



EARTHWATCH INSTITUTE FIELD REPORT

Project Title: Butterflies of Vietnam

Principal Investigator: Vu Van Lien

Position/Affiliations: Researcher/Vietnam Russian Tropical Center

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Research Site(s) (geographic location, include coordinates if known, e.g. Lat/Long):

Tam Dao National Park, Vinh Phuc Province, Vietnam. 21°21'-21°42'N and 105°23'-105°44' E.

Local Management Status of the Research Site(s) (e.g. National Park, RAMSAR Site, World Heritage Site, IBA etc.):

National Park

Scientific names of primary species being studied (if appropriate):

Key Research Objectives (5-8 brief bullet points):

- Identify and develop ecological indicators of butterflies that can be used as indicators of habitat change in Tam Dao and Vietnam.
- Study the effect of weather conditions and day times and as well as season on butterfly activities. Through the study we also understand more about butterfly ecology.
- Find food plants and other life history information of butterflies especially rare and highly valuable butterflies. Determining the food plants of butterfly larva will help greatly in establishing butterfly farms.
- Record the status of rare and red-data book butterflies in the park.
- Monitor the long-term changes of butterfly species populations especially habitat - restricted species temporally at a fixed site in the park. The butterfly monitoring will provide real data over a long-term to document the changes and trends in the butterfly populations and the causes for these changes.
- To do the Principal Investigator's Ph.D. and thesis of undergraduate as well graduate students.

Date this report was completed: December 29, 2005

Data Collection and Results

a) Give a concise account of the data you have collected during the past field season.

We recorded 135 species and 3335 individuals of butterflies from May to November 2005.

b) What progress have you made towards achieving your original objectives?

We have collected data that primarily achieved our original objectives of documenting: butterfly communities in different types of habitat disturbances, the decline of butterfly abundance due to forest destruction, and species that can be used as indicators of forest health. Although we need more time to monitor the trend of butterfly populations over time under habitat disturbance and environmental change.

c) Please provide a summary of your results (even if they are preliminary).

Butterfly communities in different habitat types were different, the most different were communities of forest and open land. Forest butterflies do not fly in grass and open land.

Habitat disturbance seriously impacted on butterfly abundance and distribution. In 2005, vegetation along forest transects was cut down to make a new road that made forest butterflies such as *Ragadia crisilda*, *Neope murrheadi*, *Mycalesis misenus*, *Lethe syrcis*, *Melanitis leda*, *Stichophthalma howqua* decline severely. Butterfly abundance in later years was less than previous years due to forest habitat destruction and herbicide utility around the village of Tam Dao. The decline of butterfly abundance from June to September in four years: the average individual numbers were 80 in 2005, 92 in 2004, 107 in 2003 and 201 in 2002.

Climate factors and different times of day also affect butterfly activities. On cloudy and windy days, fewer butterfly species and individuals were seen than on sunny days, in the morning more individuals were seen than in the afternoon, early morning and late afternoon fewer individuals were recorded than in late morning and early afternoon.

Some butterfly species can be used as indicators of forest health such as *Ragadia crisilda*, *Mycalesis misenus*, *Neope murrheadi*, *Stichophthalma howqua*. They can be used to monitor the effect of forest disturbance on butterflies and indicate the forest health.

Life histories such as food plants and lifecycle of some butterflies were discovered *Graphium chironides*, *Papilio helenus*, *Troides spp.* Fly season and distribution of a rare and precious butterfly *Teinopalpus aureus* was also documented in Tam Dao.

Significance/Benefits of Research

a) What is/are the significance/benefits of your research at the following levels?

- local (in the area of the research site)

We found negative influences of habitat disturbance and herbicide use on butterfly communities. Herbicide used in the local area also killed many honey bees that people raise. At a meeting we presented the effect of habitat disturbance and herbicide spray and propose stopping herbicide use. Local people know our research of conservation of butterflies will positively affect them.

- national

Papers published in national scientific journals, other scientists as well as managers also know and understand our research that is the first of its type in Vietnam. Some findings of

ecology and biology such as life cycles, food plants of butterflies will be helped in breeding butterflies in insect farms in Tam Dao and Vietnam.

