**Title**: CamTrapAsia: 244 wildlife capture lists from camera trapping studies

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**Open Research statement:**

The data and code are available in the GitHub directory <https://github.com/EcologicalCascadesLab/CamTrapAsia.git>

### **Class I. Data Set Descriptors**

1. **Data set identity:**

CamTrapAsia: 244 wildlife capture lists from camera trapping studies

1. **Data set identification code:**

Main document

Metadata S1

Data S1.zip

1. **Data set description**

**Originators**:

Mendes, Calebe Pereira – Asian School of the environment, Nanyang Technological University – calebepm3@gmail.com

Luskin, Matthew Scott – School of Biological Sciences, University of Queensland – mattluskin@gmail.com

**Abstract**:

Information on tropical Asian vertebrates has traditionally been sparse, especially for cryptic species in dense forests. Camera traps are an effective, non-invasive, and common method of surveying vertebrates but detections are scattered across published, peer-reviewed, and grey literature and in unpublished raw data. In this data paper, we collated 244 camera trap studies from Southeast Asia with 278,962 independent records of 372 species (233 mammals, 132 birds, and 7 reptiles). The relatively standardized methods in the region provide a consistent, reliable, and rich count dataset relative to other large-scale occurrence-only datasets such as the Global Biodiversity Information Facility (GBIF) or citizen science repositories (iNaturalist), and most similar to eBird. We plan to expand and update the dataset to include more of Asia and add new surveys and covariates as they become available. This dataset unlocks immense opportunities for single-species ecological or conservation studies as well as applied ecology, community ecology and macroecology investigations. The data is fully available to the public for utilization and research. Please cite this data paper when utilizing the data.

*Key words/phrases:* Abundance, animal, bird, biodiversity, community, count, distribution, mammal, occurrence, richness, tropical forest, vertebrate

### **Class II. Research origin descriptors**

1. **Overall project description:** 
   1. **Identity**: CamTrapAsia: 244 full wildlife capture lists from camera trapping studies.
   2. **Originators**: Calebe Pereira Mendes, Arjun Tharpa, Matthew Luskin.
   3. **Period of study**: The data range from 1987 to 2022.
   4. **Site**: Tropical Asia
   5. **Objectives**: The CamTrapAsia dataset aims to facilitate the access and use of camera trap data previously scattered in the literature.
   6. **Sources of funding**:

The research was funded by the Smithsonian Institution's ForestGEO program, Nanyang Technological University in Singapore, the University of Queensland (UQ) Centre for Biodiversity and Conservation Science, National Geographic Society #9384–13 and ARC DECRA #DE210101440, and BIFA6\_005: Biodiversity Information Fund for Asia "Sharing vertebrate occurrence data from camera traps in Asia".

1. **Specific subproject description**
   1. **Rationale:**

Camera traps have existed in some form since 1890 and revolutionized wildlife research since the late 1990s (O’Connell, Nichols, and Karanth 2010). There are numerous advantages to cameras, as it is less energy and time-intensive compared to other methods. Automatically triggered cameras also remove much of the observer bias present in humans. Since 2005, most cameras are digital and detect the heat signature from animals moving within the sensor range, photos are later sorted, and records (or ‘captures’ or independent photographic detections) are noted. Cameras monitor wildlife with minimal disturbance, both day and night using infrared flash, contributing to biodiversity inventories (species richness). When the images are time-stamped, they allow for investigations into wildlife behaviour (*e.g*., temporal activity patterns) and the use of hierarchical modelling methods, which has given scientists a robust glimpse into the ecology of cryptic animals in their natural environments (O’Connell, Nichols, and Karanth 2010; Sollmann 2018). Even when the images are not time-stamped or only the total number of captures is reported – which is the case for the majority of the data available in the literature (as well as for the dataset here presented) – the use of relative abundance indices (*i.e*., capture rates) can be useful (Hopkins & Kennedy 2004; Palmer *et al.* 2018) even when interpreted more conservatively as a proxy of species activity in a given site (Sollmann 2018).

