

Conservation Province: Using Science for Policy Making in West Papua Province, Indonesia

Charlie D. Heatubun

*Badan Penelitian & Pengembangan Provinsi Papua Barat,
Universitas Papua, The Royal Botanic Gardens Kew,
IUCN Species Survival Commission – the Palm Specialist Group
& the Fresh Water Plant Specialist Group.*





“Contribution of biodiversity, forest and climate research to the implementation of sustainable development in West Papua Province, Indonesia”

Introduction to West Papua Province:

Facts:

- **Tanah Papua (Indonesia Provinces of Papua & West Papua) with total area 416.129 km² is very rich in Biodiversity and cultures.**
- **Lowest Human Development Index (HDI/IPM) in Indonesia.**
- **Acceleration of development process to increase economy and people welfare with environment consequences.**
- **Conservation Province Initiative and Sustainable Development Policy.**

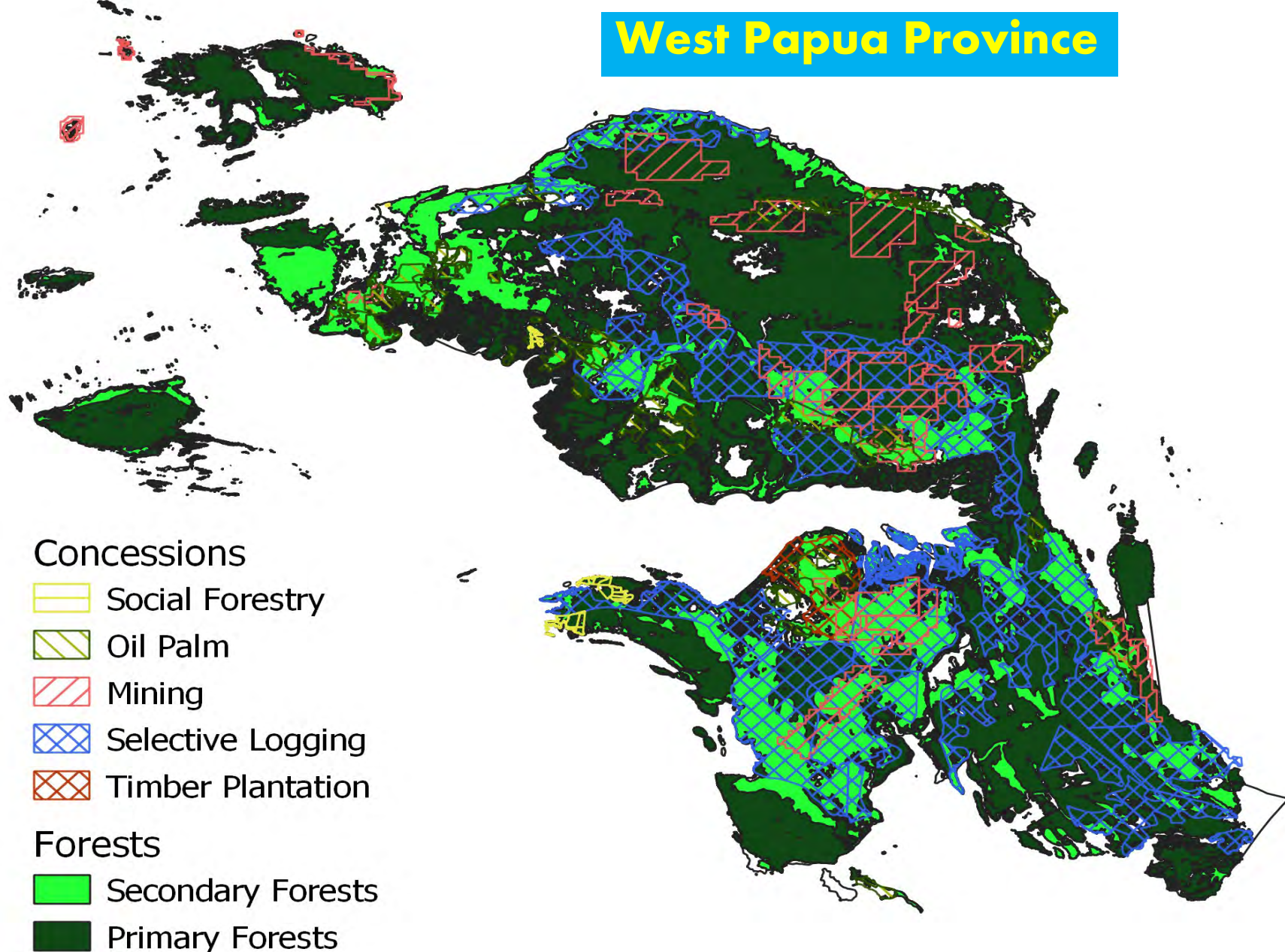
Development of Infrastructures & Palm Oil Plantation:



Logging & Palm Oil Concession 2013:



West Papua Province



Map Source: WRI Indonesia (2019)

What the Scientific tell about (recent publications):

Article

New Guinea has the world's richest island flora


<https://doi.org/10.1038/s41586-020-2549-5>

A list of authors and their affiliations appears at the end of the paper.

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Published online: 05 August 2020

 Check for updates

New Guinea is the world's largest tropical island and has fascinated naturalists for centuries^{1,2}. Home to some of the best-preserved ecosystems on the planet³ and to intact ecological gradients—from mangroves to tropical alpine grasslands—that are unmatched in the Asia-Pacific region^{4,5}, it is a globally recognized centre of biological and cultural diversity^{6,7}. So far, however, there has been no attempt to critically catalogue the entire vascular plant diversity of New Guinea. Here we present the first, to our knowledge, expert-verified checklist of the vascular plants of mainland New Guinea and surrounding islands. Our publicly available checklist includes 13,634 species (68% endemic), 1,742 genera and 264 families—suggesting that New Guinea is the most floristically diverse island in the world. Expert knowledge is essential for building checklists in the digital era: reliance on online taxonomic resources alone would have inflated species counts by 22%. Species discovery shows no sign of levelling off, and we discuss steps to accelerate botanical research in the 'Last Unknown'⁸.

(Camara-Leret *et. al.*
Nature (2020)

Camara-Leret *et. al.*
Science Advances
(2019).

SCIENCE ADVANCES | RESEARCH ARTICLE

APPLIED ECOLOGY

Climate change threatens New Guinea's biocultural heritage

R. Cámara-Leret^{1,2*}, N. Raes^{3,4}, P. Roehrdanz^{2,5}, Y. De Fretes⁶, C. D. Heatubun^{7,8,9}, L. Roebler⁷, A. Schuiteman⁷, P. C. van Welzen^{3,10}, L. Hannah^{2,5}

New Guinea is the most biologically and linguistically diverse tropical island on Earth, yet the potential impacts of climate change on its biocultural heritage remain unknown. Analyzing 2353 endemic plant species distributions, we find that 63% of species are expected to have smaller geographic ranges by 2070. As a result, ecoregions may have an average of -70 ± 40 fewer species by 2070. Species with future geographic range contractions include 720 endemic plant species that are used by indigenous people, and we find that these will decrease in 80% of New Guinea's 1030 language areas, with losses of up to 94 species per language area. To mitigate the threats of climate change on the flora, we identify priority sites for protected area expansion that can jointly maximize biodiversity and useful plant conservation.

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Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

Forest loss in Indonesian New Guinea (2001–2019): Trends, drivers and outlook

David L.A. Gaveau^{a,*}, Lucas Santos^{b,c}, Bruno Locatelli^d, Mohammad A. Salim^a, Husnayaen Husnayaen^a, Erik Meijaard^{e,f}, Charlie Heatubun^{g,h,i}, Douglas Sheil^{j,k}

^a TheTreeMap, Bagadou Bas, 46600 Martel, France

^b Department of Earth System Science, University of California, Irvine, CA, USA

^c Instituto de Pesquisa Ambiental da Amazônia, Brasília DF 71.503-5

^d CIRAD Forests and Societies, Univ Montpellier, 34398 Montpellier,

^e Borneo Futures, Bandar Seri Begawan, Brunei Darussalam

^f Durrell Institute of Conservation and Ecology, University of Kent, Cc

^g Royal Botanic Gardens, Kew, Richmond, Surrey TW93AE, UK

^h Fakultas Kehutanan, Universitas Papua, Jl. Gunung Salju, Amban, .

