

#1 What's Wild? | A Unique Approach To Rewilding In SG

00:00:00 Xiaoyun

Hello and welcome to *That's Wild!* I'm Xiaoyun, a nature guide and environmental educator, and I'll be your host for this podcast series, where we will be talking to a variety of special guests about some wild and wonderful topics surrounding nature conservation in Singapore, our City in Nature. *That's Wild* is brought to you by the National Parks Board. If you like our content, don't forget to show your support by hitting that follow button and giving us a five-star rating.

Today's episode is all about rewilding – and we've invited Jim, who's the Group Director of Conservation in NParks, to explore this topic with us. Together, we'll unpack what this term means, and how this relates to the way we understand nature and the 'wilderness' here in Singapore.

Hi Jim!

00:00:44 Jim

Hi everyone, my name is Jim. I'm the Group Director of Conservation at the National Parks Board. That actually means that I'm a glorified site manager – basically I take care of all the nature reserves in Singapore, including Central Catchment Nature Reserve, our largest nature reserve at more than 3000 hectares; the very famous Bukit Timah Nature Reserve, as well as Sungei Buloh Wetland Reserve. There are also 2 other cute and smaller places that I take care of – well, not necessarily small – one of them is Labrador Nature Reserve and the other is Pulau Ubin; the entirety of Pulau Ubin. We take care of these places, we manage them, we do a lot of activities with the community there, including habitat enhancement and restoration activities as well as species recovery efforts that take place within these reserves.

00:01:36 Xiaoyun

So first I think we can just explore what rewilding might mean to you, because I know we all have varied understandings of what rewilding means. And obviously most of the literature is more advanced elsewhere in the world, and there's not as much done, I guess, in our part of the world, where it's already pretty wild.

00:01:55 Jim

Yes, yes, absolutely. I think rewilding in the Singapore context is extremely, extremely focused, and it's very unique. So when you're talking about rewilding in many other places in the world, you must understand the context of the environment; the context of their geography and landscape. When you're talking about, for example, rewilding in Yellowstone National Park, or parts of Europe... The land is so large that you would be able to practise rewilding by literally introducing large mammals like hooved ungulates, horses, deer, wolves, and things like that.

In Singapore, you have to look at our context. 710 to 720 square kilometres – we have five to six million people packed into it.

So in the absence of a very large hinterland where you can do a whole lot more, Singapore basically has to turn the entirety of the nation, the entirety of the island into a big green matrix. So our rewilding efforts are focused a lot on habitat enhancement, habitat restoration, creating connectivity. And this is actually part of one of our key tenets, basically, in the Nature Conservation Master Plan, as well as our City in Nature efforts. Planting up as much as possible using native species such that we can then encourage very important indicators of the healthy ecosystem in Singapore like the birds, the bees, the butterflies, and the dragonflies, flying animals, and some small mammals to basically be able to proliferate, be able to sustain their populations, to be able to grow, to be able to roost, to be able to move from big green patch to big green patch. And in so doing, because they are pollinators, because they are dispersers of seeds, they can actually help us along the way by basically pollinating our native plants as well as dispersing the seeds so our natural areas become more natural.

00:04:04 Xiaoyun

I think for me, and you might laugh at this, because you laughed at the literature that we read when we were in school right – so for context, I met Jim before, and we've talked about how our ideals of wilderness is very much influenced by the media that we consume. So for example, growing up, I watched *The Little Mermaid*; I watched *Bambi*. My idea of wilderness is like a European forest, or like a cerulean blue sea – that to me is like a pristine wilderness, and I can't help but feel an attraction towards it. And it shows lah, when I first went to London when I was 15, for a geography field trip, and we went up to Lake District, so that we can understand what inspired the poetry of the Bronte sisters, and William Blake, and those kinds of persons. Then you really could see that sublime nature, and very mild temperatures was what inspired those works of literature.

Thankfully, as I grew older, I managed to explore a lot of regional environments, regional ecosystems, like tropical rainforests in Sumatra and Malaysia. And then I got to know more about our Singaporean habitats also. So meaning like coastal mangroves, like our beaches, getting to see that these are full of biodiversity as well. So now my understanding of wilderness is more balanced.

