
NEWS AND NOTES

In the wake of one of the worst modern time ecological disasters, the 1997 extensive forest fires in Malaysia and Indonesia, the focus on how this may contribute to climate change became increasingly common. With the even bigger forest fire disaster in 2015, many new publications reporting on Carbon-stock loss and measurements emerged. Some of these, along with other relevant publications and conservation news are provided in the following.

The disastrous wildfires rightfully take up most of the “News” section. Unfortunately, the lessons from the 1997 disaster were not heeded, and the question posed in our “Editorial” (see Traeholt and Novarino (2014). Preparing for *El Niño* - Will Indonesia be ready? *Journal of Indonesian Natural History* **2(2)**: 3) was clearly answered. Despite the human and economic cost of the 1997 disaster, 2015 became the year when this disaster was revisited, with even higher human, social and economic costs. One have to wonder if this second ecological and human disaster will merely become the 2nd incident in a future long strong of incidents? While the solution is theoretically straight forward, the practical circumstances on the ground is much more challenging. Combined with the conglomerate of economic interests, the implementation of policies, plans and laws continue to sputter.

Sumatran rhino declared extinct in Malaysia

The Sumatran rhino, *Dicerorhinus sumatrensis*, has been listed as Critically Endangered on the IUCN red-list for decades. Since the early 1980s, a concerted effort to develop a holistic Sumatran rhino conservation rescue plan was undertaken. Unfortunately, 30 years and millions of dollars later, a new paper declares the Sumatran rhino extinct in West Malaysia. To conservation biologists working in Malaysia, this does not come as a surprise, since neither rhinos nor signs of them have been recorded for more than a decade. Unfortunately, the most important task in conserving the Sumatran rhino in Malaysia --- effective anti-poaching measures --- never took place, and as a result this magnificent species has follow the last Javan rhino in Vietnam into oblivion. Rhino poaching is a new phenomenon; in fact it has been a major conservation crime for decades, and thousands are slaughtered in Africa for their horns and transported, primarily, to the Chinese and Vietnamese

markets as traditional medicine. With this knowledge, there has been an astonishing lack of action on the ground by the Malaysian authorities. In the end, it must be concluded that Sumatran rhinos, along with several other species, are not important enough in Malaysia’s constricted quest for financial prosperity.

Havmøller et al., (2015). Will current conservation responses save the Critically Endangered Sumatran rhinoceros *Dicerorhinus sumatrensis*? *Oryx*: (5 pp.) - doi:10.1017/S0030605315000472

Wildlife criminals take aim at another cat species

With the number of tigers dwindling across its range, combined with an increase in tiger anti-poaching activities, it appears that the illegal trade in exotic large cats have shifted its focus to another species. According to a new study published in the journal *Biodiversity and Conservation* the trade of clouded leopard, *Neofelis nebulosa*, is likely higher than that of tigers. Whereas international and domestic trade regulations are in place across the region, the authors claim that loopholes in the legislations permit legal trade in Asian big cats in “exceptional circumstances”. The study highlights that these legal loopholes apply to *all* Asian big cat species, and that this also has potential to compromise wild animal welfare. The authors suggest, as a precautionary measure, regional authorities should extend existing bans on Asian big cat trade, so that they include commercial trade in captive bred individuals too.

D’Cruze, N. and D.W. Macdonald (2015). Clouded in mystery: the global trade in clouded leopards. *Biodiversity and Conservation*. Doi: 10.1007/s10531-015-1010-9

Using local communities for monitoring and control in conservation’s blind spots

Although official on-the-ground environmental monitoring is absent over much of the world, many people living in these regions observe, manage, and protect their environment. The autonomous monitoring processes associated with these activities are seldom documented and appear poorly recognized by conservation professionals. This is what this paper about, where the authors study the activities in three villages in the Mamberamo-Foja region (Mamberamo Regency) of Papua (Indonesian New Guinea). The important results

of the study is that local monitoring contributes to effective protection and deters unregulated exploitation. In addition, monitoring is often combined with other activities: for example, hunting regularly includes areas judged vulnerable to incursions by neighbouring communities. Enforcement of the community rules and assessment of resource status also help prevent local overexploitation within the communities. Whereas the study provides very convincing evidence of local people effectively protecting large areas in a relatively natural state, it remains difficult to measure the real effect, since there are no “baseline” material available to compare against. The value of these autonomous monitoring and protection processes, their neglect, and the need for explicit recognition, however, ought to receive more credit and attention from the conservation community in general. As the authors argue, the “tragedy of the unseen sentinels” is undermined, not because these local systems are invisible, but because no one recognizes what they see.