Camera traps and associated analyses play an important role in monitoring animal populations during the Anthropocene 6th mass extinction (Ceballos et al. 2015), especially in forests where direct observations are difficult. Over 60% of the earth's forest landscapes suffer some degree of degradation (Grantham et al. 2020) and widespread poaching has driven declines >25% of the vertebrate species (Dirzo et al. 2014). Climate change is yet another threat to the conservation of ecosystems (IPCC 2014). Addressing these challenges requires datasets that span large spatial and temporal scales, which requires international sampling efforts or coordination among exisiting research groups (Beaudrot et al. 2016) and the systematic handing down of projects and datasets to the next generation of scientists. These aims can only be met via collaboration and data sharing. The CamTrapAsia dataset for tropical and subtropical forest wildlife joins other open online camera trap data repositories (Ahumada et al. 2020; Lima et al. 2017).

CamTrapAsia only uses the capture summaries from community-wide surveys (*e.g*., we excluded studies that reported a single species or subset of species). The dataset also includes numerous covariates associated with each study, in a single standardized and accessible format. Providing these covariates is aimed to remove barriers to science. While we endeavored to exhaustively search the white and grey literature for all available information and often requested missing information direct from authors, most of which are coauthors on this project. We estimate our dataset contains only half the total camera trapping conducted to date in the region as much is never published in any form or only selective animal detections are published. There is work yet to be done and we aim to keep updating this dataset for the foreseeable future. Note that a glossary of camera sampling and analysis terms used in this project is also provided.

* 1. **Research methods**

We searched for Asian camera trap studies using a variety of approaches. We started with a Web of Science using terms “camera\*” and Asia\* or Thai\* or Malaysia\* or Indonesia\* or Singapore\* or Borneo\* or Cambodia\* or Vietnam\* or Lao\* or Myanmar\* or Burm\* or Nepal\* or Sumatra\* or Borne\*. We also used Google Scholar using the terms camera\* AND vertebrate\* or mammal\* or bird\* or biodiverse\* or richness or Endangered or Threatened or terrestrial or distribution\* or abundance\* or carnivor\* or herbiv\* or omnivor\* or predator\* tiger\* or leopard\* or rhino\* or elephant\* or tapir\* or deer\* or civet\*.

The criteria for inclusion of published data were that the project must contain: (i) a complete list of the vertebrate species >1 kg detected; (ii) the number of independent records; (iii) the trapping effort, with a minimum of 25 trap nights; (iv) the number of cameras/stations deployed; (v) the coordinates of the study site and the period when the trapping survey was performed, with a minimum temporal precision of year; (vi) the cameras were not be baited. The data matching the required criteria was collated in a single table, together with the references needed to locate the original publication. The collated data set was standardized, with all coordinates set to WGS 84, and the species binomial names were verified using the R package Taxize (Chamberlain et al. 2022), based in the taxonomic databases from the National Center for Biotechnology Information and the Global Biodiversity Information Facility (Schoch et al. 2020; GBIF 2022). As this project originated as background for a PhD thesis finished in 2016 and was handed down for updating annually afterwards, the initial projects identified and annual inclusion rates are not noted.

To facilitate the usage of this dataset, we also made available a set of 13 spatial covariables including the percentage of forest cover, altitude, terrain roughness, forest landscape integrity index (FLII), human footprint index, ecoregion intactness index, average precipitation, average temperature, night light emissivity, human population, percentage of oil palm, percentage of urban areas and, percentage of protected areas), extracted in three spatial scales around the survey locations (10, 20 and 30 km radius). We also added a set of biological traits (adult body mass, percentage of diet composed by invertebrates, percentage of diet composed by vertebrates, percentage of diet composed by plants, diet breadth, trophic level, activity cycle and habitat breadth) for the recorded species extracted from the combine dataset (Soria et al. 2021). Finally, the resulting data set is provided as a three of .csv tables and as a Darwin Core archive, and available on GBIF. The R code used to assemble the dataset and standardize the species names is also provided.

