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Original article

# Home Range Size, Habitat Use, and Prey Selection of Dhole (*Cuon alpinus*) in the Khao Yai National Park, Thailand

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## ABSTRACT

Study of the size of the species home range and habitat use is essential in understanding the ecology, natural history of species for effective management, dhole is the endangered species of the world and Khao Yai National Park is the most important habitat.The study of dhole with satellite signals in the area has never been conducted. Size of home range and habitat use of dhole in the Khao Yai National Park were collected from January through December 2017. Two adult female dholes were captured and tagged with satellite radio collars on January 31, 2017 and February 7, 2017, respectively. Using a satellite monitoring system, the first dhole was monitored for 70 days in 179 telemetry locations and the second dhole was monitored for 123 days in 260 telemetry locations. It was found that the home range of the first dhole (95% of all the locations) was near its center with a home range size of 76.97 $km^2$. The second adult female dhole had a home range size (95% of all the locations) of 27.65 $km^2$. The first dhole had an average daily movement of 2,390.19 meters and the average daily movement of the second dhole was 2,754.38 meters. The collared dholes used grassland habitat significantly more than dry evergreen forest. Based on the scats of 52 dholes, seven prey species were identified using scat analysis. These were the red muntjak (*Muntiacus munjak*), sambar deer *(Rusa unicolor*), wild boar or Eurasian wild pig (*Sus scrofa*), masked palm civet (*Paguma larvata*), large Indian civet (*Viverra zibetha*), common palm civet (*Paradoxurus hermaphrodites*), and lesser mouse deer (*Tragulus kanchil*). The percentage occurrence of the prey species was the highest for red muntjak (41.31%), followed by sambar deer (28.85%), Eurasian wild pig (15.38%), masked palm civet (7.69%), large Indian civet

(1.92%), common palm civet (1.92%), and lesser mouse deer (1.92%). The relative abundance of dhole was 3.73%. The relative abundance of red muntjak was 15.90% followed by Eurasian wild pig (14.41%), pig tailed macaque (9.29%), sambar deer (6.71%), and porcupine (5.76%), respectively. The number individual animals that a dhole consumed within the year was 14.32. Most of them (84.56%) were from the ungulate species. Biomass of the prey consumed by a dhole per year in the area was 120.85 kg, out of which 95.44% were ungulate species. We recommended that dhole population and population of their prey should be monitored continuously. Grassland habitat should be improved to promote the ungulate species which are the main prey consumed by the dhole, especially in areas far from roads and human activity.

**Keywords:** Prey species, Scat analysis, Prey selection, Dong Phayayen-Khao Yai

## INTRODUCTION

The Asian wild dog or dhole is one of the top predators found in the tropical forests of Asia (Karanth and Sunquist, 2000; Grassman *et al*., 2005; Kamler *et al*., 2012). At present, dholes have disappeared from most of their historical range due to habitat loss and depletion of the prey base, persecution, disease and pathogens and also competition with other species (Kamler *et al*., 2015). Recent assessments suggest that only 900-2,100 mature dholes exist globally, thus this species was listed as an endangered species in the IUCN Red List (Kamler et al., 2015). Jenks *et al.* (2012) estimated that in Thailand, the size of the total potential habitat for dholes is around 10,461 km$^2$ or only 2% of the country area. This total suitable area can only support approximately 161 dhole packs with 30% of the potential habitat falling within protected areas. Furthermore, dhole is one of the least studied large carnivores in the world (Srivathsa *et al.*, 2017). More research is needed on dholes which can help in a better understanding of their ecology and assist in their conservation efforts (Kamler *et al.,* 2015). The size of the home range of dhole varies with their habitat. Acharya *et al*. (2010) reported that the size of a home range varied from 26-202.8 km$^2$ in dry deciduous forest at the Pench Tiger Reserve, India. Grassman *et al*. (2005) found that the size of the home range varied between 12-49.5 km$^2$ in the dry evergreen forest of Phu Khieo Wildlife Sanctuary, Thailand. Austin (2002), studying the size of the area inhabited by dholes using radio signals in Khao Yai National Park (KYNP), found that the size of the area was 27.6 km$^2$, and the average daily distance traversed by the animal was 1.4 km. Home range formation is thus the result of dynamic processes. Both the habitat and internal state of animals might change through time and result in variations of the size of its home range (Viana *et al.*, 2018). Moreover, the home range size may depend on the methods of data collection and analysis. Normally, home

