

REPORT ON A COLLECTING TRIP TO CHINA, 1984, TO STUDY AND COLLECT
NEPTICULIDAE (LEPIDOPTERA)

BY

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INTRODUCTION

At the Department of Animal Systematics and Zoogeography of the Free University Amsterdam the object of study has been already for a number of years the systematics and phylogeny of the microlepidopteran family Nepticulidae. Particularly the species of the western palearctic region have been studied, but also studies on species from New Zealand and Japan have been undertaken. Ideas about the phylogenetic relationships between genera of Nepticulidae are developed.

Until now knowledge of Nepticulidae in East Asia, apart from Japan and the Ussuryisk region in the USSR has been negligible because of the lack of material from this part of the world in museum collections. Judging from the distribution of the hostplants in E. Asia the Nepticulid fauna certainly must be very rich. This means that collecting trips to any of the East Asian countries might very well result in the discovery of many hitherto unknown species of this family of moths.

The agreement between the Peoples Republic of China and our country gave our department an excellent opportunity to establish cooperation on the study of Nepticulidae with the Zoological Institute of the Academia Sinica, Beijing.

The head of our department, Prof. C. Wilkinson, visited the Zoological Institute (and several others) during December 1983 and January 1984 to establish the initial contacts with our counterpart Prof. Liu Youqiao and investigate museum collections.

It appeared that even in the P.R.C. very few species of Nepticulidae were present in museum collections, so it became apparent that a collecting trip would be the first step necessary in starting a cooperative study of Nepticulidae in China.

This report gives the experiences and preliminary results of this first collecting trip, which lasted from September 4th till November 1st, 1984. The purpose was to collect larvae of Nepticulidae, rear them out, set up a pinned collection to enable further study, preserve their mines and prepare a herbarium of food plants of the collected Nepticulidae species. Another purpose was to show our Chinese colleagues the necessary techniques for studying microlepidoptera and Nepticulidae in particular, thus enabling them to start their own study and cooperate with us.

We wish to thank everybody who helped us in trying to make this trip a successful one. We thank the Chinese authorities, especially the Department

of Foreign Affairs for the efforts made to give us all the help we needed and we are especially grateful to Mr. Lin (Beijing), Mr. Xu (Harbin), Mr. Li (Dailing) and Mrs. Xu (Kunming) for their help on the organizational level. We very much appreciate the indispensable help of our guide and interpreter Mr. Zhang Ke: his everlasting help even covered our field work. We also must thank our colleague entomologists for their assistance during our visit, especially our counterpart Prof. Liu and Mr. Bai (Beijing), Prof. Fang, Mr. Sun (Harbin), Mrs. Tian (Dailing), Mr. Bao (Maoershan), Mr. Long (Kunming) and Mrs. Shan (Menglung). The help of the botanists Mr. Nie (Harbin), Mr. Li, Mr. Ming, Mrs. Li (Kunming) and Prof. Jū (Beijing) in identifying the hostplants was very generous and tremendously time-saving.

This trip would not have been possible without the help of many people. We cannot mention them all separately, but we thank them all for making the trip what it was: a scientifically successful journey during which we gained many new friends as well.

LIST OF INSTITUTES AND PERSONS VISITED

Zoological Institute. Academia Sinica, Beijing

Prof. Dr. Qen Yenwen, vice director

Mrs. Dr. Wu Jenru, head of department of entomology

Prof. Dr. Liu Youqiao, entomologist

Mr. Bai Jiuwei, entomologist

Mr. Yuan Tehen, postgraduate student of entomology

Northeast Forestry Institute, Harbin

Prof. Dr. Li Youngjien, vice-president

Mr. Jiang Shunnien, head of foreign affairs division

Prof. Dr. Fang Sanyan, head of department of forest entomology

Prof. Dr. Nie Shaoquang, botanist

Mr. Sun Jianghua, postgraduate student of entomology

Mr. Bao Wenlong, postgraduate student of entomology

Dailing Institute of Forestry Science, Dailing

Mrs. Tian Fenglan, entomologist

Kunming Institute of Zoology, Kunming

Dr. Shi Liming, director

Dr. Zhang Hanyun, vice-director

Dr. Zhao Wanyuan, head of department of entomology

Kunming Institute of Zoology, Kunming (continued)

Dr. Gan Yunxing, former head of the department of entomology

Mr. Long Yongchen, entomologist

Kunming Institute of Botany, Kunming

Dr. Li Xiwen, botanist, head of the department of taxonomy

Dr. Ming Tianlu, botanist

Mr. Dr. Li Hen, botanist

Provincial Institute of Forestry Science, Kunming

Dr. Wang Riefou, director

Mrs. Dr. Li Nisai, deputy director

Dr. Lo Shongfu, head of the department of entomology

Yunnan Institute of Tropical Botany, Menglung

Mrs. Shan Fang, postgraduate student of entomology

Department of Foreign Affairs, Beijing

Mr. Lin Deyin, chief interpreter

Mr. Zhang Ke, interpreter

Department of Foreign Affairs, Harbin

Mr. Xu Hao

Department of Foreign Affairs, Yichun

Mr. Li Jianhui

Department of Foreign Affairs, Kunming

Mrs. Xu Yun

ITINERARY

4-9. 14.00h: Departure by KL 887 to Hong Kong from Schiphol Airport, Amsterdam.

5-9. 15.30h: Arrival at Kai Tak Airport, Hong Kong. Overnight stay at Fortuna Hotel.

6-9. 10.30h: Departure by BA 003 to Beijing.

14.30h: Arrival at Beijing Airport. Welcomed by Mr. Zhang of the Department of Foreign Affairs, interpreter during our stay in China and Mr. Bai, entomologist at the Zoological Institute, Academia Sinica, who is also going to accompany us.

We stay at the Friendship Hotel and receive our itinerary, which is only detailed for the next 5 days.

7-9. 8.40h: Briefing at the Zoological Institute. Welcomed by Prof.Dr. Qen vice director, Mrs.Dr. Wu, head of the Department of Entomology, Prof.Dr. Liu, our counterpart, Mr. Bai and chief interpreter Mr. Lin.

Conditions of our collecting trip are discussed. After the meeting there is more informal contact with Prof. Liu, Mr. Bai and Mrs. Shan, graduate student at the Yunnan Institute of Tropical Botany, who will accompany us during our trip in Yunnan.

13.30h: Study of the Nepticulidae collection of the institute.

18.00h: We are given a banquet by the institute at the He Pingmen Roast Duck Restaurant.

8-9. - E.J. van Nieuwerkerken visits the institute to have a further investigation of the insect collection and to show the preparation of genitalia slides.

J.W. van Driel collects larvae of Nepticulidae at Yiheyuan (Summer Palace).

9-9. - Day off. Visit to the Great Wall and Ming Tombs. Some time is spent collecting along the Great Wall.

10-9. - E.J. van Nieuwerkerken visits the institute to prepare genitalia slides.

J.W. van Driel collects at Yiheyuan, accompanied by Mr. Yuan, postgraduate student of entomology of Prof. Liu.

11-9. 7.40h: Departure from Beijing Airport by CA 6116 to Harbin.

11.30h: Arrival at Harbin. Welcomed by Prof.Dr. Fang, head of the Department of Forest Entomology of the Northeast Forestry Institute (NEFI), Mr. Sun, postgraduate student of Dr. Fang, who will accompany us during our trip in Heilongjiang province and Mr. Xu, interpreter of the Department of Foreign Affairs. We stay at the

Harbin International Hotel.

Afternoon off. We have a look at the town centre.

12-9. 8.00h: Briefing at the NEFI with vice president Prof.Dr. Li, Dr. Fang and Mr. Sun. Visit to the library and some of the laboratories.

13.00h: Collecting in the tree nursery of the NEFI.

23.30h: Departure by train for Dailing.

13-9. 5.00h: Arrival at Dailing. We stay at the Dailing Hotel, where we meet Mrs. Tian, scientist at the Dailing Institute of Forestry Science and Mr. Li, interpreter at the Department of Foreign Affairs, Yichun city. Both will accompany us during our stay in Dailing.

8.00h: Collecting in the hotel garden.

10.00h: Survey of the insect collection at the Dailing Institute of Forestry Science.

13.30h: Collecting at the Liangshui forestry farm.

14-9. - Collecting at the Bishui forestry farm. Light trap catching in front of the hotel in the evening.

15-9. - Collecting at the Dachinchuan forestry farm.

16-9. - Collecting at the Dachinchuan forestry farm.

17-9. - Collecting at the Dachinchuan forestry farm in the morning.
Setting up rearings and herbarium in the afternoon.

18-9. 8.00h: Collecting in the neighbourhood of the hotel.

12.00h: Farewell lunch with Dr. Wang, director of the Dailing Institute of Forestry Science, Mr. Chang, deputy secretary of the local Communist Party and our companions.

13.30h: Departure by train to Harbin.

20.00h: Arrival at Harbin. We stay at the Swan Hotel.

19-9. - Day off. Shopping, visit to a Chinese Catholic church, some collecting in the town centre (Ulmus trees).

