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DATA PAPER

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18-year plant reproductive phenology dataset from Lambir, Borneo, including four large general flowering events

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Abstract

Flowering and fruiting phenology can have large impacts on a plant's reproductive success. In many plant species, these phenological events are controlled by seasonal climatic cues, resulting in one-year reproductive cycles. However, parts of SE Asian tropical forests have an aseasonal climate with irregular fluctuations. This database comprises phenology records collected from 1993 to 2011 at the community level in an aseasonal lowland dipterocarp forest of the Lambir Hills National Park in Borneo. Observations were made every two weeks at three sites: The Canopy Biology Plot (CBP) with tree towers and walkways, the Operation Raleigh Tower (ORT) area with a tree tower for tourist attraction, and the Crane Plot located between the CBP and ORT, where plants were monitored from terraces on a canopy crane installed in 2000. The dataset includes in total 172,521 records of 450, 118, and 51 plants in CBP, Crane Plot, and ORT, respectively, representing 303 species. The number of individuals per species ranges from 1 to 21, and 64.9% are represented by only one. The plants in the censuses were mostly trees but also included lianas and epiphytes. The data have been used to study the causes and consequences of synchronized flowering and fruiting at the community level, a phenomenon unique to the region. Previous studies have shown that this

synchronization is synergistically driven by cool air temperature and drought. Irregular flowering and fruiting have significant impacts on flower visitors, frugivores, forest material cycling, and plant regeneration. The dataset can also be used for comparing the phenology of the same species or group among forests and regions and exploring its association with climates. One major concern regarding tropical forests in the area is the effects of climate change on this community-wide masting regime, which could disrupt forest regeneration and ecosystem processes. The dataset could be an important source of information for conservation efforts aimed at protecting these amazingly diverse forest ecosystems. This dataset can be freely used for non-commercial purposes. Users of these data should cite this data paper in any publications resulting from its use and acknowledge the Forest Department Sarawak and Sarawak Forestry Corporation.

KEYWORDS
1993–2011, Borneo, dipterocarp forest, general flowering, Lambir Hills National Park, Malaysia, mast seeding, plant reproductive phenology, Sarawak

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data set is available as Supporting Information and is also available in Zenodo at https://doi.org/10.5281/zenodo.13892251.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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