

# A JOURNEY IN SERVICE



The dusk is falling. The cacophony of sounds intensifies in the dense primary tropical rainforest. As we approach the muddy path to the jungle's edge, we encounter a wall of sound. Every now and then, the wheezing and buzzing sounds of thousands of species of crickets, cicadas, hundreds of species of frogs and other creatures that have found their home in Borneo break through. Together they create an unsettling noise that, combined with the impenetrable darkness of the greenery, the stale air, and the suffocating dampness, fills you with a kind of ancient fear. This landscape, however, is slowly disappearing. As mass clearance of the tropical forest continues, replaced by the ever expanding areas of oil palm plantations, more plant and animal species are being lost in a place that is still among the most biodiverse on Earth.

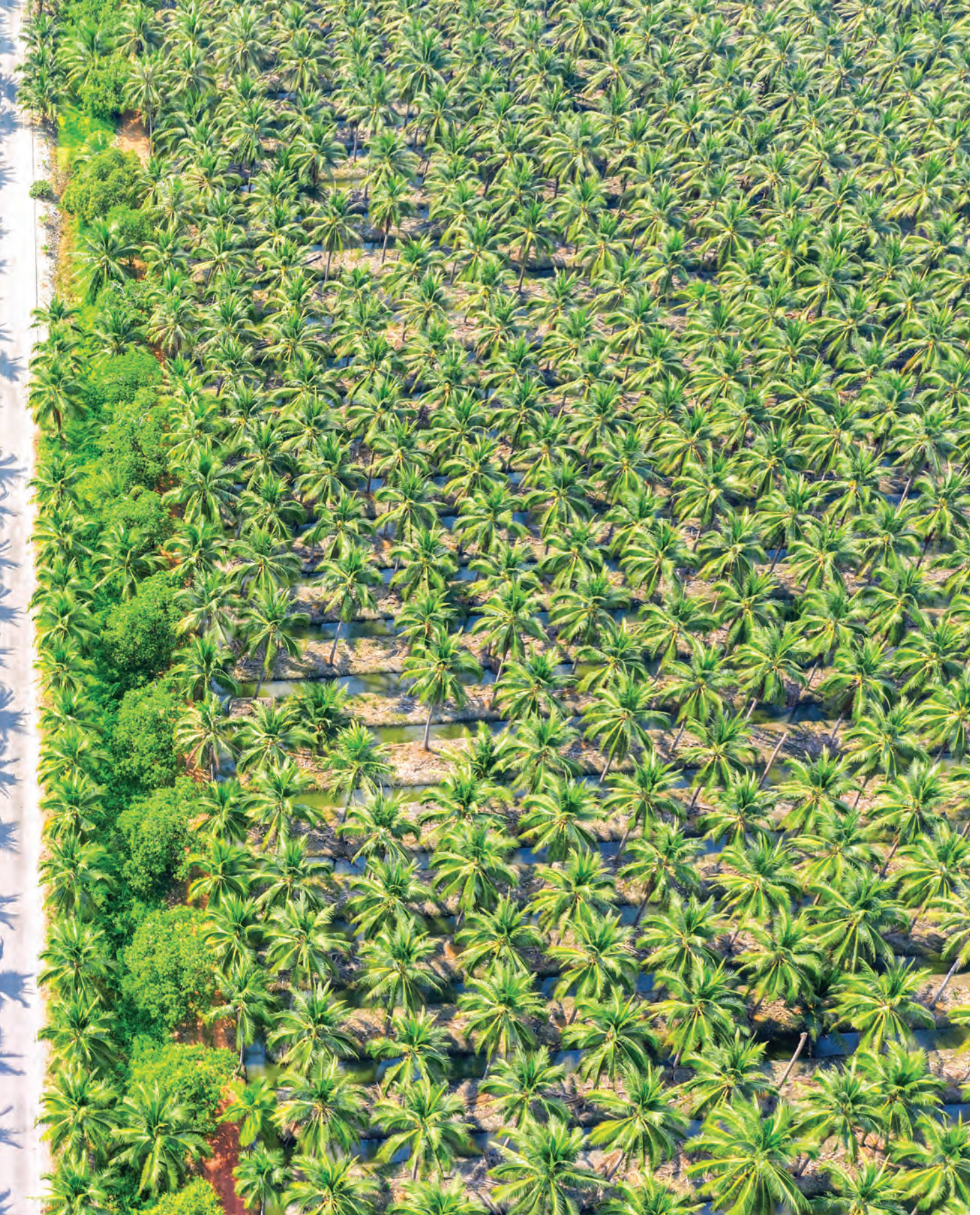


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# CE OF BIODIVERSITY



Oil palm monoculture – the main cause of tropical forest destruction in Borneo | Photo: tawatchai07 – Freepik.com

## WHEN WE DESTROY

The biodiversity map of the world is losing more and more species... Although we feel that this is a bad sign, it is difficult for us laypeople to grasp the full scale of the problem.

'Many years ago, a colleague of mine, Łukasz Junkiert, PhD, compared forest biodiversity to a blood test. The blood remains red, even in the cases of iron, vitamin D, or haemoglobin deficiency. We know how fatal the loss of just one of those would be to our health. The same is true of nature. So, why are we indifferent to the extinction of thousands of plant and animal species?', asks Marcin Walczak, PhD Eng, an entomologist from the University of Silesia in Katowice.

The scientist stresses that, at first glance, it is difficult to see the loss of biodiversity in the world. The richest in species and unfortunately also the most fragile ecosystems are tropical forests. They are easily destroyed.

