip, about a dozen bright orbs can be seen hovering in a linear formation before converging into a single cluster. In the March 31 clip, over 20 bright orbs moved around freely at great speeds.

Lastly, a news clip from different angles filmed bright lights flashing during the aftershock on April 8.

Below are some of the videos taken:

- <http://bit.ly/haQeAL>
- <http://bit.ly/f53Bg2>
- <http://bit.ly/fFEL9r>
- <http://bit.ly/eqceX5>
- <http://bit.ly/eBu3af>
- <http://bit.ly/e8WBZw>
- <http://bit.ly/gBUWN4>
- <http://bit.ly/iVVDud>
- <http://bit.ly/hmn8ot>
- <http://bit.ly/h8j6yt>

Food for Thought: Scientists’ work



One of the newly discovered species of plants of the Taraxacum genus. ANTONIO GALÁN DE MERA

The scientific man does not aim at an immediate result. He does not expect that his advanced ideas will be readily taken up. His work is like that of the planter—for the future. His duty is to lay the foundation for those who are to come, and point the way. He lives and labours and hopes.

—Nikola Tesla, inventor and electrical engineer, in his article “Radio Power Will Revolutionize the World.”

Two new dandelion species discovered in Spain

By GINGER CHAN
Epoch Times Staff

Two new species of dandelion, *Taraxacum decastroi* and *Taraxacum lacianense*, have been discovered in Spain, in the Pyrenees and Cordillera Cantábrica mountains respectively, according to a study published in *Annales Botanici Fennici*.

These newly discovered species have long leaves and saffron-yellow flower heads. Like many species of *Taraxacum*, the plants have little or no pollen, as the seeds are produced without fertilization.

Classifying the new species took a fair amount of work, according to lead researcher Antonio Galán de Mera from the Department of Biology (Botany) at San Pablo-CEU University in Madrid.

“We had to compare them with numerous examples from Europe (above all in Spain and Portugal), which were lent to us from the collections of other colleagues,” he said in a press release from Spanish news agency SINC.

The two species are closely related to *Taraxacum reophilum* from the Alps, but can be distinguished from more than 50 other Iberian Penin-

sula species by their “fairly characteristic” fruits, which have little ornamentation.

“It’s hard to find new species now in Spain,” said Galán de Mera in the release. “It depends on the complexity of the group of plants you study.”

Both plants grow in moist soils, like their relatives, and flower in the summer.

The new species *T. decastroi* is named after two naturalists, Emilio and Pérez de Castro, and grows in the fir forests of Lérida in the Pyrenees.

T. lacianense is found in bog land in the León Mountains, particularly the Laciana region from which the plant takes its name.

Richard Branson to pilot deepest-traveling submarine

By DAVID SKOUMBOURDIS
Epoch Times Staff

Founder of Virgin airlines Sir Richard Branson announced on Tuesday, April 5, that he will pilot the only craft in existence able to traverse the deepest parts of the world’s oceans.

The announcement is part of Branson’s latest venture called Virgin Oceanic, a scientific endeavour aiming to enable scientists to study life in deep-sea areas that have been previously inaccessible.

At the core of the operation is a subma-

rine, an 3,625 kg (8,000-pound) titanium and carbon fibre construction designed to withstand the immense pressures of the deep seas. Measuring 5.5 metres (18 feet) long, the craft only has room for a single pilot who will see through a dome made from a single piece of quartz.

According to the Virgin Oceanic website, “The one-person sub has an operating depth of 18 km (7 miles) and is capable of operating for 24 hours unaided. Once fully descended, the submarine’s hydroplanes (the equivalent of wings for submarines) and thrusters will allow it to ‘fly’ up

to 10 km (6.2 miles) over the ocean floor while collecting video and data.”

At maximum operating depth, each component of the craft is required to be able to withstand pressures of 1,000 atmospheres—1,500 times greater than that of an airplane. The quartz dome itself will have to withstand pressure equivalent to the weight of three space shuttles.

The submarine will undergo several months of pressure testing before it’s deemed safe for Branson to take the helm.



The Virgin Oceanic submarine is being heralded as the only piloted craft in existence able to navigate at full sea depth. VIRGIN OCEANIC