ⁱ Badan Penelitian dan Pengembangan Daerah Provinsi Papua Barat, J

^j Department of Ecology and Natural Resource Management (INA), N

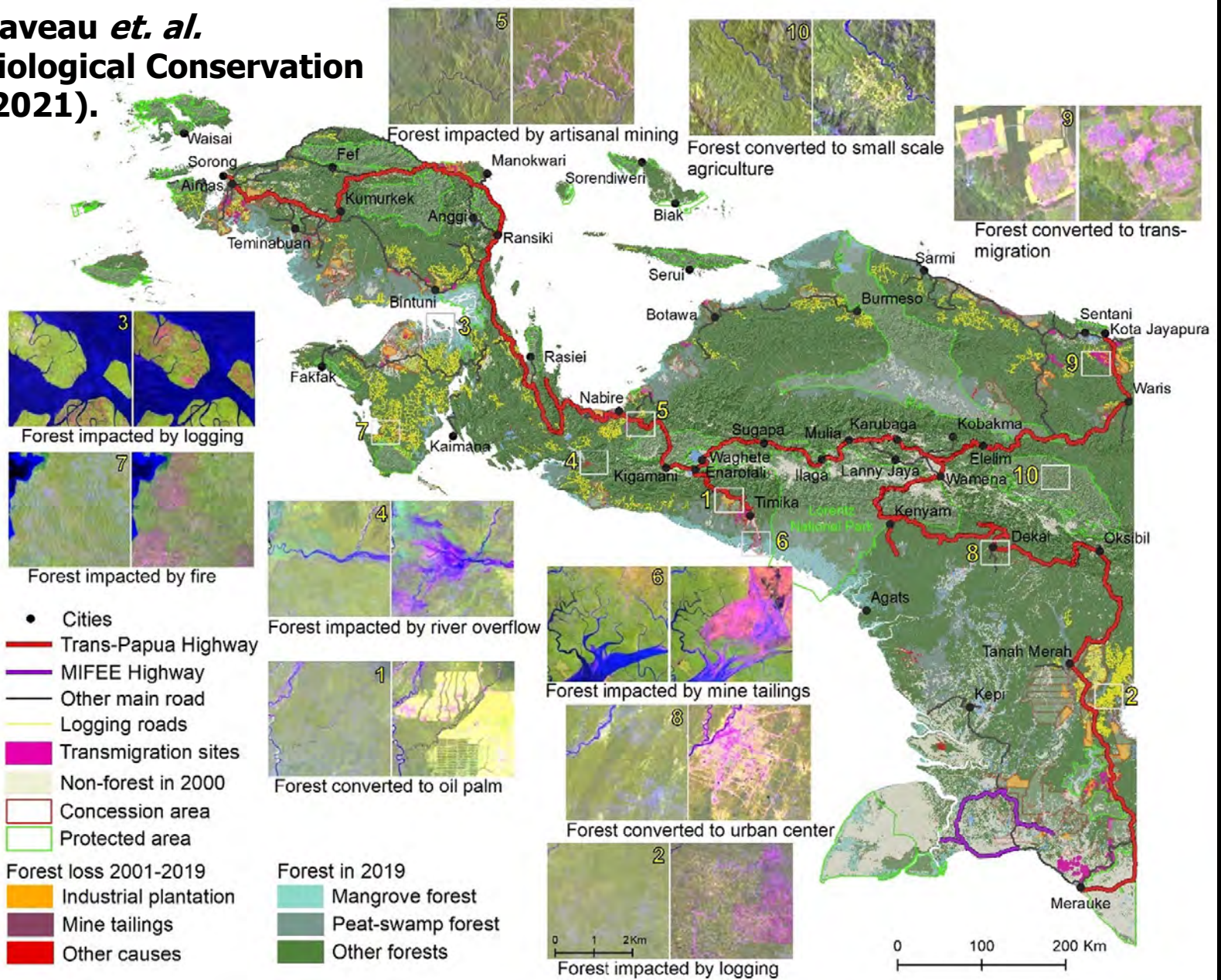
^k Forest Ecology and Forest Management Group, Wageningen Univers

A B S T R A C T

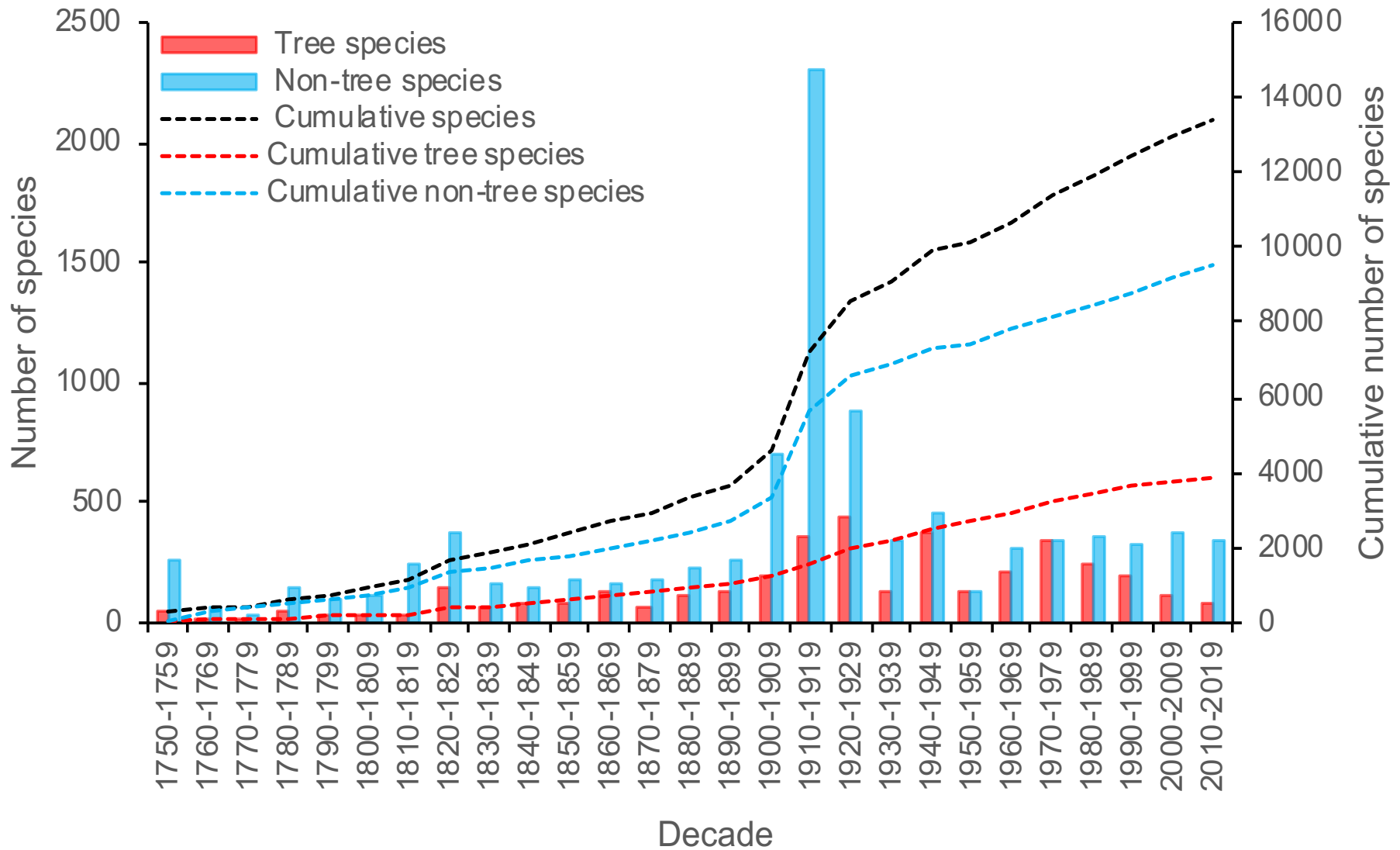
The rich forests of Indonesian New Guinea are understudied and threatened. We used satellite data to examine annual forest loss, road development and plantation expansion from 2001 to 2019, then developed a model to predict future deforestation. No previous studies have attempted such a detailed assessment of past and future deforestation. In 2019, 34.29 million hectares (Mha), or 83% of Indonesian New Guinea, supported old-growth forest. Over nineteen years, 2% (0.75 Mha) were cleared: 45% (0.34 Mha) converted to industrial plantations, roads, mine tailings, or other uses near cities; 55% (0.41 Mha) cleared by transient processes including selective natural timber extraction, inland water bodies-related processes, fires, and shifting agriculture. Industrial plantations expanded by 0.23 Mha, with the majority (0.21 Mha; 28% of forest loss) replacing forests and reaching 0.28 Mha in 2019 (97% oil palm; 3% pulpwood). The Trans-Papua Highway, a ~4000 km national investment project, increased by 1554 km. Positive correlations between highway and plantations expansion indicate these are linked processes. Plantations and roads expanded rapidly after 2011, peaked in 2015/16, and declined thereafter. Indonesian government allocated 2.62 Mha of land for the development of industrial plantations (90% oil palm 10% pulpwood) of which 74% (1.95 Mha) remained forest in 2019. A spatial model predicts that an additional 4.5 Mha of forest could be cleared by 2036 if Indonesian New Guinea follows similar relationships to Indonesian Borneo. We highlight the opportunities for policy reform and the importance of working with indigenous communities, local leaders, and provincial government to protect the biological and cultural richness still embodied in this remarkable region.

