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Hi, this is Kerry with some potentially good news if you sent a fax in Taiwan earlier this month.

Hi, my name is Zach Hedstrom and I'll be talking about some of the great benefits of mushrooms.

I was sitting there in the crowd, you know, tears in my eyes. This is right for the happy part.

This goes straight to the happy part.

So without more ado, this is the happy pod from the BBC World Service.

I'm Jackie Leonard and in this edition uploaded on Saturday the 29th of July.

Hello, I am Maurizio Vela from Bogota, Colombia, and I have very happy news for Andean Bear Conservation in Colombia and coffee production.

How bears and coffee growers can live in harmony. Also, how playing the underwater sounds of a healthy coral reef on a dead one can lure back fish.

Some fish make sort of chattering sounds. Others buzz or grunt or hum or bellow.

Limiting forest fires by the strategic deployment of mushrooms.

You can kind of think of it as a sponge layer. We're creating a landscape which is able to catch and hold more moisture and help to fight wildfire in the process.

And a very memorable first day at work for an Italian lifeguard.

First two Colombia where conservationists have helped broker a truce between coffee growers and the bears that share the land. The bears were seen as a threat to crops and livestock, but a programme was launched to provide help and resources for farmers in exchange for bear protection. It's a win-win. Harry Bly reports.

Coffee is big business in Colombia. The South American nation is the world's third largest exporter of it, with almost three and a half thousand square kilometres of mountainous land dedicated to Arabica coffee beans. But it's not just coffee beans that enjoy Colombia's nutrient-rich volcanic soil and humid climate. For years, there's been a clash between farmers and other locals. That's the sound of an Andean bear. It's South America's last bear species native to the continent's mountains that stretch from Argentina to Venezuela. They're smaller than their North American and European cousins at around a metre and a half tall. They have black fur with cream spots on the chest and face, and it's these markings that give them their other name, spectacled bears. And while these bears don't wear Wellington boots or eat marmalade sandwiches, they are thought to be the inspiration for a well-known children's book character. Well, I've got a bear name, but it seems to be rather hard to pronounce. Oh, perhaps you like an English name. Paddington. Paddington. Paddington. Yes, Paddington, who also hails from the Andean jungle. The Andean bear eats a wonderful, beautiful species. Maricio Velavargas is a biologist specializing in big mammals at Columbia's Wildlife Conservation Society.

Andean bears are in constant interaction with human communities, and Andean bears mainly eat plants, but in some cases they can attack cattle. And that's where the problems arose.

With their natural habitat taken over by agriculture, Andean bears would roam farmland in search of food, eating crops and sometimes cattle, and the farmers fought back, often slaughtering the bears in retaliation. Today Andean bears are classed as a vulnerable species. In 2017, the Worldwide Fund for Nature estimated that around 8,000 bears were left in Columbia. That number is probably lower now. The Colombian Wildlife Conservation Society is one of the bodies behind a program called Conservamos la Vida, or Let's Preserve Life.

Maricio is one of the coordinators. Inside of the farms, we identify the priority areas for conservation, like small patches of forest, the creeks, water holes, and in compensation, we start working with the communities, and the main objective is generating coexistence. And in return for coexisting with their four-legged neighbours, farmers receive coffee growing and processing equipment, tools for better water infrastructure, and help fencing in their farm animals to keep them safe from hungry bears. They also get a special label on their coffee products that reads Cafe Oso Andino, Andean Bear Coffee, a scheme which project leaders

say has created many jobs in the area, not to mention boosting a wide variety of wildlife. Last week, we had the records of the presence of cougars and deers and the umbers inside of the farms, and the people, it's happy to know that they are maintaining and helping to conserve different species of mammals in these areas. Maricio Vela Vargas from Bogota, ending that report by Harry Bly. Now, a combination of nature, scientific brilliance, and best of all, excellent sounds. We know that coral reefs are beautiful, important, and currently at risk. Australia's Great Barrier Reef has suffered extensive damage as a result of warming waters, pollution, and so on. But a lot of people are working to try to help these areas recover. And now it turns out that playing the underwater sounds of a healthy coral reef to a dead one entices back fish, and that means the nutrients that they bring with them. It's hoped that that discovery can be used to superpower reef regeneration projects. This is marine biologist Tim LeMont.

