

Saving the Iconic Asian Elephant

New Study Gives Clues to Help them Replenish

The animal kingdom is filled with natural wonders, yet most pale in comparison to the magnificence and grandeur of the Asian Elephant. This massive behemoth is an immensely awe inspiring sight to behold, yet future generations may never get the opportunity to see one with their own eyes. According to the International Union for Conservation of Nature, the Asian Elephant is currently an endangered species, and many populations are facing imminent extinction. In Myanmar, the wild elephant population has been estimated to reach extinction within the next hundred years based on current projections. Furthermore, the low rates of survival and fertility amongst the elephants in captive and semi-captive populations has further strained the sustainability of the species in the area. Unless humans intervene and give a concerted effort at their conservation, we may be witnessing the dying breaths of a species.

As with all battles against extinction, the solution is as simple and timeless as life on this Earth: babies, and lots of them. Any effort to save the Asian Elephants is predicated on our ability to help boost reproductive rates. Yet an equally simple obstacle remains in the way.

“The [elephants] mating is something we actually know absolutely nothing about,” says Adam Heyward from the Department of Animal and Plant Sciences at the University of Sheffield. “The mating all happens at night in the forest when they are completely unobserved.”

Because we know so little about elephant reproduction, any efforts at conservation are hindered by our own ignorance. Yet for Heyward and his colleagues, this is a lack of knowledge that is being filled in. Their recent longitudinal study centred on the reproductive success of elephants in Myanmar timber camps, where elephants have been used as labour animals for over a century. This population was perfect for study as there are extensive records compiled over multiple generations of elephants, including birthing records. Furthermore, Heyward is quick to point out that these animals are quite healthy, much more so than elephants in zoos where they are generally obese and don't have as long of a life expectancy. Finally, and perhaps most importantly, the elephants breed away from the camps when they are released for foraging and are left to birth and nurse their calves themselves. Simply put, they are uncontrolled when it comes to the reproductive process and yet come with an extensive history of records.

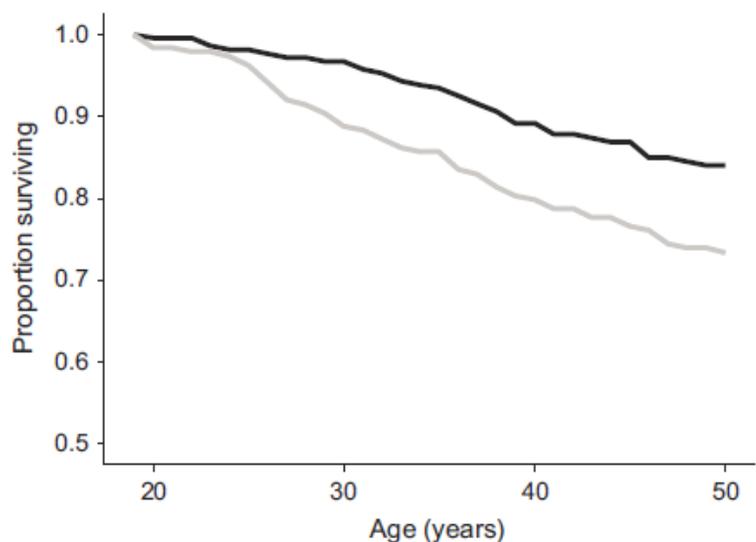
Heyward and his colleagues based their study on an evolutionary theory known as senescence. This theory posits that if the death rate of individuals increases dramatically with age, natural selection should favour animals that breed extremely early in life as opposed to those who wait until the peak breeding years. However, this early breeding also has a downside, as it has been associated with a lower life expectancy. While the validity of this hypothesis has been established in other species (namely birds), it had never really been put to test in a mammal with a life expectancy that stretches decades as opposed to years. Such a long lifetime could be construed to support a “slow and steady wins the race” model for breeding success, as waiting for peak years would still live plenty of time for further breeding when there is still decades of life ahead.

Based on the findings of the study, it was found that the peak age of elephant reproduction was at 19 years. This alone is remarkably useful information, in that knowing which elephants are statistically most likely to breed can be used in any conservation effort.

Using 19 years of age as the threshold for early versus later life breeding, the support for senescence in elephants was very convincing. Elephants who bred early in life indeed lived shorter lives (inset figure), however on average had more calves during their lifetime. Furthermore, the calves of females who had bred early in life (even if they were born later in their mothers' life) exhibited significantly higher survival rates.

Overall the early breeding did indeed shorten the lives of the elephants, yet they were able to produce a greater number of calves who would reach sexual maturity themselves.

While this information gives us insight on the breeding success of elephants as a population, and hints at how we can see them replenished, it is only the first step. The breeding patterns of individual elephants still remain a mystery, and physiological and behavioural advantages to breeding are still in need of study. One can only hope that due to the efforts of biologist such as Hayward, our grandchildren and their grandchildren will have the privilege to see one of these wonders with their own eyes.



The dark line represents elephants that reproduced before 19; the grey line represents those who did not