Sheil, D., M. Boissière, and G. Beaudoin (2015). Unseen sentinels: local monitoring and control in conservation’s blind spots. *Ecology and Society* **20**(2): 39.
<http://dx.doi.org/10.5751/ES-07625-200239>

The importance of seed dispersers in forest restoration

An estimated 63% of Southeast Asian forests are classed as disturbed and secondary as a result of human activity. Many of these forests, however, remain important for biodiversity conservation and ecosystem services. This paper looks at the role of large animals as seed dispersers in natural regeneration, especially in relation to important late successional shade-tolerant species, which might otherwise be excluded from disturbed sites. The irony, however, is that many large animals are lost from the very areas that require them. Using camera traps and field observations to relate large animal distribution to prevailing vegetation conditions, the authors investigated the persistence of a suite of threatened large mammals that are known seed-dispersers in a degraded site in lowland south-central Sumatra. The study revealed that, whereas most species were more frequently detected in intact habitats, most were also able to occupy habitats with high levels of disturbance in relatively high population densities. They conclude that severe habitat degradation does not necessarily lead to the immediate loss of large-bodied seed dispersers, but suggest protection from,

specifically hunting, must be built into management plans for restoration concessions.

Lindsell, J. A., Lee, D. C., Powell, V. J. and Gemita, E. 2015. Availability of large seed-dispersers for restoration of degraded tropical forest. *Tropical Conservation Science* **8**(1): 17-27.

Imaging tropical peat-lands in Indonesia

Much of the disastrous massive forest-fires in Indonesia and Malaysia in 1997 was caused by peat development. This led to an increase in studies about carbon storage in peat swamp forests. Current estimates of carbon (C) storage in peatland systems worldwide indicate tropical peatlands comprise about 15 % of the global peat carbon pool. Although estimates are uncertain due to data gaps regarding organic peat soil thickness and C content, it is accepted that Indonesian peatlands are considered the largest pool of tropical peat carbon (C), counting for an estimated 65 % of all tropical peat. The effect of the 1997 fires along with the continuation of peatland development has made it the largest source of carbon dioxide emissions from degrading peat worldwide, posing a major concern regarding long-term sources of greenhouse gases to the atmosphere. The authors used ground penetrating radar (GPR), and electrical resistivity imaging (ERI) with direct observations from core samples (including C analysis) to assess peatland thickness in West Kalimantan (Indonesia) and determine how geophysical imaging may enhance traditional coring methods for estimating C storage in peatland systems. They found peatland thicknesses estimated from GPR and ERI varied by less than 3% compared to direct coring, even for small peat-mineral soil interface gradients (i.e. below 0.02). They also observed that geophysical data provided information on peat matrix attributes, such as thickness of organomineral horizons between peat and underlying substrate, the presence of wood layers, buttressed trees and soil type. They concluded that, while such information is important, these attributes could further constrain quantification of C-content and aid responsible peatland management in Indonesia.

Comas et al., 2015). Imaging tropical peatlands in Indonesia using ground penetrating radar (GPR) and electrical resistivity imaging (ERI): implications for carbon stock estimates and peat soil characterization. *Biogeosciences Discussions* **12**, 191–229