When we listen with a special underwater microphone, we hear all sorts of weird and wonderful noises on a on a healthy reef. So first you'll hear this sort of background crackle. It sounds a bit like radio static or like bacon frying in a pan. And what it is is it's the sound of thousands of snapping shrimp all clicking their claws. Some fish make sort of chattering sounds. Others make whooping sounds. Others buzz or grunt or hum or bellow. There are so many sounds that we're struggling to come up with words to describe them sometimes. I was studying the soundscape of coral reefs to try and understand what we could learn about reefs by listening to them. How we could monitor their diversity and changes in their health state. At the start of my PhD, I went to the Great Barrier Reef for the first time and I was I was really excited. I was like a kid before Christmas on the plane. You know, I'd heard so much about this place. I'd read so much about this place. It was like arriving at a battle scene just after the battle. Bleaching and cyclones had just caused huge damage on this area of the barrier reef and parts of it were like a graveyard. It was quite horrifying to see.

We could hear the difference. We could hear the sort of the emptiness, the quietness, the lack of noise and diversity and loudness on this reef. It was quite heartbreaking to hear. And it also was quite distressing because they no longer sounded attractive to fishes. Maybe as part of attempts to restore reefs, we should be restoring the sound as well as what we could see. So we had these underwater loudspeakers that are usually used by synchronized swimmers

in swimming pools. And we worked out that you could power those using a motorcycle battery with a little MP3 player attached to it. That all went in a little barrel, the type you'd sort of take water in if you were going on a canoe trip or something. The healthy sounding reefs attracted

twice as many fish back to them. And over the course of about six weeks, they developed a community that was twice as abundant. That was really encouraging to us. Fish and reefs have evolved together over hundreds of thousands of years. And really, they can't live without each other. Marine biologist Tim LeMont on leering life back to the Great Barrier Reef.

And there is more on this brilliant idea from our colleagues at People Fixing the World.

Just look for them online. Now to a possible natural solution to one of the biggest problems facing several parts of the world right now. The headlines have been full of wildfires sweeping across large areas of Europe and North Africa. They are also regularly an issue in the US, Australia and Russia. So what can we do to limit the spread and damage caused? One man in Boulder,

Colorado in the United States thinks we should turn to the humble mushroom for help. That man is Zach Headstrom, who happens to be a mushroom expert. When the forestry crews come through, they're generating a large amount of wood biomass. And generally that biomass gets chipped up. And those wood chips can then be distributed along the forest floor and then sprayed with a fungal inoculant solution, essentially a slurry of mushroom roots you could call them. It's called mycelium, which gets worked into this wood chip material and then becomes essentially a vehicle for the wood chips to hold more moisture in the process as well as decompose faster. Here in the air at west, it can take anywhere from 20 to 50 years for these wood chips to decompose. And when we introduced the native fungi, we're seeing substantial decomposition within two years and also an increase in the moisture holding capacity of the wood chips. So you can kind of think of it as a sponge layer on the floor. We're creating a landscape which is able to catch and hold more moisture and help to fight wildfire in the process. Is this a system that you think could be applied elsewhere in the world that is affected by these wildfires? Absolutely. I think that this in principle can be applied all over the world. That being said, though, we believe in using native fungi for each specific region. So for example, in Greece where there's wildfires raging, we would suggest cloning or obtaining a strain of mushroom out of their own local environment. Did all of this come to you in a blinding light? At what point did you think, oh my goodness, my specialism can help solve this quite serious problem? I grew up in Boulder, Colorado, spending a lot of time in the Rocky Mountains as a kid wandering through the forest looking at plants and mushrooms. And so I started to observe a lot about the way that the ecosystem functions and the way that the forest takes care of itself. And this led me to mushrooms because I was able to see with my own eyes how wood and plant matter is so quickly and effectively recycled back into soil without any kind of human intervention at all. Just by taking notice of the patterns which are already existing in nature, I think we can really start to address our climate crisis and our man-made issues just with some of the wisdom which is already existing all around us. I think that if we can start to pay more attention to nature and take inspiration from nature, we can learn a lot about ways to live more harmoniously on this planet and just be better stewards of the earth. Mycologist Zach Headstrom. Now think back to your first day at work, meeting your colleagues, learning how everything functions. A first day can be daunting. Now meet 19-year-old Nermi Merangon, an Italian lifeguard who saved five lives on Sabaudia Beach on her first day. I was looking around, making sure no one got in trouble. Then I realized there was a man who was in trouble and run to him by swimming because it wasn't possible to take the boat. I just swimming and foresaid his life. But then his wife and his son came to help him and got trapped into the same danger. So I had to save three lives at one.

And then when I got back and take a breath because it was very, very difficult to save them, I realized that another guy was trapped in the same trouble with his brother. So I had to go back here and save him too. I felt really anxious about it because I thought I couldn't do it. But then when I realized I could save them, I just run and feel satisfied for myself. There are not many women to do my job, but the girls that are in my team are very proud of me. Five lives saved before lunch, brava lifeguard Nermi Merangon.

Still to come in this podcast?

Programs like this keep your mind going, you get smarter as you go, you learn, you feel better. How education is helping prisoners turn their lives around.