- international

By the website, scientists from other nations knew about the work and contacted us. The work also affects volunteers. Through the research they understand the butterflies, the importance of forest and habitat for butterflies, conservation problems of Tam Dao and Vietnam. Volunteers understand the value of butterflies and will contribute their effort and ability for nature and environmental protection in their countries.

b) How do your findings contribute to issues of sustainability?

The findings of food plants, lifecycles, habitat preference, distribution and other information on butterflies are invaluable to conserve butterflies and especially help to breed butterflies in insect farms in Tam Dao. People must grow food and nectar plants in the gardens to feed butterflies that also create and protect forest. Farmers can get income from exporting insects from their farms.

Dissemination of Results

a) Details of results from your research to or within:

- Scientific papers (indicate status; e.g., peer reviewed or in progress/press)
 1. Vu V. L. 2005. The current status of rare and precious butterfly *Teinopalpus aureus* in Tam Dao National Park. *Proceedings of the 5th Vietnam National Conference on Entomology*, Hanoi, 11-12 April 2005, pp. 107-109. Agricultural Publishing House. (In Vietnamese, summary in English).
 2. Vu V. L. 2005. The effects of forest disturbance on a butterfly (Lepidoptera: Satyridae: *Ragadia crisilda*) in Tam Dao National Park. *Proceedings of the 5th Vietnam National Conference on Entomology*, Hanoi, 11-12 April 2005, pp. 110-113. Agricultural Publishing House. (In Vietnamese, summary in English).
 3. Vu V. L. 2004. The decline of butterfly (Lepidoptera: Rhopalocera) abundance due to habitat disturbance: result of butterfly monitoring in two years in Tam Dao National Park. *Journal of Science*, Hanoi University of Education 4: 100-105.
 4. Vu V. L. & Vu Q. C. 2005. The indicator role of some butterfly family (Lepidoptera, Rhopalocera) in the Tam Dao National Park. *Issues of Basic Research in Life Science: Proceedings, The 2005th National Conference on Life Sciences*, Hanoi Medical University, November 03, 2005, pp. 965-968. Science and Techniques Publishing House, Hanoi. (In Vietnamese, summary in English).
 5. Vu V. L. & Vu Q. C. 2004. Using of the butterfly as a bio-indicator to monitor the change of the species population and to assess the disturbance of forest in Tam Dao National Park, Vinh Phuc. *Journal of Biology* 26: 84-87. (In Vietnamese, summary in English).
- Management plans and reports (in progress or completed). None
- Presentations (given or planned)
 1. At Proceedings of the first National Conference on Ecology and Biology Research held at Institute of Ecology and Biological Resources in Hanoi in May 17, 2005; audience was scientists and managers of Vietnam and some foreigners, about 110 people attended.
 2. At Meeting of The Nature Conservation Association at Tam Dao Town (TADANCA) in Tam Dao People Community House in October 10, 2005. Audience was local conservation association members of Tam Dao town and representatives of German

Project (GTZ), Vice Principal of the local school, head of the local forest ranger station, 30 people attended.

- Popular articles or films (in progress or completed). None.
- Books, chapters, illustrations. None.

SECTION II: VOLUNTEERS

Cover Letter to Volunteers

Dear Volunteers,

The fourth year of the field section of the project "Butterflies of Vietnam" has been completed. As the Principal Investigator of the project, and on behalf of the project staff, I would like to thank you for all your contributions. You were more than just support to our project. We could not have carried out our research or gained the results that we did without your help and contribution of time and money. I am most grateful.

Your involvement has made it possible for us to develop a process for using butterflies as eco-indicators of habitat disturbance and monitoring butterflies. We were able to monitor the changes in butterfly species within the Tam Dao National Park over time. We have recorded data showing that forest destruction made butterfly abundance seriously decline, especially forest butterflies. We have found some butterflies that can be used as indicator species of forest health to monitor and assess the forest disturbance. The project also helps us find ecology and biology of butterflies such as lifecycle and food plants that will be helpful for breeding butterflies. Your participation also assisted us in using butterflies to assess the success of conservation efficiency and find better solutions to conserving butterflies in Vietnam in future.

You are good, enthusiastic, patient, kind and generous people. We have learned much from you, and I hoped that you have learned some things from the project as well. We had a wonderful time with you in Tam Dao. It is a beautiful and ideal site. You brought us your experience, nature, passion and joyfulness.

