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Data Article

Non-volant small mammal data from fragmented forests in Terengganu State



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ABSTRACT

This data article is about non-volant small mammal (squirrel, rat and tree shrew) capture from fragmented forest understories within sub-urban areas of Setiu (Peladang Agro Resort and Setiu Wetland Research Station) and inhabited areas of Hulu Terengganu (Saok and Lasir waterfalls) that are situated in Terengganu State, Peninsular Malaysia. Fruits like banana and oil palm were individually placed into each cage before the cages were fastened onto three to five meter height tree branches. The traps were also spatially distributed about ten meters from each other. Under this installation, fifty baited traps were used during the twenty-four nights of sample collection. All animals caught were distinguished by morphology and released at the same location it was caught. The understory data comprise of seven non-volant mammal species from family groups Sciuridae, Muridae and Tupaiidae. Overall, *Callosciurus notatus* ($n = 17$, 39%) were dominant in the capture pool from all sites. Comparatively, *Sundasciurus tenuis* ($n = 2$, 4%) and *Rattus rattus* ($n = 4$, 9.3%) were restricted to Saok Waterfalls and Setiu Wetland. Banana and oil palm fruits did not attract any

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small mammals during the Lasir Waterfall (Hulu Terengganu) survey. All data were interpret into Shannon, Simpson, Margalef, Menhinik and Evenness indices to individually or collectively distinguish small mammal variety in Terengganu State.

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Specifications table

| | |
|----------------------------|--|
| Subject area | <i>Biology</i> |
| More specific subject area | Bioscience and Biodiversity |
| Type of data | Tables |
| How data was acquired | Cage traps (measuring 28 cm [Length] × 18 cm [Width] × 14 cm [Height]), Vernier caliper (sensitivity 0.1 cm), measuring tape, analytical balance (sensitivity 0.1 kg) and Paleontological Statistics Software Package (PAST) v.3 |
| Data format | Raw and Analyzed |
| Experimental factors | Cage trap height (between three and five meters) from the ground, spatial placement of cage traps (every ten meters), types of baits (oil palm fruit and banana) used. |
| Experimental features | Biodiversity indices such as Shannon, Simpson, Margalef, Menhinik and Evenness and, weight to length (W/L) relationships were used to describe the non-volant small mammals from Setiu and Hulu Terengganu districts |
| Data source location | Setiu District, Terengganu, East Peninsular Malaysia Peladang Agro Resort: N 5.5929°; E 102.6797° Setiu Wetland Research Centre: N 5.6771°; E 102.7102° Hulu Terengganu District, Terengganu, East Peninsular Malaysia Lasir Waterfalls: N 4.9655°; E 102.8396° Saok Waterfalls: N 5.0832°; E 102.7784° |
| Data accessibility | All data are available within this article |
| Related research article | Unpublished data |

Value of the data

- This data visualizes squirrel, rat and tree shrew abundances in fragmented forest understories along with their morphological descriptions.
- The non-volant small mammal data updates past checklist and compilations (last survey during year 2007), informs about potential agriculture pests (based on bait type) and the variety of non-volant small mammals present in sub-urban and inhabited areas.
- Size and weight data indicate non-volant small mammal growth and food source availability.
- Allows researchers to collaborate, extend their checklist, construct a repository and broaden their statistical analyses.

1. Data

This data article is possible after fruit-based (banana and oil palm) baits successfully attracted non-volant small mammals. All trapped small mammal were counted and measured into total length

Table 1

Taxonomic classification and abundance of squirrel, rat and shrew abundance discovered from the study sites within districts Setiu and Hulu Terengganu.

