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Gunung Palung Orangutan Conservation Program

May 2015 Issue: 29

Code RED

An e-newsletter from your friends in West Borneo

Dear Friends and Supporters,

Summer is upon us! Cabang Panti research station is beginning to fill up with students and scientists eager to collect data for their respective projects, and we are in the midst of planning a celebration of 30 plus years of scientific research in Gunung Palung National Park. Meanwhile, the conservation team is working to plan our environmental education, wildlife investigation, and sustainable livelihoods activities for the next several months. It's certainly shaping up to be an exciting season.

In our first article this month, PhD student Andrea DiGiorgio shares a bit about her research, her experiences during her first three months in the field, and how she hopes her research can inform primatology and anthropology. If you've ever wondered how to collect orangutan food samples from the very tops of trees, or why we might be interested in orangutan nutrition, her article will help answer all of your questions!

In This Issue:

GPOCP Distributes

In the second article, GPOCP Program Director Cassie Freund tells us about what she's been reading lately. Conservation stories are becoming more and more common in the "popular science" media, and can be a great source of ideas and information for those of us on the ground. Interested in sharing your favorite conservation media? Send it to us on Facebook or Twitter using the buttons in the sidebar! We're looking to hearing from you.

Sincerely,

Cheryl Knott, Executive Director
Gunung Palung Orangutan Conservation Program (GPOCP)

How to Get a PhD in the Rainforest

By Andrea DiGiorgio, Boston University PhD student

Starting a dissertation is one of the most challenging and exciting periods of a graduate student's life. I arrived in Indonesia in February, full of excitement and some anxiety. Since then, I have spent the last 2.5 months beginning my PhD research in Gunung Palung National Park. My project investigates if orangutans are foraging for specific nutrients (e.g., protein, carbohydrates, lipids) as they search for food every day. I am hopeful that this research will offer insights into the evolution of the orangutan and human diet and the modern obesity epidemic, and also provide information critical to orangutan conservation.

Andrea checks a tagged tree in one of the phenology plots

Report on 10 Years of Wildlife Crime Monitoring & Investigation

This month, GPOCP conservation staff finalized and distributed a report on the performance of our Wildlife Crime Monitoring & Investigation program. This program has been running for 10 years (2004-2014) and over that time our dedicated field investigators have uncovered and reported a total of 145 cases of poached and illegally held orangutans. The report is currently available in Bahasa Indonesia and will be translated into English for future distribution. GPOCP Program Director, Cassie Freund, will also be presenting the results and lessons learned at two upcoming international conferences.

Rainforest:Live

On June 19th GPOCP will be participating in Rainforest Live, a social media campaign to raise awareness about rainforest research and conservation. We'll be tweeting, Facebook-ing, and Instagramming posts from both the research and conservation teams all day using the hashtag #RainforestLive. Other participants include OuTrop, Selamatkan Yaki, the Sumatran Orangutan Conservation Program, and many others. Follow us on

Like most PhD students, I've hit many bumps in my research plan, which make the successes all the sweeter. My time here began by hiring my botany assistant, Albani, who assesses the availability of fruit, flowers and new leaves in 17 plots throughout the forest each month. I'm very grateful to get to work with Albani, as he trained me in phenology when I first visited GPNP in 2012. Albani and I spent a month re-creating the orangutan-specific phenology plots initially used by Dr. Cheryl Knott, which meant hiking almost every trail in Cabang Panti, searching for trees that hadn't been surveyed in 10 years. Our success rate was low - the natural turnover of rainforest trees as well as the impact of past logging made this task a difficult one. However, we have now located more than 1,100 trees across all of the plots and have even finished our first round of monthly phenology data! Then in mid-April, I was joined by Katie, my tree climbing assistant. Together we will be climbing trees that orangutans have fed on to collect samples for nutritional analysis.

My PhD project has 4 major components. The first is to carry out the regular phenology surveys, through which I will determine what orangutan foods, in what quantities and which maturity stages, are available each month. Second, I follow orangutans and take detailed data on what they are eating. I also note where in the tree they are eating so we can go back and collect similar foods from the same place, because fruit at the very top of the tree may be nutritionally different from the fruit growing near the bottom. Component three is collecting samples of orangutan foods. I am attempting to collect samples of foods that we have not yet analyzed for their nutritional content - focusing on bark, leaves, and flowers. These foods comprise the "fall-back foods" of orangutans - foods that are not preferred when fruit is abundant, but that get them through the crunch periods when fruit is scarce. Interestingly, I have observed that even when there is fruit available, orangutans eat at least a small amount of leaves, bark, termites or other non-fruit food, and I want to know why. Is there a nutrient that they need to get a minimum of to have a balanced diet? Or is there another reason that we are yet unaware of?