20-9. 7.30h: Departure by train to Shangzhi. We travel to Maoershan by jeep, where we stay in a training centre of the NEFI. We meet postgraduate student Mr. Bao, who will accompany us during our stay in Maoershan.

13.00h: Collecting on the premises of the training centre.

21-9. Morning: Collecting on the Maoershan mountain.

Afternoon: Setting up and checking rearings.

Evening: Light trap catching on the premises of the training centre.

22-9. - Collecting on hills north of Maoershan mountain. Light trap catching in the evening

23-9. - Collecting at Lao Yenling research station.

- 24-9. - Day off. Visit to a small village. Some collecting near the training centre.
- 25-9. - Collecting on the Maoershan mountain.
- 26-9. - Collecting at Laoshan.
- 27-9. 8.30h: Collecting near training centre.
11.00h: Farewell lunch with two deputies of the Maoershan forestry farm, Mr. Zhao Zhengxiang and Mr. Zhao Xiweng respectively, local party secretary Mr. Jiu and Mr. Bao.
12.30h: Departure by bus to Harbin.
16.30h: Arrival at the Harbin International Hotel.
- 28-9. Morning: Visit to the botanical garden of the NEFI to identify hostplant specimens and do some collecting.
Afternoon: Visit to the Heilongjiang Provincial Museum to survey the insect collection and see the exhibition.
Evening: Mr. Xu invites us to see a song-and-dance performance.
- 29-9. 8.00h: Visit to the herbarium of the NEFI to identify hostplant specimens with the help of botanist Dr. Nie.
12.00h: Farewell lunch at the home of Prof. Fang.
14.00h: Time for packing.
19.00h: Departure by train to Beijing.
- 30-9. 13.00h: Arrival at Beijing. We stay at the Friendship Hotel.
- 1-10. - Day off because of the 35th anniversary of the P.R.C.
10.00h: Watching the parade at the Tian'anmen square.
14.00h: Collecting at Xiangshan.
18.00h: Watching the fireworks at the Tian'anmen square.
- 2-10. Morning: Checking rearings, mounting specimens, preparing the herbarium.
Afternoon: Discussion with Prof. Liu about our achievements up till now and this month's programme.
- 3-10. 9.30h: Departure by flight CA 905 to Kunming.
12.00h: Arrival at Kunming. Welcomed by Mr. Long, entomologist at the Zool. Inst. who is going to be our guide during our stay in Yunnan province and Mrs. Xu, interpreter of the Department of Foreign Affairs. We stay at the Green Lake Hotel.
13.30h: Visit to the Kunming Institute of Zoology to discuss our programme for the next 3 weeks with Dr. Shi, director of the institute, Dr. Zhang, vice director, Dr. Zhao, head of the entomological department, Dr. Gan, former head of this department and Mr. Long. Here Mrs. Shan, whom we already met in Beijing, also joins us.

- 4-10. Morning: Visit to the Kunming Institute of Botany to select collecting spots with the help of botanist Dr. Ming, followed by a visit to the botanical garden of the institute.
Afternoon: Collecting around Gindian Si (Golden Temple).
Evening: Welcome dinner with Dr. Zhao, Dr. Gan, Mrs. Shan and Mr. Long.
- 5-10. Morning: Collecting around Qiongzhu Si (Bamboo Temple).
Afternoon: Collecting on Xishan (Western Hills).
- 6-10. - Day off. Visit to Shilin (Stone Forest). Some collecting is done during this visit. We stay at the Shilin Hotel.
Evening: Light trap catching near hotel.
- 7-10. Morning: Collecting near Shilin.
Afternoon: Travelling back to Kunming by minibus. Collecting on one spot along the road.
- 8-10. Morning: Departure by plane to Simao delayed from 10.30h. till 15.00h.
Afternoon: Arrival at Simao at 16.00h. Collecting around the village is not allowed. Overnight stay at the Simao Hotel.
- 9-10. 8.00h: Departure by minibus to Jinghong.
12.30h: Arrival at Jinghong Hotel.
14.00h: Collecting near Mengyang.
- 10-10. - Collecting north of Jinghong.
- 11-10. Morning: Collecting along riverbanks of Lancang Jiang (Makong river).
Afternoon: Collecting west of Jinghong.
Evening: Light trap catching on hotel premises.
- 12-10. 8.30h: Departure by minibus to Menglung.
12.30h: Arrival at the Yunnan Institute of Tropical Botany, Menglung.
14.00h: Collecting on the premises of the institute.
- 13-10. - Collecting in two tropical forest preservations.
- 14-10. Morning: Collecting in a tropical forest preservation near Menglung.
Afternoon: Checking rearings, etc.
- 15-10. 10.00h: Departure by minibus to Simao.
17.00h: Arrival at the Simao Hotel.
- 16-10. - Departure by plane to Kunming delayed from 10.00 till 17.30h.
19.00h: Arrival at the Green Lake Hotel. Kunming.
- 17-10. - Day off. Visit to the Provincial Museum and town centre.
- 18-10. - Collecting near Qiongzhu Si (Bamboo Temple).
- 19-10. 9.00h: Briefing at the Provincial Institute of Forestry Science by Dr. Wang, director, Dr. Mrs. Li, Deputy director and Dr. Lo, head of the entomological department.
11.00h: Visit to the Kunming Institute of Botany to identify hostplants specimens with the help of botanists dr. Li and Dr. Ming.

- 15.00h: Collecting on the premises of the institute.
- 20-10. - Collecting near Anning
- 21-10. - Collecting near Qiongzhu Si.
- 22-10. - Collecting on Xishan (Western Hills).
- 23-10. - Collecting on hills west of Xishan and on Xishan itself.
- 24-10. Morning: Visit to the Kunming Institute of Botany to identify the remaining host plants with the help of botanist Mrs. Dr. Li Hen.
Afternoon: Checking rearings, mounting specimens, etc. Visit to the Zoo.
Evening: We present a farewell dinner to our companions during our trip in Yunnan province.
- 25-10. Morning: Packing luggage.
Afternoon: Departure by flight CA 1404 to Beijing. We arrive at 17.00h. and stay in the Friendship Hotel.
- 26-10. Morning: Visit to the Zoological Institute to report our achievements to Prof. Qen and Prof. Liu.
Afternoon: Checking rearings, mounting specimens, etc. Discussing the programme for the next 5 days and future plans on cooperation with Prof. Liu.
- 27-10. Morning: Collecting with Prof. Liu at Wofo Si (Temple of Lying Buddha).
Afternoon: Collecting with Prof. Liu at the botanical garden of the Academia Sinica.
- 28-10. Day off. Shopping and visit to the Forbidden City.
- 29-10. Morning: Final discussion with Prof. Liu about our experiences and future plans on cooperation. Visit to the cargo door's office for sending unaccompanied luggage.
Afternoon off. Visit to the Tiantan Si (Temple of Heaven).
- 30-10. Morning: Last check up of the rearings etc. Packing luggage.
Afternoon off. Visit to the lama temple Yonghe Si.
Evening: We offer a farewell dinner to Prof. Liu and our companions Mr. Bai and Mr. Zhang.
- 31-10. 9.00h: Departure by flight CA 105 to Hong Kong.
11.00h: Arrival at Hong Kong.
19.30h: Departure by flight KL 888 to Amsterdam.
- 1.11. 6.30h: Arrival at Schiphol Airport, Amsterdam.

LIST OF COLLECTING STATIONS, CHINA, SEPTEMBER, OCTOBER 1984.

The data are given in the following order: station number, locality name in Pinyin transcription (name in Wade-Giles transcription, if given in Times Atlas, follows in brackets), altitude, geographical coordinates (if known), date, vegetation or forest type.

Collectors in all cases: J.W. van Driel, E.J. van Nieukerken, assisted by various persons, mainly Bai Jiuwei, Long Yongchen, Shan Fang, Sun Jianghua and Zhang Ke.

Beijing province

1. Beijing (Pei-ching), Haidian District, Friendship Hotel, 50 m, + 39.55 N - 116.26 E, 7.ix.1984, Park.
2. Beijing (Pei-ching), Yiheyuan (Summer palace), Kunming Lake, 50 m, + 39.55 N - 116.26 E, 8 and 10.ix.1984. Park, lake shores.
3. Badaling, 40 km NNE Beijing, Great Wall. 9.ix.1984, Calcareous hills with thorny scrub.