Modelling Carbon accumulation in tropical peatlands

Tropical peat-lands cover an estimated 440,000 km² (~10% of global peat-land area) and are significant in the global carbon cycle by storing about 40–90 Gt C in peat. Over the past several decades, tropical peatlands have experienced high rates of deforestation and conversion, which is often associated with lowering the water table and peat burning, releasing large amounts of carbon stored in peat to the atmosphere. However, how dynamic is the carbon storage in tropical peatlands over time? The authors developed a first model of long-term carbon accumulation in tropical peatlands by modifying the Holocene Peat Model (HPM), which has been successfully applied to northern temperate peatlands. Tropical HPM (HPMTrop) is a one-dimensional, non-linear, dynamic model with a monthly time step that simulates peat mass remaining in annual peat cohorts over millennia as a balance between monthly vegetation inputs (litter) and monthly decomposition. They included model parameters based on published data on vegetation characteristics, including net primary production partitioned into leaves, wood, and roots; and initial litter decomposition rates, and concluded that the HPMTrop outputs were consistent with field observations from Indonesia. Simulated long-term carbon accumulation rates for 11,000-year-old inland, and 5,000-year-old coastal peatlands were about 0.3 and 0.59 Mg C ha⁻¹ yr⁻¹, and the resulting peat carbon stocks at the end of the 11,000-year and 5,000-year simulations were 3,300 and 2,900 Mg C ha⁻¹, respectively. The important conclusion is that the simulated carbon loss caused by coastal peat swamp forest conversion into oil palm plantation with periodic burning was 1,400 Mg C ha⁻¹ over 100 years, which is equivalent to ~2,900 years of C accumulation in a hectare of coastal peatlands. The rehabilitation effort of Indonesia's peatlands will need some serious innovation to be able to re-establish the C-storage effect of its tropical peatlands.

Kurnianto et al. (2015). Carbon accumulation of tropical peatlands over millennia: a modelling approach. *Global Change Biology* **21**, 431–444. doi: 10.1111/gcb.12672

Trends and biases in reported conservation interventions - ten years of evidence

The impact of conservation intervention is often obscured by social, practical and political realities. Most successes are immediately reported, be it a single

picture of a newly discovered species in Africa, or a picture of a tiger in an area of Sumatra, where it was considered absent. Outright failures, however, are rarely reported, even if the lessons learnt from unsuccessful conservation interventions can be extremely useful to other similar projects. About 10 years ago *Conservation Evidence* was launched with an aim to provide a format for practitioners to publish the results of their work, irrespective of the project outcomes. This paper reviews the trends and biases in the studies published between 2004 and March 2014; 246 papers describing 439 conservation interventions in 35 countries. This seems to have been achieved as over 70% of the 609 authors were practitioners. As well as publishing the results of successful interventions, the journal encourages authors to report interventions that were unsuccessful and this was the case for almost a third (31%) of all those published. These results provide especially valuable information to practitioners. The majority of papers submitted to and published in *Conservation Evidence* have focussed on plants and birds (59%). There is a clear need for more studies testing interventions for fish, reptiles, amphibians and fungi. Similarly, few studies so far have focused on the social aspects of conservation.

Spooner F., Smith R.K. and W.J. Sutherland (2015). Trends and biases in reported conservation interventions: summarising ten years of *Conservation Evidence*. *Conservation Evidence* **12**: 2–7.

Ice melt, sea level rise and super-storms

There were probably no where in the World that could possibly claim to feel the effect of Global warming than Indonesia. The 2015 *El Niño* effect, while not a direct result of Global warming, was worse than ever, and the extreme fluctuations rain/dry seasons is one of the many direct results of Global warming. In a new publication Hansen et al (2015) provides additional evidence from paleoclimate data that the current international climate change agreement is not nearly enough to arrest the escalating negative effects of a warming Earth. There is evidence of ice melt, sea level rise to 5–9m, and extreme storms in the prior interglacial period that was less than 1°C warmer than today. Human-made climate forcing is stronger and more rapid than paleo forcings, but much can be learned by combining insights from paleoclimate, climate modeling, and on-going observations. The authors argue that ice sheets in contact with the ocean

are vulnerable to non-linear disintegration in response to ocean warming, and claim that ice sheet mass loss can be approximated by a doubling time up to sea level rise of at least several meters. Doubling times of 10, 20 or 40 years yield sea level rise of several meters in 50, 100 or 200 years. Paleoclimate data reveal that subsurface ocean warming causes ice shelf melt and ice sheet discharge. The climate model presented exposes amplifying feedbacks in the Southern Ocean that slow Antarctic bottom water formation and increase ocean temperature near ice shelf grounding lines, while cooling the surface ocean and increasing sea ice cover and water column stability. Ocean surface cooling, in the North Atlantic as well as the Southern Ocean, increases tropospheric horizontal temperature gradients, eddy kinetic energy and baroclinicity, which drive more powerful storms. The Southern Ocean's role in affecting atmospheric CO₂ amount is a tight control knob on global climate. The millennial (500–2000 year) time scale of deep ocean ventilation affects the time scale for natural CO₂ change, thus the time scale for paleo global climate, ice sheet and sea level changes. This millennial carbon cycle time scale should not be misinterpreted as the ice sheet time scale for response to a rapid human-made climate forcing. Recent ice sheet melt rates have a doubling time near the lower end of the 10–40 year range. The authors conclude that 2°C global warming above the pre-industrial level, which would spur more ice shelf melt, is highly dangerous.

