

Young Brazilians are increasingly keen on conservation- and biodiversity-related topics

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An article in *Science Advances* shows high school students are steadily becoming more sensitive to environmental and scientific ideas. However, interest is uneven in regional terms. It is most intense in the North, less so in the Southeast. Credit: Patrícia Ferrari / Wikimedia Commons

Young Brazilians are increasingly interested in biodiversity, conservation

of the Amazon and science as they begin high school, but school students in the North region are more interested in learning about these subjects, and about local fauna and flora, than their peers in the Southeast.

These are some of the findings of a study reported in an article in *Science Advances*. Part of a Thematic Project supported by FAPESP (São Paulo Research Foundation), the study analyzed data from five Ph.D. theses as well as an international survey called The Relevance of Science Education, or ROSE. The authors argue for the need to include more learning about local plants and animals in Brazil's National School Curriculum. The project was conducted under the aegis of the FAPESP Research Program on Biodiversity Characterization, Conservation, Restoration and Sustainable Use (BIOTA-FAPESP) and involved five institutions in the state of São Paulo: the University of São Paulo (USP), the Federal University of São Paulo (UNIFESP), the Federal University of the ABC (UFABC), the University of São Caetano do Sul (USCS), and Butantan Institute.

Fifteen-year-old [school](#) students have answered the ROSE questionnaire in more than 40 countries since 2004, detailing their interest in topics relating to conservation, science, technology, and [biodiversity](#). "The Brazilian students were very interested in studying native plants and animals in more depth—far more so than youngsters in the UK, Norway or Sweden, for example. We conducted three runs of the survey in Brazil between 2007 and 2014, identifying several trends, one of which is that contrary to what may be considered common sense, young people's interest in these topics is increasing," said Nélio Bizzo, principal investigator for the project. Bizzo is Professor of Science Education at USP's School of Education and UNIFESP's Institute of Environmental, Chemical and Pharmaceutical Sciences.

The students were invited to express their views freely on topics relating to science, technology and biodiversity. The survey was conducted as a

pilot in two cities in 2007, followed by nationwide samples in 2010 and 2014. In this latest run, 788 students (43.7% of the sample) in public and private high schools across the country said they were interested in learning about local wildlife, while 1,015 (56.3%) said they were not.

The comparison between regions showed that 50.4% of the students who lived in the North, which includes the Amazon Rainforest, were interested in learning more about local biodiversity, while the proportion in the Southeast was 33.1%.

The Northeast had the second-largest proportion of respondents who wanted to know more about biodiversity in their region (46.9%). "This a surprising result. One would expect interest in education to be higher in places with a higher HDI [Human Development Index] and more cultural or educational attractions such as museums, for example, but the survey showed exactly the opposite," Bizzo told Agência FAPESP. "The reasons for this inequality of interest will have to be investigated further. We want to understand why some are very interested and find ways of stimulating the others. The lowest HDIs in Brazil are in the North and Northeast. In the North, we suggest, indigenous culture may be a key reason for this interest in learning about forest conservation and biodiversity."

The researchers note in the article that Amazon biodiversity and the ancestral knowledge of the indigenous inhabitants of the region are all but absent from schools and textbooks, which tend to favor large exotic animals such as polar bears, elephants, giraffes, or lions over local diversity such as pink river dolphins, coatis, sloths, maned wolves, mosquitoes and ocelots.

"The need for Brazilian students to know more about the Amazon is evident, but schools and textbooks tell them about an impenetrable jungle only recently occupied by Indians," Bizzo said. "That's not really

the case. As we know, the Amazon was very far from being empty of people when the Portuguese came over."

It is a well-established fact that in pre-Colombian times the Amazon was home to a large complex population and that these inhabitants changed the forest. "Local communities intervened in tree distribution and domesticated more than 80 plant species," he said. "This has been demonstrated by a very interesting study combining archeology and linguistics. Yet virtually nothing is said about all this traditional knowledge, even though students are eager to learn about it at school."

People know cassava has been domesticated, he added, but those more than 80 species also include the sweet potato, the pineapple, the papaya, and many other kinds of fruit and vegetable widely enjoyed around the world. "Even the active ingredient of chloroquine, the antimalarial drug that's often in the news these days, comes from the bark of a tree discovered by Amerindians," he said.

Culture also explains this strong interest to some extent, according to the researchers. Mythological creatures such as the river dolphin, curupira and mapinguari inhabit the imagination of local and indigenous populations in the Amazon, reflecting their proximity to nature. These fabulous beings and their sagas are part of the rural and urban culture of the Amazon. They contribute to the dissemination of knowledge about biodiversity, and because of them, young people living in the North, even in urban areas, have a different relationship to nature than those in the cities and countryside of the South and Southeast.

"It's very hard to find anything similar in Brazil's South region, even in western Santa Catarina, where there's a large indigenous population, mainly consisting of Guarani and Kaingang," Bizzo said, adding that a different approach to local biodiversity and conservation urgently needs to be offered to [school students](#) and the general public, especially in the

Amazon.

The 2014 questionnaire included an item illustrating the disconnect between [student](#) interest and environmental policy. It asked respondents what they thought about compensation or reparation payments by rich countries to offset environmental problems. "Our objective data shows that most respondents in Brazil didn't support demands that rich countries pay reparations for environmental problems," Bizzo said. "Of course, these youngsters couldn't have foreseen that five years after this question was asked our environment minister would advocate making rich countries liable at the COP-25 UN climate conference in Madrid in December 2019."

More information: Fernanda Franzolin et al, Amazon conservation and students' interests for biodiversity: The need to boost science education in Brazil, *Science Advances* (2020). [DOI: 10.1126/sciadv.abb0110](https://doi.org/10.1126/sciadv.abb0110)

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