

Conservation of Natural and Cultural Heritage in the Huong Son Complex of Natural Beauty and Historical Monuments, Northern Vietnam

Vuong Tan Tu^{1,2*}, Chu Thi Hang¹, Nguyen Truong Son^{1,2}

¹Institute of Ecology and Biological Resources, Vietnam Academy of Science and Technology, No. 18 Hoang Quoc Viet road, Hanoi, Vietnam; +84 (0) 964 022 954, *vttu@iebr.ac.vn / tuvuongtan@gmail.com

²Graduate University of Science and Technology, Vietnam Academy of Science and Technology, N° 18, Hoang Quoc Viet road, Cau Giay district, Hanoi, Vietnam

■ Abstract

The Huong Son Complex has long been recognised as an important sacred landscape in Vietnam due to its spiritual and cultural values. The area also retains many aesthetic and biological values. Unfortunately, its cultural and natural treasures are currently at risk due to anthropogenic impacts, mainly associated with increased spiritual tourist activities. Some urgent solutions have been implemented, but they give priority to protecting cultural values and sometimes conflict with nature conservation efforts. This problem was encountered during our recent bat conservation research in Huong Son. Our preliminary findings revealed symbiotic relationships between natural and cultural heritage in Huong Son; thus, linking nature and culture in conservation planning and management is critical for the sustainable development of the site. However, the application of this approach in Huong Son, and other sacred places in Vietnam, is challenged by gaps in basic research and the inadequate attention of local stakeholders.

KEY WORDS: Sacred Sites, Cultural and Natural Heritage, Conservation, Conflict, Vietnam, Huong Son, Bat.

■ 1. Introduction

Vietnam is a multi-ethnic country with 54 ethnic groups coexisting peacefully. The country is also a nation with diverse beliefs and religions, which also contribute to the diverse cultures of Vietnam. According to official statistics, more than 70% of over 90 million Vietnamese people have no religion but rather practice the Vietnamese folk religion, which is a fusion of Confucianism, Taoism, and Buddhism (called the three teachings). The rest are followers of one of the recognized religions: Buddhists (11 million, 12.2%), Catholics (6.2 million, 6.8%), Cao daists (4.4 million, 4.8%), Protestants (1.4 million, 1.6%), Hoahaoists (1.3

million, 1.4%), and others (Muslims, Bahais, Hindus and other smaller groups, <1%). Associated with these religions, many kinds of sacred places can be found throughout Vietnam. Buddhist pagodas and temples – monuments to worship a deity or an ancient celebrity – are the two most popular (Government Committee for Religious Affairs 2013, Bielefeldt 2014, Chung and Linh 2016).

Considered one of Vietnam's most important sacred sites, the Huong Son Complex of Natural Beauty and Historical Monuments (alternative names: Perfume Pagoda or Chùa Hương in Vietnamese) is located in the Huong Son commune,

My Duc district, ca. 60 kilometers southwest of Hanoi [Fig. 1A]. It comprises a vast complex of Buddhist pagodas and temples that were built into the limestone Huong Tich mountain. The complex center is the Perfume Pagoda, located inside the Huong Tich cave [Fig. 1B]. According to legend, this place is where the Bodhisattva stayed in order to help save human souls. Other monuments have also been associated with many tales of Buddhism, Vietnamese folk religions, and/or historical events (Bang 2007).

■ 2. Significance of the heritage place, including natural and cultural values

Since the early 15th century, Huong Son was known as "one of the Buddhist centres of Vietnam" or "north Vietnam's most famous pilgrimage site". Pilgrimages to Huong Son can take place throughout the year, but the main season is during the Perfume Pagoda Festival with a traditional Vietnamese Buddhist celebration, and other cultural activities, held annually from 6 January to the end of March, according to the lunar

calendar [Fig. 1B]. Every year, the area attracts not only hundreds of thousands of pilgrims, who come to pray for prosperity and happiness, but also large numbers of tourists. The tourists, both Vietnamese and foreigners, just want to enjoy the atmosphere of the festival, visit the important archaeological sites of ancient Viets belonging to the Hoa Binh Culture, or explore the beautiful scenery of the area (Bang 2007; Tordoff et al. 2004).