Hansen et al. (2015). Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modelling, and modern observations that 2°C global warming is highly dangerous. *Atmos. Chem. Phys. Discuss.* **15**: 20059–20179,

Hope for Sumatran tigers?

The Natural Resources Conservation Agency of South Sumatra (NRCA) is striving to meet the national target of increasing the population of the Sumatran tiger (*Panthera tigris sumatrae*) by 10 percent. Between 1998 and 2000, as many as 66 Sumatran tigers were reported to have been killed in the national parks. After years of constant decline, resulting primarily from a combination of illegal poaching and habitat loss, the head of the NRCA, Nunu Anugrah, announced that protecting the remaining 400–500 individuals and their habitat will receive additional attention and commitment in the immediate future.

According to Nunu Anugrah, the Natural Conservation Board has already decided on permanent pilot areas to increase the population of the Sumatran tiger. These areas include the forests of Jambi, Kerinci Sebalat, Mount Leuser in Aceh, Bengkulu, the Sembilang National Park, and the Dangku Musi Banyuasin Wildlife Sanctuary in South Sumatra. Time will tell if the necessary conservation intervention will take place in due time to prevent further population decline.

Sumatran rhino returned to Way Kambas

The only remaining Sumatran rhino left outside Indonesia and Sabah (Malaysia) arrived in his ancestral home of Indonesia, making the long journey from Cincinnati, Ohio, where he was born 8 years ago. The return of *Harapan* is part of a mission to help save his critically endangered species from extinction.

Harapan was born at Cincinnati's zoo and spent nearly the past two years as the last Sumatran rhino in the Western Hemisphere. He arrived at Jakarta's Soekarno-Hatta airport in a special travel crate aboard a Cathay Pacific jet, after which he was trucked to Merak and from there ferried to Sumatra. There, *Harapan* would be handed over to Indonesian authorities at the Sumatran rhino sanctuary at Way Kambas National Park.

With the return of the 1,800-pound (816-kilogram) rhino the captive breeding program for the species at the Cincinnati Zoo ended. To date, it has been the most successful captive breeding programme, having produced three rhinos, among them *Harapan*'s older brother. The latter was returned to Way Kambas in 2007 and became a father there in 2012.

There are currently three females at the Way Kambas facilities, and it is hoped that *Harapan* will be able to add to the reproductive success at the centre. Ratu, a 12-year-old female rhino born in the wild, is now pregnant with her second calf and is expected to give birth in May, 2016. If the birth proceeds successfully, it will be Ratu's second birth, after her successful delivery of a male calf in 2012. This was also the first Sumatran rhino born in an Asian breeding facility in more than 140 years.

After a major effort to breed the species in overseas facilities failed to produce meaningful results, Indonesia has said it does not want to be dependent on other countries in conservation efforts by sending anymore rhinos to be bred abroad. However, it says it welcomes any technological or scientific assistance for the Sumatran rhino breeding program.

Javan rhinos give birth to new calves in Ujung Kulon National Park

Three critically endangered Javan rhino calves have been filmed in Ujung Kulon National Park, Indonesia. This raises hopes for the future of the world's rarest rhino after years of population decline. One female calf and two males were spotted in recent months in Ujung Kulon and were all likely born in the past year, according to park chief Mohammad Haryono. The rhinos were filmed with their mothers by camera traps set up to track the creatures, and the calves were all born from different mothers. Haryono said the discovery of the calves -- filmed in April, May and July (2015) -- brings the population of the Javan rhino to 60, all of which live in Ujung Kulon. The calves are believed to be born inside a sanctuary, which was established last year in the park and comprises 5,100 hectares rainforest and freshwater streams. The animals had previously been living mainly in one corner of the park, however, not necessarily optimal habitat for the species, and the "sanctuary" expanded the area suitable for them and relocated farmers to reduce the chances of animal-human conflict.

