

FROM THE FIELD

# Live G







# ing with GIANTS

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**“Wild elephants  
are as helpless  
as before,” says  
U Khin Maung  
Gyi, my friend  
and colleague. “I  
believe we could  
do better for  
elephants and  
villagers if there is  
more transparency  
and discussion.”**



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We are in the Bago Yoma mountain range in south-central Myanmar, eating dinner in a former timber camp as the generator-powered lights hum in the background. There are still a few captive elephants staying in the camp overnight. Every so often a low rumble or soft trumpet can be heard flowing between the collection of 50 or so thatch homes. But most of the 20-30 captive elephants are released by their handlers, called mahouts, into the surrounding forests and hills. There they will forage until dawn. As the sun rises, the mahouts will follow their individual elephant's tracks and bring them back to camp to work for the day.

Thousands of people in Myanmar live in landscapes they share with elephants. Farming is the dominant occupation in these rural areas, where little other infrastructure exists. Many homes in rural Myanmar do not have running water or electricity. If a house or village does not have a water pump, women and children are often required to carry water from a nearby stream for the day's meal preparations (left).





*A child walks through the dust of a passing truck as the sun fades. The severe dry season that begins every February and extends until the rains start in May coats everything in the village in a fine red grit and limits the water available to support both humans and wildlife. Sharing this resource can force humans and elephants into closer contact, increasing the potential for conflict.*





**P**eople in rural areas often smoke locally made cigarettes as a deterrent to mosquitoes which carry life-threatening diseases such as malaria, dengue fever, and chikungunya. This threatens the lives of people, especially the children and elderly, in areas where medical access is poor and communities already experience challenges from poverty and low employment opportunities. Above, village headman's son uses incense to imitate his father and local councilman as we discussed the human-elephant conflict (HEC) challenges facing their village.

Farming is the primary occupation for people in the Bago Yoma. Thirty-eight percent of rice farmers in our study site reported that they lost half or more of their crop in 2013. Farmers who participated in our seasonal electric fence program in 2016 and 2017 reported no loss of crops, which has helped draw more people into our mitigation programs.

Sugarcane plantations owners have scaled back their operations over the past few years due to frequent crop-raiding from elephants, reducing the number of jobs available for local community members.





**E**lephants and humans have a rich shared history in Asia. Elephants feature prominently in local religions. They guarded ancient palaces. They served in armies, even assisting American troops for non-combat purposes during World War II. In Myanmar, elephants have long been beasts of burden, essential to the success of the country's timber industry. But as human populations expanded and developed the landscape from wildlands into agriculture and permanent settlements, incidences of human-elephant conflict began to rise. The elephant, an animal so entwined in the culture and tradition of Myanmar's people, is also the source of significant loss and devastation for many people living in rural areas across the country.



*Every morning, mahouts retrieve their elephants from the forest and take them to the stream to bathe them. This allows the mahout to inspect the elephants for any injuries incurred the night before and reinforces the relationship between mahout and elephant (opposite page).*





*A farmer shows injuries from elephant encountered in rice paddy, a crushed hip and immobile leg; with injuries he can't maintain his fields to support his wife and child.*





Communities in the southern Bago Yoma experience high levels of crop-raiding (primarily rice and sugarcane), and property damage from their elephant neighbors. For the past two decades, between 3 and 6 people have died annually in this area due to HEC. U Khin Maung Gyi and I are part of a collaborative project working to implement effective strategies to reduce HEC and find ways for both species to co-exist on the landscape. We have also recently begun a study to quantify some of the indirect ways HEC affects communities, such as opportunity loss (i.e., it's too dangerous to travel to attend school or collect wood), and health impacts (i.e., higher stress levels, inability to sleep). Project collaborators include: the Smithsonian Conservation Biology Institute, Clemson University, World Wildlife Fund-Myanmar, Compass Films, Friends of Wildlife, Growth for Prosperity, and the Myanmar government.