Apart from the above spiritual and cultural values, during the period outside of the religious festival, Huong Son is also known as a tranquil sightseeing spot in Vietnam. The area is dominated by the limestone Huong Tich mountain, which reaches a height of 381 m and retains evergreen forests [Fig. 1C]. To the north and east, this limestone mountain is bordered by the low coastal plain of the Red River Delta. The natural beauty of the Huong Sun landscape is even more impressive because of the network of streams of the Day River watershed. The variety of natural habitats, particularly the evergreen

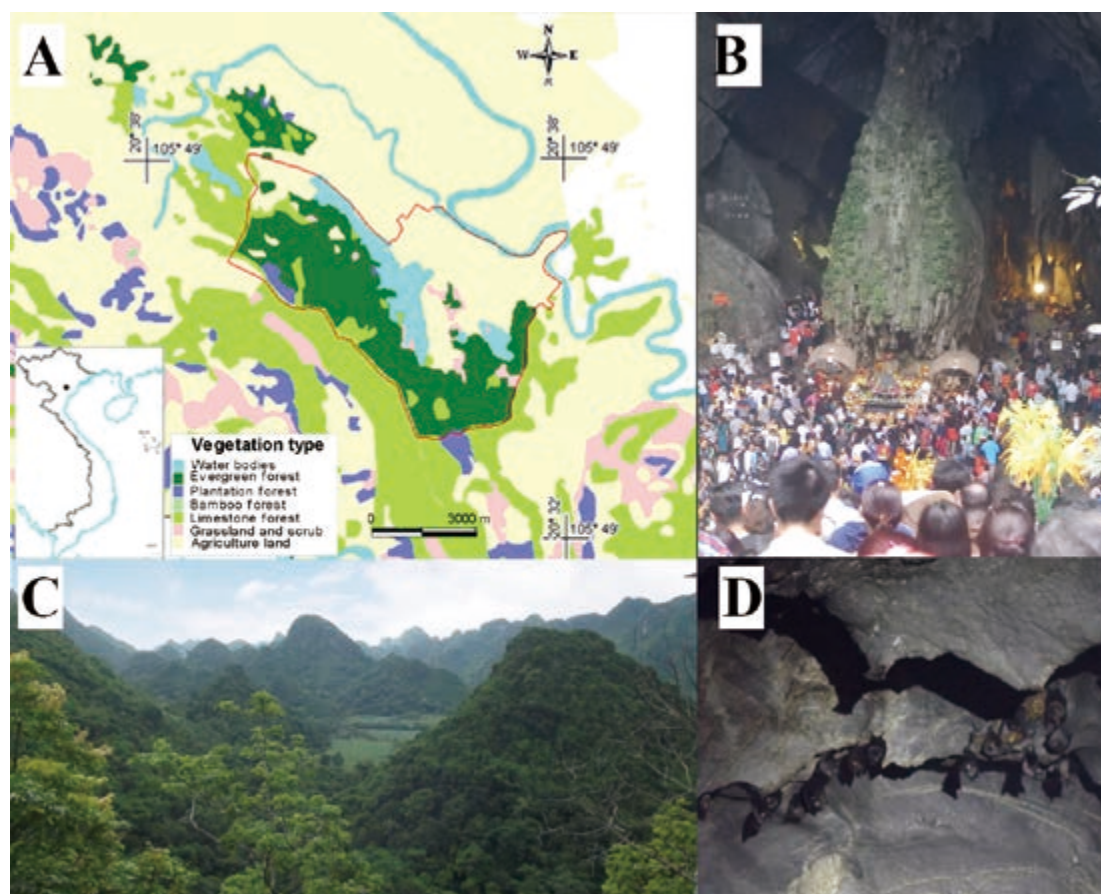


Figure 1: A – location and vegetation type of the Huong Son complex (modified from Tordoff et al., 2004); B – Crowds of pilgrims and visitors in the Huong Tich cave during Perfume Pagoda Festival; C - Tower karst landscape with tropical evergreen forest covers the steep slopes within Huong Son; and D – day roost of a bat colony inside Huong Tich cave. B.C.D@V.T.Tu

forests on limestone and caves, have also supported high levels of biodiversity and endemism [Fig. 1C-D] (Tordoff et al. 2004). Previous studies have indicated that the natural habitats within Huong Son are home to 917 vascular plant species (belonging to 597 genera and 192 families) and 290 animal species (85 families and 26 orders). Many of the recorded plants and animals are recognized as precious and rare species or have been recently described as new species to science (Tordoff et al. 2004, Chan et al. 2008, Luu et al. 2011, Do and Vu 2013).