The Javan rhino, whose folds of loose skin give it the appearance of wearing armor plating, once numbered in the thousands and roamed across Southeast Asia. Poaching and human encroachment on its habitat have led to a dramatic population decline, as with other rhino species around the world. The only other place that had Javan rhinos until recently was Vietnam, but unfortunately, lack of commitment and dedicated vigilance resulted in the last Vietnamese Javan rhino being killed by illegal poachers a few years ago. Today, Ujung Kulon National Park the only remaining habitat with the species that continues to be listed as "Critically Endangered" on the IUCN red-list. Poaching, in particular, continues to be severe threat, with rhino horns fetching high prices on the black market for use in traditional Asian medicine. It remains to be seen if the continued protection of the last Javan rhinos will be adequate if poachers decide to target Ujung Kulon National Park.

Trained Sumatran elephant killed for its tusks

On the **22 September, 2015**, the AFP reported that a critically endangered Sumatran elephant, who had patrolled Indonesia's jungles to help protect threatened habitats, was killed for his tusks. The elephant was known as Yongki, and was a tame creature who worked

with teams of elephant keepers. Unfortunately, he was found dead close to the camp where he lived in a national park on the western island of Sumatra, according to park official Timbul Batubara. The killing of Yongki sparking a surge of anger social media. Yongki's one-meter (three-foot) tusks had been hacked off, leaving just bloody stumps, while his legs still bore the chains put on him by his keepers to ensure he stayed in the camp. His body, which was found with no bullet wounds but a blue tongue, which suggests that he had been poisoned. Illegal ivory hunters commonly use this practice in Sumatra.

Yongki, aged about 35, was well-known among the local "mahouts". The elephant was involved in patrols aimed at reducing tensions, with the tame elephants stopping wild elephants from rampaging through villages. The patrols also help rangers keep a lookout for illegal logging and poaching that threaten Indonesia's vast rain forests.

There are estimated to be less than 3,000 Sumatran elephants remaining in the wild. They are frequently targeted by poachers for their tusks, which fetch a high price for use in Chinese traditional medicine. The species is listed as Critically Endangered on the IUCN red-list.

Indonesia's forest fires

According to estimates released this week by Guido van der Werf on the Global Fire Emissions Database, there have been nearly 100,000 active fire detections in Indonesia so far in 2015, which since September have generated emissions each day exceeding the average daily emissions from all U.S. economic activity. Indonesia is now on track to experience more fires this year than it did during the 2006 fire season, one of its worst on record. On 26 of the past 44 days daily estimated GHG emissions from fires in Indonesia surpassed average daily emissions from the entire US economy (approximately 15.95 Mt CO₂ per day). A massive spike in emissions can be seen on October 14, when 4,719 fires were observed. The emissions spikes is caused by burning peatlands.

Global Forest Watch Fires shows that more than half of these fires have occurred on peatland areas, concentrated mainly in South Sumatra, South and Central Kalimantan, and Papua. These regions continue to suffer major fires as the fire alerts density map below shows, with few signs that occurrences are diminishing.

The burning of tropical peatlands is so significant for greenhouse gas emissions because these areas store some of the highest quantities of carbon on Earth, accumulated over thousands of years. Draining and burning these lands for agricultural expansion leads to huge spikes in greenhouse gas emissions. Fires also emit methane, a greenhouse gas 21 times more potent than carbon dioxide (CO₂), but peat fires may emit up to 10 times more methane than fires occurring on other types of land. Taken together, the impact of peat fires on global warming may be more than 200 times greater than fires on other lands.

What does a climate catastrophe look like in a real world context? Since September 2015, daily emissions from Indonesia's fires exceeded daily emissions from the entire U.S. economy on 26 days. To put it into perspective, the U.S. economy is 20 times larger than Indonesia's. Van der Werf pointed out in a recent report that emissions from these fires over a three-week period are also already higher than the total annual CO₂ emissions of Germany.

One can only hope that the Indonesian Government continue with the dedicated efforts to put in places preventative measures to avoid future similar incidents, and follow up with concerted efforts to implement policies and laws concerning land-use development believed to initiate forest fires.