Heilongjiang (Heilungkiang) province

4. Harbin, city. 45.50 N - 126.40 E, 11 and 19.ix.1984, Elm trees in town.
 5. Harbin, tree nursery. 45.50 N - 126.40 E., 12.ix.1984.
- Stations 6-12, Dailing county, 46.46 - 47.20 N, 128.38 - 129.20 E, + 25 km WSW of Nancha (Nanyi).
6. Dailing, Hotel, 300 m. 13-18.ix.1984. Planted forest.
 7. 22 km NW of Dailing: Liangshui Forestry Farm (Linchang), + 400 m. 13.ix.1984. Mixed primary coniferous-hardwood forest.
 8. + 16 km NW of Dailing: Bishui Forestry Farm (Linchang), + 400 m. 14.ix.1984. Mixed coniferous-hardwood forest along river.
 9. + 6 km E. of Dailing: Dachinchuan Forestry Farm (Linchang), "East Hill", 300-350 m. 15.ix.1984. Steep south exposed hill with *Quercus mongolica* stand.
 10. + 5 km SE of Dailing: Dachinchuan Forestry Farm (Linchang), "South Hill", + 300 m, 16.ix.1984. Steep south exposed hill with *Quercus mongolica* stand.
 11. + 6 km SE of Dailing: Dachinchuan Forestry Farm (Linchang), + 300 m, 16.ix.1984. Mixed forest with dominance of Betula.
 12. 5 km. E. of Dailing: Dachinchuan Forestry Farm (Linchang), Yinchun Garden, + 300 m, 17.ix.1984. Swamp and mixed hardwood forest with dominance of *Quercus mongolica*.

Stations 13-16, Maoershan (Maoershshan) County, 45.20-45.25 N, 127.30-127.34 E.

13. Maoershan experimental Forestry Farm, 1 km N. of village, $\pm$ 300 m, 20-27.ix.1984. Cultivated area with shrub and plantations of *Populus*, *Larix* and *Pinus*.
14. Mt. Maoershan, 5 km NE of Maoershan, and surrounding hills, 350-800 m 21-25.ix.1984. Mixed hardwood forest with dominance of *Quercus mongolica*.
15. 18 km NE Maoershan: Laoyenling Research Station, 400-450 m, 23.ix.1984. Mixed hardwood forest with dominance of *Quercus* and swamps with *Betula*.
16. Laoshan, 5 km E. of Maoershan, 350-580 m, 26.ix.1984. Mixed hardwood forest.
17. Harbin, Botanical Garden, 45.50 N - 126.40 E, 28.ix.1984.

Beijing province

18. Beijing, Xiangshan, Wofosi and Botanical Garden, 100-500 m, 1 and 27.x.1984. Hills with deciduous scrub and low trees.

Yunnan province

19. Kunming city, 1900 m, 25.04 N - 102.41 E, 3-7.ix.1984. Town.
20. 11 km. N. Kunming, Botanical Garden, 2000 m, $\pm$ 25.04 N - 102.41 E, 4.x.1984.
21. 7 km NE Kunming, Gidian Si (Golden Temple), 2000 m, $\pm$ 25.04 N - 102.41 E, 4.x.1984. Open mixed *Keteleeria*, *Pinus*, oak forest.
22. 10 km WNW Kunming, Qiongzhu Si (Bamboo temple), 2100 m, $\pm$ 25.04 N - 102.41 E, 5, 18 and 21.x.1984. Evergreen cupuliferous forest on northern slope.
23. 14 km SW Kunming, Xishan, $\pm$ 2300 m, $\pm$ 25.04 N - 102.41 E, 5, 22 and 23.x.1984. Open *Pinus*-oak forest and shrub.
24. Shilin (Stone forest), Lunan County, $\pm$ 1800 m, 6-7.x.1984. Cultivated and seminatural vegetation between rocks.
25. W. of Yiliang (Iliang), 1900 m, 7.x.1984. Steep hills with degenerated *Pinus yunnanensis* forest.
26. Puwen, 40 km SSW Simao (Ssumao), along road to Jinghong, 22.31 N - 101.06 E, 1200 m, 9.x.1984.
27. Mengyang, 20 km NE Jinghong (Yunchinghung), along road to Simao, 900 m, 9.x.1984.
28. Jinghong (Yunchinghung), hills E. of Lancang Jiang (Mekong), 650-800 m, 21.58 N - 100.50 E, 9-10.x.1984. Secondary bamboo groves.
29. Jinghong (Yunchinghung), riverbanks of Lancang Jiang (Mekong), $\pm$ 600 m, 21.58 N - 100.50 E, 11.x.1984.

30. 8 km. W. of Jinghong (Yünchinghung), $\pm$ 600 m, 21.58 N - 100.50 E, 11.x.1984. Cultivated area.
31. Menglung (60 km NW Mengla), $\pm$ 600 m, 12-13.x.1984. Fringes of broad-leaved evergreen rainforest and cultivated area.
32. Menglung (60 km NW Mengla), $\pm$ 700-800 m, 13.x.1984. Broadleaved evergreen rainforest.
33. $\pm$ 20 km SSW Simao (Ssumao), along road Simao-Jinghong, 1200 m, 15.x.1984.
34. 11 km N. Kunming, Botanical Institute, 200 m, $\pm$ 25.04 N - 102.41 E, 19.x.1984. Open *Quercus variabilis* stand.
35. Anning, $\pm$ 1900 m, 24.55 N - 102.29 E, 20.x.1984. Mixed *Pinus yunnanensis*, *Keteleeria*, Oak forest.
36. 18 km SW. Kunming, along road to Anning, $\pm$ 1900 m, 23.x.1984. Open *Quercus-Pinus* forest.

Hong Kong

37. Hong Kong, Victoria, a.s.l., 22.16 N - 114.13 E, 31.x.1984. In town.
38. Hong Kong, Victoria Peak, 500 m, 22.16 N - 114.13 E, 31.x.1984, evergreen broadleaved shrub.

SCIENTIFIC RESULTS

The results reported here are provisionally, based on our field observations and preliminary identification of hostplants.

A large part of the Nepticulidae collected is at this moment in diapause, so that a survey of all specimens reared can not be presented before summer 1985.

All the 'species' collected are listed per region at the end of this chapter, followed by an alphabetical list of hostplant families and species. Here we will discuss shortly the various areas visited during our journey in China with their nepticulid fauna.

Heilongjiang

This is the northermost province of China, with an extreme continental climate; severe cold and dry winters, moderate wet summers. The vegetation ranges from a Siberian taiga in the North towards a very rich mixed hardwood forest zone in the South, similar to that of the Jilin province (Wang, 1961). Although the central plain around Harbin is completely deforested, large areas of almost pure forest exist in the mountain ranges near the border. We visited Dailing in the extreme South of the lesser Hinggang

range (Xiao Hinggang Ling) and Maoershan, approximately 80 km East of Harbin.

Dailing

A small town in a river valley in a hilly country ranging from 300-800 m. The forests are vast, and partly primary, partly secondary but still in a good condition. Pure timber stands are rare. The original forest combines species from the montane coniferous forest: *Pinus koraensis*, *Abies nephrolepis* and *Picea* spp. and species from the mixed hardwood forest: *Tilia amurensis*, *T. mandshurica*, *Betula platyphylla*, *B. costata*, *Fraxinus mandshurica*, *Phellodendron amurense*, with often *Corylus* groves in the undergrowth. *Quercus mongolica* forms pure stands on steep south exposed hills, often with *Rhododendron dahuricum* growing at the top of the hill.

In Dailing 34 species of Nepticulidae were observed, with a particularly rich fauna on *Quercus mongolica*: 7 species.

The most abundant species were the *Ectoedemia* species on *Rosa* and *Agrimonia*, the *Stigmella* on *Salix raddeana* and the oak species. Surprisingly few specimens were found on the abundant *Alnus*, *Betula* and *Corylus* trees.

Some species can here be collected in large numbers few weeks earlier than our visit, as indicated by the abundant mines: *Stigmella* on *Acer mono*, on *Tilia* and on *Filipendula palmata*.

Maoershan

This town is situated in a more cultivated area than Dailing, with the forest concentrated on the -often steep- hills, with an altitude of 200-800 m. The forests are mainly mixed hardwood (broadleaved) with usually as dominants: *Tilia* spp., *Quercus mongolica*, *Acer mono*, *Ulmus* spp., *Betula* spp. and *Populus davidiana*. Coniferous trees only occur here in man-made plantations. The fauna is similar to that of Dailing, but slightly richer, with the species 1-3, 13, 24, 26, 29, 35, 36, 37, 44 and 48, which were absent in Dailing. We were here too late for more species than in Dailing, so probably more species can be collected here in early September.

The most abundant species here were the *Quercus*-fauna, and *Stigmella* on *Rhododendron*. Also of interest here is the *Ulmus*-fauna with four species at least. The *Betula*-fauna here was as disappointing as in Dailing. In total we found 36 species in Maoershan.

Harbin

Even in the middle of this town we found many larvae of species 36, despite the high pollution. In the botanical garden especially the species on *Populus*

were abundant, and from species 20 on *Corylus* we found here many more mines than in its natural habitat.

Discussion Heilongjiang

The nepticulid fauna of Heilongjiang reminded us very much of the European fauna; the hostplant genera are all represented as hostplants in Europe as well. Yet few species only are probably the same as in Europe, with the obvious exception of probably all species feeding on *Betula* and probably *E. cf. argyropeza*. This is based on the completely similar mines and larvae of these species, so that we have to await if the adults are indeed inseparable from European populations. The species on for instance *Quercus* often resemble European species, but were all separable on the basis of mines and larvae alone. The continuous distribution of *Betula* and *Populus tremula-davidiana*, probably throughout the glaciations could be an explanation for these differences.