| Order | Family | Species | Setiu | | Hulu Terengganu | | N | Relative abundance (%) |
|----------------------------|------------|-----------------------------------|-------|------|-----------------|-----|------|------------------------|
| | | | A | B | C | D | | |
| Rodentia | Sciuridae | <i>Callosciurus notatus</i> | 6 | 10 | 0 | 1* | 17 | 39.53 |
| | | <i>Callosciurus nigrovittatus</i> | 1 | 0 | 0 | 0 | 1 | 2.33 |
| | | <i>Callosciurus caniceps</i> | 2 | 0 | 0 | 0 | 2 | 4.65 |
| | | <i>Sundasciurus tenuis</i> | 0 | 0 | 2 | 0 | 2 | 4.65 |
| | Muridae | <i>Rattus rattus</i> | 0 | 4 | 0 | 0 | 4 | 9.30 |
| <i>Leopoldamys sabanus</i> | | 1 | 0 | 0 | 0 | 1 | 2.33 | |
| Scandetia | Tupaiaidae | <i>Tupaia glis</i> | 16 | 0 | 0 | 0 | 16 | 37.21 |
| Abundance | | | 26 | 14 | 2 | 1 | 43 | 100 |
| Species (No.) | | | 5 | 2 | 1 | 1 | 7 | |
| Field visits (Days) | | | 6 | 6 | 6 | 6 | 24 | |
| Capture rate (%) | | | 43.3 | 23.3 | 3.3 | 1.7 | 17.9 | |

Note: The sites are described as A = Peladang Agro Resort, B = Setiu Wetland Research Station, C = Saok Waterfall and D = Lasir Waterfall. Annotation 'N' represents number of small mammals and symbol '*' represents number of non-volant small mammals sighted (without contact or handling).

Table 2

Calculated diversity indices of non-volant small mammals from the study sites within districts Setiu and Hulu Terengganu.

| Indices | | Districts | | p-Value |
|-----------------|-----------|-----------|-----------------|---------|
| | | Setiu | Hulu Terengganu | |
| Diversity Index | Shannon | 1.30 | 0.64 | 0.67 |
| | Simpson | 0.67 | 0.44 | 0.67 |
| | Evenness | 0.61 | 0.94 | 0.96 |
| Richness Index | Menhinick | 0.95 | 1.16 | 0.48 |
| | Margalef | 1.36 | 0.91 | 0.77 |

Note: The p-Values were measured using statistical significance up to 95% confidence.

Table 3

Identity, statuses in the wild, bait attraction, length to weight percentage and allometric description for non-volant small mammals caught from the study sites within districts Setiu and Hulu Terengganu.

| Species | Local name | Status | Bait | W/L (%) | Description |
|---------------------------------------|------------------------|--------|------|---------------------------------|-------------|
| Saok Waterfalls, Hulu Terengganu | | | | | |
| <i>Sundasciurus tenuis</i> | Slender squirrel | LC | OPF | 27.1 ± 3.1 ^(N = 2) | NA |
| Peladang Agro Resort, Setiu | | | | | |
| <i>Callosciurus caniceps</i> | Grey-bellied squirrel | LC | OPF | 58.7 ± 0.2 ^(N = 2) | PA |
| <i>Callosciurus nigrovittatus</i> | Black-striped squirrel | NT | B | 22.2 ± 0.0 ^(N = 1) | NA |
| <i>Callosciurus notatus</i> | Plantain squirrel | LC | OPF | 57.7 ± 6.6 ^(N = 3) | PA |
| <i>Callosciurus notatus</i> | Plantain squirrel | LC | B | 55.0 ± 6.4 ^(N = 3) | PA |
| <i>Leopoldamys sabanus</i> | Long-tailed giant rat | LC | OPF | 53.0 ± 0.0 ^(N = 1) | PA |
| <i>Tupaia glis</i> | Common tree shrew | LC | B | 48.5 ± 11.5 ^(N = 15) | NA |
| Setiu Wetland Research Station, Setiu | | | | | |
| <i>Callosciurus notatus</i> | Plantain squirrel | LC | B | 57.6 ± 10.0 ^(N = 8) | PA |
| <i>Rattus rattus</i> | Black rat | LC | B | 37.1 ± 1.3 ^(N = 4) | NA |

Note: Statuses of small mammals follow International Union for Conservation of Nature Red List descriptions whereby LC = Least Concern and NT = Near Threatened. The types of baits used are described as OPF = Oil palm fruit and B = Banana. The Weight-Length ratio represented as W/L are measured using division of weight against total length of animal and measured as percentage (%). The annotations in brackets, 'N' represents number of animals handled to obtain the desired measurements. Additionally, the Weight to Length (W/L) percentages are described as quartiles represented by < 50 % = negative allometric [NA] (Size exceeds body weight), 50 % = symmetric (Body weight increases with size) and > 50 % = positive allometric [PA] (Body weight exceeds size).

