

Project Update: January 2018

Under the framework of the project, from February 2017 to the end of January 2018, the project team has carried out a series of project activities. While additional field and laboratory investigations and qualitative analysis of data derived from up-to-date studies are far from the complete, this interim report presents the results of surveys and activities undertaken between February 2017 and January 2018 as follows:

1. Conservation research

During 12 first months of the project, research team and some local collaborators (i.e. Wildlife At Risk, GreenViet,...) have carried out a series of field expeditions in different sites in the three regions of countries i.e. northern (Hanoi city, Thanh Hoa, Vinh Phuc, Ha Giang and Cao Bang province); central (Da Nang city, Ninh Thuan and Binh Thuan provinces); and southern (Ho Chi Minh city and Dak Nong province). The surveyed areas comprised different habitats which can be categorised as a gradient from city central, rural and forested areas.

Accordingly, a total of 671 bats of nearly 50 species were captured. Most of those were released into the wild after recording required data for their species identification and other biological assessment (such as sex, age, reproductive phenomenon). We collected only some bats as vouchers (i.e. bats found dead or individuals of potential unknown species) for future investigations. Based on the guideline of FAO (2011), we usually apply non-invasive methods i.e. biopsy punching, anus swapping when collecting tissues and samples for analysing bat-borne pathogens from captured bats. Up to now, we have collected a total of 598 tissues / faecal samples for phylogenetic and virological investigations of bats and their pathogens; 167 ecto-parasites; 130 blood spots for malaria screening; and 77 samples for diet analyses of selected species. Of which, a number of collected materials have been being analysed for phylogenetic and virological investigations of bats and their pathogens in different laboratories by either project members or collaborators as follow:

- The BSL-4 Virological Laboratory, Szentagothai Research Centre, University of Pécs, Hungary: 204 samples.
- Infectious Disease Surveillance Center, National Institute of Infectious Diseases: 394 samples.
- Department of Parasitology and Zoology, University of Veterinary Medicine, Budapest, Hungary: 140 samples / species of ecto-parasites (ticks, bat flies and mites).

2. Capacity building programme

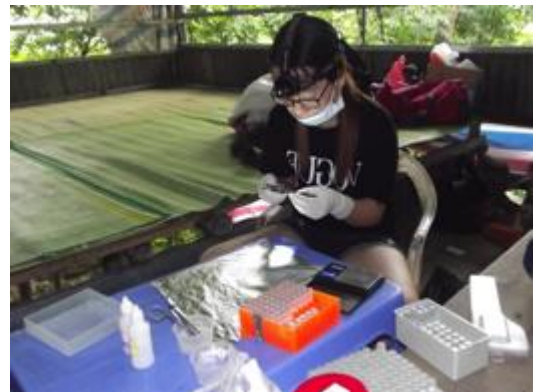
During the first year, the project has recruited a number of local post-graduate and graduate students. These assistants have learnt a lot of experiences in field/lab work, networking, etc. which might be useful for their future carriers.

- Chu Thi Hang, MSc, a pre-PhD student: Hang has joined the project as an assistant. She has focused on "the application species niche modelling for bats and other small mammals in Vietnam" for her PhD study.
- Nguyen Van Thang, MSc student: Thang has enrolled an MSc course in the University of Da Nang University of Education. He is discussing with project member to develop a study of bat diversity in different localities within Da Nang province for his MSc thesis.
- Pham Van Phu, MSc student at the Faculty of Environmental Science of Hanoi University of Science (HUS). As a junior entomologist, Phu has assisted the project team in diet analyses of selected bat species.



Hang, Thang & Phu (from left to right) were setting a harp trap in the field

- Miss Nguyen Ha Ngoc Hien, graduating student of Hanoi University of Education, is conducting her BSc thesis under the supervision of project team. In this May 2018, Hien will defend her BSc thesis entitled "Assessment of the species diversity of bats (Mammalia, Chiroptera) in the Huong Son special-use forest, My Duc district, Hanoi".



Hien is inspecting a bat in the field

The above results ensure that the impact of the projects capacity-building works will continue and certainly some new bat projects will be developed to improve national bat conservation and management.

3. Enhancement of local awareness on bat conservation



During the past period, project team has established some "Bat party" events for local resident, particularly children to strengthen their awareness on bat conservation and environment management.

Showing a live bat to local children by Vuong Tan Tu

The project team also collaborated with local organisations (i.e. GreenViet) to established seminars and workshops on "Urban bats and bat borne diseases".



Workshop on "Urban bats and bat borne diseases" held in April 2017 at the University of Da Nang - University of Education (co-organised with GreenViet)

4. Publication

In 2017, some preliminary results of the projects were made available to the public in the form of conference presentation and media article:

Vuong Tan Tu, Chu Thi Hang, and Nguyen Truong Son "Conservation of Natural and cultural heritage in the Huong Son Complex of Natural Beauty and Historical Monuments, Northern Vietnam: a case study with bats" (Oral presentation), Capacity Building Workshop and Symposium on Nature-Culture Linkages in Heritage Conservation in Asia and the Pacific 2017 (CBWNCL) held in September 2017 at the University of Tsukuba, Japan. This presentation is transforming to a scholar article to publish in the special issue in 2018 of the Journal of World Heritage Studies of the University of Tsukuba.