* 1. **Results**

CamTrapAsia contains 244 surveys from 151 sites from 100 landscapes. Sites are reported as labelled in the original papers and landscapes are defined as an area encompassing one or more forest patches within 20 km of each other, and which share similar environmental conditions. The geographical coverage is 11 countries including Indonesia, Singapore, Malaysia, Bhutan, Thailand, Myanmar, Cambodia, Laos, Vietnam, Nepal and far-eastern India (Fig. 1). The temporal coverage spans from 1987 to 2022 (Fig 2). There were 278,962 records from 13,443 camera stations over 881,428 trap nights. There wer 372 species detected from 178 genera and 71 families. The most recorded families were *Cervidae*, *Suidae* and *Cercopithecidae*, with 53,809, 49,430, and 43,975 records respectively. Mammals comprised 62.6% of the species (Fig. 3, 4 and S1), birds comprised 35.5% (Fig. 5, 6 and S2), and the remaining were reptiles. The most recorded species was the wild boar *Sus scrofa* with 38,160 records, followed by pig-tailed macaques *Macaca nemestrina* (n = 33,878) and barking deer *Muntiacus muntjac* (n = 21,156). There were 53 species detected once across all surveys and eight families with a single species recorded once.

* 1. **Glossary**

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Record | An independent detection or capture of an animal, which is a picture or video (or set of images/videos) taken by a camera trap. If multiple records are taken within the independence interval, they are group as a single record. |
| Detection / capture | Synonymous with record. |
| Independence interval | The time between two conspecific records considered for the second to be new record, with 30-60 minutes being standard in the Asian studies. |
| Survey | A set of multiple simultaneous camera deployments conducted by a research team in a single study site or landscape. Cameras are frequently set in grid, transect, or scattered opportunistically. If two research teams independently and simultaneously deploy cameras at the same site, it counts as two surveys. If a single research team deploys cameras at a site, retrieves the cameras, and then deploys them again after some time, it counts as two surveys. |
| Survey location | The coordinates of a survey, usually the centroid of the individual camera locations. |
| Site | The named area where surveys are deployed. It can be a national park, a forest reserve or a region of scientific interest. A site such as a large national park can contain multiple simultaneous surveys deployed at different non-overlapping locations. |
| Landscape | An area with 20-km radius that can compose all or part of a site (*e.g*., a national park or reserve) or an heterogeneous mosaic of habitat patches. |



**Figure 1**. Map of the collated camera trap records



**Figure 2**. Temporal distribution of the deployment dates for surveys. Note that it often takes years for surveys to be published and that covid shut down most research in 2020, explaining the relatively low number of surveys included with cameras deployed since 2020.



**Figure 3.** Independent detections per mammalian genus.



**Figure 4.** Order, Genus and number of mammalian species recorded. A higher resolution figure (S1) including all the species is available at the supplementary materials.



**Figure 5**. Independent detections per avian genus.



**Figure 6.** Order, Genus and number of avian species recorded. A higher resolution figure (S2) including all the species is available at the supplementary materials.

* 1. **Project personnel:**

Calebe Pereira Mendes, Arjun Tharpa, Matthew Luskin.

