

Elephants and Landmines

by Amelia Carver for NatureStage

Mines, explosive remnants of war (ERWs), and cluster munitions, a problem in many war torn and post-war countries across the globe are wrecking renewed havoc on herds of elephants returning to the lands they inhabited before they were forced to relocate away from violent clashes. Landmines, created with the intent to maim rather than kill in order to use up more resources caring for injured soldiers than dead ones, are an issue for both human and elephant populations that draw severely on the resources of already depleted communities. The prevalence of mines in areas shared by elephants and humans illicit similar adaptive behaviors in the two groups who, ultimately, depend on the same kinds of outside assistance to be protected from and cared for in the process of resolution of the issue.

Currently, over 156 states who have signed the Mine Ban Treaty have stopped mine production altogether; unfortunately the 12 states of China, Cuba, India, Iran, Myanmar, North Korea, South Korea, Pakistan, Russia, Singapore, the United States, and Vietnam have not become party to the treaty and are thus under no obligation to stop producing mines. In 2009, India, Myanmar, and Pakistan were still producing live mines. Additionally, many rebel groups in war torn countries continue to lay improvised mines across large areas as a means of gaining grounds against government forces. As of August 2009, as many as 73 states and 7 areas in the world had active contamination by landmines with 27 states and 3 areas additionally contaminated with cluster munitions. As many as 55 countries saw casualties as a result of mines, ERWs, or cluster munitions. Many of these countries also have active elephant populations who are increasingly affected by the issue.

The cost of landmine production versus that of its eradication is incredibly large. It can be as cheap as \$1 to produce a live munition and as much as \$1000 to locate and disable it. The common technique involves rudimentary metal detection leading to a large number of false alarms that still require the same degree of finesse during excavation; the process is time consuming and relatively unfruitful. The effectiveness of landmine removal depends entirely on the success and refinement of the initial detective sweeps and the minimization of the land that needs to be carefully combed. Newer detection technologies such as the MineWolf machine seek to minimize the area of land that needs to be physically cleared, thereby increasing the safety and effectiveness of demining personnel.

The removal of landmines is one of the first steps necessary to returning a war torn country to its previous state. The process, elongated by a lack of technology and personnel, has proven to be dangerous to many elephants. Wild elephant populations are profoundly affected as they roam in search of food and elephants employed in a labor service also fall victim. In many cases, elephants working for humans are injured in remote areas and are unable to be helped for many days. The emotional and physical distress that the elephants experience is often accompanied by the emotional distress of the handler who is dependent on the elephant's well-being for sustenance and, in many cases, has grown up with the elephant creating a strong

emotional attachment. In many cases, the injured elephants will be put down as a result of the inherent difficulty in finding veterinary help and keeping the wounds and amputations of an elephant clean. Even then, it is only relatively recently that prosthetic options have become available to elephants (See the link at the end of the page to read about Motala, the first elephant to receive a prosthetic leg following her encounter with a landmine at the Thai-Burmese border). In Sri Lanka, according to wildlife veterinarians, as many as 10 elephants are killed or injured each year by landmines, and on the Thai-Burmese border, as many as 13 since 1999; injuries sustained include loss of limbs or trunk and massive wounds to the main body. Frequently, the resettlement of human populations results in further developments of land for housing and agriculture, resulting in the displacement of many elephant populations. This increases both the chance of human-elephant clashes and the chance that elephants will be forced to scavenge for food in areas that have not been cleared of landmines because they do not have the same value to human populations as other areas.