Gaveau *et. al.* Biol. Conserv. (2021).

**Gaveau *et al.*
Biological Conservation
(2021).**

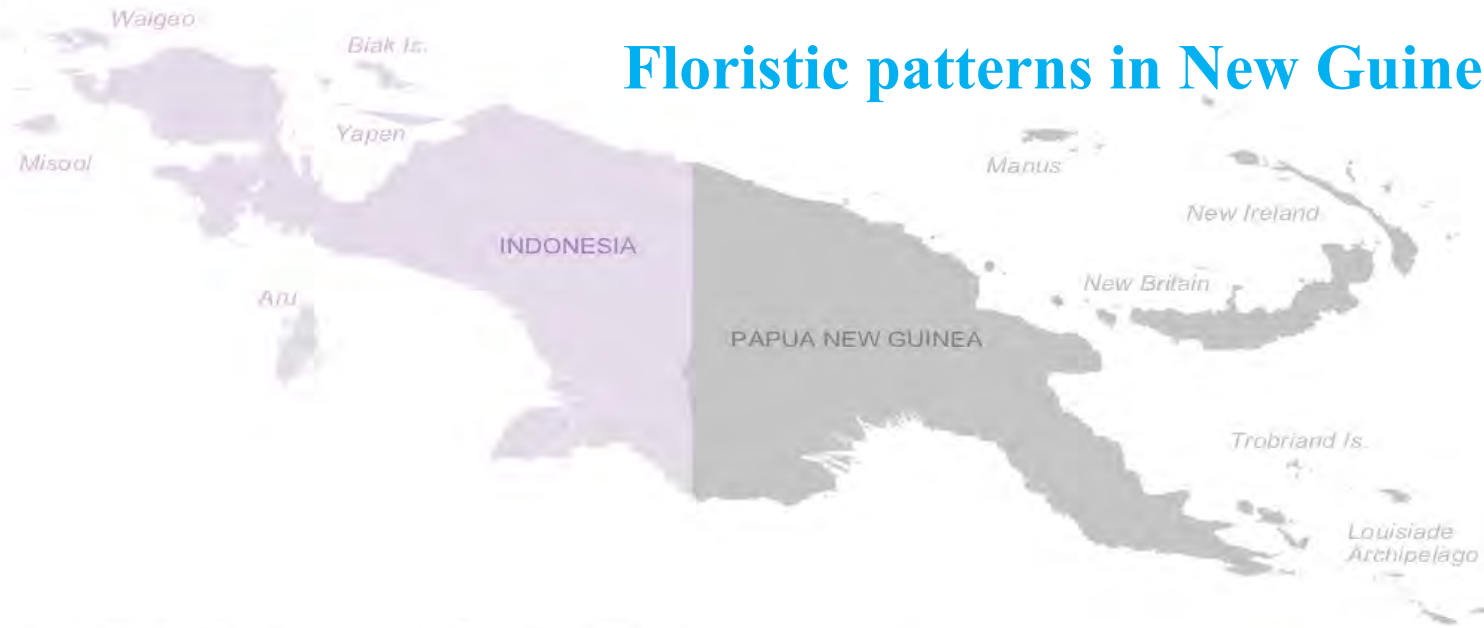


Species Described per Decade in New Guinea



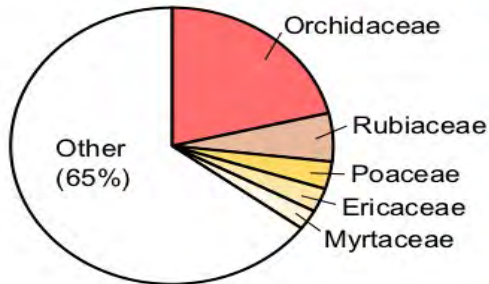
The number of plant species (basionyms) described per decade from 1753 to 2018 —grouped into trees (red bars) or non-tree species (blue bars)— and the cumulative number of accepted tree (red line), non-tree (blue line) and total species (black line). Camara-Leret, *et. al.* Nature (2020).

