IPCA
Indo-Pacific Conservation Alliance

Biological and Cultural Diversity in the Indo-Pacific

Perhaps the biologically richest and most culturally diverse region of the planet, the tropical Indo-Pacific is composed of a vast array of tens of thousands of islands, stretching from Indonesia eastward to Polynesia and northward to Micronesia. At its center is the Melanesian island of New Guinea, the world's largest and highest tropical island. Yet today, various activities such as logging, forest conversion for agriculture, and over-exploitation of resources present a serious and increasing threat to the Indo-Pacific's rich trove of biological and cultural diversity.


Sumatran Tiger
Photo courtesy ARKive

The unparalleled richness of Indo-Pacific realm is due to its geographic position at the crossroads of Asia and the Pacific. This is a geologically complex region – the so-called "Pacific Ring of Fire" – that has resulted in an array of biologically and culturally unique island ecosystems and species. In the far western Pacific (Sumatra, Java, Borneo, and Bali) are found an Asian flora and fauna: tigers, elephants, orangutans, monkeys, rhinos, rich dipterocarp forests, and *Rafflesia* flowers (the largest on Earth). Further to the east (in New Guinea, for example), the biota is quite different and unique. No tigers or monkeys are found there, but instead are Australasian species such as tree kangaroos, monotremes (egg-laying mammals), cuscuses, birds of paradise, an amazing profusion of endemic orchids, and Klinki Pines (the world's tallest tropical trees).

Between the two biogeographic regions is Wallacea – named after noted 19th Century explorer and biologist Alfred Russel Wallace, co-discoverer with Charles Darwin of the theory of evolution through natural selection. Wallacea is a zone of mixing between Asian and Australasian floral and faunal elements, but on some islands such as Sulawesi, Nusa Tenggara, and the Moluccas (known as the fabled "Spice Islands" to the explorer Columbus, who was searching for them when he stumbled onto America), are important species found nowhere else, such as the babirusa ("pig-deer") and the Komodo Dragon. In Micronesia to the north, and in other parts of Melanesia to the west lie other important island chains containing other unique animals and plants. Since many of these islands lie such a great distance from other lands, their biota have evolved in isolation, and hence many species are found only on certain islands and nowhere else.


Raggiana Bird of Paradise
(*Paradisaea raggiana*);
© Bruce Beehler


Participant at Goroka Festival, PNG; © Michael Moore

Percentage of Total Global Species	Indonesia	PNG	USA
Mammals *	11%	5%	9%
Birds *	17%	8%	8%
Reptiles *	8%	5%	4%
Amphibians *	6%	5%	5%
Freshwater Fishes *	7%	2%	4%
Insects †	5%	4%	3%
Plants †	15%	8%	7%
Marine Fishes †	22%	22%	5%‡
Marine Invertebrates †	25%	25%	5%‡

*Documented species only. Total actual percentages for many Indo-Pacific taxa are likely higher. †Estimated. ‡ Estimated; Hawai'i only.

While terrestrial floras and faunas are often highly unique to an island or island group, all the Indo-Pacific shares a rich marine diversity – by far the highest and most important on the planet. The area is located at the center of the so-called "Coral Triangle" – the epicenter of global marine diversity. While the entire Caribbean basin has about 60 species of corals, for example, the island of New Guinea has an estimated 700. Despite the Indo-Pacific's unsurpassed biological richness, many species are both rare and in immediate danger of extinction. The number of current extinctions globally and regionally, in fact, rivals that of the end of the Age of Dinosaurs. Species are going extinct thousands of times faster than new ones can evolve.