* 1. **Acknowledgements**

We would like to acknowledge the incredible about of funding and fieldwork required to conduct the original sampling. We thank Yayasan Sabah, the Sabah Forest Department, the Sabah Biodiversity Council, the Danum Valley Management Committee, Glen Reynolds, and Jedediah Brodie for permission and help to conduct fieldwork at Danum Valley. We thank the Smithsonian Institute’s Tropical Ecology Assessment and Monitoring (TEAM) network for help collecting data from Pasoh, as well as the Forest Research Institute Malaysia (FRIM) for permission to work there. We thank the Sarawak Forestry Department for permission to conduct fieldwork at Lambir Hills and Stuart Davies and the students of the 2017-2019 NTU-Singapore field ecology courses for fieldwork help in Malaysia. We thank NParks for permission and help with fieldwork in Singapore. We thank Sarayudh Bunyavejchewin and the Thai Department of National Parks, Wildlife and Plant Conservation for permissions and help at Khao Yai and Khao Ban Tat. We thank Wido Rizqi Albert, Matthew Linkie, Yoan Dinata, Hariyo Wibisono and HarimauKita for help facilitating fieldwork in Sumatra, and we thank the Leuser International Foundation and WCS-Indonesia for assistance with fieldworkOther sites and data compilation efforts acknowledge the following people: Gregoire Bertagnolio, F. Cheong, Roshan Guharajan, Gurutzeta Guillera, Ferran Jori, FR Khakim, Salwa Khalid, Saurav Hari Kumar, AH Lubis, T Lubiz, Sugesti Marif, Maryati Maryati, Mumponjan Mumponjan, Helga Peters, Alice Porco, Roshan Guharajan, Roslina Ragai, Mila Redkani, N Seuaturien, NM Shwe, Wong Siew, Cedric Tan, Joe Smith, Melvin E Sunquist, Cedric Tan, Shuwoan Teoh, Ha Wahyudi, C.T. Wong, Zulfahmi Zulfahmit. Original artwork was provided courtesy of T. Barber from Talking Animals. We thank the members of the Ecological Cascades Lab at the University of Queenlsand for ongoing help.

* 1. **Conflict of Interest Statement**

The authors have no conflicts of interest to declare.

### **Class III. Data set status and accessibility**

1. **Status**
   1. Latest update: 25-08-2023
   2. Latest archive date: 25-08-2023
   3. Metadata status: 25-08-2023
   4. Data verification: 25-08-2023
2. **Accessibility**
   1. **Storage location and medium:**

The data available in the GitHub directory <https://github.com/EcologicalCascadesLab/CamTrapAsia.git>

* 1. **Contact persons:**

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* 1. **Copyright restrictions:**

The data is fully available to the public for utilization and research. Please cite this data paper when utilizing the data.

**Costs**:

The data is available for free.

### **Class IV. Data structural descriptors**

1. **Data set file**
   1. **Identity:**

CamTrapAsia\_Captures\_20230825.csv

CamTrapAsia\_Metadata\_20230825.csv

Captures\_raw\_20230825.csv

Metadata\_raw\_20230825.csv

species\_traits\_20230825.csv

Dataset merging and Standardization – 20230825.r

* 1. **Size:**

938 KB [4569 rows, 16 columns]

251 KB [244 rows, 69 columns]

406 KB [4672 rows, 8 columns]

251 KB [259 rows, 69 columns]

68 KB [382 rows, 18 columns]

11 KB [318 lines]

* 1. **Format and storage mode:**

Comma-separated values (.csv)