Vuong Tan Tu (PI) (marked as X) attended the CBWNCL 2017

Vuong Tan Tu and Chu Thi Hang, (2017). Records of bat fatalities due to hyper thermal during hottest days in the summer 2017 in northern Vietnam. Press released in the website of Vietnam Academy of Science and Technology. (<http://www.vast.ac.vn/tin-tuc-su-kien/tin-khoa-hoc/trong-nuoc/2982-ghi-nhan-hien-tuong-doi-chet-do-nang-nong-o-mot-so-do-thi-o-mien-bac>)

Some academic papers that acknowledged Rufford Foundation published in international journals in 2017:

- Tu, V.T., Hassanin, A., Görföl, T., Arai, S., Fukui, D., Thanh, H.T., Son, N.T., Furey, N.M., and Csorba, G. (2017). Integrative taxonomy of the *Rhinolophus macrotis* complex (Chiroptera, Rhinolophidae) in Vietnam and nearby regions. *J Zool Syst Evol Res* 55, 177–198.

ORIGINAL ARTICLE

WILEY JOURNAL OF ZOOLOGICAL SYSTEMATICS EVOLUTIONARY RESEARCH

Integrative taxonomy of the *Rhinolophus macrotis* complex (Chiroptera, Rhinolophidae) in Vietnam and nearby regions

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Abstract

The taxonomic status of *Rhinolophus macrotis* sensu lato (s.l.) in Vietnam and adjacent territories remains problematic. To address this issue, we performed an integrated study of morphological, acoustic, and genetic characters of *R. macrotis* s.l. specimens and compared these with sympatric species within the *philippinensis* group (*R. marshalli*, *R. paradoxolophus*, and *R. rex*). Our results reveal that in addition to a cryptic species of *R. macrotis* previously found in Jiangxi and Jingmen, China, *R. macrotis* s.l. in continental Asia includes three further species, namely *R. cf. siamensis*, *R. cf. macrotis*, and *R. cf. macrotis* "Phia Oac." These four taxa are distinguished from genuine *R. macrotis* in Nepal and *R. siamensis* in Thailand by their morphological and genetic features. Further taxonomic evaluation of the work

Hornok, S., Szőke, K., Boldogh, S.A., Sándor, A.D., Kontschán, J., Tu, V.T., Halajian, A., Takács, N., Görföl, T., and Estók, P. (2017). Phylogenetic analyses of bat-associated

bugs (Hemiptera: Cimicidae: Cimicinae and Cacodminae) indicate two new species close to *Cimex lectularius*. Parasites Vectors 10, 439.

Hornok et al. *Parasites & Vectors* (2017) 10:439
DOI 10.1186/s13071-017-2376-1

Parasites & Vectors

RESEARCH

Open Access



Phylogenetic analyses of bat-associated bugs (Hemiptera: Cimicidae: Cimicinae and Cacodminae) indicate two new species close to *Cimex lectularius*

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Abstract

Background: Bats are regarded as the primary (ancestral) hosts of bugs of the family Cimicidae. The historically and economically most important species in the family is the common bedbug (*Cimex lectularius*), because of its worldwide occurrence and association with humans. This molecular-phylogenetic study was initiated in order to expand the knowledge on the phylogeny of cimicid bugs of bats, by investigating samples from Hungary, Romania (representing central-eastern Europe) and two further countries (South Africa and Vietnam).

5. On-going works

In fact, the field and laboratory researches of the project are still continuing. In the meantime, based on the project achievements, project members are developing some manuscripts/reports with the acknowledgement of Rufford Foundation to submit to local and international academic journals / conferences. These publications will be submitted into the Rufford officers after their publications.

- Vuong Tan Tu, Chu Thi Hang, and Nguyen Truong Son "Conservation of Natural and cultural heritage in the Huong Son Complex of Natural Beauty and Historical Monuments, Northern Vietnam: a case study with bats". This scholar article is reviewing to publish in the special issue in 2018 of the Journal of World Heritage Studies of the University of Tsukuba.
- Vuong Tan Tu, Alexandre Hassanin, Neil M. Furey, Nguyen Truong Son, Gábor Csorba. Four species in one: multigene analyses reveal phylogenetic patterns within Hardwicke's woolly bat, *Kerivoula hardwickii*-complex (Chiroptera, Vespertilionidae) in Asia. *Hystrix*, the Italian Journal of Mammalogy (Under reviewing upon the comments of Editors and Reviewers)

Together with this above efforts, project team are collaborated with NGOs (i.e. Wildlife at Risk, Green Viet) to develop a series of awareness materials including Rufford logo as the table below:

#	Item	Quantity
1	Poster (A1, full colour) will be made and delivered to local communities and schools	400 units
2	Leaflets will be made and delivered to local communities and schools	600 units

Some selected bats were captured during the field surveys of the project



A pregnant Rousettus sp.



Cynopterus sphinx



Coelops frithii



Taphozous melanopogon



Pipistrellus cf. tenuis



Myotis hasselti