Elephant diet and the role of seed dispersal by Asian elephants in Prey Lang Wildlife Sanctuary, Cambodia

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Wild Earth Allies

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Contents

Study Overview

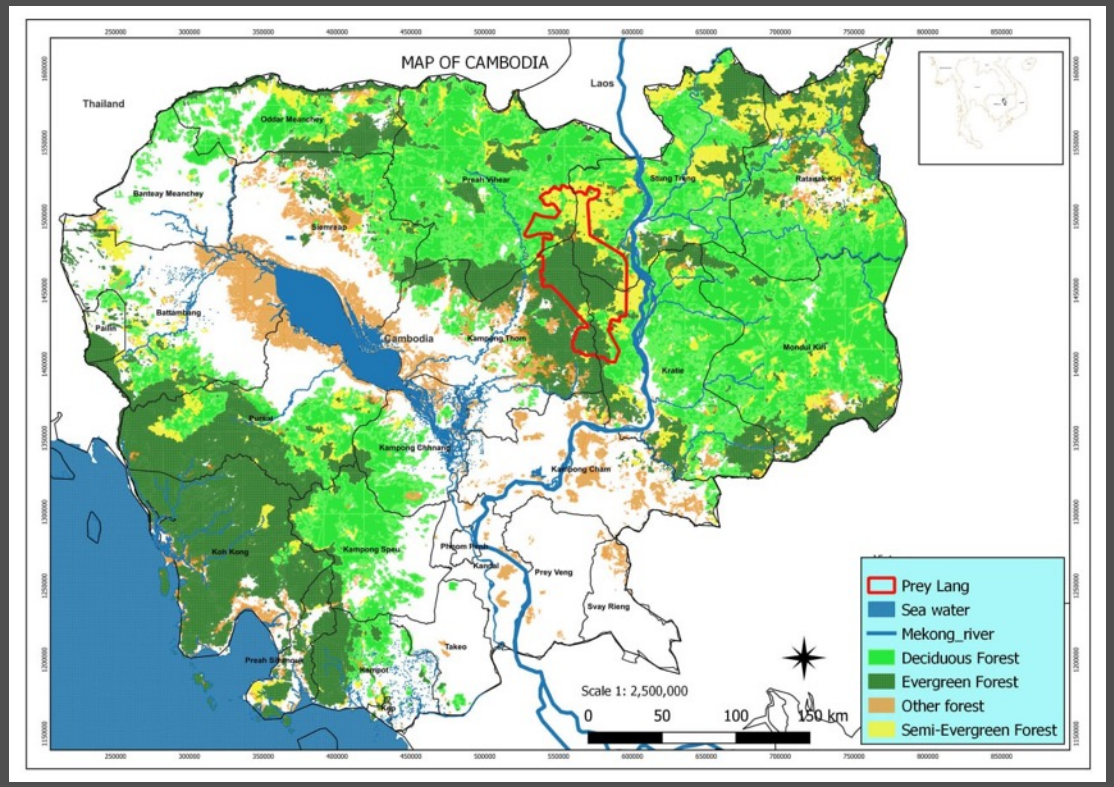
- Asian elephants are known to play a vital ecological role in seed dispersal that maintains healthy forests.
- The elephant diet study, a first for Cambodia, was undertaken to document plants and fruits eaten by Asian elephants and prove the important role of seed dispersal in the Prey Lang Forest ecosystem.
- The results of the study will help guide strategies to conserve plant species important for elephant diet. ‘Elephant Trees’ can be an essential strategy for forest habitat restoration more broadly.
- The research was conducted between 2019 and 2022 in Prey Lang Wildlife Sanctuary.

Who We Are

- Wild Earth Allies' mission is to protect vital areas of our natural world for the benefit of wildlife, habitats, and people by inspiring collaborative action.
- In Cambodia's Prey Lang Forest, we work with government and community partners to monitor and protect biodiversity. Our collaborative efforts strengthen habitat management and restoration and enhance community livelihoods.

