Pollinators and seed dispersers: conserving West Java, Indonesia's biodiversity though conservation education

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In collaboration with the Little Fireface Project (LFP) and thanks to the funding from the Primate Society of Great Britain, we educated a total of 400 students local to the village of Cipaganti, West Java on the importance of seed dispersal and pollination to agriculture by primates, civets and other local fauna. Cipaganti is located at the fertile foothills of Mount Papandayan and is a heavily agricultural community causing intense pressures on local biodiversity (Nekaris et al., 2017). Reduced pollinator and seed disperser presence can negatively impact the human condition, such as reduced agricultural yields, landslides and buffering against climate change (Shiels & Walker, 2003; Garibaldi et al., 2011; McConkey et al., 2011). The objective of this project was to increase understanding of the human benefits from a healthy ecosystem, paving the way to a sustainable future for this area of Java.

Because not all children attended school in the area, we conducted the outreach via two education settings. Children partook in the project across 10 government run schools in the area (12-15 years old); other children partook by attending the free and less formal Nature Club (6-12 years old), run by LFP. Topics discussed included 1) Javan biodiversity; 2) pollination and seed dispersal; 3) the importance of animals in pollination and seed dispersal; 4) the importance of biodiversity in agroforestry; 5) wildlife friendly coffee. All lessons were taught in Bahasa Indonesia.

Figure 1: Left - Example of the board post Team exercise used in Nature Club; Right - Children partaking in a school session in West Java, Indonesia, taught by LFP education officer Dede Ahmad.

We used an array of supporting activities that directly reflected each of the principal lessons. Games of memory were especially useful as they encouraged both team work and critical thinking. For example, to reflect on pollination and seed dispersal we split the class into 'Team pollinator' and 'Team disperser'. The task was to select the information relevant to their team service and put them in the correct order reflecting the subtitles: *hewan* (animal), *makanan* (diet), *regenurasi hutan* (ecosystem service) and key words (Figure 1). Teams presented their service to the class and then switched for the next round. The team exercises allowed us to overcome the issue of boys and girls not wanting to work/learn together as they became competitive in beating one another with their knowledge to attain a prize. Additional activities, such as growing coffee seedlings using organic and inorganic fertilizers and discussing the difference, were used.

Although we conducted formative evaluations throughout the process to ensure the children were ready to move on to the next principal lesson, we conducted a final evaluation of all lessons together one month after the completion of the programme. Using the same mixed open-ended and multiple choice questions from a pre-test, we concluded significant improvements in knowledge, reflecting each of the five principal lessons' education content. The only non-significant finding reflects the high ability to identify the central species focus of the Little Fireface Project at pre-test -- the Javan slow loris (*Nycticebus javanicus*) and Javan palm civet (*Paradoxurus musanga javanensis*). We conclude that using informative games as a teaching tool can significantly increase children's knowledge of complex ecological matter. The data also highlight the importance of activities to support conservation education projects. We will explore long-term retention after six months and one year. We will use key concepts retained to encourage positive attitudes and behaviours towards a healthy ecosystem in the future. As part of the long-term work of LFP, we will continue to monitor the impact of this knowledge on pro-environment behaviour change.

References

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