Table 4

The unprocessed data of non-volant small mammals caught from study sites within districts Setiu and Hulu Terengganu.

| Num. | Year 2017 | Day | Time | Species | Bait | Gender | WT (g) | HF (mm) | Ear (mm) | HB (mm) | Tail (mm) | TL (mm) |
|----------------------------------|-----------|-----|------------|-----------------------------------|------|--------|--------|---------|----------|---------|-----------|---------|
| Saok Waterfall, Hulu Terengganu | | | | | | | | | | | | |
| – | 02 Aug | 1 | – | – | – | – | – | – | – | – | – | – |
| 1 | 04 Aug | 2 | 07.30 a.m. | <i>Sundasciurus tenuis</i> | OPF | M | 69.1 | 32 | 10 | 126 | 110 | 236 |
| 2 | 05 Aug | 3 | 05.30 p.m. | <i>Sundasciurus tenuis</i> | OPF | M | 59.1 | 26 | 12 | 122 | 116 | 238 |
| – | 06-07 Aug | 4–6 | – | – | – | – | – | – | – | – | – | – |
| Lasir Waterfall, Hulu Terengganu | | | | | | | | | | | | |
| – | 08-13 Aug | – | – | – | – | – | – | – | – | – | – | – |
| Peladang Agro Resort, Setiu | | | | | | | | | | | | |
| 1 | 14 Aug | 1 | 12.30 p.m. | <i>Tupaia glis</i> | B | M | 119 | 34 | 13 | 180 | 155 | 335 |
| 2 | 14 Aug | 1 | 05.00 p.m. | <i>Tupaia glis</i> | B | M | 159 | 35 | 15 | 155 | 172 | 327 |
| 3 | 15 Aug | 2 | 10.30 a.m. | <i>Tupaia glis</i> | B | M | 176 | 35 | 14 | 155 | 160 | 315 |
| 4 | 15 Aug | 2 | 10.30 a.m. | <i>Tupaia glis</i> | B | M | 169 | 33 | 10 | 173 | 165 | 338 |
| 5 | 15 Aug | 2 | 10.30 a.m. | <i>Tupaia glis</i> | B | M | 158 | 34 | 14 | 170 | 165 | 335 |
| 6 | 15 Aug | 2 | 10.30 a.m. | <i>Tupaia glis</i> | B | M | 149 | 40 | 14 | 150 | 170 | 320 |
| 7 | 16 Aug | 3 | 07.00 a.m. | <i>Callosciurus nigrovittatus</i> | B | M | 256 | 40 | 15 | 179 | 180 | 359 |
| 8 | 16 Aug | 3 | 07.00 a.m. | <i>Tupaia glis</i> | B | M | 157 | 45 | 15 | 180 | 160 | 340 |
| 9 | 16 Aug | 3 | 07.00 a.m. | <i>Tupaia glis</i> | B | M | 163 | 37 | 10 | 170 | 160 | 330 |
| 11 | 17 Aug | 4 | 07.30 a.m. | <i>Tupaia glis</i> | B | M | 253 | 38 | 14 | 145 | 150 | 295 |
| 12 | 17 Aug | 4 | 07.30 a.m. | <i>Callosciurus notatus</i> | OPF | M | 244 | 43 | 13 | 190 | 189 | 379 |
| 13 | 17 Aug | 4 | 07.30 a.m. | <i>Tupaia glis</i> | B | M | 141 | 33 | 11 | 155 | 164 | 319 |
| 14 | 17 Aug | 4 | 06.00 p.m. | <i>Tupaia glis</i> | B | M | 142 | 42 | 14 | 185 | 145 | 330 |
| 15 | 17 Aug | 4 | 06.00 p.m. | <i>Tupaia glis</i> | B | M | 152 | 40 | 15 | 175 | 152 | 327 |
| 17 | 18 Aug | 5 | 06.00 p.m. | <i>Tupaia glis</i> | B | M | 124 | 41 | 12 | 172 | 176 | 348 |
| 18 | 18 Aug | 5 | 06.00 p.m. | <i>Callosciurus notatus</i> | OPF | F | 219 | 43 | 15 | 208 | 173 | 381 |
| 19 | 19 Aug | 6 | 07.00 a.m. | <i>Callosciurus notatus</i> | B | M | 200 | 44 | 14 | 200 | 190 | 390 |
| 20 | 19 Aug | 6 | 05.30 p.m. | <i>Tupaia glis</i> | B | M | 165 | 39 | 13 | 190 | 149 | 339 |
| 21 | 19 Aug | 6 | 05.30 p.m. | <i>Tupaia glis</i> | B | M | 146 | 40 | 14 | 170 | 160 | 330 |
| 22 | 19 Aug | 6 | 05.30 p.m. | <i>Callosciurus notatus</i> | B | M | 196 | 43 | 14 | 190 | 192 | 382 |
| 23 | 19 Aug | 6 | 05.30 p.m. | <i>Callosciurus notatus</i> | B | F | 224 | 42 | 13 | 175 | 184 | 359 |
| 24 | 19 Aug | 6 | 05.30 p.m. | <i>Callosciurus notatus</i> | OPF | F | 204 | 44 | 14 | 205 | 194 | 399 |
| 25 | 19 Aug | 6 | 05.30 p.m. | <i>Callosciurus caniceps</i> | B | M | 223 | 45 | 18 | 199 | 180 | 379 |
| 26 | 19 Aug | 6 | 05.30 p.m. | <i>Leopoldamys sabanus</i> | B | M | 294 | 52 | 25 | 200 | 355 | 555 |
| 27 | 19 Aug | 6 | 05.30 p.m. | <i>Callosciurus caniceps</i> | B | M | 240 | 43 | 15 | 210 | 200 | 410 |