Prey Lang Forest

- Cambodia’s Prey Lang Forest is one of the largest remaining areas of lowland evergreen forests in the Indo-Burma biodiversity hotspot.
- Home to more than 55 threatened wildlife species, including the endangered Asian elephant
- Prey Lang is threatened by illegal logging, forest degradation, and unsustainable land use practices



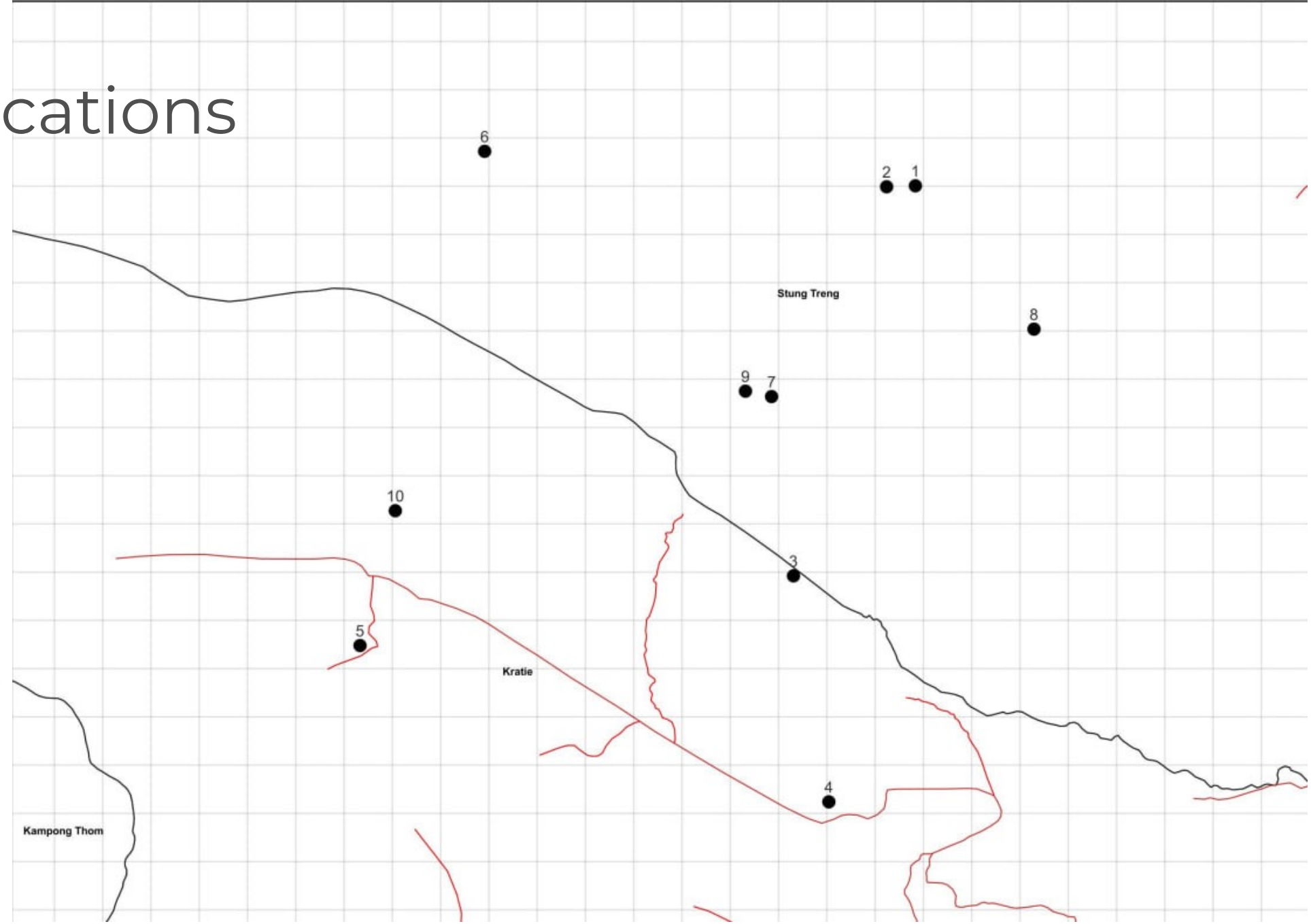
Methods

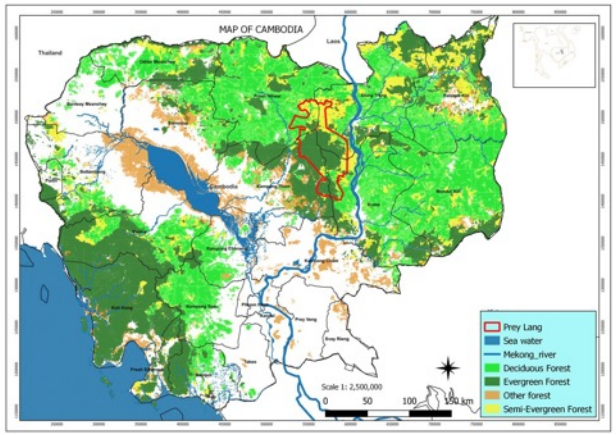
- A team of 4–5 people conducted walking surveys along 10 Asian elephant paths to look for fresh signs of eaten plants and dung piles.
- Intact seeds from fresh dung piles were collected for germination in a nursery to test the germination success against a control sample.
- Elephant dung piles with seedlings growing were also observed, and species composition was recorded.

Methods

- Plants eaten by elephants were examined, identified, and photographed. Some unknown species were collected as specimens
- Parataxonomists (local guides) were used to identify the elephant eaten plants.
- Scientific names of the plants were identified by using a field guidebook (Dy Phon, 2000)

Survey Locations





Plant Species

- A total of **66 plant species were identified** (8 unidentified), totaling 74
- This represented by 37 families, 58 genera and 66 species, 8 unknown

Life form (%)	**Trees** 49	**Liana** 16	**Shrub** 16	**Vine** 7	**Rattan** 4	**Grass** 4	**Herb** 1	**Palm** 1	**Epiphyte** 1

Parts of plants eaten (%)	**Roots** 44	**Leaves** 24	**Barks** 16	Fruits 8	**Trunks** 9

Results

Seeds collected from elephant dung

- A total of 115 seeds were collected from 46 dung piles for germination
- 65 seeds (57%) germinated into seedlings

Seeds collected from forest floor

- A total of 2,900 seeds were collected from the ground (not eaten) as a control
- 2,413 (83%) seeds germinated into seedlings