00:05:30 Jim

I think you're absolutely right. Our definitions, our own understanding, when we close our eyes and we imagine the word 'wilderness' and what it means to us is inevitably influenced by what we have consumed. We are always taken in by the beauty, the grandeur of nature. But most of those were actually temperate forests. Landscapes are beautiful, right? You have big, Alaskan mountains. You have the heather-covered moors of your Emily Bronte books and all that kind of stuff. And the important thing to remember is that in Singapore's context, and in fact, the whole tropical context, mountains are few.

In the tropical forest context, basically the amount of biodiversity, the amount of life, the diversity of plants, the diversity of animals within these tropical forests are far, far better than what you typically and traditionally experience when you read the romanticised writings of the 1800s and early 1900s.

So, the thing to remember is, Singapore, in terms of nature, when you're looking at the abiotic elements – the mountains, the rocks, the ice, the glaciers, the beautiful trees turning orange – there isn't a whole lot of that, but when you scale it down to the tropical rainforest, you see that it's got a whole lot more biotic elements, a whole lot more biodiversity, a whole lot more species of plants, a whole lot more species of animals. And therefore, the wilderness and nature in our context is no less worthy of respect. In fact, it's worthy of more respect.

It is something that also took millions and millions of years to build, but the structure is totally different from what you experience as the grandiose scale of nature that you used to experience when you read your books and when you watched your TV dramas in the old days.

00:07:28 Xiaoyun

How much intervention do you think is good enough for rewilding in an urban landscape like Singapore?

00:07:34 Jim

I think human intervention when you're talking about rewilding is, again, an inevitability at whatever scale. So when you're doing rewilding in Yellowstone National Park, it also takes the decisions and the actions of human beings. And there's this very, very nice story that I think everybody has heard of. It is the story of Jadav Payeng. Have you heard of Jadav Payeng? He is very, very well known as the 'forest man' of India. And this is the story of how one man, over the course of 27 years, has essentially single-handedly planted a forest twice the size of New York's Central Park in his little plot of land, which is basically a riverbank. Over 27 years, and now it has grown big into a forest. And there are leopards and there are elephants coming in. And it's a very inspirational story. And he has won many awards. But you see the background of that story is – it still took one man. Although it's one man, it's still a human person, right?

And in Singapore, we have to remember that whatever nature-based solutions we put in place, whatever habitat restoration and enhancement, in order to make the ecosystem better, in order to recreate compromised habitats, it is always done by the people, with the people, and for the people. Human beings benefit when we have healthy ecosystem services. Human beings benefit because healthy ecosystems can help clear the air of pollution, for example, bring down temperatures when climate change-related weather patterns become extreme. Nicely planted cityscapes will be able to help you sponge off water when there are heavy rains. So human beings benefit. And we understand that a properly functioning urban ecosystem with good habitats, healthy habitats, will actually benefit humans in the long run.

So it's very important to understand that greening in Singapore, rewilding in Singapore, bringing nature back to the Singapore urban cityscape, is not for nature's own sake. It's also for the

people. And that's why we bring the community in. And it's very important to bring the community in because it gives them ownership of this patch of nature that we call home.

So it's again very unique, right? It's a very unique vision of people living in harmony with nature and of course it's still evolving. We're still learning along the way, but I think we've taken a very nice first step towards doing that.

00:10:17 Xiaoyun

So I think there's probably another school of thought, which is – rewilding just means like, don't touch. Let nature thrive on its own. Let nature come back on its own. And humans shouldn't even be in nature, I guess, in the first place. So again, like, why wouldn't that kind of thought work in Singapore?

00:10:34 Jim

Yeah, I think for me personally, the main reason why that doesn't work in Singapore goes back to my earlier point about Singapore being an entrepot, being a hub for the past two centuries. There are many, many, many invasive species in Singapore. And if you essentially have no intervention method to rewilding, what you will see in the species mix, right, over the next 10 years, next 50 years, is essentially a whole lot of non-native invasive species proliferating.

And that can actually be dangerous for our nature reserves, our core nature reserves, many of our native species, because many of these plants are actually extremely aggressive. Now, if you've seen photographs, and I can show you a few photographs of how, for example, *Dioscorea sansibarensis* as well as the *Sarsaparilla* plant, how they grow, how aggressively they grow, how aggressively they can smother saplings, smother even adult trees, you know, at the fringes, especially when you have open areas where there's a tree fall, open areas where there's a clearing at the edge of a forest, you will see that their aggressiveness will essentially set back the natural regeneration of a Singapore native plant-dominated forest by decades, if not centuries. So there is no guarantee that you'll be able to eradicate that. So as I've pointed out before, I think the main thing about our habitat restoration and enhancement efforts, particularly at our nature parks and fringes of nature reserves, is to bring the community in and do invasive species management.