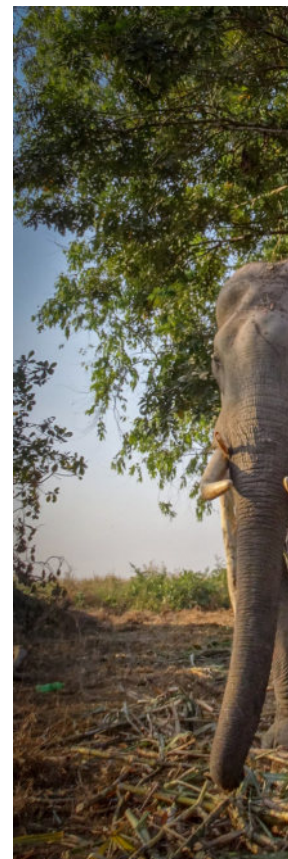
*A boy surveys the damage caused by a herd of elephants that destroyed a home and the family's small grove of banana trees. Fortunately, the family had been staying with relatives when the event occurred.*





**E**lephant presence near a village can make the journey from a child's home to their school dangerous, especially if the local schoolhouse is in the next village. This can prevent children from attending school especially during periods of high HEC, such as when the crops are ripening and can draw elephants nearer the villages.

The largest captive elephants in a camp are called koonkies, or warrior elephants. Koonkies are used by the Myanmar government to help farmers push wild elephants out of an area and protect crops. If the farm or plantation is located far from the camp, koonkies and their mahouts travel by truck.









**W**e are currently at the Myaing Hay Wun elephant camp, where we are working with nearby villages to collect dung samples and construct seasonal electric fences that will protect their crops from elephants until they can be harvested. But as we finish dinner and settle in for the evening cup of tea, U Khin Maung Gyi and I discuss a different problem for the elephant population.

“It appears to be more motherless elephant infants in our country”, he says. Our elephant movement project, designed to track how the elephants were moving through the landscape, had instead revealed the devastating extent of poaching occur-



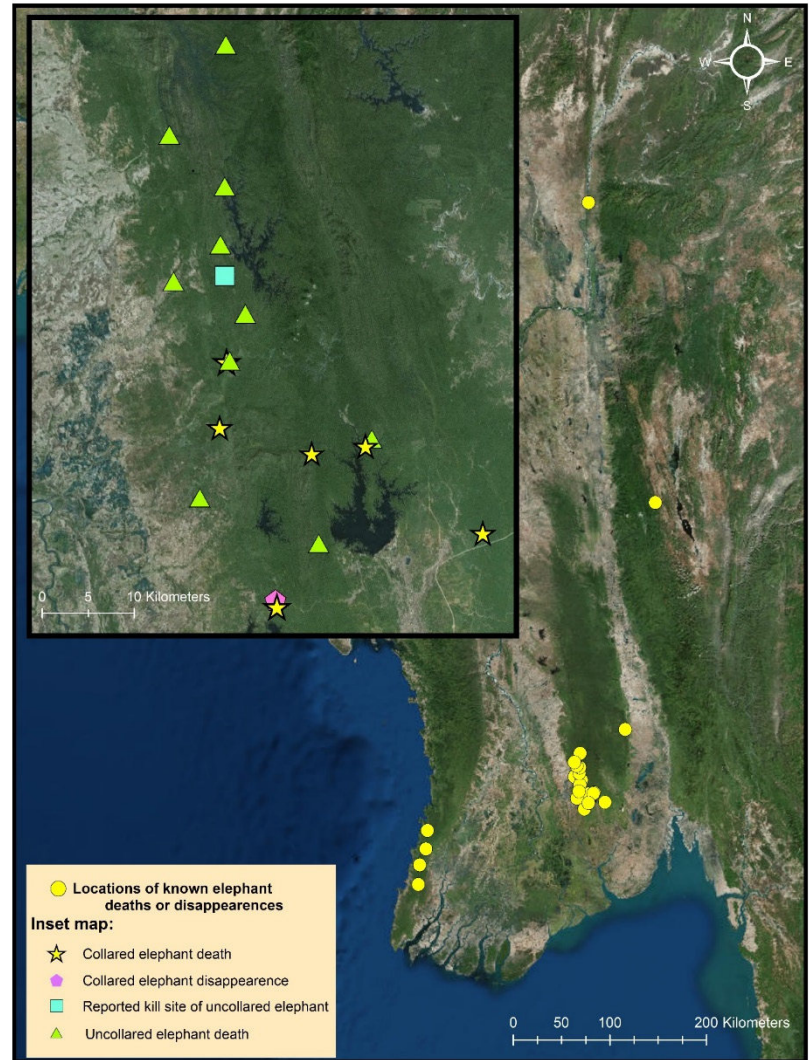
*Captive elephants are also used by the research team to track and capture wild elephants to attach satellite GPS collars (below). The captive elephants can help ensure the safety of both people and the wild elephant during the collaring process.*



