



AT PEACE WITH THE FOREST

Findings from the UQ-Borneo Futures Research Initiative have led to the Bornean Orangutan now being recognised as Critically Endangered on the Red List of Threatened Species. In an effort to save them, the team has revealed the importance of banning illegal hunting activities and expanding protected forests.

People living peacefully with the forest = forest still here with all its animals + abundant plant life = mutual respect = happy, economically fulfilling lives without clearing the forests. This is not a dream: this is our choice.

This is the message the UQ-Borneo Futures Research Initiative (UQBFRI) wishes to convey to the 19 million people of Borneo, the world's third largest island and home to at least 1600 animal and 14,400 plant species.

And through careful documenting of the impact of forest and wildlife management – spanning the fields of taxonomy, genetics, ecology, land use economics, conservation planning and development policy – their message seems to be getting through.

Australian Eureka Award winner Professor Kerrie Wilson from the School of Biological Sciences puts science into practice every day with Borneo Futures founder Professor Erik Meijaard, advising government and industry on the best ways to conserve Borneo's natural resources that, in turn, improves human wellbeing.

"Using a structured, scientific approach, we have developed evidence-based decision support tools that can be applied to a broad range of land management strategies," she says.

"We work with local communities as well as more than 70 multi-disciplinary agencies world-wide to analyse the impact of Borneo's legal system; investigate the social, economic

and ecological behaviours of the island's inhabitants; and communicate our findings through media and academic journal outlets," says Professor Meijaard.

But why Borneo in particular?

"We found that Borneo, despite being home to three countries (Indonesia, Malaysia and Brunei) and having a rich and diverse cultural and environmental heritage – including 17 major ethnic groups – is one of the most understudied regions in the world," says Professor Wilson.

"Yet, together with Indochina, it's the evolutionary cradle for much of South-East Asia's biodiversity, featuring tropical ecosystems that range from mountain rainforests and lowland forests to peat swamps, mangroves and coral reefs.

"Borneo's health and prosperity affect those way beyond its borders, so we must encourage the strengthening of its natural resource policy and planning and ensure the most effective actions are carried out. This is especially important when the island is faced with threats from intensive logging, oil palm and timber plantations, mining, small-scale agricultural development and forest fires that could destroy its resources forever.

"Restoring and maintaining thriving ecosystems, natural resources and species across the tropics can only support the delivery of ecosystem services that citizens rely on for livelihoods, economic development and human health," says Professor Erik Meijaard

The innovative applied research pioneered by UQBFRI is fundamental to ensuring that the knowledge, tools and skills exist for achieving this vision. Because planning for Borneo's landscapes needs to incorporate diverse social and environmental issues, the research team has developed new approaches to spatial planning that clarify the trade-offs and synergies of social and environmental objectives, and can suggest a diverse range of sustainable land use activities of benefit to the wider community.

And its impact is huge.

UQBFRI's recent discovery that the island has lost 29,000 orangutans over the past ten years due to hunting and land mismanagement has caused the International Union for the Conservation of Nature (IUCN) to downgrade the status of the Bornean Orangutan to Critically Endangered on the Red List of Threatened Species. At a local scale, the UQBFRI have been working on the ground to mitigate this loss. As an example, they have saved 150 orangutans by applying their research principles for landscape management to an oil palm plantation and ensuring that remaining habitat would not be deforested.

The Initiative has also had success convincing the Indonesian government to change its policies on setting fires to clear land after analysing the health and environmental impact of massive uncontrolled fires on the island in 2015.

"When more than 500,000 people read our article in the *Jakarta Globe* on Indonesia's fire crisis being the biggest environmental

crime of the century, the government quickly realised the huge cost to the Indonesian economy and was forced to rapidly reform its policy on starting fires, and followed this with investigating and prosecuting offenders,” says Professor Meijaard.

