# the weekly anthropocene

*dispatches from the wild, weird world of humanity and its biosphere*


By Sam Matey, June 17 2019

# Special Report on the Madagascar Biodiversity Partnership

## Background: The Island and Nation of Madagascar


Madagascar (pictured) is the fourth-largest island in the world, a nation about the size of California lying off the eastern coast of Africa. It is one of the most biodiverse places in the world, described as a "biologist's paradise," and "the naturalist's promised land." Madagascar split apart from Africa 135 million years ago, in the Jurassic Period, and split from India 88 million years ago, becoming the landmass we know today, in the Cretaceous. Thus, for longer than the dinosaurs have been extinct, the life-forms of Madagascar have evolved in isolation, following their own paths independent of the creatures rising and falling across the rest of the world. It shows. Due to this early isolation, Madagascar has no native big cats (or small cats), canids, bears, hoofed mammals, elephants, rabbits, monkeys, poisonous snakes, or woodpeckers, among others.

However, it has a completely unique fauna all its own. 80% of Madagascar's species are endemic, meaning they live nowhere else in the world. Madagascar is home to two-thirds of the world's chameleon species, unique birds like the hamerkop and cuckoo-roller, unique hedgehog or shrew-like mammals called "tenrecs," and, in lieu of "normal" mammalian predators like felids, canids, and ursids (bears), the "euplerids," a family of puma-sized mongoose-like creature known as "fossas." And, of course, Madagascar is the only place in the world to find lemurs, a unique group of primates that have radiated to form over 100 different species, from the tiny mouse lemurs to the terrestrial ring-tailed lemur to the giant, tree-dwelling indri.

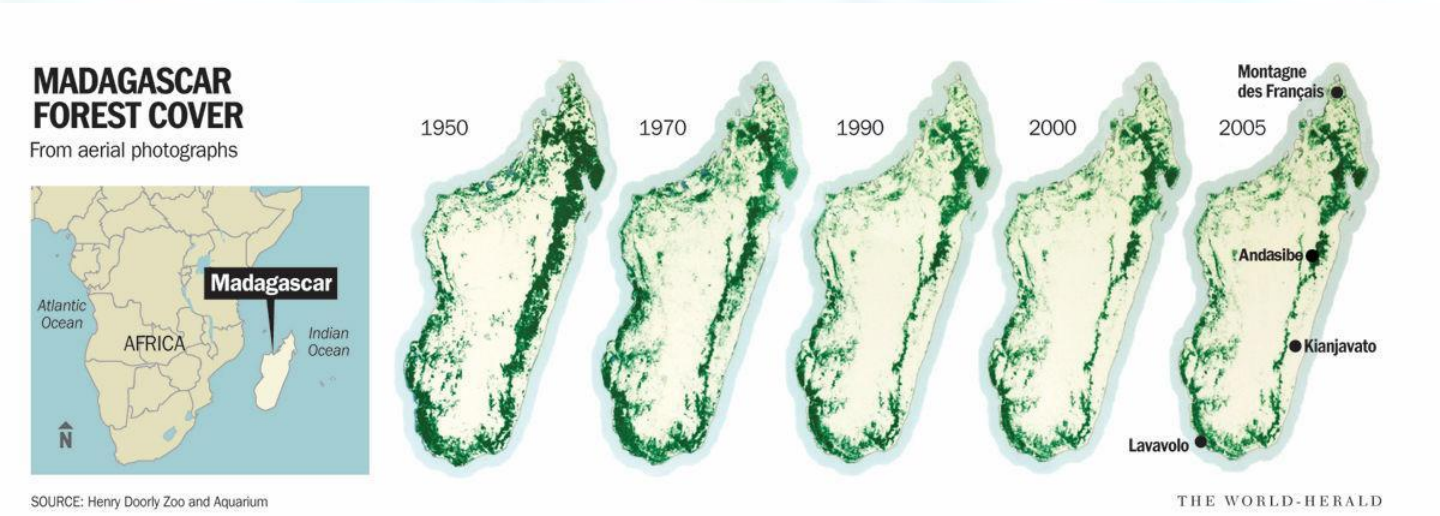
Madagascar's human population (about 25 million people as of 2018) is also unusual: the island was first settled by voyagers not from Africa, but from Indonesia, on the other side of the Indian Ocean, which has led to the modern Malagasy people speaking a language similar to Indonesian and retaining many Indonesian cultural practices, such as terraced rice paddy farming. Its modern history is fascinatingly complex, involving pirate "republics," the adventures of Robinson Crusoe-esque European castaways, the reigns of the kings and queens of the Imerina line (who first united the