Table 4 (continued)

| Num. | Year 2017 | Day | Time | Species | Bait | Gender | WT (g) | HF (mm) | Ear (mm) | HB (mm) | Tail (mm) | TL (mm) |
|---------------------------------------|-----------|-----|-----------|-----------------------------|------|--------|--------|---------|----------|---------|-----------|---------|
| Setiu Wetland Research Station, Setiu | | | | | | | | | | | | |
| 1 | 20 Aug | 1 | 6.0 p.m. | <i>Callosciurus notatus</i> | B | M | 273 | 47 | 19 | 178 | 195 | 373 |
| 2 | 20 Aug | 1 | 6.00 p.m. | <i>Callosciurus notatus</i> | B | M | 200 | 45 | 19 | 176 | 193 | 369 |
| 3 | 20 Aug | 1 | 6.00 p.m. | <i>Callosciurus notatus</i> | B | F | 198 | 44 | 20 | 175 | 200 | 375 |
| 4 | 21 Aug | 2 | 8.00 a.m. | <i>Callosciurus notatus</i> | B | M | 247 | 41 | 20 | 180 | 200 | 380 |
| 5 | 21 Aug | 2 | 6.00 p.m. | <i>Callosciurus notatus</i> | B | F | 217 | 42 | 11 | 170 | 174 | 344 |
| 6 | 22 Aug | 3 | 8.00 a.m. | <i>Rattus rattus</i> | B | M | 106 | 36 | 19 | 143 | 135 | 278 |
| 7 | 22 Aug | 3 | 8.00 a.m. | <i>Rattus rattus</i> | B | M | 91 | 30 | 17 | 119 | 120 | 239 |
| 8 | 22 Aug | 3 | 6.00 p.m. | <i>Callosciurus notatus</i> | B | M | 169 | 41 | 18 | 180 | 215 | 395 |
| 9 | 23 Aug | 4 | 8.00 a.m. | <i>Rattus rattus</i> | B | M | 102 | 31 | 17 | 120 | 156 | 276 |
| 10 | 23 Aug | 4 | 6.00 p.m. | <i>Callosciurus notatus</i> | B | M | 175 | 39 | 14 | 155 | 210 | 365 |
| 11 | 24 Aug | 5 | 8.00 a.m. | <i>Callosciurus notatus</i> | B | M | 223 | 41 | 15 | 135 | 225 | 360 |
| 12 | 24 Aug | 5 | 8.00 a.m. | <i>Rattus rattus</i> | B | M | 103 | 30 | 16 | 113 | 179 | 292 |
| – | 25 Aug | 6 | – | – | – | – | – | – | – | – | – | – |