A

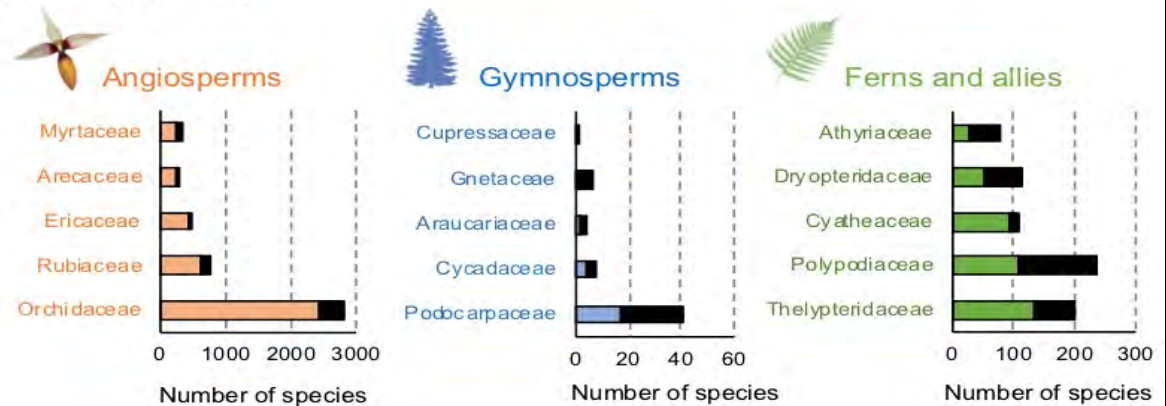


Floristic patterns in New Guinea

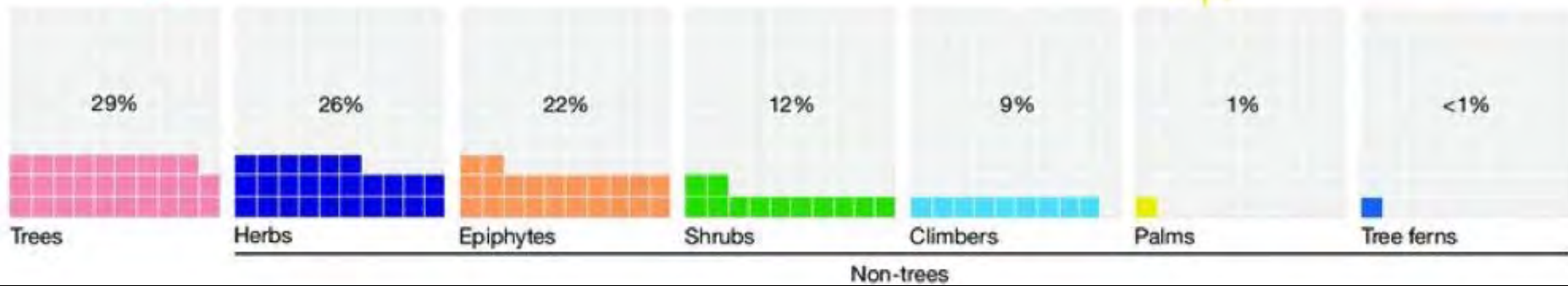
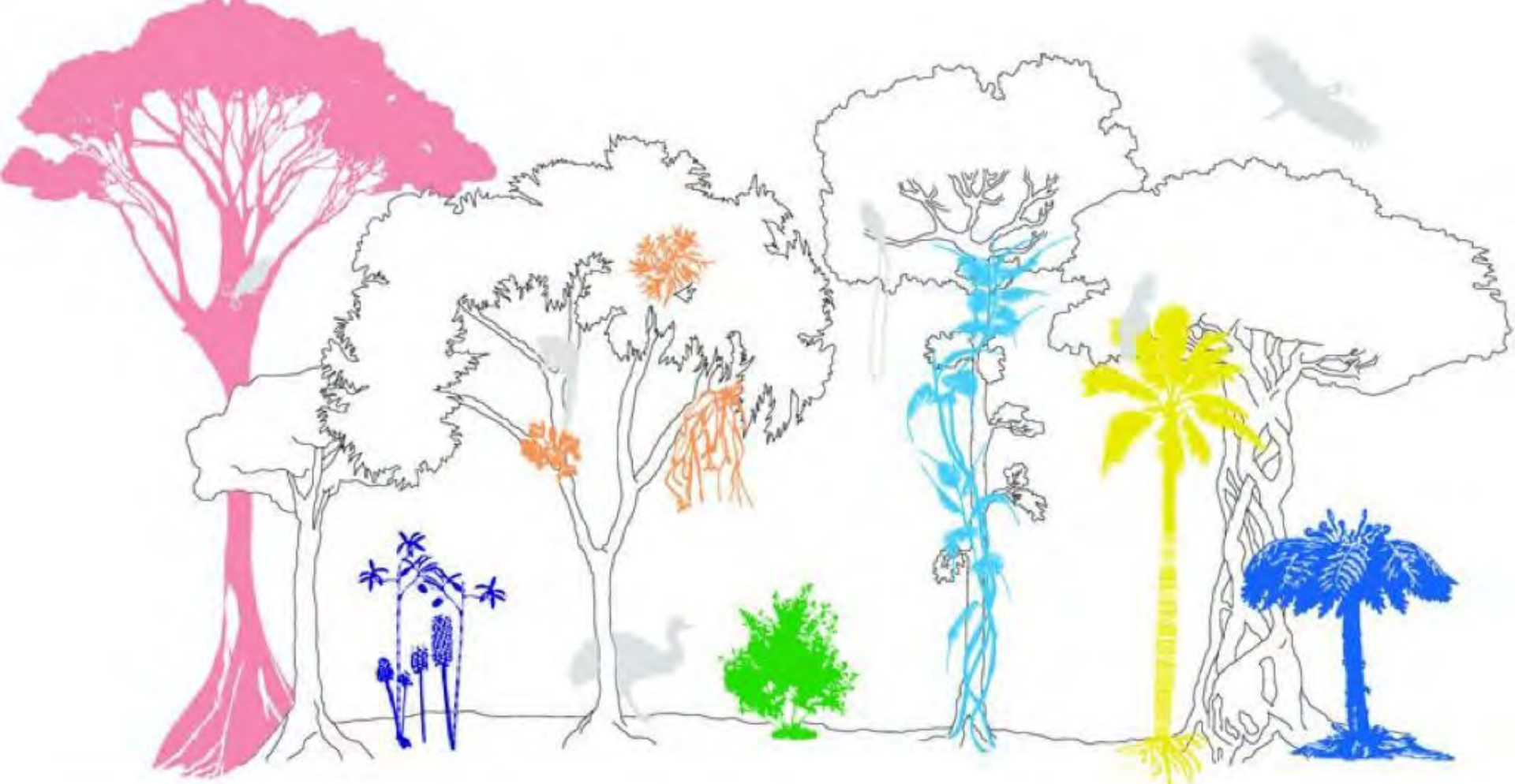
B Species diversity



C Endemism

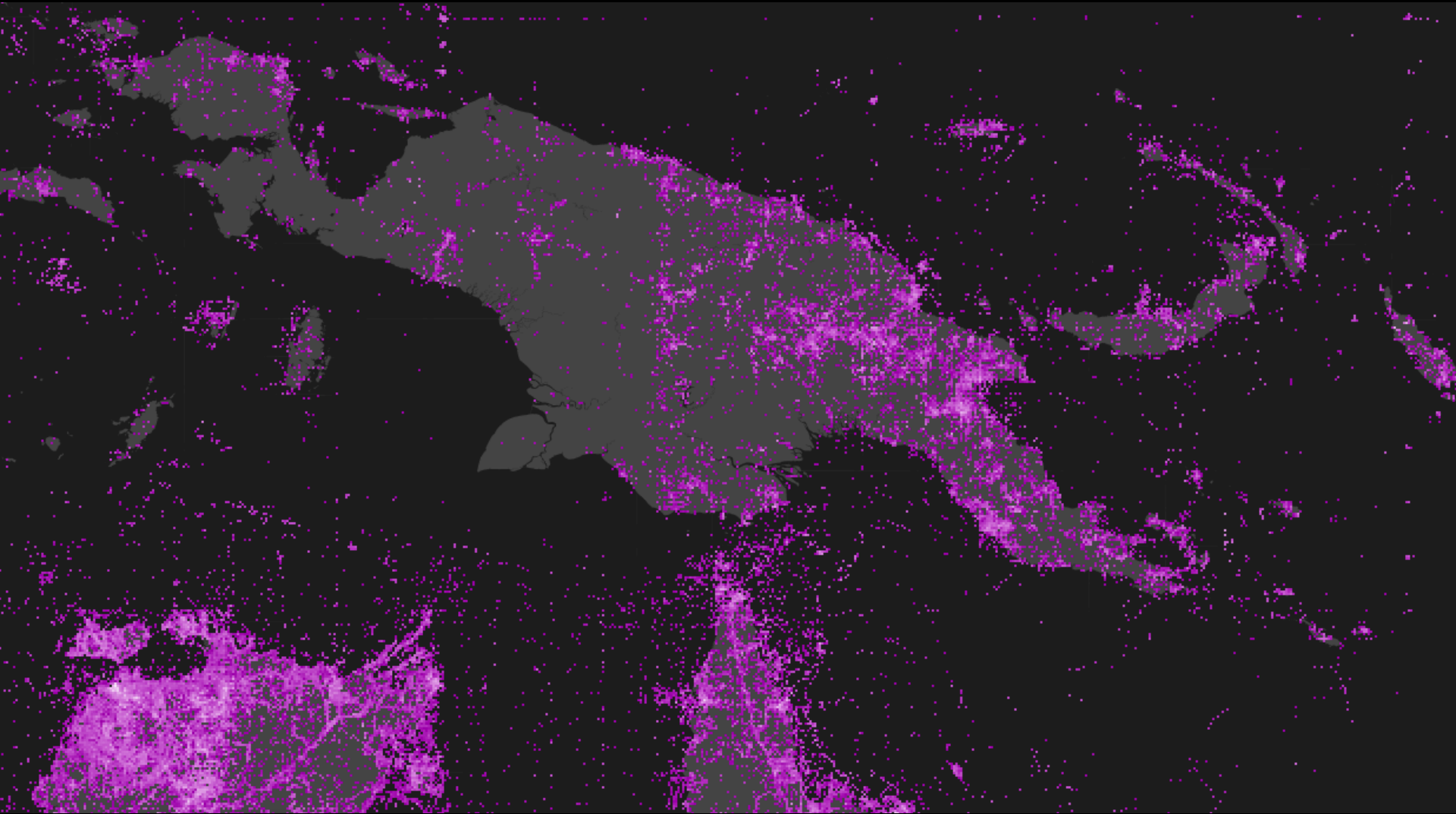


B. The five plant families that contain 35% of the flora. C. Families with highest species endemism in angiosperms (orange), gymnosperms (blue), and ferns and lycophytes (green). Black bars depict the number of non-endemic species. (Camara-Leret *et. al.* Nature (2020).