■ 3. Current management arrangements

The area and its existing values are protected by various laws and regulations. With its cultural and natural importance, Huong Son was discussed for a possible nomination as a Mixed Cultural and Natural site to the World Heritage List by the Vietnamese Government in 1991. However, during that period of time, they lacked an effective conservation management program with which to mitigate the adverse effects of human activities on its cultural and natural heritages. Hence, the preparation of its nomination dossier was suspended. Regardless of the situation, the area is still included on the country's Tentative List and, with recent conservation actions, a new program for its nomination is being considered by the local authorities (Huong Son Cultural and Historical Site Management Board in litt. 2017).

The Perfume Pagoda Festival has been listed as one of the most important national festivals of the country. The Perfume Pagoda was classified as a national historical and cultural monument in 1962. At that time an area of 500 ha around the monument was designated as a cultural and historical site under Decision No. 194/CT date 09/08/1986 by the Chairman of the Council of Ministers. In 1993, the area of Huong Son was expanded to 4,354 ha and additionally functions as a special-use forest – a type of protected forest listed in the national nature conservation strategy by the Vietnamese Government. Currently, the area of Huong Son is 4,705 ha and coordinated by two independent management boards, one responsible for the spiritual and tourism activities (the Huong Son Cultural and Historical Site Management Board) and the other for the natural resources (Management Board of Huong Son special-use forest). As presented

above, Huong Son is an example of a site containing mixed natural and cultural properties in Vietnam. Thus, under the existing legal framework of Vietnam, the management of its natural and cultural heritage has been performed in accordance with numerous laws and regulations. For instance, as a special-use forest, forest protection and development in Huong Son are based on the Law on Forest Protection and Development (amended in 2016); whereas the Law on Cultural Heritage (amended in 2009) determines the protection of historical-cultural values of the area. Indeed, some considerable discrepancies among different laws or legal frameworks of Vietnam occur in defining the mutually symbiotic relationships between natural and cultural values in most natural sacred sites of the country; Huong Son is not an exception. Therefore, the current management arrangements of the area are seen as obstacles, creating overlapping and sometimes conflicting responsibilities and interests among different stakeholders, consequently reducing the effectiveness of conservation efforts therein.

■ 4. Current State of Conservation and Challenges for Continuity

The enforcement of existing legislation on nature and culture conservation in Huong Son is not really effective. In recent years, coupled with fast economic development (at an average annual growth rate of 8-10%), the area has experienced a population boom and rapid urbanization (i.e., the population of Huong Son commune has increased from 17,598 in 1999 to 20,059 in 2009 and to 22,681 by the end of 2017). Such social-economic growth is strongly correlated with the development of spiritual tourism and associated services.

4.1 *Spiritual tourism and its impacts*

The number of pilgrims and visitors coming to the Perfume Pagoda has rapidly increased from 352,802 in 2007 to nearly one million in 2010, and up to ca. 1.5 million in 2017. Accordingly, the number of local people providing services for spiritual tourism (i.e. lodgings, restaurants, boat drivers, porters) has also increased from 4,667 in 2007 to 5,334 in 2010 and more than 6,000 in 2017. However, since most tourists only visit Huong Son during the Perfume Pagoda Festival, the imbalance between

the increased requirements of spiritual tourism and the insufficient capacity of services has long been considered to be a specific concern to this site (People's Committee of Huong Son Commune, in litt. 2017). These tourist activities, particularly during the Perfume Pagoda Festival, have collectively led to increasing rates of illegally or intentionally destructive effects on the cultural and natural heritage of the site. These anthropogenic impacts include: (1) destruction or disturbance of cultural sites (Buddhism pagodas, temples); (2) deforestation in favour of cultivated lands and/or infrastructures and suppliers mainly for spiritual tourism; (3) over-harvesting of plants and animals; (4) limestone mining; and (5) environmental pollution caused by waste (air, solid, liquid). Although local authorities have implemented many urgent solutions (i.e. strengthening the protection and renovation of Buddhist pagodas, temples, and statues as well as infrastructures such as access roads and marinas, replacing motorboats with rowboats, and improving facilities for garbage collection and disposal) to mitigate such negative effects, most recent efforts have prioritized the protection of the existing cultural heritage of Huong Son. The basis for these actions is mostly short-term – to attract more tourists and consequently to obtain more benefits from spiritual tourism and other inherent activities. This approach sometimes conflicts with nature conservation due to the lack of scientific guidance. These conservation issues have been encountered throughout our on-going bat conservation research in Huong Son.