range size depends on the quality of habitat, with a higher habitat quality allowing them to have smaller home ranges. Home range size and dhole movement can be determined using satellite radio signals and also through the presence of prey species. Although KYNP is one of the most important dhole habitats in Thailand, such estimations of this species has never been done. Relative abundance of dhole and the characteristics of the prey they consume in the area have also never been investigated. An understanding of home range size, habitat used, and prey characteristics is important in maintaining a healthy dhole population and for habitat management (Rechetelo *et al*., 2016). The objectives of this study were to estimate the size of dhole's home range and track their movement using satellite radio signals and to study their habitat used and prey selection in KYNP.

## MATERIALS AND METHODS

### Dhole trapping and radio collaring

Dhole trapping, using 5-8 trap stations, was undertaken from 25th Jan 2017 to 20th February 2017, using soft catch traps in the area between the KYNP head office and the Khao Yai Training Center. This method is similar to the method used by Jenks *et al*. (2015). The captured dholes were fitted with a GPS radio collar and released at the captured site. All of the locations were downloaded via the SIRTRACK website every 4 hours until we stopped receiving the signal.

### Home range size, movement, and habitat use

All the GPS locations during the study period were downloaded and analyzed using the RANGE 9 Program, with 95%, 75%, and 50% of all the GPS locations analyzed (Grassman *et al*., 2005). Daily movements of the collared dholes were analyzed by the BIOTA program. The Arc Map program was used to classify the locations as a habitat type or a forest type. The Chi square test was used to compare between the observed and expected frequency of the pooled data. Based on pooled data, the average number of telemetry locations falling in each habitat category in terms of the expected frequencies were compared with the actual number of observed frequencies using the chi square goodness of fit test. Significant differences were determined at a significance level of $P<0.05$. (McClean *et al*., 1998).

### Prey species and abundance

A camera trap study was performed by dividing the 1: 50,000 geographic map into 1 $km^2$ grid cells, and placing a camera trap within each grid (Gupta *et al*., 2009; Jenks *et al*., 2011; Siripattaranukul *et al*., 2015a, b). Cameras were deployed in 15 – 20 grids per trip. The cameras were placed at a distance of more than 500 m in each grid to reduce the probability of photographing the same animal with different cameras (Jenks *et al*., 2012a, b). The selection of deployment location was based on the suitability of each area in terms of the animal trails and tracks (Lynam *et al*.,

2013; Prayoon *et al*., 2012; Wongchoo *et al*., 2013; Siripattaranukul *et al*., 2015a, b).

Camera traps were placed 30-40 cm above the ground and 3-4 m from the target point (Chutipong *et al*., 2014) or according to the suitability of the area. The cameras were set to take 3 consecutive photographs once triggered, 10 seconds apart and were set to run for 24 hours (Network, 2008) and 30 days. After 30 days, the cameras were moved to new locations. The GPS locations of each camera were recorded. A camera trap survey was performed from November 2017 to October 2018.

All the photographs were imported into a computer and organized with the Camera Trap Manager program (Zaragozi *et al*., 2015). The data was then transferred to Microsoft Excel for data analysis.

The diet of dholes was determined by an analysis of the scats that were regularly collected by researchers and park staff from February 2017 through October 2017. Dhole packs hunt, feed, and often defecate together (Johnsingh, 1982; Karanth and Sunquist, 1995; Durbin *et al*., 2004; Thinley *et al*., 2011). Therefore, we sampled only 1 scat from each dropping to help ensure that the scats were from independent feeding events. For each scat, the scat diameter, date, and GPS location were recorded.