(Camara-Leret *et. al.* Nature (2020).)

Source of Natural History Data (GBIF 2013):





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Article

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Areca jokowi: A New Species of Betel Nut Palm (Arecaceae) from Western New Guinea

CHARLIE D. HEATUBUN^{1,2}

¹Fakultas Kehutanan, and Pusat Penelitian Keanekaragaman Hayati, Universitas Papua, Jl. Gunung Salju, Amban, Manokwari 98314, Papua Barat, Indonesia

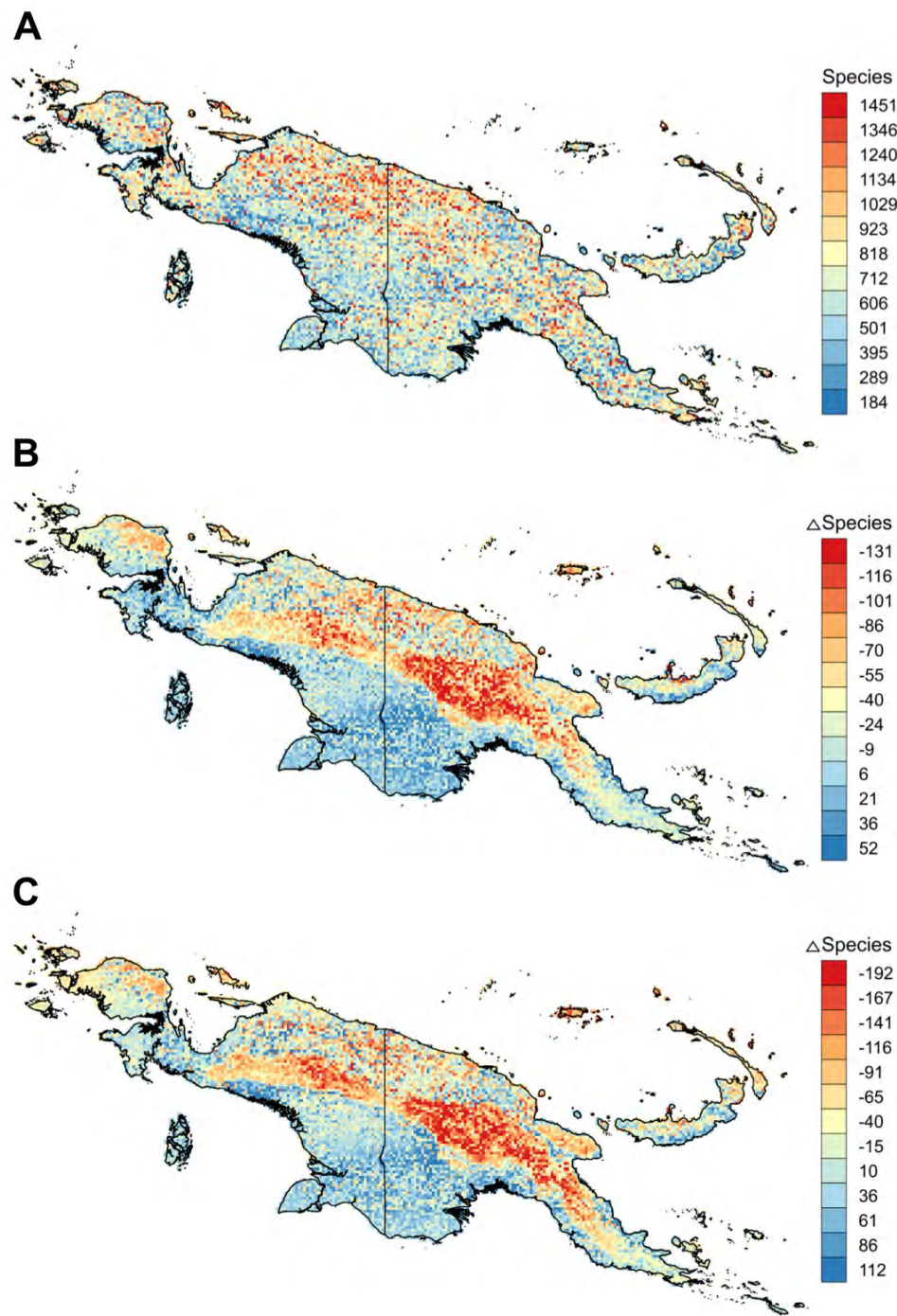
²Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, United Kingdom

Email: charlie_deheatboen@yahoo.com

Abstract

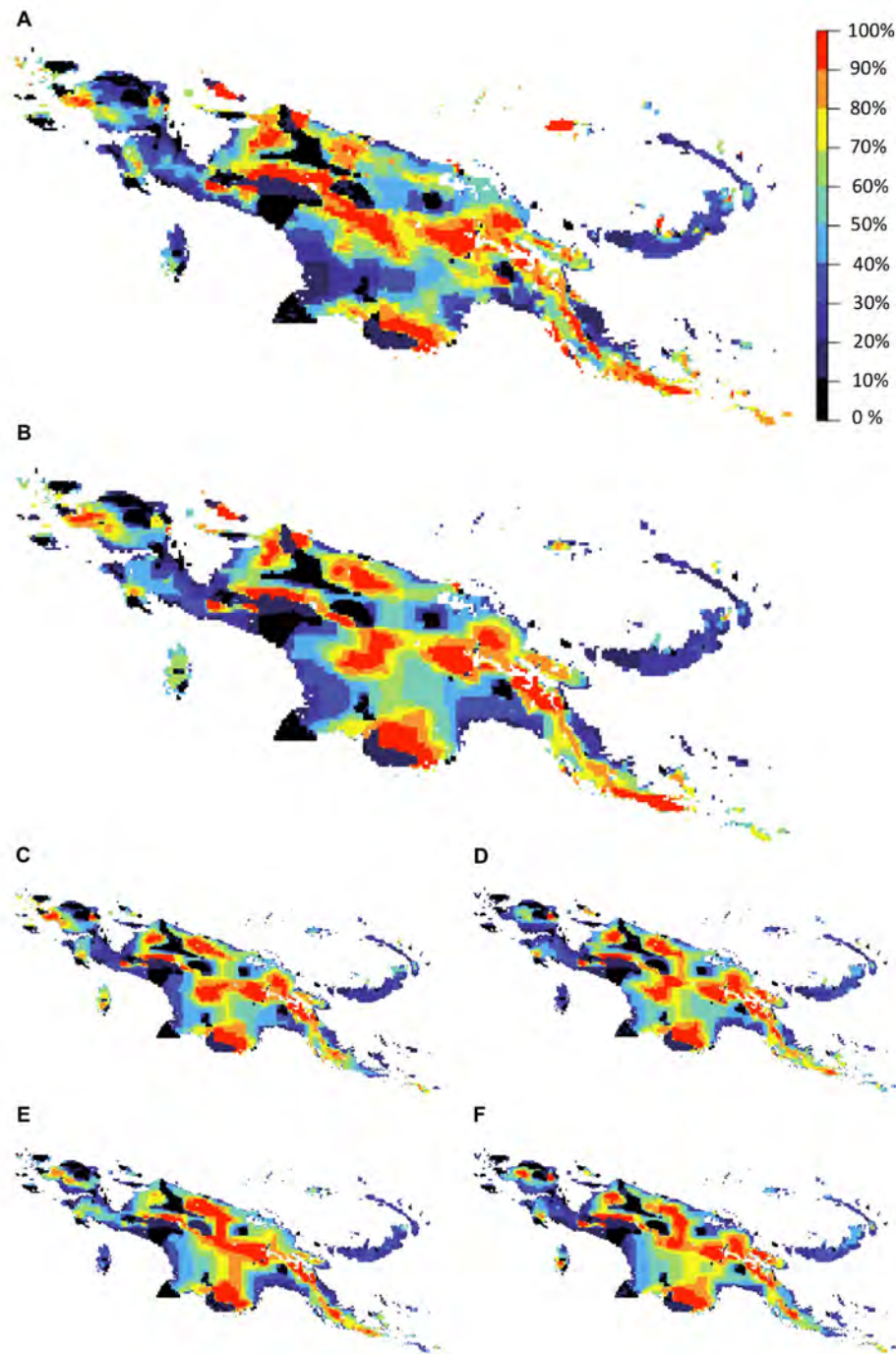
A new species of betel nut palm, *Areca jokowi*, is described and illustrated here. This is the third species of *Areca* to have been described recently from New Guinea that is closely related to the widespread, economically important species *A. catechu*, the cultivated betel nut palm. A discussion of its morphological characters, distribution, ecology, habitat, uses and conservation status is provided, as well as a new identification key for western New Guinean *Areca*.