Vast forest fires in Indonesia spawn ecological disaster (*from Andi Jatmiko And Niniek Karmini*)

On November 16, 2015, Phys.org reported that the extensive forest fires have caused immeasurable ecological disaster. The devastating forest fires in Indonesia and Malaysia in 2015 engulfed the region in a thick and dangerous layer of smoke. Millions were affected as "passive smokers" resulting from problems hundreds of kilometres away. However, for local farmers, it was a season of smoke where months without sunlight caused crops to under-perform and, in some cases, entirely fail to produce crops of a high enough standard for trade. This year's devastating fires have already surpassed the 1997 disaster and has inflicted a staggering toll on the region's environment, economy and human health. It is estimated that 2.1 million hectares (21,000 km²) of forests and other land burned, 21 died as a direct result of the fires and more than half a million people fell ill with respiratory conditions. The economic loss from damaged crops,

hundreds of cancelled flights and a decline in tourists arrivals is estimated at far more than 9 billion US\$.

Many of the fires were set illegally by various parties believed to put greed and profit ahead of the country's laws and citizens' health. Authorities are investigating more than 300 plantation companies and 83 suspects have been arrested, and to date the licenses of three plantation companies have been revoked and those of 11 others have been suspended.

Since July, 2015, approximately 50,000 fires were detected by satellite, most of which occurred on the islands of Sumatra and Borneo. An absence of rain from the El Niño effect made them worse. The resulting smoke caused the visibility to fall below 50 meters in some areas, forcing 13 airports around the country to close, and in late October, the Pollution Standards Index hit a record high of 3,300 in Central Kalimantan provinces. In addition, nearly 20,000 schools closed in the worst-hit provinces, affecting about 2.4 million students.

The fires also likely affected many endangered or threatened species, including orangutan and Sumatran rhino. It also sent enormous amounts of greenhouse-gas emissions into the air. Much of the forests lost were peat-land, which stores a particularly large amount of carbon.

To fight the fires, Indonesia used everything from helicopters to elephants outfitted with water pumps and hoses. Russia leased two amphibious jets, and Singapore, Malaysia, Australia and Japan also sent aircraft, fire-fighters or chemicals and experts to help out. More than 30,000 soldiers and fire-fighting personnel were deployed, and the disaster agency spent US\$36.5 million. Ultimately, it was seasonal rains that ended this year's crisis.

Indonesia's Fire and Haze Crisis

World Bank, November 25, 2015

Indonesia's fire and haze crisis this year has been described by many in the international community as an environmental disaster. Large parts of the country's forests and land area have burned out of control since August 2015, impacting the health, education and livelihoods of millions of Indonesians living in the areas with the worst burning. This has also resulted in billions of dollars' worth of damages and losses.

Fires and the resulting haze have caused Indonesia and neighbouring countries significant economic, social

and environmental costs. The full extent of these costs and the long-term impacts are not yet known. The World Bank is helping to assess the costs of the fires and haze in a variety of sectors. Early estimates of the total economic costs of the fires in 2015 in Indonesia alone exceed US \$16 billion. This is more than double the damage and losses from the 2004 tsunami (which affected provinces in Indonesia and other countries), and equal to about 1.8% of Indonesia's Gross Domestic Product (GDP). This estimate includes losses to agriculture, forestry, transport, trade, industry, tourism, and other sectors. Some of these costs are direct damage and losses to crops, forests, houses and infrastructure, as well as the cost of responding to the fires. Many of the economic losses result from the disruption of air, land and sea travel due to the haze. These damages and losses are expected to have serious impact on the economic growth rate of affected provinces and the government's efforts to reduce poverty in the hardest-hit regions, such as Central Kalimantan.

Air quality during high burning periods in villages near the fires regularly exceed the maximum level of 1000 on the international Pollutant Standard Index (PSI) – this is more than three times the amount considered “hazardous.” The toxic smoke causes widespread respiratory, eye, and skin ailments and is especially hazardous for the very young and the elderly; the toxic air they breathe include carbon dioxide, cyanide, and ammonium. The long-term health impacts are not yet known but are expected to be highly significant.

Businesses and schools across the region close due to the haze, crippling many low-income families and prompting them to fall back into poverty. Approximately 5 million students have been impacted by school closures in 2015.