4.2 Case study on bats

Bats were chosen as the focus for research as they are one of the native mammalian groups in the limestone forests and caves in Huong Son. Bats play many important roles in local ecosystems through the ecological and economic services they provide in plant pollination, seed dispersal, and insect consumption. In addition, many bat species roosting in caves can produce large quantities of guano, which is regarded as a primary nutrient source for entire cave ecosystems and as a fertilizer source (Altringham 2011). Despite their importance, little is known about the current status and ecological requirements of the local bat community. However, like many other creatures in Huong Son, local bats, particularly cave and forest dwellers, have been exposed to the

destructive impact of humans. It also should be noted that, based on studies in other areas of the world, several bat species are considered as natural reservoir hosts for zoonotic pathogens, including human pathogenic coronaviruses (SARS Coronavirus), henipaviruses (Hendra, Nipah), and lyssa viruses. The intensive human encroachment into the natural habitats of bats (caves and surrounding areas) in Huong Son, may increase the risk of the emergence of zoonotic diseases (Schneeberger and Voigt 2016). Yet, scientific knowledge and social awareness of the public health risks from bat pathogens in Huong Son and other areas of Vietnam remain neglected. Thus, this project aimed to address these issues by providing much needed information in the development of conservation actions that will ensure environmental sustainability while maintaining human well-being. The experience gained from this project will then be used as a model for follow-up conservation initiatives in the country's other sacred natural sites.

So far, two field surveys using mist-nets and harp-traps during March-April and in July 2017 have been carried out in Huong Son. Our preliminary results have revealed that the study sites support at least 13 species of five bat families, accounting for nearly 10% of Vietnamese bat diversity [Table 1; Fig. 2]. All of the recorded bat species were found to be widespread elsewhere in Vietnam and nearby territories (Kruskop 2013). However, our understanding regarding the bat diversity in Huong Son is underestimated because our recent surveys were conducted only in small areas associated with Buddhism pagodas and temples.

As presented in Table 1, with the exception of the *Tylonycteris fulvida* that roosts in bamboo internodes, all other bat taxa were known to roost in large colonies in caves. These cave-dwelling bats have often been exposed to destructive human impacts (i.e. air and light pollution, noise) through crowds of visitors and/or religious practices, particularly during the Perfume Pagoda Festival [Figs. 1B, 3A]. This inference corroborated the results of our recent monitoring surveys in the Huong Tich cave in March-April and July, 2017. During both trips, we found considerable numbers of bat carcasses on the cave's floor under their roosts [Fig. 3B]. All of these fatalities are attributable to the exposure to the toxic smoke of candles and incenses at high concentration in the

cave. In addition, the relative abundance of cave-dwelling bats observed in March-April (during the Perfume Pagoda Festival) was significantly lower than that in July (out of festival period). Specifically, consistent with previous studies in northern Vietnam (e.g. Furey et al., 2011), our reproductive assessment of captured bats has also indicated that March–July is the timing of major reproductive events (i.e. pregnancy, lactation, and weaning – the period when offspring become independent) for local bat species, thus protection of maternity roosts during

these periods is critical. Unfortunately, most pilgrims and tourists only visit Huong Son during the three-month festival. As a consequence, the high number of visitors and their associated destructive activities (noise, toxic smoke, and light pollutions) during

No	Scientific name	Roosting preference (Frequent / occasional)	Dietary
I Pteropodidae			
1	<i>Cynopterus sphinx</i>	Foliage / Cave	Frugivore
II Rhinolophidae			
2	<i>Rhinolophus pearsonii</i>	Cave / Tree hollow	Insectivore
3	<i>R. cf. stheno</i>	Cave / Tree hollow	Insectivore
4	<i>R. cf. lepidus</i>	Cave / Tree hollow	Insectivore
III Hipposideridae			
5	<i>Hipposideros armiger</i>	Cave / Tree hollow	Insectivore
6	<i>H. larvatus</i>	Cave / Tree hollow	Insectivore
7	<i>H. pomona</i>	Cave / Tree hollow	Insectivore
8	<i>H. cineraceus</i>	Cave / Tree hollow	Insectivore
IV Vespertilionidae			
9	<i>Myotis muricola</i>	Cave/ Crevices in buildings	Insectivore
10	<i>Scotomanes ornatus</i>	Cave/ Crevices in buildings	Insectivore
11	<i>Pipistrellus tenuis</i>	Cave/ Crevices in buildings	Insectivore
12	<i>Tylonycteris fulvida</i>	Bamboo internodes / Tree hollow	Insectivore
IV Emballonuridae			
13	<i>Taphozous melanopogon</i>	Cave	Insectivore