Key words: Arecaceae, Palmae, palms, New Guinea, taxonomy



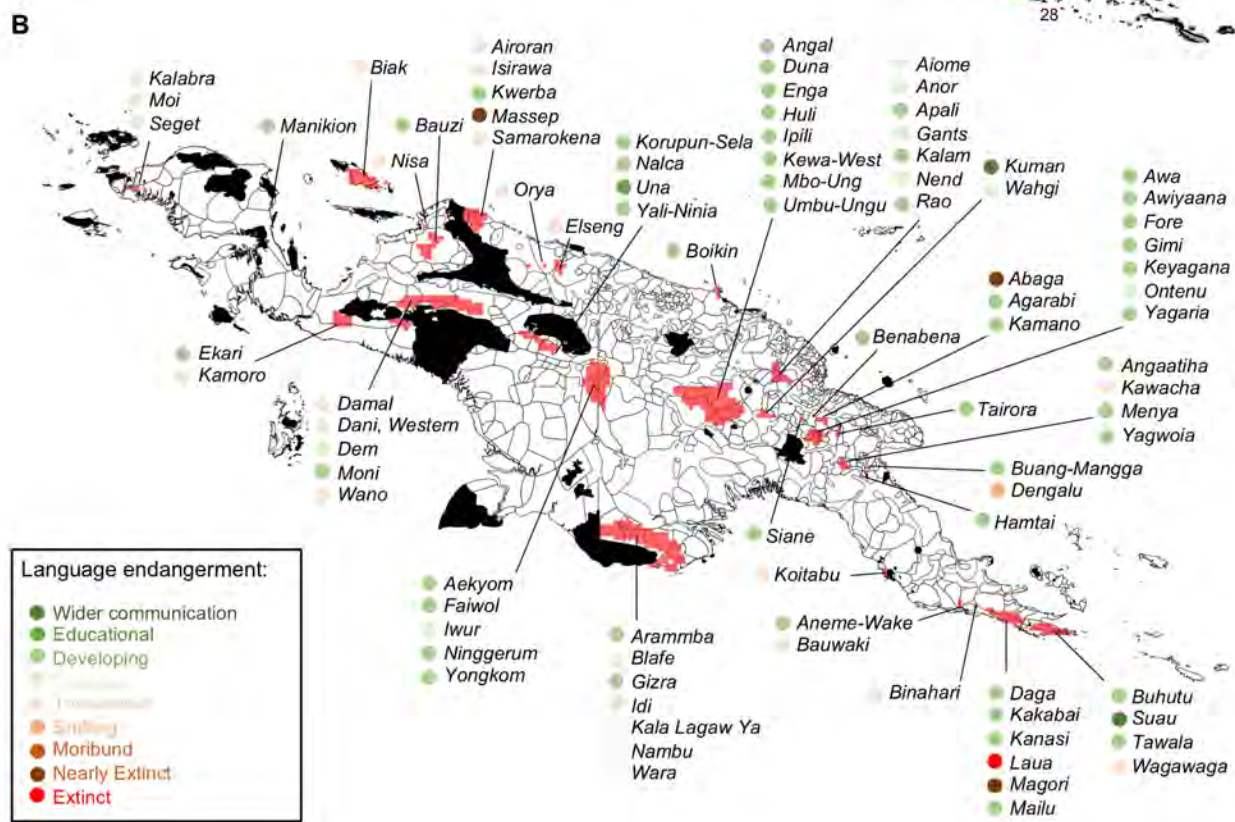
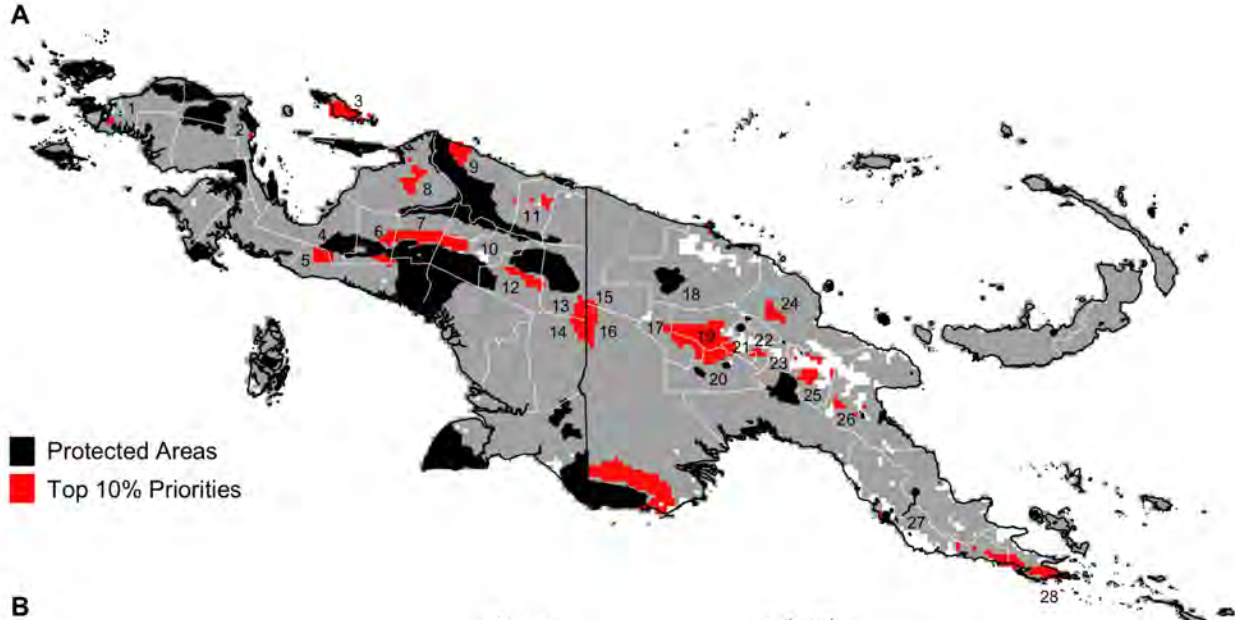
Endemic plant species richness (number of species per grid cell) in the face of climate change. Species richness under current climate (A), and difference in species richness between current climate and 2070 RCP 2.6 (B) and 2070 RCP 8.5 (C).

Camara-Leret *et. al.* Science Advances (2019).



Spatial conservation priorities for endemic plants in the face of climate change. All endemic plants ($n = 2353$ species) (A), all endemic useful plants ($n = 720$ species) (B), and subset of useful plants for construction ($n = 374$) (C), culture ($n = 271$) (D), food ($n = 162$) (E) and medicine ($n = 187$) (F).