Note: Non-volant small mammal counts are represented by (num.), baits used are denote B = banana and OPF = oil palm fruit and gender are denote with M = male and F = female. Description of measurements are abbreviated as WT = weight, HF = hind foot length, HB = head and body length and TL = total length (from nose tip to end of tail). Measurements are denote g = gram and mm = millimeter.

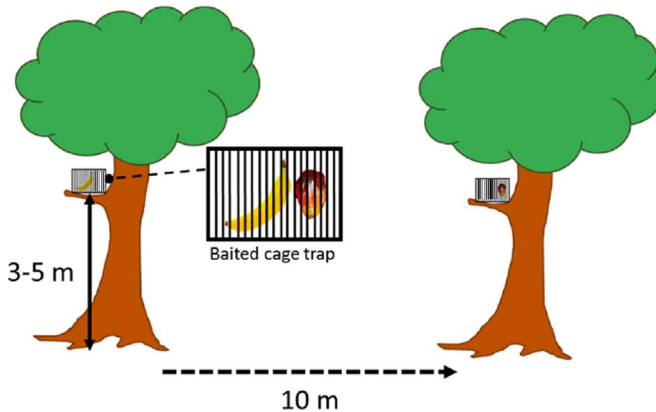


Fig. 1. Illustration of cage trap placement on the tree and distances from each trap in the 50×50 m transect. The baits used are shown within the figure but each cage has only one type of fruit which differ every 10 m distance and are similar every 20 m distance.

and weight (Table 1) categories. The Evenness, Margalef, Shannon, Menhinik and Simpson diversity indices were calculated to differentiate non-volant small mammals into individual and group diversity values (Table 2). Weight to length (W/L) percentages were used to describe non-volant small mammal growth whereas their statuses in the wild [1] were acquired from IUCN Red List (Table 3). Complete raw data on non-volant small-mammal capture along with additional morphological descriptions are available in a separate list (Table 4).

2. Experimental design, materials, and methods

Non-volant small mammal data were gathered from Setiu (Peladang Agro Resort and Setiu Wetland Research Station) and Hulu Terengganu (Lasir and Saok Waterfalls) after twenty-four days by spending six days (five nights) at each site. The experimental design adopted from Lim [2] was used to construct the $(50 \text{ m} \times 50 \text{ m})$ 2500 m^2 transect. Under this setup, fifty cage traps (measuring 28 cm [Length] \times 18 cm [Width] \times 14 cm [Height]) were baited using either, oil palm fruit or banana pieces ($1/4$ length). Then, the cage traps were fastened onto tree branches between three (3) and five (5) meters heights. Spatial placement of cage traps were maintained at ten (10) meters apart (Fig. 1). All traps were examined three times daily, between 6.00 a.m. (before sunrise) and 7.00 p.m. (before sunset). The non-volant small mammals were safely secured in cloth bags, examined to distinguish gender and measured for weight, tail length, head-body length, hind foot length, ear-length and total length before their release [3]. Recounting was avoided by excluding non-volant small mammals with trimmed hind leg hairs. Data from the field were transformed into diversity values using Shannon, Simpson, Evenness, Margalef and Menhinik indices available in Paleontological Statistics Software Package (PAST) v.3.

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Transparency document. Supporting information

Transparency data associated with this article can be found in the online version at <https://doi.org/10.1016/j.dib.2018.10.061>.

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