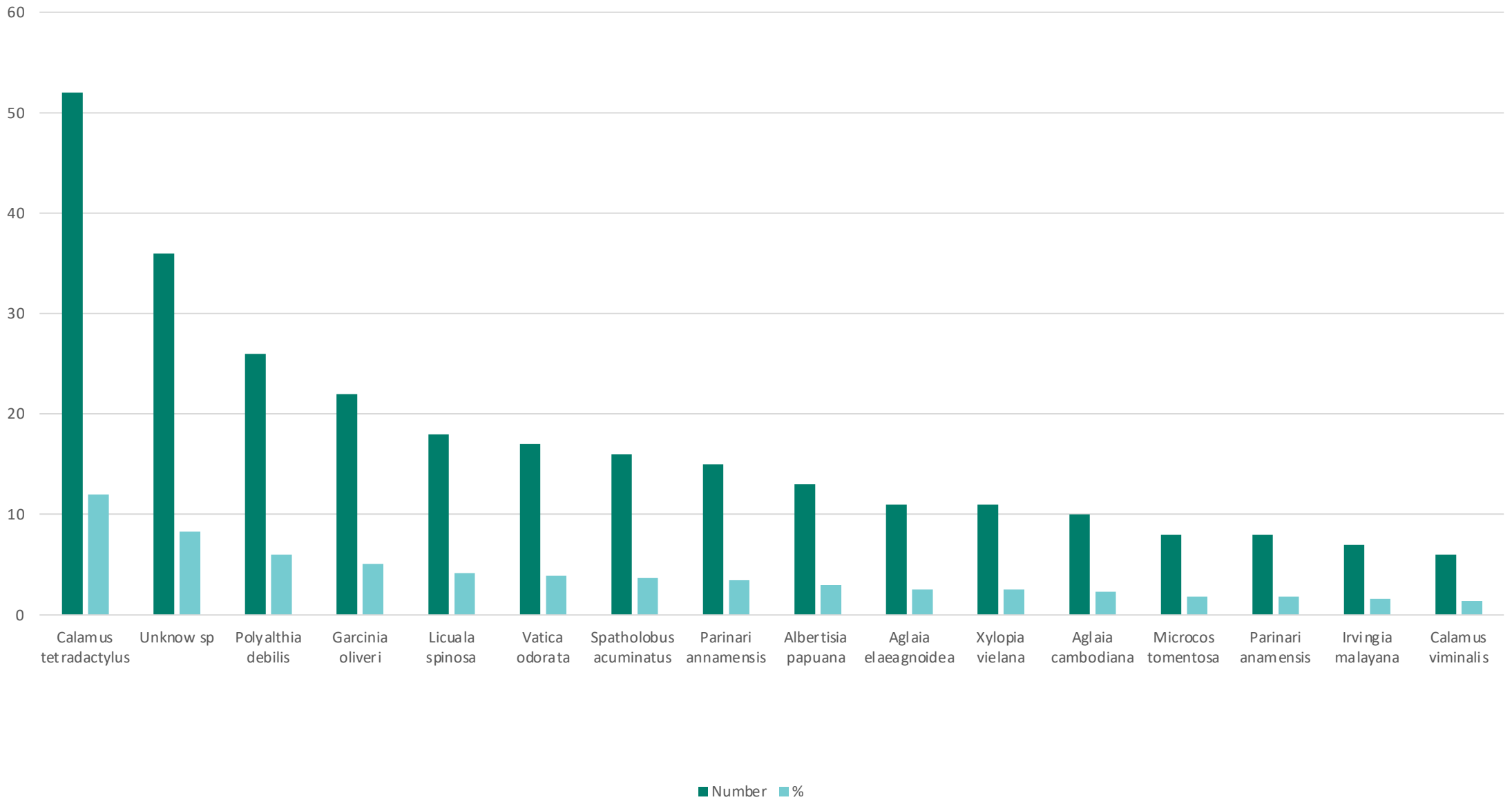
Replanted seedlings

- 2,478 seedlings were planted in the forest to restore degraded elephant habitat in 2022–2023

Results

- ***Garcinia celebeca***
  Evergreen tree
  6 seedlings germinated from 8 seeds
- ***Garcinia vilernsiana***
  Evergreen tree
  7 seedlings germinated from 12 seeds
- ***Sandoricum koetjape***
  Evergreen tree
  25 seedlings germinated from 42 seeds
- ***Parinari annamensis***
  Evergreen tree
  19 seedlings germinated from 32 seeds
- ***Willugbeia edulis***
  Liana
  7 seedlings germinated from 17 seeds
- ***Irvinga malayana***
  Evergreen tree
  1 seedling germinated from 4 very hard seeds