A part of the species collected here belong certainly to those described by Puplesis (1984a and b and in press), but cannot be identified yet.

Judging from Wang (1961) the forests visited by us are an impoverished type of the very rich forests in the China-Korea border area (Changbai Shan range) in Jilin province.

This could therefore be the best place to collect the fauna of northeast China during future expeditions.

It must, however, been borne in mind that even in the botanical garden in Harbin valuable material can be found, which is of course much easier, and can be done at any time by research workers in Harbin.

Beijing area

Considering our short and superficial collecting in Beijing, we can conclude that even this very populated area has a rich nepticulid fauna of which we found already 19 species. Some species are the same as in Heilongjiang especially those from *Ulmus*, but several are different. The hostplant spectrum is still very much the same as in Europe, with some notable exceptions, such as *Koelreuteria* and *Grewia*. Part of these species are certainly the same as those collected by Prof. Liu, at light in Wofosi, and further rearing will be inevitable to combine mines and moths, and to get a fine series. It is especially easy to collect large numbers, in the good time, of species 51, 52, 53, 55, 56, 57, 58, 59, 63 and 65. All occur in large numbers either at Yiheyuan, Wofosi or the

botanical garden. Additional collecting in the more remote remnants of the original forest could be a nice project for the future.

Yunnan, Kunming area

Kunming is a large town, situated on a high plateau, about 1900-2000 m elevation, with some mountain ridges up to 2400 m nearby. The area is very heavy cultivated due to the high population density, and as a consequence the original vegetation is largely destroyed. The original forest type is the evergreen cupuliferous forest (Wang, 1961), with many species of Fagaceae, but this is replaced over vast areas by an open *Pinus yunnanensis* Franch. forest, locally with stands of *Keteleeria evelyniana* Mast. and the oaks *Quercus variabilis* Bl., *Q. acutissima* Carr. and *Cyclobalanopsis glaucoides* Schottky. Only very locally, on steep hills and particularly near temples, remnants of a much richer forest type are found. Two localities are noticeable in this aspect: near the bamboo temple (station 22), with six species of oaks (*Castanopsis orthacantha* Franch., *Lithocarpus dealbatus* (Hook f. et Thoms.) Rehd., *L. mairei* (Schottky) Rehd., *Cyclobalanopsis glauca* (Thunb.) Oerst., *C. glaucoides* and *Q. acutissima*) and Xishan (western hills, station 23) with at least five oaks. Many species of trees are very local and we failed to find any *Ulmus*, *Carpinus* or *Acer*, although they are listed in local catalogues. The fauna here was extremely interesting and rich, with a high proportion of *Stigmella* species. Hostplants show a distinct palaeartic pattern with many Fagaceae, Betulaceae, Salicaceae and Rosaceae but striking differences are *Myrsine* and *Reinwardtia*. The high proportion of Ericaceae is similar to the situation in Japan (material under study).

Due to the climate, collecting can probably take place all year round with different results. On some plants we only found large numbers of empty mines, such as species 81, 87, 89, 101 and 113.

The total number of 47 species collected in this area lead us to the expectation that the fauna in undisturbed parts of the same vegetation type - as can be found in remote parts of Yunnan - must be extremely rich and interesting.

South Yunnan (Xishuanbanna)

In this region two main types of climax vegetation can be recognised: the evergreen cupuliferous forest, mainly above 1500 m. and the evergreen broadleaved rainforest, similar to the tropical rain forest (Wang, 1961).

We were not able to collect in the first type - which must be very rich here - although we passed vast areas of this forest around Simao. In Jinghong we were forced to collect in secondarily bamboo-groves only, because of a restricted permit. In Menglung we collected in and at the fringes of the tropical rain-forest, but the time (2½ days) was really too short to get a good picture. Concluding we can say that the result in Xishuanbanna are the poorest of our whole journey. Still we found mines on 48 species of hostplants, representing somewhere between 35 and 45 species of Nepticulidae, but numbers were very low, and larvae rarely present. The collecting in tropical forests needs a very different approach from that in temperate regions, and is much more practicable for somebody working a long time in one area.

Final remarks

When studying the following lists, we may provisionally conclude that we collected the traces of at least a 140 species of Nepticulidae, with only a small overlap between Heilongjiang and Beijing. We also noted 148 species of hostplants, belonging to 81 genera and 36 families. On 36 genera and 9 families of these no Nepticulids have been found before. So, if we consider this total number and the very small proportion of the Peoples Republic of China yet examined, we may safely conclude that the fauna of the territory of the PRC is extremely rich and will probably exceed 500 species. Years of collecting are essential to get just a very rough picture of this fauna and the important information necessary to unravel the evolution of holarctic Nepticulidae.

LIST OF NEPTICULIDAE SPECIES COLLECTED IN CHINA, 1984.

From species marked with an asterisk adults have already been reared

Heilongjiang province.

Species	Host	Station	Total number larvae
<i>Ectoedemia</i> (s. str.)			
* <i>E. near hannoverella</i>	<i>Populus simonii</i>	5, 13, 17	10 63

Species (cont'd)	Host	Station	Total number larvae	
2* cf argyropeza Z.	Populus davidiana	15	2	1
3* preisseckeri-group	Ulmus macrocarpa	14	21	6
4* spec.	Acer mono	6,14,16	5	1
5* ? near caradjai	Quercus mongolica	9,10,12,14,16	41	5
6* albifasciella-complex	Quercus mongolica	9,10,12,14,16	32	5
7* subbimaculella-complex	Quercus mongolica	9,10,12,14,15,16	64	5
8* spec.	Quercus mongolica	9,10,12,14,15,16	57	1
9* near quinquella	Quercus mongolica	12,14,15,16	35	8
10* ? occultella-group	Corylus heterophylla	10,12	5	1
11* cf pilosae Puplesis	Agrimonia pilosa	6,7,13,14,16	230	63
12* angulifasciella group	Rosa acicularis	6,7,10,12,13	hundreds	247
13. angulifasciella group	Rubus crataegifolius	13	-	
14* near spiraeae	Spiraea sericea	8	8	2

Ectoedemia (Zimmermannia)

15. spec.	Quercus mongolica	10	-	
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Ectoedemia (Fomoria)

16* spec.	Hypericum attenuatum	6,7,11,14	48	16
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Stigmella

17. cf betulicola Stainton	Betula spp.	6,8,10,11,14,15	37	2
18. cf distingua Schoorl	Betula spp.	6,11	1	
19. cf luteella Stainton	Betula spp.	6	-	
20* near microtheriella	Corylus spp.	6,7,8,9,10,12,14	7	
21. betulicola-group	Alnus hirsuta	8	1	
22. ultima-group	Acer mono	7,14	-	
23. tiliae-group	Tilia spp.	7,8,9,14	-	
24. tiliae-group	Tilia spp.	14,16	5	
25. malella-group	Rhamnus davurica	6	-	
26* malella-group	Rhamnus parvifolius	14,16	17	1
27. near anomalella	Rosa acicularis	6,13	2	
28. cf nostrata Puplesis	Pyrus ussuriensis	9,12	1	
29. cf micromelis Puplesis	Micromelis alnifolia	14,15	-	
30. near desperatella	Malus pallasiana	6,12,13,16	4	
31. oxyacanthella-group	Crataegus pinnatifida	12,13	1	

Species (cont'd)	Host	Station	Total number larvae
32. spec.	Crataegus pinnatifida	13	-
33. salicis-group	Salix koreensis	14	-
34. [*] near salicis	Salix raddeana	7,8	17 58
35. near trimaculella	Populus simonii, koreana	5,13,17	6
36. near ulmivora	Ulmus pumila	4,13	23
37. [*] spec.	Ulmus macrocarpa	14	1 8
38. [*] near ^{= gimonella} marginicolella	Ulmus propinqua, macr.	6,11,12,13,14,15	7 28
39. cf continuella Stainton	Betula spp.	6,8,10,11,14,17	3
40. [*] spec.	Rhododendron dahuricum	9,14,16	5 49
41. cf palmatae Puplesis	Filipendula palmata	7,8,12	-
42. aurella-group	Sanguisorba parviflora	12	-
43. aurella-group	Rubus sachalinensis	7	-
44. aurella-group	Rubus crataegifolius	15,16	1
45. [*] cf monticulella Puplesis	Lonicera ruprechtiana	7,8,14,15	1 13
46. [*] spec.	Quercus mongolica	9,10,12,14,16	- 40
47. [*] near roborella	Quercus mongolica	9,10,12,14,15,16	19 125
48. [*] near ^{= owellhoi = humatai} ruficapitella	Quercus mongolica	14	1 . 3

Total Heilongjiang:

48 species

36 species collected as larva (12 only as mine)

19 species more than 10 larvae (17 less than 10)

Beijing province

Ectoedemia

49. near spiraeae	Spiraea cf pubescens	3,18	-
50. preisseckeri-group	Ulmus macrocarpa	18	-
(= sp. 3)			

Niepeltia

51. spec.	Cotinus coggyria	18	2
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Genus unknown