'This is hard to explain to the tourists returning from resorts in Zanzibar or Bali, who are enthralled by artificially planted palm trees. Unfortunately, almost 95% of the tropical forests on these "paradise islands" have already been cut down, and yet tourists return from their trips delighted and blissfully unaware that what they saw were nothing more than plantations of imported trees. This artificial greenery has replaced the once rich and original nature. They look, but they don't see that nature is dying', he adds.

The scientist's day-to-day work involves

the study of Auchenorrhyncha, insects belonging to the Hemiptera, a poorly studied group whose only representatives known to the general public are the cicadas. In search of unknown species, he went on a research trip to Borneo.

'We are currently describing two new species of Auchenorrhyncha of the genus *Andes*, native to this beautiful island', he stresses.

He was inspired by the work of Frederick Arthur Godfrey Muir, an English entomologist who wrote about and illustrated 15 species from Borneo exactly 100 years ago. 'Hand-drawn sketches of male copulatory organs allowed me to distinguish new species. However, Muir did not illustrate females, as they are more difficult to distinguish. These days, we can make use of genetics and scanning microscopes, so it is important that I get to his collection now located in a museum in Honolulu. I could take samples and digitise all the specimens. Without it, I won't be able to process the rest of the collection', says Marcin Walczak.

The entomologist points out that even such small, inconspicuous insects as true bugs have a big role to play in the ecosystem.

'Large-scale clearing of the jungle in Borneo is having a catastrophic impact on these and millions of other animal and plant species', he stresses.

Borneo is an Asian island bordered by Indonesia, Malaysia, and Brunei. It is the third largest island in the world, with an

area more than twice the size of Poland. It is also one of the most biologically diverse places on Earth.

Unfortunately, human activity is causing the forests of Borneo to disappear right before our very eyes. This is the result of deforestation – the mass clearing of primary tropical forests to make way for expanding oil palm plantations. Palm oil produced in this way is commonly used by both the food and cosmetics industries. Indonesia is the largest producer, and the main consumers are the American, Chinese and, of course, European markets. However, it is worth noting that in 2023, the European Union introduced restrictions on palm oil imports due to the negative impact of its production on the environment.

On the one hand, we have a wealth of nature that is incomparable to anything else, and on the other, there are monocultures, which by their very definition contradict any notion of diversity.

'To illustrate what I mean, let's take a moment to imagine a tropical forest, which I had the opportunity to see up close during one of my scientific expeditions', says the entomologist. 'In Poland, we have three species of cicadas. We associate their pleasant sound with the beginning of summer. The further south you go in Europe, the greater the number of species found there and the more intense the sounds they make', says the scientist.

Borneo offers a completely different experience.

'As darkness falls, the cacophony of sounds in the jungle intensifies. The sounds heard around you are more like the clatter of machines or jackhammers. Drilling is interspersed with buzzing and sawing. They all sound really strange and end up merging into a uniform wall of sound... And yet I recognised them recently when I turned on a programme about tropical forests on the National Geographic channel. When I heard the sounds of the jungle, I knew that in just a moment the narrator would say that it was Borneo. The heartbeat of this primeval forest is permanently etched in my memory', adds the entomologist.

This is a truly unique, sense-based proof of biodiversity.



Borneo is the third largest island in the world, with an area more than twice the size of Poland | Photo: Łukasz Junkiert

Large-scale deforestation in Borneo has a devastating impact on the animal and plant species living there | Photo: Lukasz Junkiert



## WHEN WE ATTEMPT TO PRESERVE

When we learn about the effects of human activity, it is difficult not to get the impression that not only does nature not need us, but our presence is actually harmful to it. It seems to function best in places not yet reached by humans. Borneo serves as a clear example. The problem of the huge number of oil palm plantations is not only linked to the loss of biodiversity, but also poses a threat of huge forest fires, soil erosion, river drying, and watercourse pollution. Excessive deforestation is to be limited in national parks and nature reserves. But are these restrictions effective?

'Imagine reserves – these “jungle islands” in a sea of oil palm plantations. They are effectively isolated micro-ecosystems, separated from each other by hundreds of kilometres,' says the scientist from the University of Silesia in Katowice. Although they provide shelter for plant and animal species, they are ultimately too small to truly save the island's biodiversity. For isolated small populations of plant and animal species, the only chance of survival is through the so-called wildlife corridors, which

are strips of natural vegetation usually running along watercourses, forming a route connecting individual protected areas.

'They are very important because the lack of contact with other populations carries the risk of inbreeding, i.e. reproduction within a small group,' says the researcher.

One solution would, therefore, be to leave strips of natural vegetation connecting the reserves and to look after the forests outside the protected areas. The policies adopted by palm oil-consuming countries are also important.

The earlier-mentioned European Union decision to restrict imports of this raw material could be an example of an effective action. It is also up to us to consciously avoid food products and cosmetics containing palm oil.

Scientists are also analysing the possibility of restoring tropical forests.

'It is theoretically possible. However, we know that imitating nature has always been an uphill struggle for us,' says the scientist.

'There are an average of 300 tree species per hectare in Borneo. For comparison, Poland has only 60 in total. A major problem is the monocultures planted in our country, which I call “single-species pseudo-forests”. Although this solution makes the work of foresters easier and allows them to obtain specific tree species that are valuable to industry, it has disastrous consequences for biodiversity. A real forest has a variety of plant species, rich undergrowth, and a multi-layered structure. It is a place where old, dead and decaying trees also play an important role,' emphasises the scientist.

How then can we even begin to imagine the restoration of forests in Borneo, a place with 50 times more tree species?

'Only nature can do it, but it will take many thousands of years,' concludes the entomologist.