Table 1: Checklist of bat species recorded in Huong Son

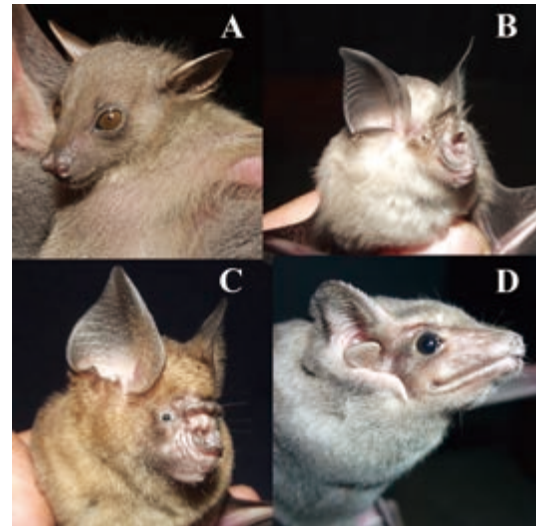


Figure 2: Portraits of selected bat species recorded in Huong Son A – *Cynopterus sphinx*; B – *Rhinolophus stheno*; C – *Hipposideros larvatus*; D – *Taphozous melanopogon*©V.T.Tu



Figure 3: Conflicts between religious practices and bat conservation in Huong Son A – Light and air pollution caused by ritual activities in Perfume Pagoda inside the Huong Tich cave; B – carcass of *Taphozous melanopogon* found in Huong Tich cave; C – bat excreta damage on the statues of worship in Tien Son cave; D – fishing nets used for banishing bats in Tien Son cave. ©V.T.Tu

the festival are particularly detrimental to local bat assemblages.

In many caves where Buddhist pagodas and temples exist, the accumulated guano and urine of cave-dwelling bats causes severe damage to the buildings or disturbs visitors with its bad odour [Fig. 3C]. These issues have also been encountered in many other World Heritage sites around the world (e.g. Angkor monuments in Cambodia) (Voigt et al. 2016 and references therein). Although bat-related damage to monuments can easily be prevented by removing the accumulated guano, covering exposed structures with plastic sheets, and/or creating isolated safe corridors inside caves for bats, local authorities (monks, guardians) in Huong Son usually banish bats in an unpleasant manner, e.g. using fishing nets [Fig. 3D]. This displacement may lead to the collapse of the bat populations and consequently spread potential bat related zoonotic diseases (Schneeberger and Voigt 2016).

■ 5. Recommendations

The preliminary results of our case study in Huong Son provides snapshots of existing conservation issues, particularly the conflicts in current conservation planning and management, in natural sacred sites in Vietnam where coexisting cultural and natural values have been threatened by increased adverse anthropogenic impacts. In order to resolve such issues, based on practical experience gained during our on-going research and the available guidelines of international organizations (UNESCO World Heritage Centre and its advisory bodies, IUCN, ICCROM, and ICOMOS) for the conservation and management of sacred natural sites, i.e. Wild and McLeod (2008), a decision-making flowchart for safeguarding natural and cultural heritage in Huong Son and in other natural sacred sites of Vietnam has been proposed in Fig. 4, which we hope could be used by local authorities and relevant stakeholders.