For most elephant populations, these issues are a significant threat to survival; but elephant populations are adapting. In Bangladesh and Angola, elephant herds have been observed developing the ability avoid territories of land affected by mines. Using satellite-tracking collars and ground observation, biologists and wildlife monitors have witnessed a change in the routes taken by elephants returning to their native lands postwar. A senior researcher in South Africa's Kruger National Park attributes this pattern to the possibility for elephants to smell landmines, but little is known how the elephants might have learned to associate the smell of landmines with danger. Another theory is that elephants have learned to associate certain areas with danger as a result of the trauma of seeing other elephants being injured by mines. With their complex social and communication structures it is possible that knowledge of the mines has been passed from herd to herd as a means of collective self-preservation. The behavioral changes witnessed in elephants, however, are not unlike those seen in humans living in mine-populated areas. Both are typically forced to enter affected areas as a result of food scarcity and livelihood pressures. Local people see the area affected in the same manner that elephants do, by seeing someone from the community be killed or injured by an active mine. Community leaders bring attention to the issue; the matrons of elephant herds are the ones that are satellite tagged and presumably, if any communication between herds occurs, they would be the ones to facilitate that communication and lead their herds through established safe routes. Andersson et al's research into Mine Awareness programs postulates that the sustainability of a mine-risk education program is highly dependent on the degree of communication between those educated by the program and others in the community. Thus, the effectiveness with which wild elephant herds have begun to avoid landmines indicates that there is a high level of inter- and intra-elephant community correspondence. According to the Elephant Charter, and organization that seeks to promote the healthy co-existence of humans and elephants, "Elephants live in an extensive social network, with relationships radiating out from the mother-offspring bond through members of a family, bond group, clan, sub-population, to independent adult males, and even beyond the population to strangers. Even in African forest

elephants where social organization seems to be simpler, the smaller family groups still interact with each other regularly.” What research has yet to show, however, is the degree to which elephants have a conception of their own mortality relative to the events that they have witnessed, but the presence of Post-Traumatic Stress Disorder (PTSD) and other psychological disorders in elephant populations has never been higher, an indication of their own understanding of the direness of their situation.

Indeed, adaptation has not been seen in all elephant populations faced with survival in active mine areas, and elephants continue to be harmed. On April 4, 2011--International Mine Awareness Day-- while many advocates for mine removal were celebrating the inclusion of 10 more states to the Mine Ban Treaty, two elephants were killed in Sri Lanka by landmines. This comes after a decision made by the Sri Lankan government to relocate the Sri Lankan Nature Conservatory to a former war zone containing as many as 1.5 million active landmines; proving even more that elephant safety depends on the actions taken and decisions made by humans in affected regions. As many as seven organizations are currently working in Sri Lanka to clear mines and promote mine education, but the demining process is not the only factor in helping elephants. Resettlement efforts made by human populations must be cognizantly managed to leave enough safe land for elephants to forage, decreasing the tendency for them to wander into dangerous territory or lash out against humans. With respect to the natural movement of elephants in Angola, a local elephant expert involved in Sri Lanka states that, "There should be some corridors left for elephants to move from one area to another. Blocking these traditional elephant paths aggravated the problem in other areas and we need to learn from those mistakes.” Plans to circumvent human-elephant conflict in Sri Lanka include the protection and rehabilitation of seven areas for elephants to safely live with an abundance of food and water, and the installation of electric fences by the Department of Wildlife Conservation all of which will keep elephants from wandering into villages and farmland. Further education of the general public as to how to deal with elephants is another important step in human-elephant conflict resolution.

General motions to help conserve the elephant population tend to be active in ways that seek to promote the demining of elephant occupied areas and of positive human elephant relations. To get involved with the plight of the elephants, and the issue of landmines specifically, please consider organizations such as Roots of Peace, Conservation International, and The Prosthetic Foundation at Friends of the Asian Elephants, all of whom have specific projects related to the well being of elephants affected by landmine presence.

Amelia Carver is a student at MIT who worked for NatureStage for the spring semester. She writes:

I am in my second year at MIT studying pre-medicine and music with a focus in composition. My long-term goal is to become a surgeon (specifically a trauma surgeon) working with organizations like Doctors Without Borders in third world countries. International travel is, for me, an absolute necessity; but one that demands that I become intimate with a region through an extended presence as well as contribution to a community. Being a surgeon assures me a

greater body of knowledge to help people immediately in places where aid is uncommon and, in all likelihood, the most needed. It is also a visceral means to foster connection with people; starting the healing process with physical aid and continuing it holistically with individual invigoration and community rejuvenation. I saw first-hand through my work in Thailand and India the interconnectedness of human welfare with animal and environmental protection.

Music is another form of healing which can be a powerful form of community- building. I am currently working mostly with acoustic guitar, voice, piano, and various electronic mixing mediums. Working for NatureStage prepares me for a livelihood working with non-profit organizations, while using my research and musical talents towards the appreciation of and compassion for other beings, and understanding the human niche within a larger scope of existence, as explored through multiple modes of expression. I am pleased and honored to join the NatureStage group and to assist with these endeavors.

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