**Camara-Leret *et. al.*
Science Advances
(2019).**



Congruence in 2070 spatial conservation priorities for all endemic and useful plants. Numbers indicate administrative units of Indonesian New Guinea and Papua New Guinea containing the top 10% solutions: 1, Sorong; 2, Manokwari; 3, Biak Numfor; 4, Nabire; 5, Mimika; 6, Paniai; 7, Puncak Jaya; 8, Waropen; 9, Sarmi; 10, Jayawijaya ; 11, Jayapura; 12, Yahukimo; 13, Pegunungan Bintang; 14, Boven Digoel;

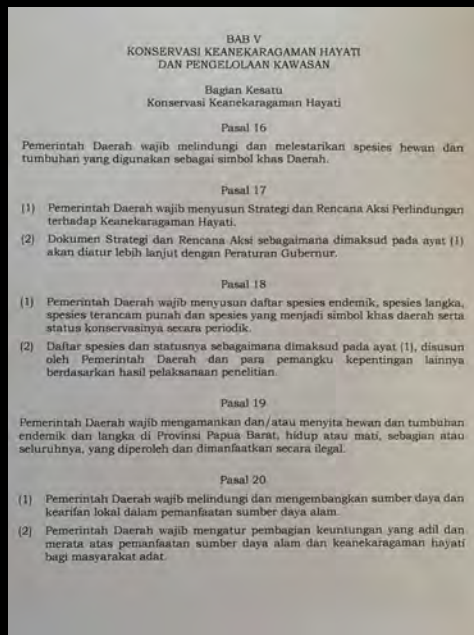
Camara-Leret *et. al.* Science Advances (2019).

Milestones for sustainable Development in West Papua Province, Indonesia:



Declaration of West Papua as the first Conservation Province in Indonesia 2015 and followed by Manokwari Declaration 2018.

A commitment of all stakeholders to protect and preserve minimum 70% of forest covers and 50% sea and coastal area in West Papua – increase the protected areas.



Special Regional Regulation (PERDASUS) No. 10 / 2019 about Sustainable Development in West Papua Province.

Special Section: The economies, ecologies and politics of social forestry in Indonesia
Policy Forum

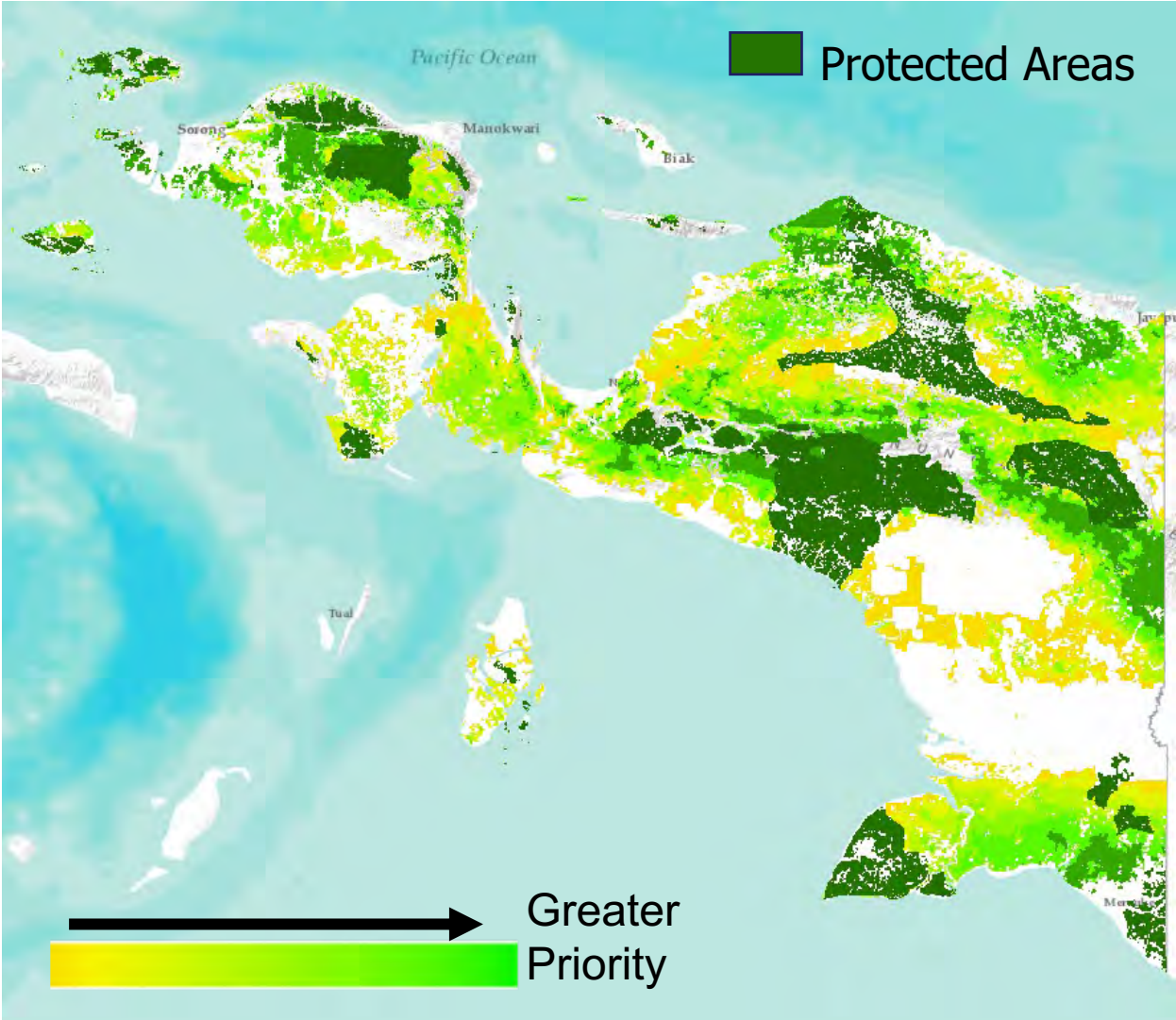
The Manokwari Declaration: Challenges ahead in conserving 70% of Tanah Papua's forests



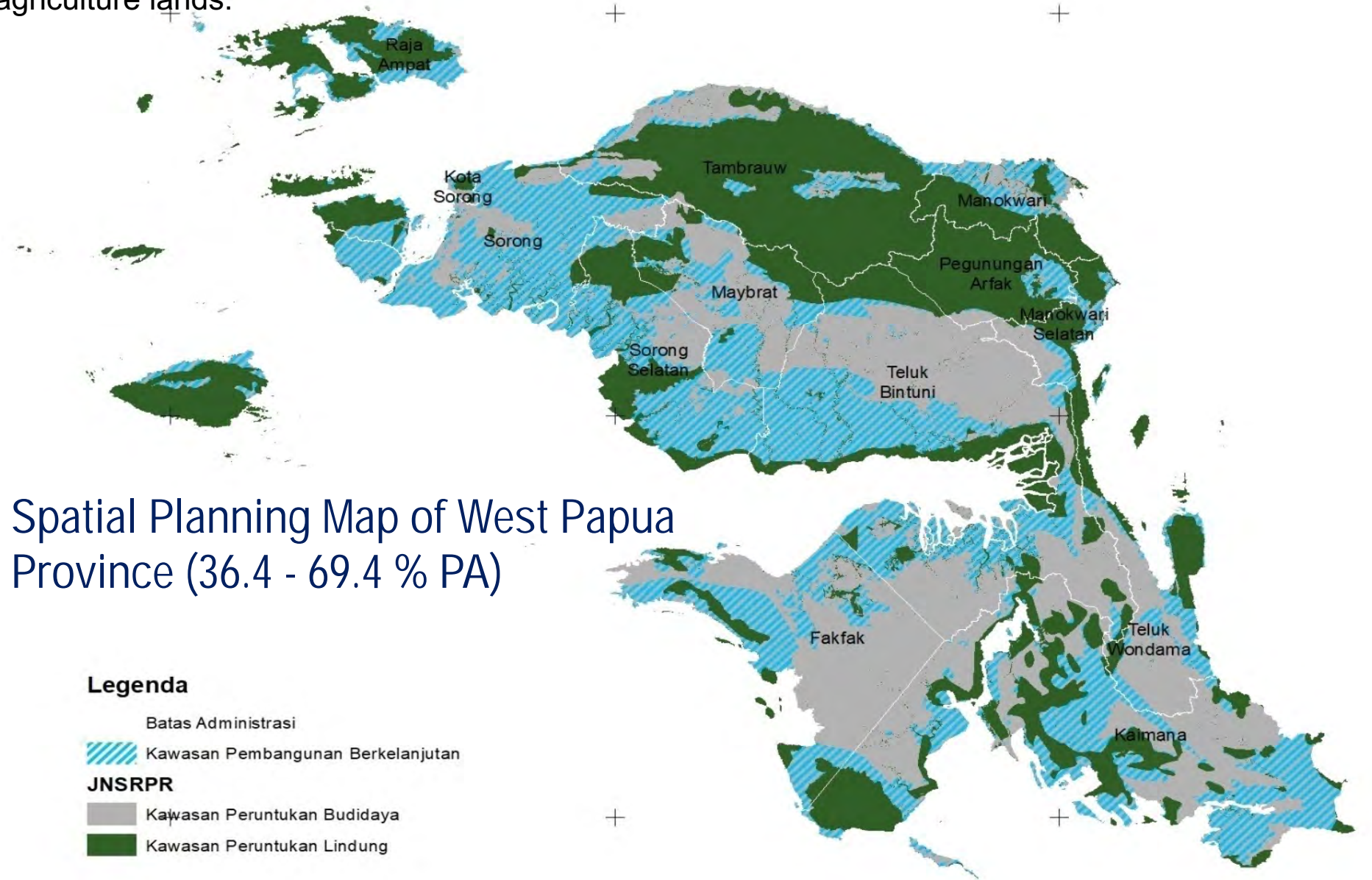
Rodrigo Cámara-Leret^{1*}, Andre Schuiteman¹, Timothy Utteridge¹, Gemma Bramley¹, Richard Deverell¹, Larry A. Fisher², Jonathan McLeod³, Lee Hannah^{4,5}, Patrick Roehrdanz^{4,5}, Timothy G. Laman^{6,7}, Edwin Scholes⁷, Yance de Fretes⁸, Charlie Heatubun^{1,9,10}