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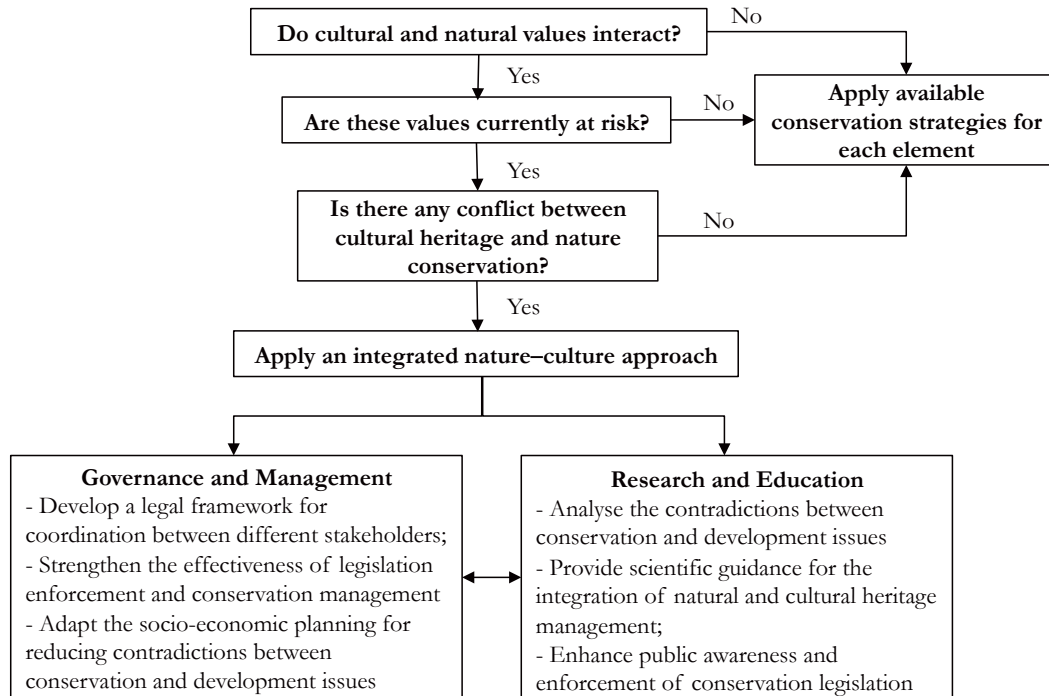


Figure 4: Decision-making flowchart for safeguarding natural and cultural heritages in Huong Son

■ Literature cited

- Altringham, J. D. 2011. *Bats: From evolution to conservation*. Oxford University Press, Oxford.
- Bang N. D. 2007. *The history of Perfume Pagoda*. Ethnic Culture Publishing House, Hanoi. [in Vietnamese].
- Bielefeldt, H. 2014. Press Statement on the visit to the Socialist Republic of Viet Nam by the Special Rapporteur on freedom of religion or belief. United Nations High Commissioner for Human Rights. Available at <http://www.ohchr.org/EN/News Events/Pages/DisplayNews.aspx?NewsID=14914&LangID=E> [accessed 7 November 2017]
- Chan L. T., Tu N. H, and Tai V. A. 2008. *Flora of Huong Son special use forest*. Vietnam Plant Data Center. Available at <http://www.botanyvn.com./cnt . asp?Param=news&newsid=523> [accessed 7 November 2017]
- Chung, T. V. and Linh, N. T. 2016. The situation of new religious studies in Vietnam. *Tattva- Journal of Philosophy* 8: pp. 45–60.
- Do, Q. H. and Vu, T. T. 2013. New records for the fauna of Huong Son special use forest, Hanoi. *Journal of Forestry Science and Technology* 4: pp. 31–39. [in Vietnamese].
- Government Committee for Religious Affairs. 2013. *Vietnamese legal documents on belief and religion*. Religion Publishing House, Hanoi. [in Vietnamese].
- Furey, N. M., Mackie, I. J., and Racey, P. A. 2011. Reproductive phenology of bat assemblages in Vietnamese karst and its conservation implications. *Acta Chiropterologica* 13: pp. 341–354.
- Kruskop, S. V. 2013. *Bats of Vietnam: Checklist and an identification manual*. KMK Sci Press, Moscow.
- Luu, V. Q., Nguyen, T. Q., Do, H. Q., and Ziegler, T. 2011. A new *Cyrtodactylus* (Squamata: Gekkonidae) from Huong Son limestone forest, Hanoi, northern Vietnam. *Zootaxa* 3129: pp. 39–50.
- Schneeberger, K. and Voigt, C. C. 2016. Zoonotic viruses and conservation of bats. In Voigt, C. C. and Kingston, T. (eds): *Bats in the Anthropocene: Conservation of bats in a changing world*, pp. 263–292. Springer e-book.
- Tordoff, A. W., Bao, T. Q., Tu, N. D., and Hung, L. M. 2004. *Sourcebook of existing and proposed protected areas in Vietnam*. 2nd edition. BirdLife International in Indochina and Ministry of Agriculture and Rural Development, Hanoi.
- Wild, R. and C. McLeod (eds.). 2008. *Sacred Natural Sites: Guidelines for Protected Area Managers*, IUCN, Gland, Switzerland.
- Voigt, C. C., Phelps, K. L., Aguirre, L. F., Schoeman, M. C., Vanitharani, J., and Zubaid, A. 2016. Bats and buildings: The conservation of synanthropic bats. In Voigt, C. C. and Kingston, T. (eds): *Bats in the Anthropocene: Conservation of bats in a changing world*, pp. 427–462. Springer e-book.

