



# Global Medicinal Use of Bats: A Systematic Literature and Social Media Review



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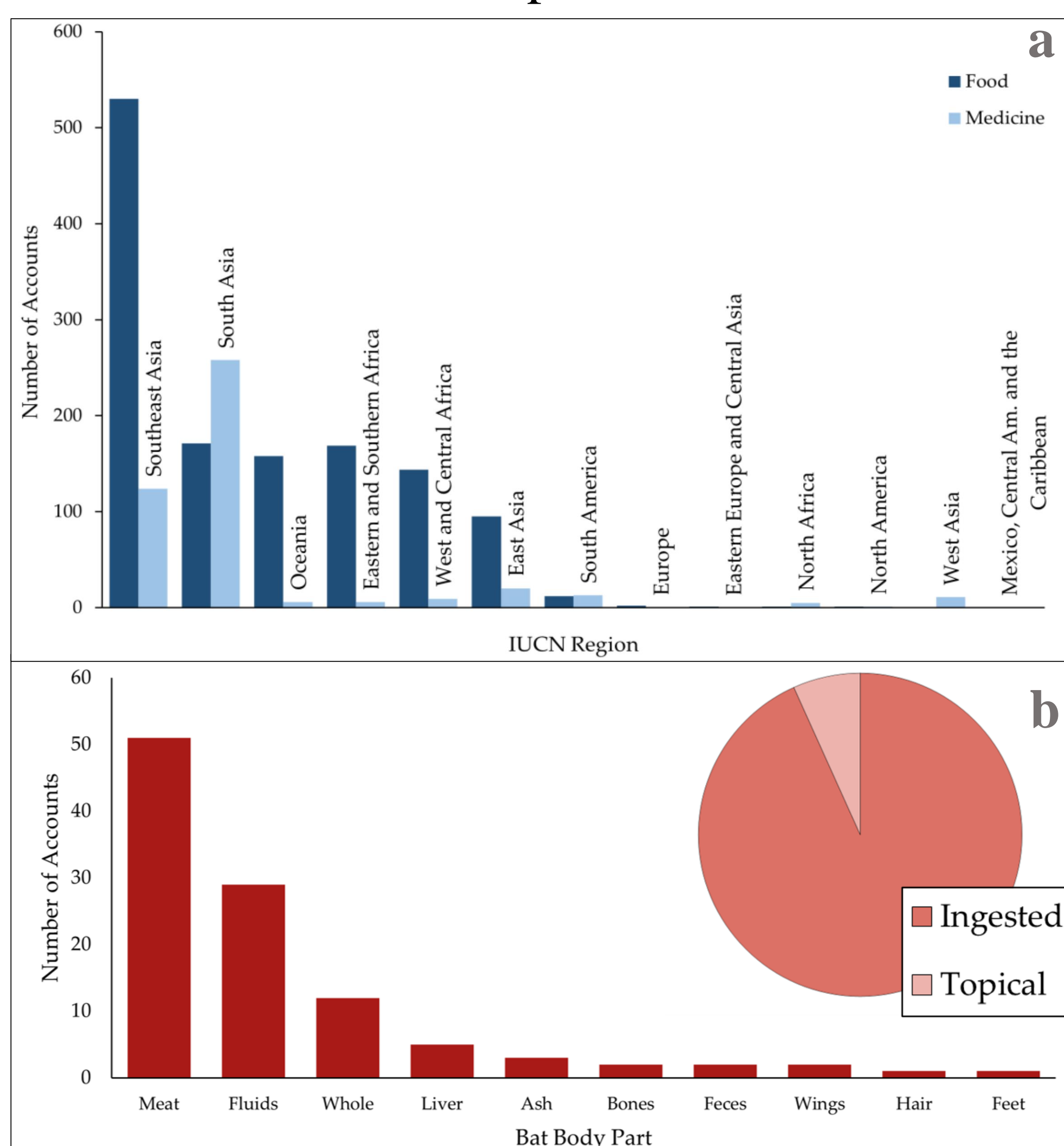