1. **Variable information**

metadata.csv

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Field Name | Description | Range | NAs | Example | Source |
| survey\_id | Unique ID which connects the records from the metadata table with the capture table. | Not applicable | 0 | Lambir2017.ECL | compiler |
| region | General region where survey was performed | Not applicable | 0 | Southeast\_Asia | original authors |
| country | Country where survey was performed | Not applicable | 0 | Indonesia | original authors |
| site | Name of the location where sampling was performed | Not applicable | 0 | Leuser\_forest\_fragments | original authors |
| effort | Trapping effort, in trap-nights | 28 – 32027 | 0 | 45 | original authors |
| size\_km2 | Size of the forest where the sampling was performed, in km² | 0.14 – 278889.37 | 12 | 1.80 | original authors |
| Protected\_area | Whether the sampling happened within a protected area | “y” for protected areas, “n” for not protected areas and “Mixed” when only a part of the area is protected | 22 | y | original authors |
| Y\_lat | Latitude of the survey as provided by the authors, in decimal degrees using WGS84 | -8.7 to 33.0 | 0 | 3.972066 | original authors |
| X\_long | Longitude of the survey as provided by the authors, in decimal degrees, using WGS84 | 80.2 to 140.1 | 0 | 98.08855 | original authors |
| logging | Weather the area was previously logged, not-logged or in a plantation | "logged", "not\_logged", "plantation" and "mixed" which includes cameras in both logged and unlogged areas | 93 | logged | original authors |
| logging\_obs | Observations about logging | text | 97 | logged | original authors or compiler |
| edge\_1km | Weather the sapling was performed within 1 km from an edge | “edge” for sampling within 1 km of the nearest edge, “interior” for sites farther than 1 km, “both” for sampling with cameras in both edge and interior. | 123 | edge | original authors |
| year\_start | Year of the start of the trapping survey | 1987 - 2020 | 0 | 2014 | original authors |
| year\_end | Year of the ending of the trapping survey | 1988 – 2020 | 0 | 2014 | original authors |
| monthstart | Month of the start of the trapping survey | 1 to 12 | 4 | 1 | original authors |
| monthfinish | Month of the ending of the trapping survey | 1 to 12 | 6 | 2 | original authors |
| n\_points | Number of sampling points in the survey. A sampling point can contain one or more cameras. When more than one camera is used they are arranged to capture the animals from multiple angles. | 1 - 310 | 3 | 1 | original authors |
| n\_cameras | Number of cameras deployed in the survey | 1 - 600 | 0 | 1 | original authors |
| cam\_spacing | Minimum space between cameras, in meters | 60 - 4000 | 46 | 1000 | original authors |
| area\_cover\_km2 | Area of the minimum convex polygon of the sampling points in a survey, in km² | 0.04 - 1357 | 89 | NA | original authors |
| indent\_cap\_mins | Minimum time allowed between two independent records, in minutes | 0 - 60 | 21 | 60 | original authors |
| forest\_type | Type of forest in which the sampling was deployed | Not applicable | 77 | Evergreen broadleaf | original authors |
| study\_notes | Notes about the study from which the camera trap data was obtained | Not applicable | 172 | NA | compiler |
| veg\_notes | Notes about the vegetation where the sampling was deployed | Not applicable | 72 | Frag | original authors and compiler |
| study\_author | Correspondent author of the study/data | Not applicable | 0 | Luskin et al. 2017 | original authors |
| Source | Link or citation to the original publication or the author contact. | Not applicable | 0 | https://www.nature.com/articles/s41467-017-01656-4 | original authors |
| forest\_cover\_10km | Percentage of area covered by vegetation above 4m in a 10km buffer around the sampling coordinates | 0 to 78.22 | 0 | 60.26213169 | (Sexton *et al.* 2013) |
| forest\_cover\_20km | Percentage of area covered by vegetation above 4m in a 20km buffer around the sampling coordinates | 0 to 75.79 | 0 | 57.71243796 | (Sexton *et al.* 2013) |
| forest\_cover\_30km | Percentage of area covered by vegetation above 4m in a 30km buffer around the sampling coordinates | 0 to 74.92 | 0 | 54.05373898 | (Sexton *et al.* 2013) |
| altitude\_10km | Average altitude in a 10km buffer around the sampling coordinates, in meters | 8 to 4798.25 | 0 | 56.88501509 | (Jaxa 2015) |
| altitude\_20km | Average altitude in a 20km buffer around the sampling coordinates, in meters | 9.39 to 4960.17 | 0 | 107.5634248 | (Jaxa 2015) |
| altitude\_30km | Average altitude in a 30km buffer around the sampling coordinates, in meters | 9.13 to 5005.22 | 0 | 219.5147203 | (Jaxa 2015) |
| roughness\_10km | Roughness index, calculated using the R function terra::terrain() with option v = “roughness”, in a 10km buffer around the sampling coordinates, in meters | 2.85 to 68.80 | 0 | 14.36782614 | (Jaxa 2015; Hijmans 2022) |
| roughness\_20km | Roughness index, calculated using the R function terra::terrain() with option v = “roughness”, in a 20km buffer around the sampling coordinates, in meters | 2.62 to 59.13 | 0 | 17.58147274 | (Jaxa 2015; Hijmans 2022) |
| roughness\_30km | Roughness index, calculated using the R function terra::terrain() with option v = “roughness”, in a 30km buffer around the sampling coordinates, in meters | 2.94 to 56.25 | 0 | 19.45138369 | (Jaxa 2015; Hijmans 2022) |