The team suggests that the island's three countries work together under binding agreements to achieve the most cost-effective and environmentally sensitive land-use solutions; for example, having joint targets for not clearing all lowlands where elephants and orangutans live, or planting trees in such a way that logging practices will be minimally disruptive.

With Professor Meijaard being based in Indonesia, along with co-founder Dr Marc Ancrenaz and Indonesian postdoc Dr Truly Santika, the Initiative has a local team to draw attention to issues of most pressing need and ‘fact-check’ on the ground. The team back in Brisbane, headed by Professor Wilson, focuses more on spatial data – analysing whether the benefits, for example, of increasing oil-palm and timber plantations by 7.1 million hectares over the next 20 years outweigh the costs of a 30 per cent decline in forests and associated social conflict, loss of environmental services and reduced food security.

“We believe that having a better knowledge of the economic costs of forest loss and degradation will inform government plans for greener, more sustainable development,” says Professor Wilson.

“We focus on quantifying the impacts of flooding on agricultural production, the impacts of temperature increases due to deforestation on agricultural yields and human health, the impacts of deforestation on non-timber forest products, and costs associated with air pollution. Our earlier research indicates that these costs are the main concerns of people in Borneo when considering the environmental impacts of deforestation.”

The team is currently looking at five projects, all of which use mathematical mapping techniques to compare what’s happening in Borneo at present with a range of possible alternatives for the future.

“Our research is strongly interdisciplinary, focusing on the best way to allocate restoration investment across multiple ecosystems; how to integrate watershed ecosystem services into landscape planning; what the trade-offs are for carbon, biodiversity, and livelihoods in Central Kalimantan; planning for REDD+ across Kalimantan; and quantifying the benefits

and costs of different types of protected forests, including community forest areas,” says Professor Meijaard.

The ultimate goal is to demonstrate to the people of Borneo that they do indeed have a choice about whether or not to clear land indiscriminately, and that they can live at peace with the forest yet still benefit economically.

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Orangutans

The International Union for the Conservation of Nature (IUCN) has now officially classified orangutans in Borneo as **Critically Endangered**, which is only one step away from being extinct in the wild. Borneo Futures scientists have proven that, if the Indonesian and Malaysian governments’ development plans proceed as predicted, by 2025 the orangutan population will have dropped by 80 per cent since 1950.

Three main reasons can explain this dire situation: the decline of the orangutan’s natural habitat, the forest; changing landscapes; and hunting. Together with its low reproduction rate – only one offspring every six to eight years – the future does not look bright unless some intervention occurs.

Hunting is currently the biggest concern for ‘the man of the forest’ with between 2000 and 3000 individuals killed each year for meat, traditional medicine, the pet trade or for destroying people’s crops.

Borneo Futures suggests that we can save the orangutans in two ways, either by protecting the individuals, or protecting their habitat. In other words, ban hunting or save the forests.

Photo: Bornean Orangutan in the wild (credit: Professor Erik Meijaard)

Timeline:

2008: Professor Wilson begins post-doctoral research on conservation as an ARC Research Fellow

2010: Professor Erik Meijaard and Dr Marc Ancrenaz establish the Borneo Futures Initiative

2011: The Australian Research Council Centre of Excellence for Environmental Decisions (CEED) is established at UQ as the world’s leading research organisation for solving environmental management problems and evaluating the outcomes of environmental actions

2012: Professor Wilson is awarded an ARC Future Fellowship and establishes the Wilson Conservation Ecology Lab at UQ focusing on applied conservation resource allocation problems, such as where to invest limited resources to protect or restore biodiversity

2013: Professor Wilson wins Australian Museum Eureka Prize for Outstanding Young Researcher for her work on the best way to spend conservation dollars, saying that targeted spending provides better value for protecting species

2015: Professor Wilson wins Women in Technology Life Sciences research award

2016: PhD student Rebecca Runting is awarded best paper at the Society for Conservation Biology Oceania conference for the research ‘Alternative futures for Borneo show the value of integrating economic and conservation targets across borders’, published in *Nature Communications*

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