

EVIDENCE

“Someday we will all learn anew through hands that love us”: Protecting a key insular population of the Sulawesi Fruit Bat *Acerodon celebensis*

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Flying foxes are vital in ecological and economic systems but also exceptionally vulnerable to extinction (Fujita & Tuttle, 1991; Vincenot et al., 2017), with hunting for bushmeat one of the most critical threats (Mildenstein et al., 2016). The Sulawesi Fruit Bat, *Acerodon celebensis*, a flying fox endemic to Indonesia's island of Sulawesi, is listed as Vulnerable on the IUCN RedList, and may soon move to Endangered if hunting and habitat loss continue (Tsang & Sheherazade, 2016). Exploitation for bushmeat is already considered responsible for its extirpation from parts of its former range (Sheherazade & Tsang, 2015). Protection of daytime roost sites has been demonstrated to recover declining flying fox populations and “could hold the key to sustaining populations” (Mildenstein et al., 2016).

Tangkaladi Island (or *Pulau Empat*), located c.1.5 km off the coast of Taima village in the Tompotika region of eastern Central Sulawesi, is a 7-ha uninhabited island which serves as a daytime roost site for thousands of *A. celebensis* as well as the Black Flying Fox *Pteropus alecto* and 2–5 other bat species, which depart the island each night to forage in mainland forests as much as 25 km away (Vardon et al., 2001). Taima's c.580 households comprise largely subsistence farmers and fisherfolk. Starting in 2006,

a small international conservation partnership (“the NGO”) was formed to collaborate with the Taima community to conserve the maleo bird *Macrocephalon maleo* (IUCN Endangered), a megapode which nests communally in the village environs. Working with the Taima community to end the poaching of maleo eggs has resulted in a four-fold increase in local maleo numbers (Tasirin et al., 2021). Despite the common perception of fruit-eating bats as agricultural pests, and their commercial potential as bushmeat, the growing conservation ethic in the village inspired the NGO partnership to attempt to end the long-time practice of bat hunting on Tangkuladi.

An inquiry revealed that only a small number of individuals were involved in bat hunting on the island, and for none was it their sole income source. Bats were captured by the hundreds or thousands in large nets or on lines with hooks, primarily for commercial sale through middlemen to distant bushmeat markets. Muslim practice discourages bat consumption, so few were consumed locally, except occasionally to serve a folk belief that consumption of bat hearts can cure asthma. However, although only a few local men were involved, their hunting activities were frequent and ongoing over a period of years.

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Through community events and printed materials, local outreach efforts were initiated in 2010, emphasizing the ecological and economic contributions of bats, as well as their entitlement to human respect and compassion as marvelous and vulnerable fellow creatures. With increased awareness, anti-hunting sentiment within the village grew, but some hunting continued. Bat numbers, although unquantified, appeared to be declining on Tangkuladi and, by March of 2013, all remaining bats abandoned the island.

In September 2013, with the approval of village leadership, the NGO negotiated the purchase of a two-year conservation lease of the island from all 10 individual Tangkuladi landowners, at which point all hunting ceased. Under the lease terms, the island landowners, who previously used the island only occasionally for raising coconuts, were each paid approximately Rp 1,000,000 per year (c. USD \$80)—considerably more than they would have earned from the coconuts—to dedicate the island for conservation (the amount increased over time). The landowners, which included the most active former bat hunter, were also hired on a rotating basis to patrol and monitor the site to prevent hunting. Within months, bats were again seen roosting there. In 2014, on top of the conservation lease, Tangkuladi was granted official government status as a local protected area (KKPD, *Kawasan Konservasi Perairan Daerah*), and by February 2015 more than 10,000 bats were counted departing the island at dusk to forage in nearby mainland forests. The IUCN RedList assessment for *A. celebensis*, written in 2016, states that no large roost sites for this species are fully protected from hunting (Tsang & Sheherazade, 2016). Tangkuladi has in fact achieved that status, but may thus be the only one.

Tangkuladi's conservation lease has since been renewed twice, for 5, then 10 years, with near-unanimous support from landowners and the community, and the bats continue their nightly visitations to the region's forests. Former bat hunters have three times threatened to resume hunting in violation of the conservation lease, but, with pressure from their village peers and verbal persuasion by NGO staff, have not done so. Villagers explain that they no longer see bat hunting as an acceptable livelihood; in their view, bats must now be conserved and former hunters can pursue farming or fishing like everyone else. Commercial traders have on multiple occasions offered cash for the opportunity to hunt bats on the island, but they have been consistently refused. Indeed, villagers are now even discouraging bat hunting on another nearby island that does not enjoy any form of protection. Visitors have occasionally arrived to observe Tangkuladi's bats, for which a modest boatman's fee is charged for their passage and one of the former landowners will proudly serve as tour guide. Occasional bat-related outreach efforts in the

village and beyond have continued, not only providing information, but encouraging residents to reflect on and express, in conversation, community and religious discussions, and artistic expression, their shared sense of appreciation for and kinship with bats and the more-than-human world.