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"The love for all living creatures is the most noble attribute of man."

-Charles Darwin-

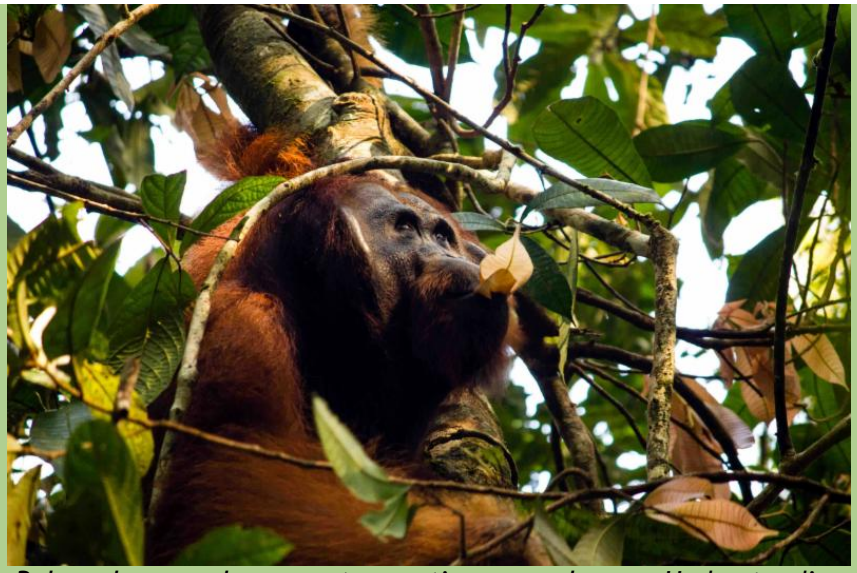
Andrea's botany assistant, Albani, measures the size of one of the trees in the phenology plots.

To get our hands on these samples, Katie and I are using every trick we can muster. Because I am interested in collecting samples from the exact spot in the tree that the orangutan ate from, we cannot just collect them from the forest floor. Each time an orangutan eats during a follow, we are presented with a new puzzle as to how to collect that specific food sample. Sometimes we use a bow-and-arrow and climbing throw-bags with rope to shake down leaves from smaller trees, whereas sometimes we have to climb high into the canopy to reach the right branch. Thus far, we have successfully collected all of the samples from one full day orangutan follow, including bamboo *umbut* (the "heart" or "pith" of the bamboo in between joints of newer stalks - quite delicious, and often included in human foods). To do this, Katie climbed at least 100 feet into a tree, cut down the samples, and then threw them to the ground. We also spent two days using our bag-throwing/shooting method to shake down young leaves. As it turns out, the 100 grams of sample we need for our analysis equals bags and bags of leaves!

Andrea takes aim with her bow-and-arrow in an attempt to collect samples high up in a tree (don't worry, she's an expert!)

The fourth component of my research is movement ecology - or understanding how orangutans move through their environment when searching for food. This will involve some fancy tricks in ArcGIS, so for now, I am using the daily path of the orangutan as collected by a GPS unit. In addition, I am marking all the trees that orangutans pause in so that I can investigate whether orangutans are using landmark-based navigation. This part of my project has proven quite challenging, and I've had to pare down my data quite a bit.

I hope to accomplish three primary goals with my research. The first is to understand orangutan dietary evolution in this unpredictable habitat. How did orangutans evolve to search for food and make feeding choices? Orangutans are the only great ape that lives outside of the more predictable African rainforests, so understanding how they adapt to these forests is very interesting to me. I would also like to see if orangutans are a good model for human diet and foraging evolution. Initial research from another site suggests that orangutans do prioritize the same nutrients as humans, which might mean the foraging strategies of orangutans are similar to those of early human ancestors. Understanding orangutan nutritional requirements may also elucidate the factors that lead to obesity and Type 2 diabetes in humans, who generally inhabit environments with an overabundance of food.



Balu, a large male orangutan, eating young leaves. Understanding orangutan nutrition may help researchers explain the causes of diseases such as obesity and Type 2 diabetes in humans.

Finally, and personally, the most important goal to me is to help conserve these amazing animals and the awe-inspiring forests and ecosystems in which the live. By understanding what nutrients orangutans seek out in foraging, we can prioritize the monitoring and conservation of important fruit trees and lianas (and alternative food plants with similar nutrition), as well as their all-important fallback foods. This information may also be useful to rescue and rehabilitation centers and re-introduction projects, who need to know how best to feed captive animals so that they can thrive. Through all of the ups and downs, stresses and apprehensions involved in starting my dissertation research, this goal has propelled me to make this project work.

To read more about Andrea's project, and watch a video of how she learned to climb trees, visit her Chasing Orangutans article on Boston University's research website.