island into one country), a spell as a French colony from 1897 to 1958, a period as a Soviet-allied dictatorship in the late 20th century, and a return to democracy in 2002. Today, Madagascar retains its immensely rich biological and cultural heritage, but is desperately impoverished in economic terms: it is categorized as a "Least Developed Country" by the UN and, according to the CIA World Factbook, 70% of Madagascar's population lives below the poverty line, many of them depending on subsistence agriculture. Many of its flagship species, especially lemurs, are severely threatened by deforestation and hunting, to an extent that has led the International Union for the Conservation of Nature to describe lemurs as "the most endangered of any group of vertebrates."

(For a deeper dive into Madagascar's biological uniqueness, I recommend Peter Tyson's *Madagascar: the Eighth Continent* and Patricia Wright's magisterial *For the Love of Lemurs*. For a shorter overview of Madagascar's unique biogeography, check out evolution.berkeley.edu/evolibrary/news/091001_madagascar and www.livescience.com/21592-madagascar-lemurs-endangered.html. For more general background information, see www.cia.gov/library/publications/the-world-factbook/geos/ma.html).

## The Madagascar Biodiversity Partnership-Overview.

The Madagascar Biodiversity Partnership (MBP) is a conservation organization affiliated with Omaha's Henry Doorly Zoo and Aquarium (OHDZA) and led by renowned primate geneticist Dr. Edward Louis. Over the last decade, it has become one of the most focused, innovative, and effective conservation organizations in the world. MBP was founded by Dr. Louis in 2010, as a natural extension of the lemur research Dr. Louis had been conducting since 1998. It has a dual focus on species research and conservation and community-led ecosystem regeneration. MBP has four major field sites,



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Montagne des Francais, Andasibe, Kianjavato, and Lavavolo (see map above), which serve as both centers of research into lemurs and other endemic Malagasy species (such as the rare radiated tortoise) and headquarters for reforestation projects to restore some of Madagascar's fast-vanishing forests. As of March 2019, MBP has planted over 2.6 million trees in Madagascar, and has been the supporting organization for a plethora of trailblazing research into lemurs' diet, range, ecology, and evolutionary history. MBP commonly partners with an array of other international and local conservation organizations, and is notably deeply rooted in the local Malagasy communities in which they work. At their Kianjavato field site, MBP plans to cede their field station (home to tree nurseries, a dining hall, tent shelters, and a central research building) to the local community in 2034, indicating an admirable commitment to developing a long-lasting local ethos of conservation.

(For a great overview of MBP from their hometown paper, see www.omaha.com/living/zoo/henry-doorly-zoo-team-plays-key-role-in-restoring-lemur/article_277ee0a4-3506-5c2f-afd4-533b01723017.html. For more on MBP, explore their website at www.madagascarpartnership.org/).

## MBP's Incredible Community Reforestation Work.

The innovative techniques employed by MBP at their reforestation efforts, especially in and around the Kianjavato field site, are superb examples of effective, community-driven conservation. MBP's Education Promoting Reforestation Program (EPRP) relies on the early breakthrough of collecting seeds for reforestation from the feces of the black-and-white ruffed lemur (see below). This greatly improved the effectiveness of the program, as seeds that have passed through a lemur's digestive tract are more likely to germinate and grow into trees, as well as *ipso facto* eventually producing the sorts of fruits that lemurs like to eat, thus making the resulting forest better lemur habitat. Furthermore, instead of planting seeds straightaway, MBP personnel nurture them in one of a dozen-plus tree nurseries (one is pictured, right) so that they can grow into more robust seedlings before being exposed to the stresses of the outdoors.