The relative abundance of dhole and their prey were investigated using the camera trap data and the data were obtained for % relative abundance (% RA) of the dhole and their main prey.

The remaining parts of the scats were washed in a laboratory and hair samples from each scat were identified for as to which species they belonged by examining the structures of the cuticle, medulla, and cross section under a microscope and comparing these with a reference database of hair of the known species. Results from scat analysis were quantified both in terms of the percent biomass consumed and the frequency of occurrence (Kamler *et al*., 2011, Charaspet, 2015).

**Data Analysis**

The carnivorous species photographed by the camera trap were identified using their common and scientific name according to Lekagul and McNeely (1988). Only those photographs which could clearly identify the animal were used along with the respective date and time recorded on the photograph. Photographs with more than one carnivorous species captured in the same photo were counted as one incidence for each species (Jenks *et al*., 2011) and were used as photographs or incidences independent of each other. The criterion used to determine that the same animal was not photographed multiple times were (1) consecutive photographs of different animals of either the same or different species, (2) consecutive photographs of the same animal, same species which are more than 30 minutes apart, or (3) nonconsecutive photographs of

the same animal of the same species (O'Brien *et al*., 2003).

Frequency of occurrence (% Frequency of Occurrence or % FO) of the prey species was calculated based on data combined and separated by the seasons using the number of scats of the prey species that were found multiplied by 100 and divided by the total number of scat detections.

We reported the number of animal detections and then relative abundance index (RAI) for each species were calculated. To compute the RAI, all detections for each species were summed for all camera traps over all days, multiplied by 100, and then divided by the total number of nights observed in the camera trap.

To determine the preference for specific mammal species by dhole, we calculated the Ivlev's electivity index (D) and modified by Jacobs (Jacobs, 1974) as Electivity index (E) = (r-p)/(r+p)-2rp, where D is prey selectivity, r is the proportion of a given prey species in the predator's diet (calculated from the percent frequency of occurrence) and p is the proportional availability, or abundance, of the prey species in the study area. We calculated Ivlev's electivity index D, modified by Jacobs (1974), to assess which prey species were selected ($0 < D \leq 1$) and which were avoided ($-1 \leq D < 0$). We calculated the D-values using data from both the biomass consumed and individuals consumed, to determine if both the methods resulted in similar trends. For each prey species, the D-value depends on the other species included in the calculation. Therefore, we calculated the D-values only for ungulate species whose abundance was determined during the prey surveys. D-values of rare species are often biased (e.g., a detection in 1 scat might lead to a D-value of +1, whereas no detection would lead a D-value of -1). To determine the biomass available from each ungulate species, we multiplied the adult female body masses by abundance estimates based on the recommendation of Lekagul and McNeely (1988).

To determine the number of individual prey consumed per dhole per year, we used the modified equation from Jedrzejewska and Jedrzejewski (1998), i.e., Nprey= (DFI × Bprey × ndays × 100)/BMprey, where Nprey is the number of individual prey animals eaten per dhole, DFI is the daily food intake of dholes, Bprey is the percent biomass consumed by dholes for a given prey species, n is the number of days (i.e., 365 days in our analysis), and BMprey is the mean live body mass of a prey. The daily food intake per dhole was assumed, conservatively, to be 1.36 kg based on the mean body mass (16 kg) of dholes (Durbin *et al*., 2004), and that carnivores in general consume approximately 8.5% of their body mass per day (Mukherjee *et al*., 2004). The mean live body mass of prey species was the same used to determine the percent biomass consumed. We used a linear regression model ($yi = 0.439 + 0.008xi$) developed for gray wolves (*Canis*

*lupus*) by Weaver (1993) to calculate the consumed biomass of different prey species by a dhole in the area. In the model, x is the live body mass of a prey, whereas y is the mass of the prey per collected scat (i).