What I'm Reading in Conservation, and a Word About Optimism

By Cassie Freund, Program Director

As the Program Director, a big part of my job is to keep up-to-date on conservation news - first and foremost about orangutans, but also about the conservation of the rainforest and other species on Borneo, and across Indonesia as a whole. Our work, to protect the orangutans in and around Gunung Palung, cannot be divorced from the country's social and political climate, and I like to understand what other NGOs and governments are doing so that we can maximize our conservation impact. So, I read a lot of articles about orangutans, the wildlife trade, Borneo, conflict between communities and palm oil companies, and all kinds of other related topics. Most of my sources these days are colleagues sharing links on social media. This is one of the great things about Facebook and Twitter; these platforms help conservationists share information and lessons learned with just a few clicks of the mouse or a few buttons on our phones. Most of these articles are also

written for a more popular audience, which is key to getting people, regardless of their scientific knowledge, interested in protecting the world's wildlife. This month I wanted to share five of my favorite recent articles about developments in the conservation and study of Indonesian wildlife species. Each one is in some way relevant to the work that we do here in Gunung Palung. So without further ado, my top 5 "What I'm Reading" list!

1. Going ape: Finding orangutan refuges in Borneo

A recent scientific paper by Struebig *et al*. explored how the combination of continued deforestation and climate change might affect the future availability of orangutan habitat. Orangutans, like other animals, will likely be forced to move to higher altitude habitats as lowland and peat swamp forests become simply too hot to inhabit. Thus researchers have identified approximately 42,000 square kilometers of "refuge" habitat that may become available to orangutans as climate change continues. One such refuge is Gunung Palung National Park! Because the Park encompasses the full range of possible orangutan habitats, from lowland and peat swamp forests to montane rainforest, its protection may become critically important to the survival of the Bornean orangutan in the future. This is yet another reason why we feel our work is so important - conserving Gunung Palung National Park will contribute to orangutan conservation both now and in the future. Until now, most scientists had not considered the effect of climate change on great apes, because there are so many other urgent threats to their survival, but this new research helps us look ahead to the long-term fight to protect orangutans and their habitat.

The mountainous habitats in Gunung Palung National Park may someday serve as "refugia" for orangutans whose primary habitat has been lost due to climate change. Photo © Tim Laman.

2. Saving the Jungle Hipster of Borneo

If I asked any group of people to name the most important Bornean wildlife, I'm not sure anyone would say "the Bornean bearded pig," which is why I found this editorial by Erik Meijaard so fascinating. Before now I'd never seen bearded pigs get airtime in the overall discussion about conserving Bornean species, but Meijaard makes a very compelling argument for why they should get more attention. These pigs play an important role in forest ecosystems as seed predators and dispersers. They are also a source of bushmeat for Borneo's Christian population and this may be a valuable tool in wildlife conservation, because as rainforest disappears, this source of food will as well. With an estimated market value of at least $120 million, this is a very tangible consequence of deforestation for these forest-dwelling communities, making conservation an attractive proposition. Although GPOCP is primarily an orangutan conservation organization, understanding the socioecological factors surrounding the protection of other species, including the Bornean bearded pig, is important to developing a holistic forest protection strategy.

A Bornean bearded pig meets photographer Tim Laman in the forests of Gunung Palung National Park. (Photo © Tim Laman)

3. Birds in Bottles Show Need to Stop Online Wildlife Trade

Social media, especially Facebook, is a popular platform for the illegal wildlife trade in Indonesia. In May, in one of the most shocking cases of wildlife trade this year, police on the Indonesian island of Java announced that they had discovered a smuggler carrying 23 highly endangered birds to Jakarta, stuffed inside of plastic water bottles. These included 22 yellow-crested cockatoos and one Eclectus parrot, both of which are endemic to the Maluku Islands in eastern Indonesia. Although Indonesian conservation authorities report that they are strengthening customs at major air and sea ports, it is abundantly clear that Indonesian wildlife laws, including their enforcement and penalties for breaking them, also need to be strengthened. Weak law enforcement is a significant problem in orangutan conservation as well, because if there are no real consequences for breaking wildlife protection laws, then people will continue to poach animals from the wild for the illegal pet trade. The threat of five years in jail and/or an approximately $7,500 fine is simply not enough to deter people from the highly lucrative trade in endangered species. Because the images of helpless birds confined to small plastic bottles was such a sensational

example of the illegal wildlife trade, this particular story has helped put pressure on Indonesian authorities to strengthen conservation laws.