ring in the Bago Yoma and in several of our other field sites across the country. We lost 7 of 15 collared elephants in the Bago Yoma to poachers, one only six days after the collar was attached. Once we realized the breadth of the problem, we began searching for other carcasses, documenting the loss of 19 total elephants within our ~35 km<sup>2</sup> study site in the Bago Yoma in a two-and-a-half year period. Searches in other field sites raised that number to 70 elephants for the same time frame, including a mass grave that housed the remains of an entire herd of 20 elephants.

“The number of wild elephants is so decreasing that there will be no elephant left”, he worries. Despite our findings, I’m not sure I agree. It is true that experiencing high levels of HEC can make people more willing to accept or engage in poaching. And the sale of the body parts from a single elephant on the black market can be more than 25 times greater than the annual salary for a farmer in the Bago Yoma (approx. \$1000/yr).

The skinned carcass of an elephant is not an uncommon sight (found April 2017; credit: Dr. Zaw Min Oo). Locations of elephant deaths and disappearances in Myanmar (map, right) shows elephants lost at the Bago





Yoma field site, including collared and uncollared elephants (source: World Imagery: Esri, DigitalGlobe, Earthstar Geographics, males CNES/Airbus DS, GeoEye, USDA FSA, USGS, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community [accessed November 2017]).

For Asian elephants, only males have tusks, which means poachers can only kill males if they want ivory. But if they poach for skin, they can kill any elephant regardless of age or gender. Due to the elephants' reproductive ecology, females are much more important in maintaining population stability than males. Targeting females for poaching will have a devastating effect on the survivorship rates of this endangered species.





Interview surveys in the area have shown that the local communities value elephants and want to protect them for future generations. Many of the community members remark on elephants' importance as 'part of nature' and that they are 'precious' to Myanmar. Most people are also willing to engage in mitigation activities such as electric fencing, though ensuring proper maintenance of the fence and equipment has proven difficult in some areas. Educational outreach programs in the area are also well received, but the effectiveness of the programs is still being assessed.

No single HEC mitigation or anti-poaching strategy can address the issue and achieve the balance we need between elephant conservation and protecting people and their livelihoods. Identifying different methods and compiling a toolbox of potential approaches is key. But what's more important is listening to the community and engaging them in elephant management and the creation of conservation policies. The will to conserve elephant populations is there. We as researchers need to provide the science and resources that communities can use to overcome some of the obstacles sharing a landscape with elephants presents, and support them as they find their own ways to live with the last remaining giants.



Further details on the poaching crisis: Sampson C, McEvoy J, Oo ZM, Chit AM, Chan AN, et al. (2018) New elephant crisis in Asia—Early warning signs from Myanmar. PLOS ONE 13(3): e0194113. <https://doi.org/10.1371/journal.pone.0194113>