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In addition to employing many local Kianjavato citizens in reforestation and research programs, MBP has reached out to the broader community with several other innovative initiatives. MBP's Conservation Credit Rewards (CCR) program rewards local villagers based on their commitment to reforestation: local Kianjavato families and individuals may earn credits by participating in tree-planting events. They may then exchange these credits for items that can help lift them out of poverty, such as rocket stoves, solar kits, bicycles, and sewing machines (some of which have already become starting equipment for new local businesses). Finally, MBP's Vehivavy Vonona Association (VVA), employs single mothers, some of the most vulnerable members of the community, for half-day shifts in the tree nurseries so that they can earn enough to provide for their families. MBP's incredible work demonstrates once again that species conservation and community development are codependent goals, and can be accomplished in tandem.

(For more, please check out https://madagascarpartnership.org/field-sites/kianjavato/, madagascarpartnership.org/about-2/education-promoting-reforestation-project/ and news.mongabay.com/2014/07/next-big-idea-in-forest-conservation-rewards-for-reforestation/).

## MBP and the Lemurs of Kianjavato.

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In addition to being a vital nexus of community development and ecosystem restoration, MBP's Kianjavato field site also conducts pioneering research on three local lemur species: the critically endangered greater bamboo lemur (*Prolemur simus*, pictured above right), the critically endangered black-and-white ruffed lemur (*Varecia variegata*, pictured middle right) and the lovably goblin-esque (and endangered) "aye-aye" (*Daubentonia madagascarensis*, below right). All three of these species are wonderful examples of the unique ecology of Madagascar. The greater bamboo lemur can be thought of as a primate evolved to fill a similar niche to that of the giant panda: like the Asian bear (and yes, according to the latest research pandas are indeed bears), the greater bamboo lemur subsists almost entirely on bamboo. The black-and-white ruffed lemur performs the vital ecological function of seed dispersal, primarily the

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domain of rodents and birds in other parts of the world. And the aye-aye is essentially the primate world's attempt at creating a woodpecker (another life-form naturally absent from Madagascar). Aye-ayes use their long middle fingers to tap on hollow logs in search of sound shifts indicating the presence of grubs, then gnaw holes in the wood and extract their meals.



All three of these species are severely imperiled by deforestation and hunting for food (and, in the case of the aye-aye, a long-held local belief that the eerie-looking creatures are evil omens). However, in and around MBP's Kianjavato site, they are thriving, with MBP data confirming that numbers are creeping up. Even though the Kianjavato communal forests have no legal protection on paper, MBP's close connections with the local community ensure that the region remains an ever-greener oasis for these rare and precious creatures.

For a comprehensive list of MBP research, see madagascarpartnership.org/publications/madagascar-publications/, and, again, please check out madagascarpartnership.org/field-sites/kianjavato).

## The Future: Ongoing Updates from Kianjavato.

From July 23 to October 16, 2019, this writer will be volunteering with the Madagascar Biodiversity Partnership at the Kianjavato field station. I'll be spending half the time working with MBP's lemur monitoring teams, and half with the habitat restoration teams. I chose to spend these three months volunteering with MBP at Kianjavato because I deeply admire their double-barreled species conservation and community-based habitat restoration initiative, and I feel that this is a spectacular way to work to preserve endangered species and aid in the development of the local community. By restoring carbon-sequestering tropical forests, MBP's work is even helping to slow climate change. I also hope to "learn from the best" and gain conservation skills that will be useful for my future career. For this period, the Weekly Anthropocene will be temporarily replaced with weekly volunteer blogs, dispatches from Kianjavato describing my life, work, and research in Madagascar. There will be no blog next Wednesday (as I'll be traveling), but my first volunteer blog will be sent out to my regular mailing list sometime shortly after that! For more on the MBP volunteer program, see madagascarpartnership.org/volunteer/. New readers can sign up for my mailing list at theweeklyanthropocene.weebly.com/blog. Finally, feel free to email me at Samuel.matey@maine.edu!