00:12:37 Xiaoyun

Before we continue, let's take a pause here for a fun mid-episode break. In the spirit of our podcast title *That's Wild*, I'd like to invite Jim to share something wild about biodiversity that you guys may not have known before.

00:12:48 Jim

The one that I can think of is this species of gecko – wall lizard in Singapore, for those who don't know what geckos are. And Singapore has a few species, but one of the most common ones is this species, which has a mottled colour and you find it everywhere now. It is the *Lepidodactylus lugubris*, also known as the maritime gecko or the mourning gecko. Now, this species is very widespread in the Asia Pacific. It's found from Taiwan, all the way down to Indonesia, all the way

around the Pacific Rim, and it has been introduced into even South America, Central America, and all of the Pacific islands. Now, the cool thing about *Lepidodactylus lugubris*, the maritime gecko or mourning gecko, is that they are almost all female. There are very few males that have been found, and even then, most of the males are sterile, which actually means that the reproduction of *Lepidodactylus lugubris*, the maritime gecko, is through parthenogenesis. They don't need a man. They essentially hatch eggs which do not need a sperm donor, and the eggs and babies that hatch are clones of the mother. Which means that theoretically, if you follow the entire heritage of the maritime gecko, there must be an Eve of the maritime gecko and all the progeny, generations upon generations of this lizard, are all clones of this one original mother gecko. How cool is that?

00:14:23 Xiaoyun

That's cool. Or maybe, that wild.

00:14:25 Jim

Yeah, that's wild.

00:14:27 Xiaoyun

Or maybe the species evolved such that they need no man. Like maybe the men were all phased out.

00:14:33 Jim

Which is why they're all doing so well, by the way.

00:14:39 Xiaoyun

I think maybe to kind of take us back a bit, to set the historical context, right – I guess when we became independent, we already lost 97% of our forests, and across a lot of different habitats, from our freshwater swamp forests to the more familiar tropical rainforest. And similarly, we also lost like maybe like 73% of our coral reefs in the marine space. So given this, how is rewilding being carried out now in Singapore?

00:15:06 Jim

I think that's a very good question. And the remarkable thing is that when you talk about 97% of forests lost, even in 1965, the scary thing which is actually quite a cool fun fact is that 97% of forests were lost by the year 1930 – well before we even attained independence, right? And it is remarkable that nature is so resilient that despite all this. By 1930, we still have many, many species of plants, many, many species of animals still surviving and hanging on. And I think it's testament to our very good work on the whole as a people of Singapore, that we understood that nature was important for Singapore, and we worked very hard to bring back nature into Singapore. And as to how we do it, I think the best thing to do is to look at our Nature Conservation Master Plan.

First and foremost is to protect and conserve our core habitats. And the number one thing we did was to essentially gazette our four nature reserves, and in order to protect that as well, we have introduced nature parks around them to basically ensure that the footprint of our nature reserves are buffered by these nature parks, which also allow people to come and partake in nature-based recreation without having a ton of traffic going into our core nature reserves.

Then the second thing is essentially making sure that they are connected. So we have had a very good decade of introducing Nature Ways into Singapore, and those Nature Ways act as very important connectors, not just for people to get from green space to green space, but actually with judicious planting, with very good selection of native plants, these Nature Ways have now become very beautiful as well as very ecologically important connections for dispersers, for pollinators.

Part of that second component is also to naturalise our parks. So previously, before, when you're talking about the 1970s and 1980s, our parks were very manicured, very managed. And now you go to a park, for example, like Bishan-Ang Mo Kio Park, and that's a park, that's not a nature park. It's not a nature reserve, but it's so natural. It has a naturalised canal with otters in it. So naturalising of our parks also adds a further component into Singapore being more organic, being more habitat conscious, being more able to provide flora and fauna, and the people who enjoy the flora and fauna with more spaces to basically hide, with more spaces to grow families, with more places to roost.

The third one, which is something that perhaps may need another feature, another podcast to cover, is the amount of research and science and technology that goes into this. So for example, before you engage in species recovery programmes like we do, the first thing to do is to get a survey done. And a survey is actually no small thing, sometimes it can take many years. And in the past decade, again, we at NParks, we have introduced a whole lot of the technology into doing our surveys. Previously, for example, if you wanted to do a survey, camera traps were never a thing. You had to go around a transect using your eyes to spot animals. And of course, animals occur sometimes at night, and you can't even see them. So with the advent of camera traps, with the advent of night vision devices, we will be able to capture and see all these, especially mammals that come out in the night time.