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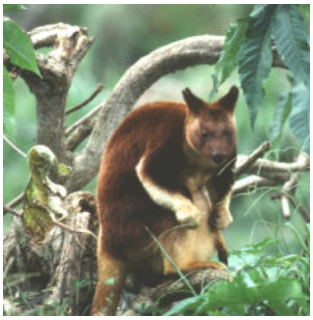


Goodfellow's Tree Kangaroo (*Dendrolagus goodfellowi*), Papua New Guinea; © Bruce Beehler

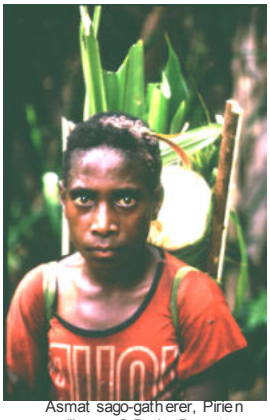
The problem of biodiversity loss is especially significant because of its irreversibility: once a species is gone, it is truly lost forever. Given the increasing scale and scope of current threats such as logging, agricultural expansion, and increasing demo-graphic pressures on natural resources, new conservation strategies are clearly necessary if biodiversity in the Indo-Pacific is to be protected. Unfortunately, zoos can't protect every species, nor can it even protect any single species indefinitely.

Total Number of Species	*Indonesia*	*PNG*	*USA*
*Mammals **	515	242	428
*Birds **	1,531	762	768
*Reptiles and Amphibians **	781	505	455
*Freshwater Fishes **	1,400	214	790
Insects †	300,000	200,000	160,000
Plants †	37,000	25,000	18, 956
Marine Fishes †	3500+	3,000+	700
Marine Invertebrates †	15,000+	15,000+	3,615

**Documented species only. Total actual numbers for many Indo-Pacific taxa is likely to be higher. †Estimated. ‡Hawaii only.*

Integrally linked to the biodiversity of the region is the extraordinary cultural diversity of the Indo-Pacific. The democratic nation of Papua New Guinea has 817 distinct ethnic groups – which makes it, despite its relatively small size, easily the most culturally diverse country on the planet. Indonesia is similarly rich, possessing at least 712 distinct ethnic groups, and the rest of the Indo-Pacific (Micronesia, Polynesia, and Melanesia) contains another 263 ethno-linguistic groups. This diversity is a source of vitality and strength, but it also requires of conservation a keen sensitivity to local and national complexities and perspectives.

The cultural integrity of many traditional communities is closely linked with biodiversity conservation. Traditional uses of forest and marine resources are consistent with effective conservation management, and indeed, conservation can't succeed without the support of local communities. Moreover, there are essential, if under-appreciated, links between economies and the environment. Biodiversity – the sum total of genes, species, ecosystems, and ecological processes – is the "natural capital" upon which the wealth and prosperity of societies and economies are ultimately based. The ecosystem services provided by biodiversity include purification of water and air, pollination of crops and other plants, pest control, climate regulation, and flood control. Forests provide the oxygen necessary for life on Earth, store excess carbon dioxide, help to prevent soil erosion, and contribute to the formation of rain and other weather patterns.



Asmat sago-gatherer, Pirien village; © Burke Burnett

The richness and diversity of lifeforms is also essential for many foods, medicines, fuels, and raw materials used by both local peoples and global consumers. Plant-based pharmaceutical products have an estimated market value of $84 billion per year, of which nearly 40% comes from tropical forests. It is quite possible that cures for AIDS, cancer, or other diseases could be found in the forests or reefs of the Indo-Pacific, perhaps the biologically richest areas of the planet.

Yet today, excessive logging, forest conversion for agriculture, population pressures and loss of traditional conservation measures, and the introduction of exotic species present serious threats to the Indo-Pacific's rich biodiversity. Without immediate action to improve natural resource management policies and practices, many land, freshwater, and marine habitats will be degraded or destroyed. The inevitable result will be not only the extinction of perhaps hundreds of thousands of species, but also the disruption of key ecological processes and increased poverty for local peoples. IPCA is committed to working with governments, the private sector, and local communities and NGOs to provide essential tools, training, and data to empower institutions and communities to protect their biodiversity. Indeed, it is clear that without access to this essential information and expertise, all other efforts to adequately protect the rich biological and cultural heritage of the Indo-Pacific will be extremely difficult or impossible.

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