A yellow-crested cockatoo smuggled inside of a plastic bottle in Java, Indonesia. (Photo © Reuters/Antara Foto/Risyal Hidayat)

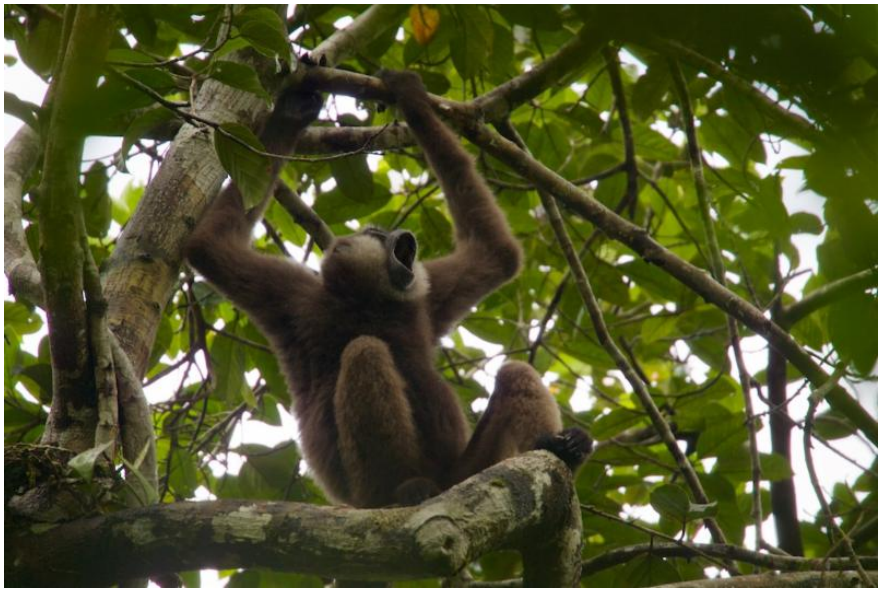
4. Wilmar, Musim Mas supplier caught clearing elephant habitat for palm oil in Aceh

Large-scale deforestation for oil palm plantations is one of the leading factors in the decline of many of Indonesia's endangered species. Unfortuantely, Sumatra and Borneo, the only two islands in the world where orangutans exist, are also prime real estate for palm oil. The situation in Sumatra is even more severe because Aceh's Leuser Ecosystem, home to orangutans, tigers, elephants and Sumatran rhinos, is quickly being destroyed by oil palm companies. This is the only place on earth where these large mammals all coexist, as well as one of the last strongholds for the critically endangered Sumatran orangutan. Dozens of NGOs are working to protect Leuser, but even with strict oversight, palm oil companies have still been able to secure permission to develop this area. The dynamics between local communities, the Aceh and national government, and these companies (who have very deep pockets) are incredibly complicated and right now it appears that there will be no ramifications for this illegal land clearing - yet another indication of the need for stricter law enforcement by the Indonesian authorities.

5. Secret gibbon language translated: Scientists discover meaning behind their hoo calls

First and foremost, this article is interesting because gibbons are awesome. The way they can effortlessly swing through the trees makes orangutans look positively clumsy by comparison. And, as it turns out, gibbon calls serve as predator warnings, with different frequencies indicating different predators (tigers, leopards, birds of prey, and pythons). Researchers believe that further analysis of gibbon communication may shed light on the evolution of human speech, as "context-specific communication" is a key step in the development of more complicated verbal interactions. One common argument for primate conservation in general is that by protecting - and studying - them, we can learn about ourselves. I like to think that in doing the work that we at GPOCP do, we're not only conserving biodiversity for the future, but also preserving the past. After all, who knows how many

other secrets about human evolution the gibbons, orangutans, and other primates hold?



Gibbon songs are highly complex and often described by listeners as "hauntingly beautiful." Now researchers have learned that their short 'hoo' calls alert other gibbons to the presence of dangerous predators. (Photo © Tim Laman)

Finally, I'd like to take a minute to talk about how to stay positive about conservation in the midst of what can, at times, feel like a mountain of bad news. After reading back over my list, it occurred to me that three of the five articles here dealt mainly with bad news: climate change further restricting orangutan habitat, birds stuffed in plastic bottles, and the deforestation of one of the most unique and biodiverse places on earth. It is important that the conservation community as a whole also publicize the success stories, so that we don't become "the most depressing scientists on the planet." For example, let's celebrate the fact that over 18,000 new species have been described in just the past year, including a new primate species from Brazil. One a more local level, I've personally noticed that the Indonesian people seem more invested in conservation than ever before, and there have been a number of grassroots petitions asking the government to stop forest fires and strengthen wildlife protection laws. After the story about the smuggled birds came out, messages to save Indonesian cockatoos started trending on Twitter and people reportedly were lining up to turn in birds that they had kept as pets because they realized that they should live in the wild, not cages. It's quite the change, and I hope that it continues so that future generations have the opportunity to see orangutans and other wildlife in their natural habitat far into the future.

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