So survey methods are important. Baselineing is important. And a lot of our policy decisions with regard to conservation are not whimsical. They are not something that I just happened to think of. It's always founded on a very strong foundation of science done by scientists both within NParks and with our community partners. Some of which are academics in the universities, some of which are actually citizen scientists with very strong interests in the fields in which they work.

And that then segues and brings me to the fourth component, which is community stewardship. I've given a few examples of how we engage the community in our planting, our invasive species management. And I've just talked about how important the community is in supporting us in our research efforts as well. It is paramount, because we have to make sure that

everybody, especially youth like you, understand that a green City in Nature, full of thriving biodiversity, is actually part of Singapore's DNA.

00:20:07 Xiaoyun

I think one of the strands, one of the four strands that you mentioned – which is the one specific to species reintroduction, and the work that we do, or that NParks spearheads to reintroduce specific species, is actually very admirable, because even though we're not reintroducing huge megafauna like wolves, we are doing baseline surveys to decide – there are certain species that we do prioritise, and we want to take care of, especially the endemic species, like the *Johora singaporensis*. There's so much, I think, every time I go into a freshwater stream, I have never seen the *Johora*, but every time I see another crab, I would say that this is one of six species in Singapore, and they are very protected here.

So maybe Jim, you could speak about species recovery and species reintroduction, cite maybe another case study that's quite interesting for you.

00:20:56 Jim

So far we're talking about plants, right? So I think that's a very good question about animals and what we do with regard to species recovery. As I said before, what we don't do at this point in time is to make species which are extinct or extirpated in Singapore deliberately reintroduced, right?

So our species recovery efforts have always been in helping animals which are extremely rare, but still exist in Singapore. And at the same time animals which were extirpated before, but somehow have come back into Singapore and have taken a foothold in Singapore to basically do better. Because we know that they were gone for a reason, but we also do know that when they come back and hang around for a few years and in fact start to breed, then there is a reason for that as well. And we want to figure out what the reasons are and help make the conditions better so that they can thrive.

Of course the biggest success story which everybody has heard of before is the hornbills. They were extirpated for 40 years, we've not seen them. They flew across once in a while, but suddenly a population established itself in Pulau Ubin, and soon on the mainland, and we saw that they were actually not doing too badly. So we helped them out; again, just a little nudge, but we actually had an action plan that included putting up nest boxes for them, and now we have a thriving population. In fact, they are practically in common in Singapore.

So what we do is always very considered, always together with the community, and to make sure that we help the species along, rather than reintroduction. Because I think the environment that these animals need are more important than just taking animals, breeding them, and then chucking them in. So every animal that we have, basically we have to consider the availability of the environment, the availability of the habitat, and if they are separated, again to introduce the connectivity of the habitat. To find out what that animal likes with regard to its living conditions,

you know – what it likes to eat, what it likes to roost, are there sufficient plants for it to basically survive as a thriving, sustainable population.

So, I can also add a plug for our Habitat Enhancement and Restoration Handbook. There are tons and tons of not just the policy as well as the techniques behind doing habitat enhancement and restoration, but the cool thing about this book is that it has tons and tons of actual case studies of how we applied it in Singapore. Not just in our nature parks, our nature reserves, but also in our parks. And it also has a very cool chapter on one big element of connectivity, which is essentially the eco-link bridge that bridges the Central Catchment Nature Reserve, as well as the Bukit Timah Nature Reserve crossing over the BKE – how it was built, with pictures and with background on how we decided, you know, the look and feel of the bridge, how to plant it, what we planted it with, as well as the follow-up that showed that animals were using it. It's a very cool thing. It's all freeware, and there's a link that we shall link it to.

00:24:16 Xiaoyun

And with that, we've come to the end of our episode. Thank you, Jim, for joining us today. More information about our Nature Ways and other rewinding efforts can be found on our website, which is linked in our episode shownotes. Do share your thoughts on this discussion with us on NParks' socials, and give us a follow if you've enjoyed our content. My name is Xiaoyun, and thank you so much for listening to *That's Wild*. Stay tuned for more exciting conversations to come!