To all the Earthwatch Volunteers, I cannot express in writing how delightful it was to work with you. The Earthwatch Institute brought us together from different nations and cultures in the world. We represented different ages and occupations. Our time together provided us with a unique opportunity to begin to understand each other. The Earthwatch Institute has made our Earth a smaller place and helps us to learn how to live peacefully in it. We were all in an international family.

Once again I would like to thank all of you who contributed time and money to help us carry out our research in Tam Dao National Park, Vietnam.

Sincerely yours,



Vu Van Lien

Volunteer Tasks and Accomplishments

- a) How did the volunteers contribute ideas, skills, expertise and motivations beyond that which you anticipated?

Volunteers worked hard in hot and humid weather condition on the slippery and steep transects. They tried with their best skill and ability to contribute to our work. Volunteers also wanted to learn to identify butterflies to help the research. Almost all volunteers were willing to walk any transects in spite of slippery and steep paths and by that way they encouraged us and other volunteers to work harder. Many volunteers really over came themselves. We appreciated their contribution and their motivations as well.

- b) How have volunteers helped you to achieve your research or educational objectives? Please give specific and quantitative measures of the volunteers' contribution to your data collection.

Volunteers were assigned to walk on different transects to count, catch, identify, and record butterflies on data sheets. Volunteers walked transects everyday except rainy days. Almost all teams were divided into two small groups to walk transects to collect a large amount of data..

Teams contributed 1350 working hours in the field and recorded totally 135 species and 3335 individuals of butterflies.

Project Development

- a) What logistical or scientific challenges have you encountered in the past season and how will you address them during the next field season?

The most difficult problem we encountered in the field was the slippery transect in hot and humid conditions.

- b) Have you used any additional methods/strategies to meet your research objectives? If so, please describe them.

Due to forest cut down along the forest transect, and now a new road, we set up two more forest transects of which one was from 950m to 1200m a.s.l and the other is in mixed forest of bamboo and trees. One transect to the mountain top was also set up but this was by choice and only for fit and healthy people to climb the mountain top.

By setting up new forest transects we can study butterflies both inside and outside forest to identify indicator species and monitor butterfly abundance and composition in a variety of habitat types. On the mountain top, we can do our research of butterflies along the path to the top and also butterfly communities on the top.

- c) How will you develop your research in the coming field season?

We continue to do research on butterflies in different transects including new transects and on the mountain top to find indicator species and monitor butterfly abundance and composition over time, to find food plants as well as other life histories, and other ecology and biology information of butterflies, especially rare species.

Educational Opportunities

- a) Does your project directly or indirectly involve the following groups in your research topic?
- Local communities

- Students
- Other groups

b) Please tell us the ways your research helps these groups better understand the conservation of a sustainable environment (see the UNESCO definition above).

The research helps these groups better understand the conservation of a sustainable environment by indicating to them the value of butterflies and their environment. The research involved foreigners; that also brings attention and concern for local communities and the environmental problem in the area. It positively affects their attitude and awareness of protection of wildlife and environment where environmental awareness is quite low.

Research on butterflies will help to establish insect farms in Tam Dao that local communities can breed butterflies for export. The farm is establishing in the area. A farm like this can also help protect forest and bring cash to local communities.

c) Has your project helped lead to the completion of Masters' theses, or other educational research findings?

The project helped lead to the completion of Graduate thesis of a student and to do the Ph.D. thesis of Principal Investigator.

Partnerships

a) List partnerships or collaborations with other organizations that you have developed or maintained in the past season.

Tam Dao National Park

b) How have these organizations contributed to your project objectives?

The Park permitted us to carry on the research and also assigned some staff to learn and help the project.

c) How do you anticipate these organizations will use the results generated by the project, and in what timeframes?

The results of the project will be used in the report and conservation plan by the Park to protect butterflies and their forest habitat; they can use our monitoring methods to monitor other wildlife of the park in the future.

Acknowledgements

I thank very much for our team leader and staff; Mr. Tien the director of Tam Dao National Park for giving us permission to work in the park. Thanks especially go to the 37 Earthwatch volunteers from the United States of America, England, Japan, Bangladesh, Canada, China, Hong Kong, Taiwan, India, Malaysia and Malta. Thanks as well to The Earthwatch Institute who funded the project.