## RESULTS AND DISCUSSION

### Size of home range

Two adult female dholes were captured. The first one, named Farn, was captured on the 30th January 2017 and the second one was captured on 7th February 2017 and was named Pak Chi. Based on a satellite monitoring system, we found that the first dhole could be monitored for 123 days with 260 telemetry locations, and the second dhole could be monitored for 70 days, with 179 telemetry locations. Based on the GPS locations gained from the satellite, Farn operated in locations 1-4 per day between 31st January and 4th June 2017, 123 days in total, indicating that the size of its home range was 76.57 km$^2$. Pak Chi's home range, based on the data gained from the satellite during 8th February through 19 April 2017 or 70 days in total, showed that the size of its home range was 27.65 km$^2$. The difference between the sizes of home range was due to the differences in the number of the locations used to calculate the home range size. For the first dhole, 260 telemetry locations and for the second dhole, only 179 telemetry location were used to calculate the size of the home range. Other reasons may be the differences in the environmental conditions in each of their home range areas. Home range area of the second dhole mostly covered a grassland habitat, whereas the home range of the first dhole mostly covered the dry evergreen forest. Furthermore, the differences may be dependent on the animal's conditions. Three dens were found during a ground check of the second dhole's home range area, a smaller home range due to the pubs (Table 1 and Figure 1).

**Table 1** Home range size of the collared dholes in Khao Yai National Park using satellite radio collar.

| Dhole | The first dhole (Farn) | The second dhole (Pak Chi) |
|---|---|---|
| Number of telemetry locations | 260 | 179 |
| 95% core area (ha) | 7,657.65 | 2,765.43 |
| 75% core area (ha) | 4,171.64 | 762.45 |
| 50% core area (ha) | 2,585.03 | 169.11 |

The home range size of the second dhole was close to that of an adult female caught on radio in the KYNP by Austin (2002), who reported that the size of the area was 26.7 km$^2$. Moreover, the size of the home range for the first dhole is similar to that recorded by Durbin *et al*. (2004), who found that an adult male dhole in India had an average home range size of 55.0 km$^2$.

**Daily Movement**

The results showed that, the first adult female dhole, namely Farn, had a daily moving distance of 2,390.19 meters with a maximum daily moving distance of 14,215.31 meters and a total distance of 293,993.60 meters. While the second adult female dhole, namely Pak Chi, had a daily moving distance of 2,754.38 meters with a maximum daily movement of 10,982.96 meters and a total distance of 192,806.90 meters, as shown in Table 2. The distance traveled during the day by the dholes was close to daily dhole movement reported in Phu Khieo Wildlife Sanctuary, Chaiyaphum province of 2.60 km of average movement (Grassman *et al*., 2005) whereas Austin (2002) reported a daily movement of 1.4 km. Johnsingh (1982) reported a daily movement of dhole in India of 1.0-6.0 km. In addition, the results showed that the dhole repeatedly moved at night to a nearby position. Based on a regular ground checking, we found that at least three den sites were located within the area which may be a reason that the dhole movement was concentrated in this area.

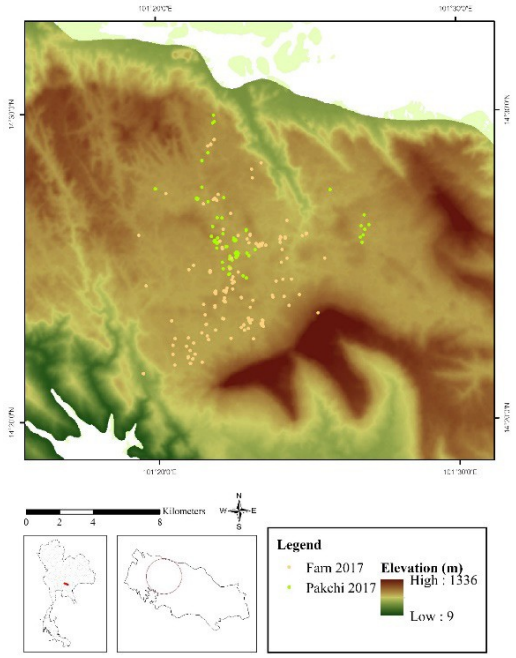


**Figure 1** GPS locations of the satellite collar installed on the dholes in Khao Yai National Park during the study period.