52. spec.	Koelreuteria paniculata	2,18	-
53. spec.	Grewia globosa	2,18	1
54. spec.	Campylotropis macrocarpa	18	1

Species (cont'd)	Host	Station	Total number larvae
<i>Stigmella</i>			
55.* near paliurella	Zizyphus jujuba	2,3,18	33 2/
56.* near nivenburgensis	Salix babylonica	2,18	21
57.* salicis-group	Salix babylonica	2,18	14
58. near trimaculella	Populus of nigra	2,18	-
59. near prunetorum	Prunus of cerasus	18	-
60. spec.	Prunus sibiricus	3	1
61. ultima-group	Acer truncatum	2	1
62. ultima-group	Acer	18	1
63.* malella-group	Rhamnus dahurica	2	23 //
64. malella-group	Rhamnus globosa	18	-
65.* near ulmivora (= sp.36)	Ulmus pumila	2,18	33
66. spec. (= sp. 37)	Ulmus macrocarpa	18	4
67. aurella-group	Potentilla chinensis	18	3
Total Beijing:			
19 species			
13 species collected as larva (6 only as mine)			
5 species more than 10 larvae (8 less than 10)			
Yunnan province - Kunming area.			
<i>Ectoedemia</i> (s. str.)			
68*.	Rosa odorata	22,36	15
69.*	Cyclobalanopsis glaucoides and glauca	22,35	20
70.*	Cyclobalanopsis glaucoides	35	90
71.*	Quercus acutissima and variabilis	34,35,36	hundreds
72.	Quercus variabilis	34	2
<i>Ectoedemia</i> (Fomoria)			
73*.	Hypericum patulum	22,23,24,25,35	38
<i>Niepeltia</i>			
74.	Toxicodendron grandiflorum	35	10

Species (cont'd)	Host	Station	Total number larvae
<i>Genus unknown</i>			
75*.	Myrsine africana	22,35	>100
76.	Vaccinium sprengelii	22	1
<i>Artaversala (=Johanssonia)</i>			
77*.	Polygonum hastatum, urophyllum and spec.	22,23,35	60
78.	Polygonum multiflorum	22,35	9
<i>Stigmella</i>			
79*.	Agrimonia nepalensis, Potentilla griffithii, Potentilla fulgens and Rubus parvifolius	21,22,23,25,35,36	40
80.	Cotoneaster acuminata	23	-
81.	Dichotomanthes tristaniaecarpa		-
82.	Malus cf pumila	24	1
83*.	Pyrus pashia	22,35	6
84*.	Crataegus scabrifolia	22,35	7
85. (green)	Pyracantha fortunei	22	81
86. (yellow)	Pyracantha fortunei	22	9
87.	Prunus cerasoides	22	-
88.	Campylotropis polyantha	22,23,24,35	24
89.	Milletia dielsiana	22	1
90.	Populus yunnanensis	22,24	3
91*.	Myrica nana	22,35	5
92*.	Castanopsis orthacantha	22 (5-2)	18
93.	Castanopsis orthacantha	22 (5-1)	8
93A.	Castanopsis delavayi	23	2
94*.	Lithocarpus dealbatus	22	4
95*.	Lithocarpus dealbatus	22	2
96.	Lithocarpus mairei	22	1
97*.	Cyclobalanopsis glaucoides and glauca	21,22,35	26
98.	Quercus acutissima and variabilis	21,34,35,36	17
99.	Quercus acutissima and variabilis	34,36	4
100.	Quercus dentata	23	-
101.	Quercus franchetii	35	-

Species (cont'd)	Host	Station	Total number larvae
102*.	Ficus tikoua	23,24	64
103.	Rhamnus aureus	23	-
104.	Rhamnus leptophyllus	22	3
105.	Rhamnus spec.	21	3
106.	Sageretia compacta	24	5
107.	Lyonia ovalifolia	22	1
108*.	Pieris formosa	22,23	12
109.	Rhododendron speciferum	22,35	4
110*.	Rhododendron spinuliferum	23,35	2
111.	Sarcococca ruscifolia	22	-
112*	Reinwardtia indica	23	110
113.	Alnus nepalensis	23,35,36	-
114.	Corylus yunnanensis	35	40

Total Kunming area:

+47 species

+39 collected as larva (8 only as mine)

18 with 10 or more larvae (21 with less than 10)

Yunnan province: Xishuanbanna

Here only the hostplants are listed since most mines could not be identified to any genus. The larvae collected belong all to *Stigmella*.

Mines on different hostplants might belong to one nepticulid species.

115.	Lagerstroemia intermedia	28	-
116.	Heliciopsis terminalis	26	-
117.	Flacourtia montana	32	-
118.	Thladiantha villosula	30	-
119.	Trischosanthes bracteata	31	3
120.	Microcos paniculata	30	-
121.	Abroma angusta	31	-
122.	Buettneria aspera	28,32	-
123.	Helicteris angustifolia	28	-
124.	Urena lobata	29,33	-
125.	Bridelia balansae	28	-
126.	Cleidion brevipetiolatum	32	-
127.	Glochidion daltoni	32	-
128.	Mallotus philippinensis	30	-

Species (cont'd)	Host	Station	Total number larvae
129.	Mallotus tetracoccus	28	-
130.	Indigofera cf nigrescens	28	6
131.	Atylosia barbarta	31	-
132.	Dalbergia obtusifolia	30,31	1
133.	Dendrolobium triangulare	31	-
134.	Milletia leptobotrya	32	-
135.	Milletia bonatiana	32	-
136.	Milletia pachycarpa	31	-
137.	Ormosia yunnanensis	31	-
138.	Pueraria alopecuroides	28,31	-
139.	Pueraria tonkinensis	28	-
140.	Castanopsis indica	31,32	-
141.	Lithocarpus truncata	26	-
142.	Trema orientalis	33	-
143.	Ficus gibbosa	29	-
144.	Ficus glomerata	27	-
145.	Ficus hirta	29	-
146.	Ficus ? obscura	32	-
147.	Ficus semicordata	29	8
148.	Boehmeria macrophylla	28,32	1
149.	Pittosporopsis kerrii	32	-
150.	Zizyphus apetala	29	2
151.	Zizyphus fungii (Stigmella 1)	28	7
152*.	Zizyphus fungii (Stigmella 2)	28	18
153.	Zizyphus yunnanensis	28	-
154.	Cissus javana	31	-
155.	Alangium kurzii	31	-
156.	Adina polycephala	31	-
157.	Uncaria polycephala	32	-
158.	Porana racemosa	31	-
159.	Parmentiera spec.	28	-
160.	Lucuna nervosa	31	-
161.	Styrax argentifolia	32	-
162.	unidentified plant	32-8	-
163.	unidentified plant	32-10	-

Plant name (cont'd)	Nepticulid-species	Reference numbers
BETULACEAE		
<i>Alnus hirsuta</i> Turcz.	21	8-7
<i>Alnus nepalensis</i> D. Don	113	23-16, 35-17, 36-4
<i>Betula costata</i> Trautv.	17	6-8, 8-3
<i>Betula dahurica</i> Pall.	17, 39	10-2, 17-4
Corylus <i>platyphylla</i> Suk	17, 18, 19, 39	6-5, 8-4, 11-1, 14-11, 15-1, 17-3
Betula <i>heterophylla</i> Fisch. ex Bess.	10, 20	6-10, 9-4, 10-4, 12-1, 17-6
<i>Corylus mandshurica</i> Maxim	20	7-9, 14-1, 17-5
<i>Corylus yunnanensis</i> (Franch.) A. Camus	114	35-1
**BIGNONIACEAE		
** <i>Parmentiera cerifera</i> Seem.	159	28-11
**BUXACEAE		
** <i>Sarcococca ruscifolia</i> Stapf.	111	22-33
CAPRIFOLIACEAE		
<i>Lonicera ruprechtiana</i> Regel	45	7-7, 8-1, 14-17, 15-2
CONVOLVULACEAE		
** <i>Porana racemosa</i> Roxb.	158	31-14
**CUCURBITACEAE		
** <i>Thladiantha villosula</i> Cogn.	118	30-5
** <i>Trichosanthes bracteata</i> (Lam.) Voigt.	119	31-12
ERICACEAE		
* <i>Lyonia ovalifolia</i> (Wall.) Drude	107	22-14
* <i>Pieris formosa</i> D. Don	108	22-9, 23-19
* <i>Rhododendron dahuricum</i> L.	40	9-2, 14-16, 16-4
<i>Rhododendron speciferum</i> Franch.	109	22-13, 35-11
<i>Rhododendron spinuliferum</i> Franch.	110	23-10, 35-12
<i>Rhododendron species</i>	?	35-21
<i>Vaccinium sprengelii</i> (G. Don) Sleum.	76	22-32
EUPHORBIACEAE		
<i>Bridelia balansae</i> Hutch	125	28-8
** <i>Cleidion brevipetiolatum</i> Pax et Hoffm.	126	32-18
** <i>Glochidion daltoni</i> (Muell.- Arg.) Kurz.	127	32-14
** <i>Mallotus phillipinensis</i> (Lam.) Muell.-Arg.	128	30-3
<i>Mallotus tetracoccus</i> Kurz.	129	28-?5

Species (cont'd)	Host	Station	Total number larvae
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Total Xishuanbanna:

48 hostplantspecies, with at most 49 species of Nepticulidae.