| FLII\_10km | Average Forest Landscape Integrity Index in a 10 km buffer around the sampling coordinates, unitless | 0 to 9.98 | 2 | 5.459989231 | (Grantham *et al.* 2020) |
| FLII\_20km | Average Forest Landscape Integrity Index in a 20 km buffer around the sampling coordinates, unitless | 0 to 9.75 | 1 | 5.175927237 | (Grantham *et al.* 2020) |
| FLII\_30km | Average Forest Landscape Integrity Index in a 30 km buffer around the sampling coordinates, unitless | 0 to 9.63 | 1 | 5.403120846 | (Grantham *et al.* 2020) |
| human\_footprint\_10km | Average Human Footprint Index in a 10 km buffer around the sampling coordinates, unitless | 0.14 to 94.66 | 0 | 9.853968254 | (Venter *et al.* 2018) |
| human\_footprint\_20km | Average Human Footprint Index in a 20 km buffer around the sampling coordinates, unitless | 1.16 to 95.77 | 0 | 11.97931583 | (Venter *et al.* 2018) |
| human\_footprint\_30km | Average Human Footprint Index in a 30 km buffer around the sampling coordinates, unitless | 1.42 to 103.79 | 0 | 15.08300954 | (Venter *et al.* 2018) |
| ecoregion\_intactness\_10km | Average Ecoregion Intactness Index in a 10 km buffer around the sampling coordinates, unitless | 0 to 787.88 | 0 | 53.77821012 | (Beyer *et al.* 2020) |
| ecoregion\_intactness\_20km | Average Ecoregion Intactness Index in a 20 km buffer around the sampling coordinates, unitless | 0 to 661.38 | 0 | 57.35282651 | (Beyer *et al.* 2020) |
| ecoregion\_intactness\_30km | Average Ecoregion Intactness Index in a 30 km buffer around the sampling coordinates, unitless | 0.12 to 636.78 | 0 | 87.49029982 | (Beyer *et al.* 2020) |
| precipitation\_10km | Average annual precipitation in a 10km buffer around the sampling coordinates, in mm | 585.362637362637 - 4105.63561643836 | 0 | 2616.955801 | WorldClim 2.1 (http://worldclim.org) |
| precipitation\_20km | Average annual precipitation in a 20km buffer around the sampling coordinates, in mm | 567.015068493151 - 4134.70378006873 | 0 | 2614.322536 | WorldClim 2.1 (http://worldclim.org) |
| precipitation\_30km | Average annual precipitation in a 30km buffer around the sampling coordinates, in mm | 567.131466828971 - 3935.06654456654 | 0 | 2588.659534 | WorldClim 2.1 (http://worldclim.org) |
| temperature\_10km | Average annual temperature in a 10km buffer around the sampling coordinates, in degrees Celsius | -1.81 to 27.98 | 0 | 25.97048802 | WorldClim 2.1 (http://worldclim.org) |
| temperature\_20km | Average annual temperature in a 20km buffer around the sampling coordinates, in degrees Celsius | -2.36 to 28.04 | 0 | 25.72089934 | WorldClim 2.1 (http://worldclim.org) |
| temperature\_30km | Average annual temperature in a 30km buffer around the sampling coordinates, in degrees Celsius | -2.26 to 28.03 | 0 | 25.14833225 | WorldClim 2.1 (http://worldclim.org) |
| nighttime\_lights\_10km | Average artificial light emissivity during nighttime in a 10km buffer around the sampling coordinates, in microflicks | -0.31 to 50.49 | 0 | 0.30145052 | (Elvidge *et al.* 2021) |
| nighttime\_lights\_20km | Average artificial light emissivity during nighttime in a 20km buffer around the sampling coordinates, in microflicks | -0.41 to 38.77 | 0 | 0.420156367 | (Elvidge *et al.* 2021) |
| nighttime\_lights\_30km | Average artificial light emissivity during nighttime in a 30km buffer around the sampling coordinates, in microflicks | -0.39 to 23.99 | 0 | 0.527438576 | (Elvidge *et al.* 2021) |
| human\_population\_10km | Human population in a 10km buffer around the sampling coordinates | 0 to 3418112 | 0 | 8533.319525 | (European Commission *et al.* 2019) |
| human\_population\_20km | Human population in a 20km buffer around the sampling coordinates | 0 to 6413067 | 0 | 77634.95748 | (European Commission *et al.* 2019) |
| human\_population\_30km | Human population in a 30km buffer around the sampling coordinates | 335 to 7188317 | 0 | 265187.7767 | (European Commission *et al.* 2019) |
| oil\_palm\_10km | Percentage of area covered by oil palm plantations in a 10km buffer around the sampling coordinates | 0 to 62.58 | 0 | 28.0820553674567 | (Miettinen, Shi & Liew 2016) |
| oil\_palm\_20km | Percentage of area covered by oil palm plantations in a 20km buffer around the sampling coordinates | 0 to 64 | 0 | 31.3603581198707 | (Miettinen, Shi & Liew 2016) |
| oil\_palm\_30km | Percentage of area covered by oil palm plantations in a 30km buffer around the sampling coordinates | 0 to 31.39 | 0 | 24.9347604936087 | (Miettinen, Shi & Liew 2016) |
| urban\_areas\_10km | Percentage of area covered human settlements in a 10km buffer around the sampling coordinates | 0 to 46.08 | 0 | 0 | (FAO *et al.* 2014) |
| urban\_areas\_20km | Percentage of area covered human settlements in a 20km buffer around the sampling coordinates | 0 to 24.17 | 0 | 0.12303486 | (FAO *et al.* 2014) |
| urban\_areas\_30km | Percentage of area covered human settlements in a 30km buffer around the sampling coordinates | 0 to 11.80 | 0 | 0.579732197 | (FAO *et al.* 2014) |
| protected\_areas\_10km | Percentage of area protected in a 10km buffer around the sampling coordinates | 0 to 100 | 0 | 57.70151636 | (UNEP-WCMC & IUCN 2021) |
| protected\_areas\_20km | Percentage of area protected in a 20km buffer around the sampling coordinates | 0 to 100 | 0 | 35.98726115 | (UNEP-WCMC & IUCN 2021) |
| protected\_areas\_30km | Percentage of area protected in a 30km buffer around the sampling coordinates | 0 to 100 | 0 | 28.62700027 | (UNEP-WCMC & IUCN 2021) |