**Table 2** Movement of the collared dhole in Khao Yai National Park.

| Dhole movement | The first dhole (Farn) | The second dhole (Pak chi) |
|---|---|---|
| Number of telemetry locations | 260 | 179 |
| Number of days observed | 123 | 70 |
| Total distance (m) | 293,993.60 | 192,806.90 |
| Average distance covered per day (m) | 2,390.19 | 2,754.38 |
| Minimum distance covered per day (m) | 1.54 | 1.54 |
| Maximum distance covered per day (m) | 14,215.31 | 10,982.96 |
| SE | 248.69 | 364.38 |

**Habitat used**

In order to determine the habitat usage, the forest type was used as a factor. The dholes in this study used different forest habitats. The first dhole (Farn) preferred the dry evergreen forest, whereas the second dhole (Pak chi) used the dry evergreen forest frequently which had a nearby grassland. However when compared with the available area, a small patch of grassland, within the home range area of an individual dhole and the combined data indicated that the dhole used the grassland significantly more than the dry evergreen forest. The details of the location in each habitat type are shown in Table 3. Thus, habitat improvement by maintaining the grassland in the park area can be an important practice to conserve the numbers of the animal.

**Table 3** Number of telemetry locations of the collared dholes in the two forest categories.

| Habitat type | The first dhole | The second dhole | combined data (% in parenthesis) |
|---|---|---|---|
| | Number of locations (% in parenthesis) | Number of locations (% in parenthesis) | |
| Dry evergreen forest | 175 (67.31) | 88 (49.16) | 263 (59.91) |
| Grassland | 85 (32.69) | 91 (50.84) | 176 (40.09) |
| Summary | 260 | 179 | 439 |

**Prey species**

Fifty two dhole scat samples were collected between February and October 2017, which indicated to 7 prey species consumed by the dhole. These were the red muntjak (*Muntiacus munjak*), sambar deer (*Rusa unicolor*), Eurasian wild pig (*Sus scrofa*), masked-palm civet (*Paguma larvata*), common palm civet (*Viverra zibetha*), large Indian civet (*Paradoxurus hermaphrodites*) rat, and lesser-mouse deer (*Tragulus kanchil*), with a % frequency of occurrence of 41.31, 28.85, 17.38, 7.69, 1.92, 1.92, and 1.92, respectively, as shown in Table 4. Slangsingha (2013),

through scat analysis, reported that the most frequent prey species consumed by the dhole in Phu Khieo Wildlife Sanctuary was the sambar deer (31.4%), followed by lesser-mouse deer (23.5%), red muntjak (20.6%), and Eurasian wild pig (12.8%). Grassman *et al.* (2005) studied the prey species consumed in the Phu Khieo Wildlife Sanctuary and found that the highest percentage, 42.6%, was of the red muntjak followed by sambar deer with the %FO of 31.5%, wild boar (23.6%), and hog deer (14.2%).

**Table 4** Percentage frequency of occurrence (%FO) of the prey species based on 52 specimens of dhole scats in Khao Yai National Park, during February to September, 2017.

| No. | Common name (scientific name) | n=52 | |
|---|---|---|---|
| | | n | %FO |
| 1 | Red muntjak (*Muntiacus muntak*) | 22 | 42.31 |
| 2 | Sambar deer (*Cervus unicolor*) | 15 | 28.85 |
| 3 | Eurasian Wild pig (*Sus scrofa*) | 8 | 15.38 |
| 4 | Masked palm civet (*Paguma larvata*) | 4 | 7.69 |
| 5 | Large Indian civet (*Viverra zibetha*) | 1 | 1.92 |
| 6 | Common palm civet (*Paradoxurus hermaphrodites*) | 1 | 1.92 |
| 7 | Lesser mouse deer (*Tragulus kanchil*) | 1 | 1.92 |
| | Total | 52 | 100.00 |