Now this was sent to us by Sofia, a student from Canada, currently living in Latvia.

This is a clip from the Latvian Song and Dance Festival. This year Latvia celebrated its 150 year anniversary of the festival. 40,000 performers come from all different corners of Latvia and 500,000 people show up in audience. But at the final performance, that's a 15,000 person choir that you're listening to. You really get a sense of the unity that the entire Latvian nation appreciates choirs and appreciates singing. It's a real experience. Just sitting there and listening to these lyrics that also reflect Latvia's struggle for preserving its own culture throughout its history, it really was inspiring and it honestly, it brought me to tears. With my family as well from Ukraine, I really feel connected to traditional music and traditional songs that were written years ago, just knowing that these songs have passed through so many years

of history and have persevered throughout history, really is just inspiring. I was sitting there in the crowd, you know, tears in my eyes. This is right for the happy part. This goes straight to the happy part. And we're very grateful for that. Thank you, Sophia, a Canadian in Latvia.

To the U.S. now and a plan to try to help prison inmates turn their lives around.

Starting this month, the U.S. government will be expanding student grants for prisoners to help them get university and college degrees in jail. The better to build a new life outside.

The BBC's Peter Goffin has been finding out more. We've been taking all the top college classes from philosophy, which is one of my favorites, chemistry, thermodynamics, which is my worst. Broderick Hollins is working toward a bachelor's degree at Northwestern University, one of the top rated schools in the U.S. But he began his academic journey at a very different institution, Stateville Correctional Center. When I first got my transcript, my grades on it, I finally felt good about, like, man, something, programs like this, keep your mind going, you getting smarter as you go, you learn, you feel better. Mr. Hollins, who was released from Stateville last year, has not had to pay tuition fees because Northwestern waves costs for members of its prison education program. So-called tough on crime laws passed 30 years ago in the U.S., banned prisoners from receiving government assistance for underprivileged post-secondary students, known as Pell Grants. That aid has been restored on a limited basis over the past few years. But as of this month, it's being drastically expanded, with the government set to issue \$130 million to around 30,000 incarcerated students each year. Nick Turner is the head of Vera, a pressure group working to end mass incarceration. The return of access to post-secondary education

provided by these grants means that people will be able to get degrees and trades that the evidence shows increases their access to employment. And for society at large, it's a much better thing, too, because it reduces what we call recidivism, you know, returns to prison. It's up to each

university and college to decide whether and how to run prison programs and only certain prisons participate. Others say people in prison should be given the chance to put their learning to use.

People are obtaining associates, bachelors and masters or whatnot, and yet they might still have five, ten, fifteen years left on their sentence. So how can we find ways for people to apply and use that education during incarceration and also help them make money?

Ved Price is the executive director of the Alliance for Higher Education in Prison.

He also took post-secondary classes while serving time.

What would it mean for people to come home with five, ten thousand dollars to have some agency over their re-entry to help pay for housing, to help pay for transportation, to help them get stable in the community? Proponents of these education grants, from prisoners to activists to President Joe Biden himself, say they could be life-changing for many of the approximately two million people in U.S. prisons. That was Peter Goffin. Now, some of the other things that caught our eye over the last few days, you might have seen that the River Seine in Paris has been so dramatically cleaned up that it'll be possible to swim and dive in its waters. Swimming in the Seine was banned for a century because it was so dirty, but a huge amount has been spent on regeneration and the Paris Olympics next year will have three Olympic and Paralympic

events, triathlon, marathon swimming and paratriathlon scheduled to take place in the river.

A three-year-old boy in India is recovering after being rescued from a 12-meter-deep well in eastern Bihar state. The rescue of Shivam Kumar took eight hours. A painting recently found to be undoubtedly by the Renaissance artist Raphael has gone on show for the first time.

The Debrécy Tondo had been subject of study for decades because of its resemblance to Raphael's Sistine Madonna, but some thought it was a Victorian copy. Teams from the English

universities of Nottingham, Bradford used facial recognition technology to prove it's the real deal. And another bear story because there are never enough bear stories. A hiker who says he was saved from a bear in the US by the voice of the Scottish comedian Raymond Manns. Ian McAllister was doing

the Pacific Crest Trail in California. I was hiking up a hill and when I'm hiking up a hill

I like to listen to a podcast. When you're having a laugh the hill goes much quicker.

A bear popped onto the track, the trail right in front of me. The bear turned around and looked at me but before I could make any noise to scare it off it heard Raymond's voice on the podcast and it ran away. They run at 30 miles an hour and I think maybe this was about 40.

So what does Raymond think he said to spook the bear?

