

Understanding biodiversity and the food web in relation to sun bear ecology

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Concerning reliable scientific information as a source, it is imperative that any scientific study be peer-reviewed, meaning that a study should be evaluated by qualified, impartial, and even anonymous experts that are not involved in the work that led to the publication (Simon, 2014). An example is a recent study by Naing et al. (2020) concerning potential predators of the sun bear (*Helarctos malayanus*) in the tropical forests of Southeast Asia. Published in *Ursus*—a scientific journal covering bears, published biannually by the International Association for Bear Research and Management (Ursus, 2017)—the study was found on ResearchGate, entitled *Large carnivores as potential predators of sun bears*.

The ecological study is appropriate considering that the world is currently experiencing a significant decline in biodiversity on all levels—from the ecosystem level down through to the organism. Otherwise known as the sixth mass extinction, scientists, governments, and some of the public are extremely concerned about humanity's impact on species biodiversity by way of habitat fragmentation, resource exploitation, and overpopulation, to name but a few (Pievani, 2013).

Tissue regeneration and green anoles as model organisms: Is a cure for humans imminent While the Naing et al. study considers different predators of sun bears in an effort to better understand trophic levels in Southeast Asia, the authors acknowledge the importance of the undertaking since populations of predators such as tigers (*Panthera tigris*) and leopards (*Panthera pardus*) are already experiencing regional declines while being restricted to protected areas (Naing et al., 2020). Such a closure to the knowledge gap would potentially aid in wildlife management strategies since the potential impacts of predation on sun bears would likely amplify under existing conditions, leading to a further decline in sun bear populations (Naing et al., 2020).

The article begins by acknowledging that very little is known about the predation of sun bears, not to mention the ecology of sun bears as a distinct biological species (Naing et al., 2020). Moreover, the authors admit that only the reticulated python (*Malayopython reticulatus*) was confirmed as a natural predator after a large adult female sun bear was documented as having been predated upon (Naing et al., 2020; Fredriksson, 2005). While not explicitly stated as a question in the study, the researchers were keen to discover what other potential carnivores might be predated on sunbears. This, in short, was the research question.

Naing and fellow researchers laid out a series of camera traps in a 2,151km² protected area known as the Htmanthi Wildlife Sanctuary of northwestern Myanmar (Naing et al., 2020). They also performed an intensive literature review on the dietary findings of three apex carnivore species living in Southeast Asia ranging from 1980 to 2018: dholes (*Cuon alpinus*), leopards, and tigers. Finally, the literature review included a study outside of Southeast Asia to see if

other bear species were prey for other apex predators. For example, the Eurasian brown bear (*Ursus arctos arctos*) is prey for the Amur tiger (*Panthera tigris altaica*) (Naing et al., 2020).

In addition to previous dietary studies confirming sun bears as prey for tigers and leopards (but not dholes), one of the camera traps captured an image of an adult male leopard carrying a dead sun bear cub in its jaws; two puncture marks around the neck area confirmed the kill since leopards are known to dispatch their prey through strangulation of the jugular. Moreover, the same leopard was caught on camera in 22 sites where sun bears and leopards share the same tropical forest habitat (Naing et al., 2020).

Such a finding, according to Naing et al. (2020), “provided the first record of probable predation on sun bears by leopards, which is only the second confirmed natural predator of sun bears, in addition to reticulated pythons.” Yet the authors acknowledge that though this seemingly answered their research question, additional studies of leopard diets will be necessary in order to determine the extent that leopards prey on sun bears (Naing et al., 2020).

The authors utilized the scientific method soundly, though one should never assume that it is a strictly linear process. For example, the research question, methods, and results ended up leading to a new observation—the photograph of the leopard with the bear cub. This observation could lead to a brand new question, followed by a hypothesis and different experiment(s) altogether.

References

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