Relative abundance index (RAI). Based on the camera trap data, 2013 trap nights in total, showed a relative abundance of 3.73% of the dhole. We also found that the barking deer was the most abundant species in the area as estimated by the pooled data, with a percentage of 15.90%, followed by Eurasian wild pig at 14.41%, pig-tailed macaques at 9.29%, sambar deer at 6.71%, and porcupine at 5.76 %, respectively. When comparing the abundance of dhole and their prey species using camera trapping, RA of dhole was lower than that of their main prey in the area. The details of the analysis are shown in Table 5.

**Table 5** Relative abundance index of dhole and their prey in Khao Yai National Park, deduced by the camera trap technique during January to April, 2018.

| No. | Common name | Total of trap night = 2,013 | |
|---|---|---|---|
| | | N [1] | RAI [2] |
| 1 | Red muntjak | 320 | 15.90 |
| 2 | Eurasian Wild pig | 290 | 14.41 |
| 3 | Pig-tailed macaque | 187 | 9.29 |
| 4 | Sambar deer | 135 | 6.71 |
| 5 | Porcupine | 116 | 5.76 |
| 6 | Dhole | 75 | 3.73 |
| 7 | Large Indian civet | 21 | 1.04 |
| 8 | Small Indian civet | 16 | 0.79 |
| 9 | Gaur | 10 | 0.50 |
| 10 | Common palm civet | 5 | 0.25 |
| 11 | Large spotted civet | 2 | 0.10 |

**Remarks:** 1: N = trap success, 2: RAI = relative abundance Index

**Electivity index**

Using the dhole electivity index, the prey species were classified into 3 groups. The first group consisted of the preferred prey of dhole, composed of lesser mouse deer (+1.00) and the masked palm civet (+1.00). The second group that dhole fed on was based on the prey availability and consisted of the wild boar (0.00), red muntjak (-0.02), and sambar deer (-0.05). The third group, which was relatively not consumed by the dhole, was composed of the common palm civet (-1.28) and large Indian civet (-1.28).

**Correction factor**

The weights of the prey per scat or the correction factor of the prey species were estimated to be 0.63 kg, 2.22 kg, 1.54 kg, 0.47 kg, 0.51 kg, and 0.47 kg for the red muntjak, sambar deer, Eurasian wild pig, masked-palm civet, large Indian civet, common palm civet, and lesser mouse deer, respectively.

**Number of individual prey consumed**

The total number of prey in KYNP as calculated by the pooled yearly data indicated that in total, 14.32 individuals belonged to the prey species, with 4.57 individual red muntjak, 1.18 individual Sambar deer, 0.71 individual Eurasian wild pigs, 3.72 individual masked-palm civet, 0.45 individual large Indian civet, 1.6 individual common palm civet, and 2.64 individual lesser-mouse deer. Of the total number of individuals from the prey species, 84.56% belonged to the ungulate species. The details of the analysis are shown in Table 6.

**Table 6** Prey species, average body weight of each prey, correction factor, frequency of occurrence, biomass consumed and number of individual prey consumed by the dhole per individual per year in the Khao Yai National Park.

| No. | Prey species | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| 1 | Barking deer | 20-28 (24.0) | 0.63 | 42.31 | 26.65 | 22.07 | 4.57 |
| 2 | Sambar deer | 185-260 (222.5) | 2.22 | 28.85 | 64.04 | 53.03 | 1.18 |
| 3 | Wild boar | 75-200 (137.50) | 1.54 | 15.38 | 23.69 | 19.62 | 0.71 |
| 4 | Mask palm civet | 3-5 (4) | 0.47 | 7.69 | 3.62 | 2.99 | 3.72 |
| 5 | Large Indian civet | 8-10 (9.0) | 0.51 | 1.92 | 0.98 | 0.81 | 0.45 |
| 6 | Common palm civet | 2-5 (3.5) | 0.47 | 1.92 | 0.90 | 0.75 | 1.06 |
| 7 | Lesser mouse deer | 0.7 - 2 (1.35) | 0.45 | 1.92 | 0.87 | 0.72 | 2.64 |
| Total | | | | 100.00 | 120.75 | 100.00 | 14.33 |