8 *Stigmella* species collected as larva, total number 46.

Hong Kong.

Stigmella (?)

164*.	unidentified leguminosous tree	37	2
165.	Rhaphiolepis indica	38	-
166.	Rubus spec.	38	-

LIST OF HOSTPLANTS

Only those hostplants on which mines of Nepticulidae have been collected are listed. The plants are arranged alphabetically under the families which are also listed alphabetically. Hostplant families or genera from which hitherto no Nepticulidae have been found are marked with two asterisks, one asterisk is used when they have been found but not yet published. Plants are identified by: Nie Shaoquang (Heilongjiang), Li Hen (Yunnan), Li Xiwen (Yunnan), Ming Tianlu (Yunnan, Ericaceae and Fagaceae), T.T. Jü (Beijing area) and E.J. van Nieuwerkerken (various).

Plant name	Nepticulid-species	Reference numbers
ACERACEAE		
<i>Acer mono</i> Maxim.	4,22	6-11,7-1,14-2,16-3
<i>Acer truncatum</i> Bunge	61	2-7
**ALANGIACEAE		
** <i>Alangium kurzii</i> Craib.	155	31-9,31-20
ANACARDIACEAE		
<i>Cotinus coggyria</i> Scop.var. <i>pubescens</i> Engl.	51	18-2
** <i>Toxicodendron grandiflorum</i> C.Y.Wu; et T.L. Ming	74	35-8

Plant name (cont'd)	Nepticulid-species	Reference numbers
FAGACEAE		
<i>Castanopsis delavayi</i> Franch.	93A	23-6
<i>Castanopsis indica</i> (Roxb.) DC.	140	31-1, 32-16
<i>Castanopsis orthacantha</i> Franch.	92, 93	22-5
<i>Cyclobalanopsis glauca</i> (Thunb.) Oersted	69, 97	22-23
<i>Cyclobalanopsis glaucoides</i> Schottky	69, 70, 97	21-3, 22-4, 22-34, 35-5
** <i>Lithocarpus dealbatus</i> (Hook. f. et Thoms.) Rehd.	94, 95	22-2, 22-11
<i>Lithocarpus mairei</i> (Schottky) Rehd.	96	22-6, 22-12
<i>Lithocarpus truncata</i> Rehd. et Wils.	141	26-2
<i>Quercus acutissima</i> Carr.	71, 98, 99	22-17, 24-4, 35-2, 36-5
<i>Quercus dentata</i> Thunb. var. <i>oxyloba</i> Franch.	100	23-7
<i>Quercus franchetii</i> Skan.	101	35-4
<i>Quercus mongolica</i> Fisch.	5, 6, 7, 8, 9, 15, 46, 47, 48	9-1, 10-1, 12-8, 14-6, 15-7, 16-8
<i>Quercus variabilis</i> Bl.	71, 72, 98, 99	21-1, 34-1, 35-3, 36-6
FLACOURTIACEAE		
<i>Flacourtia montana</i> Grah.	117	32-5
GUTTIFERAE (Hypericaceae)		
<i>Hypericum attenuatum</i> Choisy	16	6-9, 7-3, 11-2, 14-14
<i>Hypericum</i>	73	35-18
<i>Hypericum patulum</i> Thunb.	73	22-7, 22-35, 23-4, 24-9, 25-3, 35-19
** ICACINACEAE		
** <i>Pittosporopsis kerrii</i> Craib.	149	32-2, 32-11
LINACEAE		
** <i>Reinwardtia indica</i> L.	112	23-5
LYTHRACEAE		
* <i>Lagerstroemia intermedia</i> Koehne	115	28-4
MALVACEAE		
* <i>Urena lobata</i> L.	124	29-2, 31-6, 33-1
MORACEAE		
<i>Ficus gibbosa</i> Bl.	143	29-1
<i>Ficus glomerata</i> Roxb.	144	27-1
<i>Ficus hirta</i> Vahl.	145	29-4
<i>Ficus ? obscura</i> Bl.	146	32-9

Plant name (cont'd)	Nepticulid-species	Reference numbers
MORACEAE (cont'd)		
<i>Ficus semicordata</i> Buch.-Ham. ex J.E. Sm.	147	29-3
<i>Ficus tikoua</i> Bur.	102	23-15, 24-7
MYRICACEAE		
<i>Myrica nana</i> Cheval	91	22-10, 23-20, 35-10
**MYRSINACEAE		
** <i>Myrsine africana</i> L.	75	22-36, 35-16
PAPILIONACEAE		
** <i>Atylosia barbarta</i> (Benth.) Baker	131	31-7, 31-11
** <i>Campylotropis macrocarpa</i> (Bunge) Rchl.	54	18-4
<i>Campylotropis polyantha</i> (Franch.) A.K. Schindl	88	22-19, 23-13, 24-8, 35-9
** <i>Dalbergia obtusifolia</i> Prain	132	30-2, 31-4
** <i>Dendrolobium triangulare</i> (Retz.) A.K. Schindl.	133	31-8
** <i>Indigofera cf nigrescens</i> Kurz et King et Prain	130	28-9
** <i>Milletia bonatiana</i> Pamp.	135	32-4
<i>Milletia dielsiana</i> Harms ex Diels	89	22-8
<i>Milletia leptobotrya</i> Dunn	134	32-17
<i>Milletia pachycarpa</i> Benth.	136	31-17
** <i>Ormosia yunnanensis</i> Prain	137	31-2
** <i>Pueraria alopecuroides</i> Craib.	138	28-12, 31-15
<i>Pueraria tonkinensis</i> Gagn.	139	28-13
Unidentified species	164	37-1
POLYGONACEAE		
* <i>Polygonum hastatum</i>	77	22-18, 23-2
<i>Polygonum multiflorum</i> Thumb.	78	22-31, 35-6
<i>Polygonum urophyllum</i> Bur. et Franch.	77	23-3, 35-7
<i>Polygonum spec.</i>	77	22-22
**PROTEACEAE		
** <i>Heliciopsis terminalis</i> (Kurz.) Sleum.	116	26-1
RHAMNACEAE		
<i>Rhamnus aureus</i> Heppeler	103	23-1
<i>Rhamnus dahurica</i> Pall.	25, 63	2-1, 6-7
<i>Rhamnus globosa</i> Bunge	64	18-5
<i>Rhamnus leptophyllus</i> Schneid.	104	22-28, 22-29
<i>Rhamnus parvifolius</i> Bunge	26	14-3, 16-2
<i>Rhamnus spec.</i>	105	21-4, 23-8

Plant name (cont'd)	Nepticulid-species	Reference numbers
RHAMNACEAE (cont'd)		
** <i>Sageretia compacta</i> Drumm. et Spragne	106	24-3
<i>Zizyphus apetala</i> Hk.f.	150	29-7
<i>Zizyphus fungii</i> Merr.	151, 152	28-1
<i>Zizyphus jujuba</i> Mill. var. <i>spinosa</i>	55	2-2, 18-8
<i>Zizyphus yunnanensis</i> Schneid.	153	28-6
ROSACEAE		
<i>Agrimonia nepalensis</i> D. Don	79	21-6, 22-15, 23-11, 25-1, 35-20
<i>Agrimonia pilosa</i> Ledeb.	11	6-4, 7-10, 13-5, 14-7, 15-5, 16-
<i>Cotoneaster acuminatus</i> Lindl.	80	23-9
<i>Crataegus pinnatifida</i> Bunge	31, 32	12-9, 13-2, 14-18
<i>Crataegus scabrifolia</i> (Franch.) Rehd.	84	22-21, 35-15
** <i>Dichotomanthes tristaniaecarpa</i> Kurz.	81	20-1, 35-13
<i>Filipendula palmata</i> (Pall.) Maxim.	41	7-4, 8-5, 12-5
<i>Malus pallasiana</i> Jusepczuk	30	6-6, 12-7, 13-6, 16-7
<i>Malus pumila</i> Mill.	82	24-2
<i>Potentilla chinensis</i> Ser.	67	18-3
<i>Potentilla fulgens</i> Wall.	79	23-17
<i>Potentilla griffithii</i> Hook f.	79	23-12
<i>Prunus cerasoides</i> D. Don	87	22-3
<i>Prunus cf cerasus</i> L.	59	18-16
<i>Prunus sibiricus</i> (L.) Lam.	60	3-1
<i>Pyracantha fortuneana</i> (Maxim.) Li	85, 86	22-20, 22-25
<i>Pyrus pashia</i> Buch.-Ham. ex D. Don	83	22-1, 22-30, 35-14
<i>Pyrus ussuriensis</i> Maxim.	28	9-3, 12-3
** <i>Rhaphiolepis indica</i> (L.) Lindl	165	38-1
<i>Rosa acicularis</i> Lindl.	13, 27	6-3, 10-6, 12-6, 13-7
<i>Rosa odorata</i> (Andr.) Sweet	68	22-16, 22-26, 36-2
<i>Rubus crataegifolius</i> Bunge	13, 44	13-3, 15-6, 16-5
<i>Rubus parrifolius</i> L.	79	22-27, 23-14, 25-1, 36-1
<i>Rubus sachalinensis</i> Leveille	43	7-6
<i>Rubus spec.</i>	166	38-2
<i>Sanguisorba parviflora</i> (Maxim.) Takeda	42	12-4
<i>Sorbus alnifolia</i> Sieb. et Zucc.	29	14-8, 15-8
<i>Spiraea cf pubescens</i> Turcz.	49	3-2