Since protecting the island, Taima villagers have expressed growing support for protecting the bats of Tangkuladi. Completely on his own initiative, villager Warman Manasai (included here as a co-author) even composed poetry from a bat's point of view in which he called for a new attitude of “mercy” towards these fellow members of the “world community.” (For full text, in translation from Bahasa Indonesia, see Summers, 2021).

In attempting to persuade communities to support conservation—especially poor communities in a developing country—practitioners are usually advised to emphasize the economic benefits and ecosystem services that biodiversity brings, and these are indeed important. However, our experience suggests that not only economic factors but also intrinsic values including a sense of kinship with and compassion for wildlife can motivate communities to take conservation action (Rolston III, 1988). From this perspective, humans and the rest of nature are all members, in Warman's phrase, of the “world community,” accountable to one another, and deserving of one another's care and respect. Failure to speak to this deep sense of connection not only wastes a critical opportunity for strengthening support for conservation, but it can also reflect an underlying disrespect for the poor—as if, because of their economic conditions, the poor are somehow less capable of feeling this more expansive connection with nature than the wealthy.

Taima village has shown that successful community-based cessation of bat hunting can be accomplished and sustained. This accomplishment is all the more significant in light of the Covid-19 pandemic, and the growing need and challenge to protect bats and prevent zoonotic diseases (MacFarlane & Rocha, 2020). In the words of the poem's bat narrator: “Goodbye, feckless human that hunts us/Someday we will all learn anew through hands that love us.”

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Marcy Summers, Roma Bunsung, and others conceived of the project. Marcy Summers, Roma Bunsung, Warman Manasai, and others carried out the activities described. Marcy Summers wrote the article. Warman Manasai wrote the poem quoted in the article.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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REFERENCES

- Fujita, M., & Tuttle, M. (1991). Flying foxes (Chiroptera: Pteropodidae): Threatened animals of key ecological and economic importance. *Conservation Biology*, 5, 455–463.
- MacFarlane, D., & Rocha, R. (2020). Guidelines for communicating about bats to prevent persecution in the time of COVID-19. *Biological Conservation*, 248, 108650.

- Mildenstein, T., Iroro, T., & Racey, P. A. (2016). Exploitation of bats for bushmeat and medicine. In C. C. Voigt & T. Kingston (Eds.), *Bats in the anthropocene: Conservation of bats in a changing world* (pp. 325–375). Springer. https://doi.org/10.1007/978-3-319-25220-9_12
- Rolston, H., III. (1988). *Environmental ethics: Duties to and values in the natural world*. Temple University Press.
- Sheherazade, S., & Tsang, S. M. (2015). Quantifying the bat bushmeat trade in North Sulawesi, Indonesia, with suggestions for conservation action. *Global Ecology & Conservation*, 3, 324–330.
- Summers, M. (2021). ALTO Update July 2021: The Bat Defender. <https://www.tompotika.org/news-archives/>
- Tasirin, J. S., Iskandar, D. T., Laya, A., Kresno, P., Suling, N., Oga, V. T., Djano, R., Bawotong, A., Nur, A., Isfandri, M., Abbas, W., Rihu, N. A., Poli, E., Lanusi, A. A., & Summers, M. (2021). Maleo *Macrocephalon maleo* population recovery at two Sulawesi nesting grounds after community engagement to prevent egg poaching. *Global Ecology & Conservation*, 28, e01699.
- Tsang, S. M. & Sheherazade, S. (2016). *Acerodon celebensis*. IUCN red list of threatened species. 2016.e.T137A21988719.
- Vardon, M. J., Brocklehurst, P. S., Woinarski, J. C. Z., Cunningham, R. B., Donnelly, C. F., & Tidemann, C. R. (2001). Seasonal habitat use by flying-foxes, *Pteropus alecto* and *P. scapulatus* (Megachiroptera), in monsoonal Australia. *Journal of Zoology*, 253, 523–535.
- Vincenot, C. E., Florens, F. B. V., & Kingston, T. (2017). Can we protect Island flying foxes? *Science*, 355, 1368–1370.

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