**Remarks** : 1. Range and Average body weight (kg) of prey species in parenthesis based on Lekagul and McNeely (1988)
2. yi = Correction factor based on Weaver (1993)'s formula as: yi = 0.439 + 0.008xi
3. Frequency of occurrence based on scat analysis in th is study
4. Biomass consumed based on Ackerman *et al.* (1984)'s formula
5. % Biomass consumed
6. Number individual of prey consumed per 1 dhole per year based on Jedrzejewska and Jedrzejewski (1998)'s formula

**Biomass of prey consumed**

The biomass of prey consumed by an individual dhole per year in the area, based on 52 dhole scats found that the total weight of the prey consumed was 120.75 kg per individual per year. The individual prey contribution was 64.04 kg (53.03%) of sambar deer, 26.65 kg (22.07%) of red muntjak, 23.69 kg (19.61%) of wild boar, 3.62 kg of masked palm civet, 0.98 kg of large Indian civet, 0.90 kg of common palm civet, and 0.87 kg of lesser mouse deer. Most of the prey biomass (95.60%) was contributed from the ungulate species. The results of this study are similar to that reported by Borah *et al.* (2009) and Salvan *et al.* (2013) in India, who found that quantity of biomass consumed by a dhole per year was 127.76 kg and 147.87 kg, respectively. This result is similar to that of Dar and Khan (2016), who studied the food habits of dhole in the tropical forests of Silent Valley National Park. They found that sambar was principal prey species consumed by the dhole as inferred from the relative biomass estimation of prey remains in the dhole scats.

Regarding the prey biomass contribution, sambar was the highest (66.74%) while grey jungle fowl was the lowest (0.32%).

## CONCLUSION

The result of this study was the first time in Khao Yai National Park showed the size of the home range of the 2 female dholes. The first dhole was estimated to be around 7,697.66 hectares, whereas the home range size of the second dhole was 2,765.43 hectares. The average daily distance traversed by the first dhole was around 2,390.19 meters, with a maximum daily movement distance of 14,215.31 meters. The second dhole had an average daily movement distance of 2,754.38 meters, with a maximum daily movement of 10,982.96 meters. Dholes preferred the grassland habitat more than the dry evergreen forest. Using the scat analysis, seven prey species were found to be consumed by the dhole. These were the red muntjak (*Muntiacus munjak*), sambar deer (*Rusa unicolor*), European wild pig (*Sus scrofa*), masked plam civet (*Paguma larvata*), large Indian civet (*Viverra zibetha*), common plam civet (*Paradoxurus hermaphrodites*), rat, and lesser mouse-deer (*Tragulus kanchil*). Using the electivity index, prey species were classified into 3 groups. The first group was composed of the prey preferred by the dhole, the lesser mouse deer and mask palm civet. The second group that the dhole fed on, based upon their availability, was composed of the wild boar, red muntjak, and sambar deer. The third group, consisted of species that the dhole did not prefer to feed on, and was composed of the common palm civet and the large Indian civet. The total number of individual prey consumed was 14.32 individuals by a dhole per year. Of the total number of individuals of the prey species, 84.56% were ungulate species. The total prey biomass consumed by a dhole per year was 120.85 kg. Most of the prey biomass (95.44%) was of the ungulate species. We recommend a continuous monitoring of the dhole population and their prey, and to reduce anthropogenic activities in the area used by the dhole. Grassland habitat should be improved to promote the ungulate species which are the main prey consumed by the dhole, especially in areas far from roads and human activity.

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