captures.csv

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Field Name | Description | Range | NAs | Example | Source |
| survey\_id | Unique ID which connects the records from the capture table with the metadata table. | Not applicable | 0 | Lambir2017.ECL | compiler |
| records | Number of independent records | 0 - 3644 | 0 | 3 | original authors |
| Y\_lat | Latitude of the survey as provided by the authors, in decimal degrees, using WGS84 | -8.71 to 33.02 | 0 | 3.972066 | original authors |
| X\_long | Longitude of the survey as provided by the authors, in decimal degrees, using WGS84 | 80.25 to 140.09 | 0 | 98.08855 | original authors |
| year\_start | Year of the start of the trapping survey | 1987 - 2020 | 0 | 2014 | original authors |
| country | Country where sampling was performed | Not applicable | 0 | Malaysia | original authors |
| domestic | States whether the species recorded is domestic or wild | “domestic" or “wild” | 0 | wild | IUCN Red List |
| uri | Link for the species webpage at the NCBI or GBIF | Not applicable | 0 | https://www.ncbi.nlm.nih.gov/taxonomy/37029 | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| class | Class name of the recorded animal (when identified at least to the class taxonomic level) | Aves, Mammalia or Reptilia | 0 | Mammalia | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| order | Order name of the recorded animal (when identified at least to the order taxonomic level) | Not applicable | 0 | Carnivora | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| family | Family name of the recorded animal (when identified at least to the family taxonomic level) | Not applicable | 102 | Felidae | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| genus | Genus name of the recorded animal (when identified at least to the genus taxonomic level) | Not applicable | 234 | Prionailurus | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| species | Species name of the recorded animal (when identified to the species taxonomic level) | Not applicable | 549 | bengalensis | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| binomial\_verified | Binomial name of the animal recorded, verified in the NCBI or GBIF database. | Not applicable | 0 | Prionailurus bengalensis | original authors, verified by NCBI or GBIF |
| taxonomic\_level | Taxonomic level in which the animal record was identified | species, genus, order or family | 0 | species | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |

NCBI - National Center for Biotechnology Information ([www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov))

GBIF - Global Biodiversity Information Facility ([www.gbif.org](http://www.gbif.org)

species\_traits.csv

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Field Name** | **Description** | **Range** | **NAs** | **Example** | **Source** |
| uri | Link for the species webpage at the NCBI or GBIF | Not applicable | 0 | https://www.ncbi.nlm.nih.gov/taxonomy/9691 | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| species | Species name of the recorded animal (when identified to the species taxonomic level) | Not applicable | 63 | pardus | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| genus | Genus name of the recorded animal (when identified at least to the genus taxonomic level) | Not applicable | 33 | Panthera | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| family | Family name of the recorded animal (when identified at least to the family taxonomic level) | Not applicable | 8 | Felidae | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| order | Order name of the recorded animal (when identified at least to the order taxonomic level) | Not applicable | 0 | Carnivora | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| class | Class name of the recorded animal (when identified at least to the class taxonomic level) | Aves, Mammalia or Reptilia | 0 | Mammalia | (Schoch *et al.* 2020; Chamberlain *et al.* 2022; GBIF 2022) |
| binomial\_verified | Binomial name of the animal recorded, verified in the NCBI or GBIF database. | Not applicable | 0 | Panthera pardus | original authors, verified by NCBI or GBIF |
| taxonomic\_level | Taxonomic level in which the animal record was identified | species, genus, order or family | 0 | species | original authors, verified by NCBI or GBIF |
| adult\_mass\_g | Average body mass of an adult individual, in grams | 25.99 to 3220000 | 192 | 53075 | (Soria *et al.* 2021) |
| dphy\_invertebrate | Percentage of the diet composed by invertebrates | 0 to 100 | 192 | 0 | (Soria *et al.* 2021) |
| dphy\_vertebrate | Percentage of the diet composed by vertebrates | 0 to 100 | 192 | 100 | (Soria *et al.* 2021) |
| dphy\_plant | Percentage of the diet composed by plants | 0 to 100 | 192 | 0 | (Soria *et al.* 2021) |
| det\_diet\_breadth\_n | Number of dietary categories with  consumption above 20%, based on EltonTraits | 1 to 4 | 192 | 1 | (Soria *et al.* 2021) |
| trophic\_level | Trophic level of the species recorded | 1 for herbivores,  2 for omnivores and  3 for carnivores | 192 | 3 | (Soria *et al.* 2021) |
| activity\_cycle | Dial activity cycle of the recorded species | 1 for strictly nocturnal,  2 for cathemeral and crepuscular,  3 for strictly diurnal species | 192 | 1 | (Soria *et al.* 2021) |
| habitat\_breadth\_n | Number of habitats suitable for the species, based on IUCN | 1-7 | 198 | 6 | (Soria *et al.* 2021) |
| iucn2020\_binomial | Binomial name of the recorded animal, based on the IUCN taxonomic database | Accipiter gentilis - Zoothera dauma | 0 | Panthera pardus | (Chamberlain *et al.* 2022; IUCN 2022) |
| IUCN | IUCN redlist status | CR - VU | 84 | VU | (IUCN 2022) |

NCBI - National Center for Biotechnology Information ([www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov))

GBIF - Global Biodiversity Information Facility ([www.gbif.org](http://www.gbif.org))

IUCN - The International Union for Conservation of Nature ([www.iucn.org](file:///Users/uqmluski/Dropbox/CT%20survey-level%20database%20for%20GLMMs/CamTrapAsia%20survey-level/manuscript%20-%20CamTrapAsia/www.iucn.org))

1. **Data anomalies:**

Unavailable data is indicated by “NA”.

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