Number of plant species eaten by Asian elephants




Xylopia vielana


Licuala spinosa


Dracaena cambodiana


Butea superba


Aglaia lawii


Zingiber zerumbet


Polyalthia debilis


Garcinia oliveri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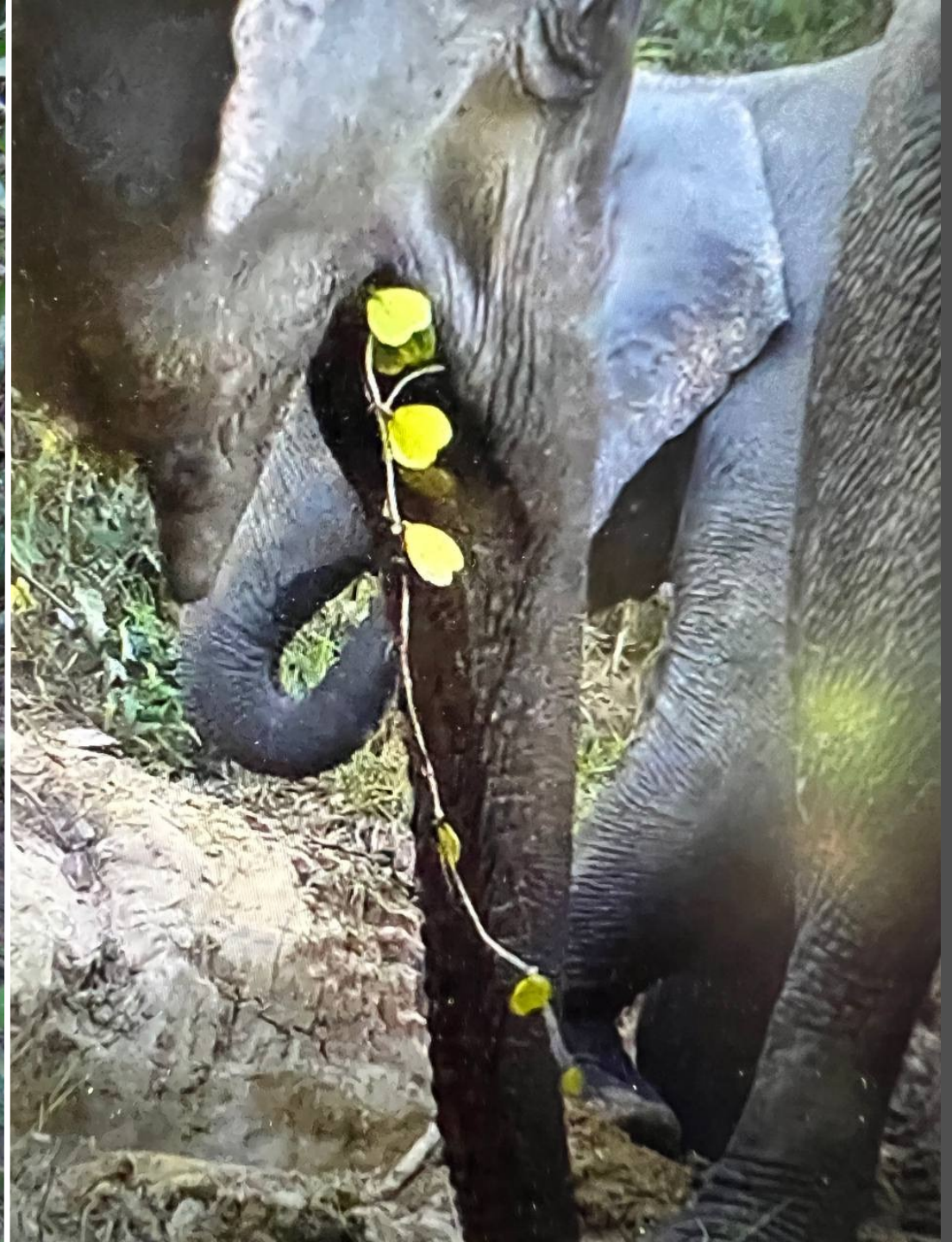


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Field Observations

Seedlings grown from dung piles of Asian elephants

Discussion

The findings of 74 (8 unknown species) plant species eaten by Asian elephants in Prey Lang are:

Higher than:

- 36 plant species in India (Das, 2017)
- 57 plants in Nepal (Koirala et al., 2016)

Lower than:

- 103 plants in Myanmar (Campos-Arceiz et al., 2008)
- 132 plant species in a similar study in India (Das et al., 2022)
- 114 plants in Lao (Dubost et al., 2019)
- 136 plants in India (Panda & Behera)
- 165 plants in Thailand (Schwarz et al., 2020)

Conclusion

The study has proven that by eating a variety of plants, Asian elephants contribute to diverse habitats and play a vital role in maintaining forest structure.

References

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Thank you

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