West Papua Conservation Priorities under Climate Change

1,500 Endemic Plants (RCP8.5)



Sustainable Development Areas are provincial administrative government areas that carry out development by applying the principles of forest protection and conservation, and the sustainable use of natural resources including biodiversity and which are integrated in special provisions covering disaster-prone areas, watershed (catchment) areas, border areas, and sustainable agriculture lands.

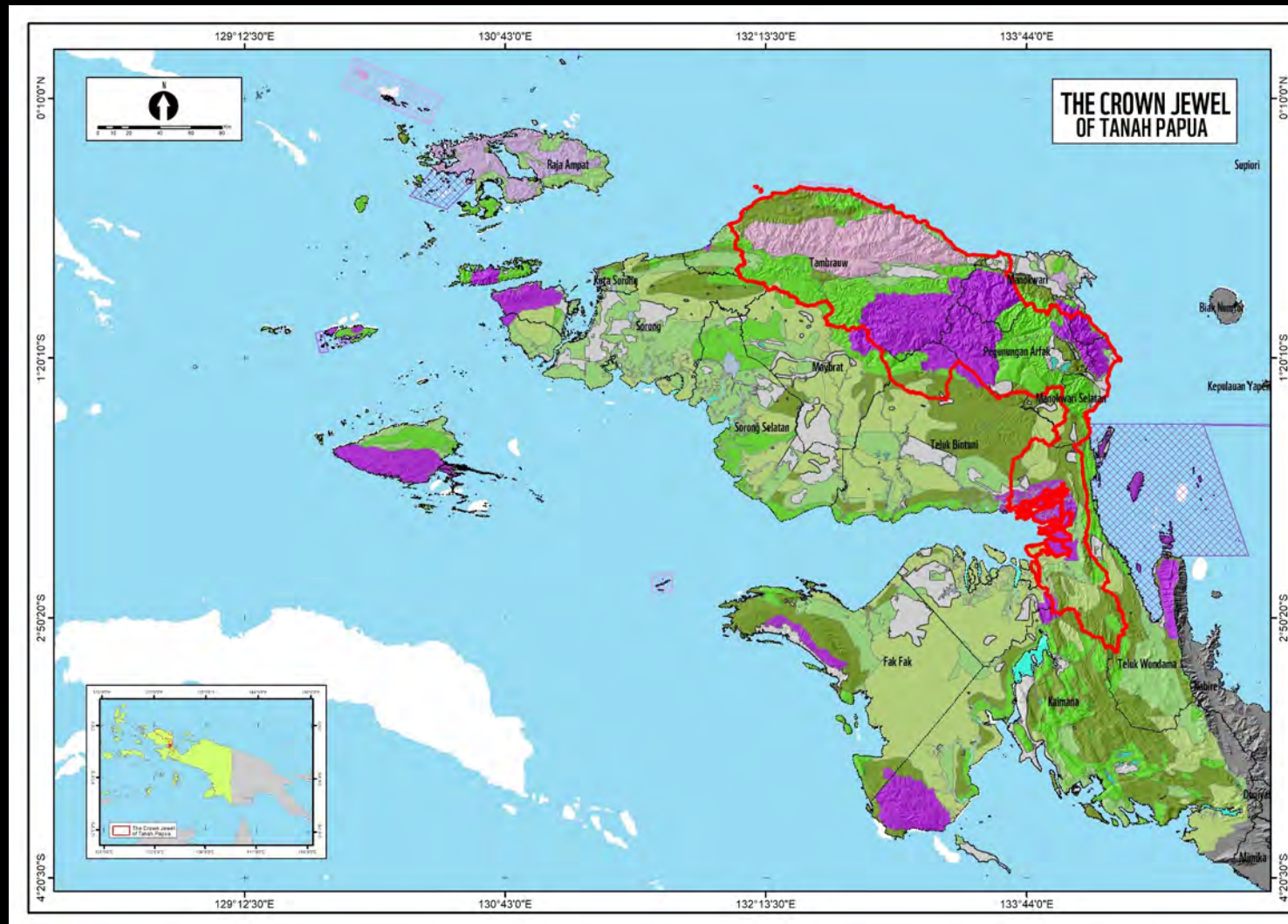


Spatial Planning Map of West Papua Province (36.4 - 69.4 % PA)

- Legenda**
- Batas Administrasi
 - Kawasan Pembangunan Berkelanjutan
 - JNSRPR**
 - Kawaslan Peruntukan Budaya
 - Kawaslan Peruntukan Lindung

The West Papua Province's Strategic Area Functions for Protecting Biodiversity and Adat Communities (2.3 million hectares)

THE CROWN JEWEL OF TANAH PAPUA



West Papua revokes quarter of a million hectares of land from palm oil

Hans Nicholas Jong

1 year ago



More than 200 Indigenous residents march to the office of the South Sorong district head in West Papua province in a protest against palm oil companies and to demand the government to follow up on a license review in the province. Image courtesy of Pusaka.

5 environmental victories from 2021 that offer hope

In a year of seemingly continuous bad news, there are many reasons to be hopeful about the environment.



BY KIERAN MULVANEY

PUBLISHED DECEMBER 9, 2021

12 MIN READ

It's easy to feel despondent about the state of the global environment in 2021. More than a million species are at risk of extinction, levels of carbon dioxide in the atmosphere continue to increase, and the planet was rocked by a series of climate change-fueled extreme weather events. Meanwhile, the world continues to grapple with a deadly pandemic that seems like it will never end.

Indonesia: New chocolate a “pioneer” of green investment in West Papua

📰 News article - 2 Sep 2019

The Indonesian chocolate makers [Pipiltin Cocoa](#) have launched a new addition to their collection: Ransiki 72%. The chocolate bar is made from cocoa sustainably grown in the Ransiki sub-district in the West Papua province of Indonesia and is seen as one of the pioneers for green investment in the region. Ransiki 72% is a result of collaboration between the West Papua Provincial Government, South Manokwari District Government, Pipiltin Cocoa, Cokran Farmers' Cooperative “Eiber Suth” and Yayasan Inisiatif Dagang Hijau (YIDH, or IDH Indonesia).



***“Thank You and
God Bless You All”***

