

Education workshops improve the ability of Forest Departments to identify amphibians in Western Ghats, India

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SUMMARY: Education workshops conducted with forest departments in Western Ghats resulted in improved ability to identify four of five amphibian species and their habitats.

BACKGROUND: The toad-skinned frog *Walkerana phrynoderma* is a critically endangered terrestrial frog restricted to an area less than 100 km² in tropical, mid- and high-elevation rainforests of the Western Ghats, India (Biju *et al.* 2004). Increasing habitat loss and unchecked firewood collection are its major threats. The focus of Forest Departments on charismatic megafauna (MoEF 2011) and their lack of knowledge to identify amphibians further undermines their conservation. We conducted education workshops to improve the amphibian identification skills of Forest Department employees. Previous studies found that students taught using live amphibians and those with previous experience gained and retained knowledge better than those taught indoors with pictures (Smith *et al.* 2017). This study aims to test whether workshops improved the Forest Department's capacity to identify amphibians.

ACTION: Two one-day amphibian identification workshops (16 November and 8 December 2015), consisting of classroom and field sessions, were conducted in Munnar, Kerala with 26 participants from three regional Forest Departments. Classroom sessions consisted of visual presentations detailing the importance of amphibians and their diversity in the Western Ghats, specifically focusing on five amphibians in Munnar: *W. phrynoderma* and *Rhacophorus pseudomalabaricus* (both critically endangered), *Micrixalus adonis* (not evaluated), *Ghatixalus asterops* (data-deficient) and *Raorchestes beddomii* (near threatened). These species were chosen as they were distinct, easy to identify and occupied different habitats within the rainforest. Species information cards in the local language (Malayalam), each with an illustration of the amphibian along with identification characteristics, common name (Malayalam, English; Das 2015) and habitat occupied were provided to each participant. The field session involved showing participants the five species and their specific habitats in the field. A survey was conducted before the workshop to record participants' prior knowledge of the five species. Information on whether they recognized the species, its common name in Malayalam and the habitat it was found in were requested after showing them photographs of the species. An identical survey was repeated four months later with 14 respondents to understand whether the workshop had improved their skills. The number of participants who had had previous knowledge of the species, or who gained or did not gain knowledge was calculated.

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Table 1. Number of Forest Department employees without prior knowledge that successfully identified amphibians and related information four months after attending an education workshop (n=14, those with prior knowledge excluded).

Species	Recognition		Common name		Habitat	
	Yes	No	Yes	No	Yes	No
<i>W. phrynoderma</i>	14	0	2	12	11	3
<i>R. pseudomalabaricus</i>	2	1	2	12	10	4
<i>M. adonis</i>	5	3	3	11	9	2
<i>G. asterops</i>	3	8	0	14	6	8
<i>R. beddomii</i>	5	7	2	12	6	8

CONSEQUENCES & DISCUSSION: Four months after the workshop, Forest Department employees had improved their recognition skills for *W. phrynoderma*, *R. pseudomalabaricus*, *M. adonis* and *R. beddomii* and the habitats they occurred in (Table 1). These species are therefore relatively easy to distinguish and should act as focal species during official monitoring of amphibian populations. Participants also had substantial previous knowledge of *R. pseudomalabaricus* and *M. adonis*. There was less improvement in identifying *G. asterops* as it was probably not sufficiently distinct or characteristic. The common name of all species was not retained by most respondents (Table 1), possibly because common names were difficult to memorize and folk taxonomy for most amphibians is generic and not specific to the species-level (Ulicsni *et al.* 2013). This could be improved through a greater encouragement from the higher officials of the Forest Department for their staff to equip themselves with such knowledge. Overall, workshops improved the knowledge of Forest Department employees and, if undertaken annually, could consistently improve their skills in identifying amphibians and eventually conserving them.

ACKNOWLEDGEMENTS: We thank Sandeep Das for co-organizing workshops; Benjamin Tapley, Carly Waterman, Jack Tordoff, K.V. Gururaja, Rajeev Raghavan and Stuart Patterson for supporting the project and the Conservation Leadership Program (03234915), Idea Wild and Rufford Small Grants Program (17771-2) for financial support. Research permission was from the Kerala Forest Department (WL10-15417/15).

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