## Introduction

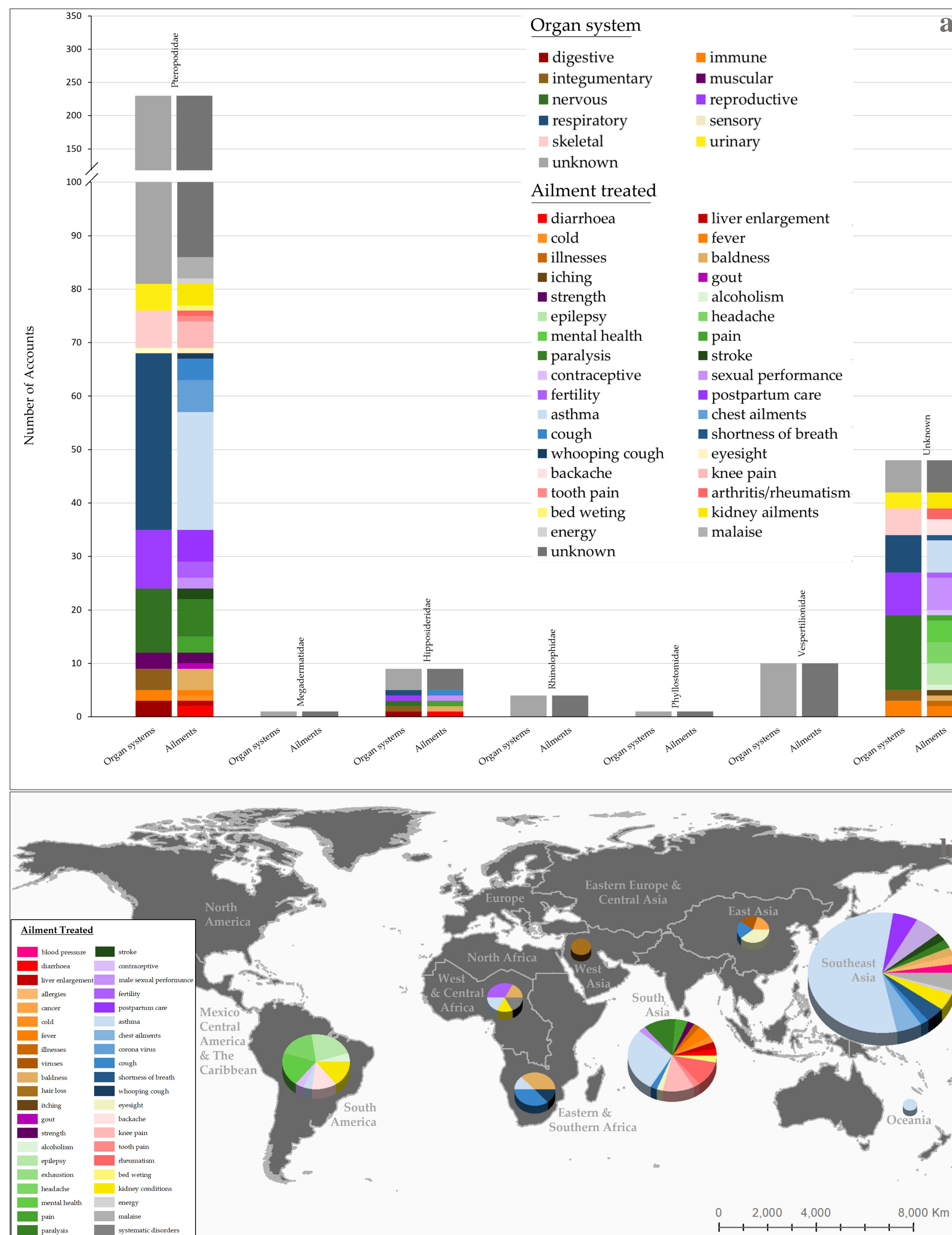
- Bats are exploited for bushmeat and medicine<sup>1</sup>.
- Written records of medicinal use dates to at least ~3400 BC<sup>2</sup>
- Yet research underreports bat exploitation<sup>1</sup>.
- We quantified the medicinal uses of bats, including geographical and taxonomic variation in food and medicinal practices.

## Methods

- Scientific Literature
  - Papers cited in IUCN Red List assessments of species threatened by hunting.
  - Systematic Web of Science search.
  - Gathered 198 papers from 1974-2021.
- Social Media
  - Manual keyword search of 17 social media platforms in 23 languages.
  - 1063 social media posts from 2007-2021.



**Figure 1.** **a)** Comparison of bat usage for food (dark blue,  $n = 1284$ ) and medicine (light blue,  $n = 453$ ). Regions and subregions follow the IUCN classification system. **b)** Body part of bats used in medicine  $n = 108$ , and route of administration of bats used in medicine  $n = 104$ , measured as unique accounts reported in the literature (1974–2021) and social media (September 2007–October 2021).



**Figure 2.** **a)** Medicinal use of bats by family. Human organ systems (left bar) aligned with the specific ailments that comprise them (right bar,  $n = 303$ ). Data measured as unique accounts reported in the literature (1974–2021). **b)** Global variation in type and quantity of ailments treated with bats ( $n = 188$ ), measured as unique accounts reported in the literature (1974–2021). Size of pie charts reflect the number of data points in that region. Regions and subregions follow the IUCN classification system.

## Results

- More IUCN regions use bats for food than medicine (Fig. 1a).
- 83 countries use bats for food or medicine.
- Bats are used to treat 42 ailments of 11 human organ systems across 37 countries.**
- Ingestion of bat meat was the main method of administration (Fig. 1b).
- We identified 36 bat species from six families, located in 14 countries used for medicine (Fig. 2a).
- Bats are exploited for medicine in 8 out of 13 IUCN regions/subregions (Fig. 2b).
- Exploitation for respiratory ailments was common throughout Asia (Fig. 2b).
- Asthma was the most common ailment (Fig. 3).
- Southeast Asia had the most reports of medicinal use and treated the greatest number of ailments (Fig. 2b).

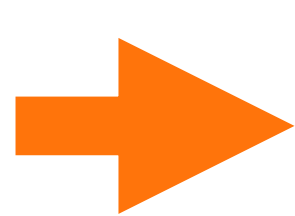


**Figure 3.** Bat organs, cooked bats, and caged bat all used to treat asthma. Images from publicly available social media posts.

## Conclusions

- We found evidence that people from 83 countries and territories use bats for food and/or medicine.
- Better scientific documentation of bat hunting for medicinal use is needed.
- Understanding the beliefs behind the medicinal use of bats deserves further research.

## Read our paper



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<sup>1</sup> Mildenstein, T.; Tanshi, I.; Racey, P.A. *Exploitation of Bats for Bushmeat and Medicine. Bats in the Anthropocene: Conservation of Bats in a Changing World*; Springer: Berlin/Heidelberg, Germany, 2016; pp. 325–375.

<sup>2</sup> Riccucci, M. Bats as materia medica: An ethnomedical review and implications for conservation. *Vespertilio* 2012, 16, 249–270.