Plant name (cont'd)	Nepticulid-species	Reference numbers
ROSACEAE (cont'd)		
<i>Spiraea sericea</i> Turcz	14	8-10
RUBIACEAE		
** <i>Adina polycephala</i> (Wall.) Benth.	156	31-5
** <i>Uncaria polycephala</i>	157	32-13
SALICACEAE		
<i>Populus davidiana</i> Dode	2	15-3
<i>Populus koreana</i> Rehder	35	17-2
<i>Populus cf nigra</i> L.	1,35,58	18-12
<i>Populus simonii</i> Carr.	1,35	5-2,13-1,17-1
<i>Populus simonii</i> x <i>nigra</i>	1,35	5-1
<i>Populus yunnanensis</i> Dode	90	22-24,24-1,36-3
<i>Salix babylonica</i> L.	56,57	2-3,4-2,18-9
<i>Salix koreana</i> Rehder	33	14-12,14-15
<i>Salix raddeana</i> Laksch	34	7-2,8-8
SAPINDACEAE		
** <i>Koelreuteria paniculata</i> Lasan.	52	2-5,18-20
**SAPOTACEAE		
** <i>Lucuna nervosa</i> A.DC.	160	31-3
STERCULIACEAE		
** <i>Abroma angusta</i> (L.) L.f.	121	31-16
** <i>Buettneria aspera</i> Colebr.	122	28-7,32-1,32-7,32-12
** <i>Helicteris angustifolia</i> L.	123	28-10
STYRACACEAE		
<i>Styrax argentifolia</i>	161	32-15
TILIACEAE		
<i>Grewia globosa</i> G. Don var <i>parviflorum</i> (Bunge) Hand.-Mazz.	53	2-9,18-6
** <i>Microcos paniculata</i> L.	120	30-1
<i>Tilia amurensis</i> Rupr.	23,24	8-2,9-5,14-5,16-1
<i>Tilia mandshurica</i> Rupr. et Maxim.	23,24	7-5,8-2,9-5,14-5,16-1
ULMACEAE		
** <i>Trema orientalis</i> (L.) Bl.	142	33-2
<i>Ulmus macrocarpa</i> Hance	3 (=50), 37 (=66), 38	14-4,15-4,18-1
<i>Ulmus propinqua</i> Koidz.	38	6-2,11-3,12-2,13-4
<i>Ulmus pumila</i> L.	36 (=65)	2-6,4-1,13-8,18-10

Plant name (cont'd)	Nepticulid-species	Reference numbers
*URTICACEAE		
* <i>Boehmeria macrophylla</i> D. Don	148	28-5, 32-6
**VITACEAE		
** <i>Cissus javana</i> DC	154	31-21
Unidentified hostplant	162	32-8
Unidentified hostplant	163	32-10

FUTURE COOPERATION

Although we have not full insight yet in the ultimate number of species that were collected during this trip, several remarks can be made based on the results already achieved:

1. In all the regions visited during this field work Nepticulidae species are abundantly present.
2. Probably most of the collected Nepticulidae species are new species.
3. The specimens collected on this trip are the first substantial collection of Nepticulidae from mainland East Asia and represent the only collection of species with known hostplants.

These facts not only stress the value of the collection of Chinese Nepticulidae, which is now being set up, but also reflect tremendous richness of the Nepticulid (and general Microlepidopteran) fauna in China.

Nepticulidae have an oligo- or monophagous relationship with their hostplants. Based on this fact, the great number of different vegetations in a country as vast as China and the fact that most of the collected species are hitherto unknown, we expect that many more new species are to be found in other parts of China. Even in the regions we visited there are undoubtedly more species to be found at other times of year, which is indicated by our collection of empty mines.

In the southern tropical parts of Yunnan province, the vegetation is extremely diverse, resulting in a low density of hostplants and thus makes the collecting of Nepticulidae extremely laborious. Collecting in tropical regions is made more difficult by the absence of synchronized seasonality in the life cycle of the different Nepticulidae species.

A thorough investigation of the Nepticulid fauna therefore can only be accomplished by intensive collecting by trained entomologists during several years and during different seasons. Prof. Liu is very eager to set up such a study, but cooperation with experienced entomologists seems

essential to him. At this very moment there are too few Chinese entomologists with the necessary skills for collecting, rearing and preservation of micro-lepidoptera and besides there is a substantial lack of equipment. There is no better way to create a group of entomologists capable for studying small moths than doing this research together with experienced foreign entomologists and therefore it is essential, according to Prof. Liu to continue cooperation in this field with us. On the other hand continuation of this cooperation will be of great benefit to our study on the phylogenetic relationships between several groups of Nepticulid species: unknown species can be used to test the existing phylogenetic and systematic insights. According to Prof. Liu Chinese financial resources are sufficient and will not obstruct future cooperation. For the next one or two years a visit of a Chinese entomologist to our department to acquire the necessary skills during field work in Europe will not be possible, because there is no suitable entomologist at the moment. There is a candidate, however, and Prof. Liu wishes the necessary arrangements to create a full-time job for a research worker on Nepticulidae to be made in the course of 1985. From all that is said above it will be clear that at this very moment the only possibility to continue cooperative research on Nepticulidae is to plan a second joint collection trip in the autumn of 1986, so Prof. Liu and we advise the Department of Animal Systematics to apply to the appropriate authorities for this visit. Anticipating another collecting trip we suggest some regions which seem to be very promising to us for the collection of Nepticulidae.

Northeast China: Changbai Shan range

North China: mountain ranges in Hubei, Beijing, reachable from Beijing
(especially *Quercus* forests)

Central China: the mixed mesophytic forest zone: Tienmu-Shan (West of Hangzhou)

Lu-Shan (Jiangsi)

Western Hubei: Shuisha Pa (*Metasequoia* Valley)

Western Sichuan: Emei Shan

Southwest China: Yunnan: mountain ranges in Northwest

Yunnan: forest around Simao.

We hope this report will meet the needs of the authorities and facilitate the continuation of joint Chinese-Dutch research on Nepticulidae.

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SUPPLEMENT TO REPORT ON A COLLECTING TRIP TO CHINA, 1984, TO STUDY
AND COLLECT NEPTICULIDAE (LEPIDOPTERA)

WITH DATA OF REARED SPECIMENS

by

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In this supplement I will list all adult Lepidoptera reared from the larvae and pupae collected in 1984 in China. Since no more moths emerged the last two months, we can assume that no more emergences are to be expected and those species which failed to produce adults probably all died. In the following list I completely follow the numbering and order in our previous report (pp. 16-22). Only those species are listed from which larvae have been collected.

LIST OF NEPTICULIDAE REARED

Heilongjiang province

Species	Host	Station	Number	Data
<i>Ectoedemia</i> (s.str.)				
1. cf <i>wilkinsoni</i> (Puplesis)	<i>Populus simonii</i>	5,13,17	5♂,5♀	2-9.iv.85
2. cf <i>argyropeza</i> (Zeller)	<i>Populus davidiana</i>	15	1♀	27.iii.85
3. cf <i>preisseckeri</i> (Klim.)	<i>Ulmus macrocarpa</i>	14	5♂,1♀	19-26.iv.85
4. spec.	<i>Acer mono</i>	14	1♀	26.iv.85
5. ?near <i>caradjai</i>	<i>Quercus mongolica</i>	10,12,14	1♂,4♀	19.iv-9.v.85
6. <i>albifasciella</i> -complex (mixture!)	<i>Quercus mongolica</i>	9,10,12	1♂,4♀	10.iv-9.v.85
7. <i>subbimaculella</i> -complex	<i>Quercus mongolica</i>	9,10	3♂,2♀	10-16.iv.85
8. spec.	<i>Quercus mongolica</i>	9	1♂	16.iv.85
9. near <i>quinquella</i>	<i>Quercus mongolica</i>	12,15,16	3♂,5♀	12-22.iv.85
10. spec.	<i>Corylus heterophylla</i>	12	1♀	30.iv.85
11. cf <i>pilosae</i> Puplesis	<i>Agrimonia pilosa</i>	6,7,13,14,16	27♂,36♀	13.iv-14.v.85
12. <i>angulifasciella</i> group	<i>Rosa acicularis</i>	6, 10,12	247 exx.	10.iv-10.v.85
14. near <i>spiraeae</i>	<i>Spiraea sericea</i>	8	2♂	16.iv.85