More than 2.6 million hectares of forest, peat, and other land have burned in 2015 -- an area 4.5 times the size of Bali. Burned peat areas can be restored, but short-term impact include the loss of timber and non-timber forest products, and the loss of habitat for pollinators, wildlife, and grazing lands. While not yet fully analysed, the costs related to biodiversity may exceed US \$295 million for 2015. The long-term impact on wildlife and biodiversity is also not fully known, but thousands of hectares of habitat for orang-utans and other endangered species have been destroyed.

In terms of global impact, forest and peat fires are a major source of greenhouse gas (GHG) emissions. Daily emissions from Indonesia's fires in October 2015

exceeded the emissions from the entire US economy – that is more than 15.95 million tons of CO₂ emissions per day. If Indonesia could stop the fires it would meet its stated target to reduce GHG emissions by 29% by the year 2030.

Global Species Management Planning Workshops for Banteng, Anoa and Babirusa, January 2016

The IUCN Wild Cattle Specialist Group, together with the Ministry of Forestry and Environment, Indonesia will be conducting a Global Species Management Planning (GSMP) Workshops for Banteng, Anoa and Babirusa. The event will take place 25-30th January 2016, and includes a Population Viability Analysis. The venue will be Royal Safari Garden Hotel, Cisarua, Bogor.

Statistics bootcamp, Baluran National Park (April, 2016)

The Biodiversity Conservation Society Sarawak (BCSS) in collaboration with Baluran National Park and Copenhagen Zoo will be holding a Statistics bootcamp from the 4-14th of April, 2016 at Baluran National Park Head Quarters. The number of participants will be limited to 20. For more information and registration , please contact Mike Meredith: stats.bcss@gmail.com

Statistics bootcamp, Singapore (July, 2016)

A Boot Camp is planned as a *post*-conference workshop following the Conservation Asia 2016 event, a joint meeting of Association of Tropical Biology and Conservation (Asia-Pacific Chapter) and Society for Conservation Biology (Asia Section). The bootcamp will take place from 4-15th July at National University of Singapore. More details of workshops can be found at: <http://www.conservationasia2016.org/#!/workshops/c10yh>

Applications are open to those attending the main meeting, and signing up for the workshop is part of the registration process for the main meeting.

<http://www.conservationasia2016.org/#!/home/c1dmp>

Orangutan PHVA Workshop, Bogor (May 2016)

The IUCN Conservation Breeding Specialist Group (CBSG), together with the Ministry of Forestry and

Environment, will conduct a population and habitat viability workshop for orangutan in Indonesia from 23-27th of May, 2016. For more information, please contact: Phone: +6251 840 1645; Email: info@forina.or.id. Or visit: [www. http://forina.or.id/phvaou/category/intro/](http://forina.or.id/phvaou/category/intro/)

VORTEX population simulation - training workshop

Following the orangutan PHVA, Bogor, the CBSG will conduct a 2-day training workshop for conservation biologists that are interested in knowing more about VORTEX programme. The venue and exact time will be announced at the same site as the orangutan PHVA workshop site.

Invite to join Women for the Conservation of Indonesian Biodiversity (WCIB)

Creating professional networks has many benefits including creating connections and opportunities, sharing knowledge and experiences, boosting profiles and referrals, and increasing confidence and positive influences. Networks have proven to leverage efforts, diminish learning curves and catalyze synergies. Therefore, linking female natural resource and conservation professionals at a global level is urgently required. It is necessary to recognize outstanding women in Indonesian biodiversity conservation and encourage young women to enter and remain in this professional field.

The goals of Women for the Conservation of Indonesian Biodiversity are:

- Train and mentor women in conservation science and natural resource management
- Provide a support network/ advise during professional challenges
- Empower women to manage and conserve natural resources
- Ensure the best science is the basis for conservation and development decisions
- Conserve biodiversity and natural resources throughout Indonesia
- Provide a forum for how to best assist/ advise women in the future

This network is available to anyone working with or interested in biodiversity conservation in Indonesia. We encourage our male colleagues and supervisors to join and show they are committed to gender equality and support the advancement of women in natural resource fields. To join or for more information please email: WCIB@googlegroups.com