I have no idea. I've been in California, I went up to Lake Tahoe and I've walked through the woods in California. It never really dawned on me at the time that I had special bear protection because after we kind of walked through the forest at Lake Tahoe I thought,

hang on, if we had clocked a bear a bear would have, we could have been in big trouble. I hadn't

been on to me that I'm a bear repellent. Raymond Manns and the podcast he was on was breaking the news but we cannot promise it will protect you from wild animals so do follow advice from people who actually know what they're talking about, not us. Now back to the water

and a solution to stopping plastic from being washed down drains into rivers and oceans.

A Dutch company has come up with a bubbly way of heading that litter off before it can do too much damage to marine wildlife. The BBC's Richard Kenny went to Amsterdam in the Netherlands to see

for himself. I'm standing on the Prinsengracht. It's one of the main canals which are such a major attraction of the city of Amsterdam. Tourist boats are chugging along them so people can see the city

at its best from the water but these canals aren't just carrying tourists, they're also carrying a lot of the city's litter. We are a very water-rich city. We have 150 kilometers of canals and what happens is that garbage, debris, plastic from the shores, from the sides, from the streets get into the water and it all flows through the canals to one of our six exits to our main river and that river goes into sea. That's Art Breitbrien from the Regional Water Authority, Waternet. The problem with plastic is it doesn't disappear, it just gets smaller and smaller and smaller. The smaller it gets, the easier it gets into animals, into people and it will be bad in general for biodiversity. Here now we can still get it. And this is the sound of the solution that some ingenious young scientists have come up with to get that plastic. It's called the Great Bubble Barrier and it sits at one of the exit points where the canals go into the river. Philip Airhorn is one of the people behind it. Well we're catching plastic here before it has a chance to flow out towards the ocean. It's quite literally a tube that we placed diagonally on the bottom of the waterway and then we pump air through it. The hose is perforated so tiny little air bubbles will start to rise and that creates an upwards current which can lift plastic to the surface and then add the surface together with the natural flow of the river. It will all be pushed towards the collection area where we can then remove it from the water. Does it stop fish going through the water? So we are still looking at this very carefully to show that we really don't have a negative impact. So far there's nothing that suggests we do. I've heard one fish expert say bubbles is something of a daily life of a fish. Well most of the passers-by when they notice it seem to think the bubble barrier is a good idea. I think it's a very nice and cute idea too because it doesn't look bad as well. No it adds something to the canal I think. It's not polluting it doesn't stop any boat to go up and down in the canals so yeah I think it's a it's a great idea overall. That report by Richard Kenney in Amsterdam. Do you keep your receipts? If you're in Taiwan it's probably a good idea to. One lucky person has won the jackpot on what's known as the receipt lottery

on a very small investment indeed. Carrie Allen is our China media analyst. This time the winner of the big prize this 342,000 US dollar prize what they did was they sent a fax for the equivalent of about 50 cents. So they spent a very small amount of money and have won a huge amount. And just to back up a little bit on the win a fax. A fax yes I didn't even know that people still sent faxes anymore so this is obviously lit up Taiwanese media with people saying yeah who sends a fax anymore? So we were a bit baffled by this because I thought gambling's not a thing in Taiwan. It isn't no gambling is illegal in Taiwan and this is the state lottery it's really the only legal form of gambling in the region and in order to get a ticket you basically just buy things in shops and you get an eight digit number at the bottom of your receipt and six times a year a lottery is drawn and people can win prizes as big as 342,000 US dollars. And at this point although we know that a fax was the cause of the win what do we know about the winner? Well we don't actually know who they are yet and obviously there's some speculation on social

media that this is probably somebody who's a lot older because the younger generation I don't know would have even heard of a fax let alone sent one but yes we do know that they can claim their prize from the 6th of August onwards. This story has obviously got people looking at their receipts

at home and thinking you know could they have won because there have been in the past unclaimed prizes because these are numbers on physical receipts. So yeah to give you an idea of some of the previous winnings there was back in March someone who won this huge amount of money they bought an adult toy and again they might be somebody who's not come forward or want to keep things quiet and this might be the case also with this person who sent the fax they might come and collect their winnings but they might actually not reveal who they are. So the moral of the story is don't throw away your receipts? Yeah if you've got a receipt just hanging around in your pocket or your handbag that it could make you a life-changing amount of money.

Carrie Allen rifling through her handbag as we speak.

And that's it from us for now but before we go another word from Sophia. If you'd like to send the sound that brings you joy like I did just email [globalpodcast at bbc.co.uk](mailto:globalpodcast@bbc.co.uk).

And send us anything else you'd like as well to be honest. This edition was mixed by Chris Lovelock and the producers were Anna Murphy and Tracy Gordon. Our editor is Karen Martin. I'm Jackie Leonard

and until next time goodbye. Season two of The Bomb unravels the mystery of Klaus Fuchs.

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