Ectoedemia (*Fomoria*)

16.A. spec. 1	<i>Hypericum attenuatum</i>	6,7,11	5♂,7♀	13-23.iv.85
16.B. spec. 2	<i>Hypericum attenuatum</i>	11,14	3♂,2♀	13-16.iv.85

Stigmella

17. no adults reared				
18. no adults reared				
20. near <i>microtheriella</i>	<i>Corylus mandshurica</i>	14	2♀	30.iii-2.iv.8
21. no adults reared				
24. no adults reared				
26. <i>malella</i> -group	<i>Rhamnus parvifolius</i>	16	1♀	30.iii.85
27. no adults reared				
28. no adults reared				
30. no adults reared				
31. no adults reared				
34. near <i>salicis</i>	<i>Salix raddeana</i>	7,8	7♂,10♀	4-15.iv.85
35. no adults reared				
36. no adults reared (but see sp. 65)				
37. spec.	<i>Ulmus macrocarpa</i>	14	1♀	13-15.iv.85
38. cf <i>gimmonella</i> (Mats.)	<i>Ulmus</i> spp.	11,12,14	4♂,3♀	28.iii-29.iv.85
39. no adults reared				
40. spec.	<i>Rhododendron dahuricum</i>	14,16	2♂,3♀	28.iii-1.iv.8
44. no adults reared				
45. cf <i>monticulella</i> Pupl.	<i>Lonicera ruprechtiana</i>	15	1♀	29.iii.85
46. no adults reared (from 40 larvae!)				
47. near <i>roborella</i>	<i>Quercus mongolica</i>	10,12,14,16	13♂,6♀	23.iii-1.iv.85
48. near <i>ruficapitella</i>	<i>Quercus mongolica</i>	14	1♂	22.iii.85

Total Heilongjiang

48 species

24 species reared (15 *Ectoedemia*, 9 *Stigmella*)

Beijing province

51, 53, 54. No adults reared

Stigmella

55. near <i>paliurella</i>	<i>Zizyphus jujuba</i>	2,18	10♂,12♀	2-4x.84, 10.iv.85
56. near <i>nivenburgensis</i>	<i>Salix babylonica</i>	18	2♂,3♀	13-29.iv.85
57. <i>salicis</i> -group	<i>Salix babylonica</i>	18	2♂,1♀	30.iii-1.iv.85
60-62. no adults reared				
63. <i>malella</i> -group	<i>Rhamnus dahurica</i>	2	6♂,5♀	30.iii-18.iv.8

65. near <i>ulmivora</i> (= sp.36)	<i>Ulmus pumila</i>	18	6♂,3♀	16.iv-6.v.85
66,67. no adults reared				

Total Beijing

19 species

5 species reared (*Stigmella*, all different from Heilongjiang)

Yunnan province - Kunming area

Ectoedemia (s.str.)

68.	<i>Rosa odorata</i>	22	2♂,6♀	10.xi-4.xii.84, 20.iii-1.iv.85
69.	<i>Cyclobalanopsis</i> spp.	22	2♂	20.iii,26.iv.85
70. no adults reared (from 90 larvae!)				
71.	<i>Quercus</i> spp.	34,36	26♂,23♀	5.iii-12.iv.85
72. no adults reared				

Ectoedemia (*Fomoria*)

73.	<i>Hypericum patulum</i>	22,23,25	8♂,4♀	3.xi.84-6.iii.85
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Niepeltia

74.	<i>Toxicodendron grandiflorum</i>	35	1♂	26.iv.85
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Genus unknown

75.	<i>Myrsine africana</i>	22,35	147 exx.	9.xi-9.xii.84
76. no adult reared				

Artaversala (= *Johanssonia*)

77.	<i>Polygonum hastatum</i>	22,23	2♂,2♀	30.x.84, 19-21.iii.85
78. no adults reared				

Stigmella

79.	various <i>Rosaceae</i>	23	10♂,10♀	10-19.xi.84
82. no adult reared				

83+84.	Pyrus pashia, Crataegus scabrifolia	22,35	1♂,3♀	19-21.i.85
85.	Pyracantha fortunei	22	13♂,11♀	26.ii-30.iii.85
86. no adults reared				
88.	Campylotropis polyantha	35	1♂	27.ii.85
89. no adult reared				
90.	Populus yunannensis	24	1♂,1♀	25.ii,3.iv.85
91	Myrica nana	22	2♂	10-13.xi.84
92.	Castanopsis orthacantha	22(5-2)	4♂,5♀	9-16.xi.84
93. no adults reared				
94.	Lithocarpus dealbatus	22(2-1)	1♂	28.xi.84
95.	Lithocarpus dealbatus	22(2-2)	2♀	17-22.xi.84
96. no adult reared				
97.	Cyclobalanopsis glaucoides	35	4♂,2♀	13-30.xi.84
98.	Quercus spp.	36	3♂	20.ii-4.iii.85
99. no adults reared				
102.	Fikus tikoua	24	2♂,6♀	19-21.x.84
104-107. no adults reared				
108.	Pieris formosa	22,23	2♂,2♀	10.xi-3.xii.84
109. no adults reared				
110.	Rhododendron spinuliferum	23,35	1♂,1♀	17-27.xi.84
112.	Rheinwardtia indica	23	4♂,14♀	7-14.xi.84
114.	Corylus yunnanensis	35	7♂,11♀	23.ii-2.iv.85

Total Kunming area:

+ 47 species

23 species reared (4 *Ectoedemia*, 3 other genera, 16 *Stigmella*)

Yunnan province: Xishuanbanna

119,130,132,148,151. no adults reared

147.	Ficus semicordata	29	1♂	28.x.84
150.	Zizyphus apetala	29	1♂(damaged)	30.x.84
152.	Zizyphus fungii	28	3♂,3♀(damaged)	24-27.x.84

Hong Kong

164.	leguminosous tree	37	2♀	19.xi.84
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CONCLUSION

The total number of species reared into the adult stage is now 56, divided as follows: *Ectoedemia* (s.str.): 18 species; *E. (Fomoria)*: 3 species; *Niepeltia*: 1 species; Genus (Trifurculini): 1 species; *Artaversala*: 1 species; *Stigmella*: 34 species. The rearing result for some species has been extremely good: over 50%, but for several species the result was poor or even no adults emerged at all, as for instance in species 46 and 70, despite large numbers of larvae. In general we can conclude that the treatment given to the larvae collected is suitable, since the result is good, compared with collecting and rearing results obtained elsewhere.

From the species collected in the north a considerable number has been described recently or is in course of description by Puplesis, or members of our working group, respectively from the USSR or Japan.

APPENDIX

Other Microlepidoptera reared

species	host	station	number	data
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Tischeriidae - genus *Tischeria*

1. cf <i>ekebladella</i>	<i>Quercus mongolica</i>	9	3	12-23.iv.85
2. cf <i>decidua</i>	<i>Quercus mongolica</i>	12,14	11	26.iii-23.iv.85
3. sp.	<i>Quercus acutissima</i>	35	4	18.ii-19.iii.85
4. sp.	<i>Corylus mandshurica</i>	14	2	30.iii-2.iv.85
5. sp.	<i>Ulmus macrocarpa</i>	14	1	16.iv.85
6. sp.	<i>Malus pumila</i>	24	1	12.ii.85
7. sp.	<i>Crataegus scabrifolia</i>	35	2	2-8.ii.85

Lyonetiidae (s.l.)

Bucculatrix

8.	<i>Sida szechuensis</i>	30	1	7.xi.84
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Leucoptera

9. <i>malifoliella</i>	<i>Malus, Crataegus</i>	1	28	2.x.84, 30.iii-10.iv.85
10. cf <i>aceris</i>	<i>Acer ginnala</i>	6	1	5.iv.85
11.	<i>Desmodium esquirolii</i>	29	3	27.x.84
12.	<i>Dalbergia obtusifolia</i>	31	4	1.xi.84

Lyonetia

13.	<i>Prunus duclouxii</i>	24	1	x.84
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Genus?

14.	<i>Berchemia yunnanensis</i>	24	31 (partly destroyed)	24.x-2.xi.84
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Genus?

15.	Grewia globosa	18	1	10-11.iv.85
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Phyllonorycter

16.	Quercus mongolica	14	1	27.iii.85
17.	Ulmus macrocarpa	14	3	26-28.iii.85
18.	Ulmus pumila	18	4	30.iii-2.iv.85
19.	Lonicera ruprechtiana	14,15	" 2	27-30.iii.85
20.	Rhododendron dahuricum	16	1	12.iv.85
21.	Grewia globosa	18	1	12.x.84

Phyllocnystidae

Phyllocnystis

22.	Piper boehmerifolium	32	1	5.xi.84
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Elachistidae

Elachista

23.	Cyrtococcum patens	28	7(5 lost)	19-26.x.84
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Various microlepidoptera reared from leaf-litter, collected in Jing-Hong t
5 specimens, 24,27,30.x., 7.xi.1984; 18.i.1985.