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# Light-trap catch of Macrolepidoptera species compared the 100 W normal and 125 W BL lamps

## Macrolepidoptera fajok fénycsapdás gyűjtése 100 W normál és 125 W BL fényforrással

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**Abstract –** Puskás, J. & Nowinszky, L. 2011: Light-trap catch of Macrolepidoptera species compared the 100 W normal and 125 W BL lamps. – e-Acta Naturalia Pannonica **2** (**2**): 000-000. – The study carried out by comparing catch data of the Hungarian light-trap network normal and BL trap types operating simultaneously in 19 observation sites. The behaviour of 630 species was considered in total and for 384 species was established, which trap type is more suitable for their collection? More species of *Sphingidae, Notodontidae, Arctiidae* and *Noctuidae* families can be collected by BL traps whereas the majority of *Geometridae* flies to normal ones. No family contains, however, species that would fly solely to one or other type.

**Key words –** Macrolepidoptera, normal, BL lamps

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**Összefoglalás –** A tanulmány a normál és az UV fényforrással gyűjtő fénycsapdák Macrolepidoptera fajok fogási eredményeinek összehasonlításával foglalkozik. Összesen 630 faj befogott példányainak számát feldolgozva, 384 fajról sikerült megállapítani, hogy melyik fényforrással gyűjthetők eredményesebben. A Sphingidae, Notodontidae, Arctiidae és Noctuidae családok fajainak többsége az UV csapdában, míg a *Geometridae* család fajainak többsége a normál csapdában fordult elő nagyobb számban. Egyetlen családban sem találhatók azonban olyan fajok, amelyek kizárólag egyik vagy másik típusú fényforrással lennének gyűjthetők.

### Introduction

There have been a lot of entomologists in the world examining the spectral sensitivity of insects' eyes for a long time. They also made a comparison between the collecting results of light-traps operating with different light sources. We have not enough place to write on these studies in detail but according to the researches of Agee 1972, 1973; Gui et al. 1942; Williams 1951; Cleve 1954; Frost 1955; Zlokovity et al. 1958; Belton & Kempster 1963; Jászainé 1977; Sifter 1971; Mikkola 1972; Blomberg et al. 1976; Bürgés et al. 1976; Járfás 1978 most of species fly to light-traps operating with short wave-length light (HGL and BL). There is an opposite conclusion in some studies, some species fly better to the normal light (Theoward 1963; Jászainé 1969; Járfás 1977).

There were two light-traps run by the Plant Protection Research Institution, one operating with normal and the other with BL light, operating parallel in Keszthely from 1962 to get information about the practicability of normal and BL light-traps in Hungary. The distance was about 100 meters between these traps. There was a building between them (Sáringer 1995), so the catching results of traps were not modified by the light of traps. A new light-trap network was organized operating with BL light at all the county plant protection stations, working parallel with normal light-traps, by Plant Protection Service in 1962 and 1963. The normal and BL light-trap network provided useful information for the examination of trapping data of the two light-trap types. The harmful species of Macrolepidoptera data, caught by normal and BL light-traps, was determined by Mészáros (1966) and he made a comparison among the most important species. He stated that the BL light-traps collected more individuals but because of their complicated operation he did not find this data suitable for phenological examinations. It is easier to determine the insects caught by the normal light-trap than by BL one

(Mészáros 1966). In the second case the problem is the breaking to pieces of insects. The normal light-traps have been used in the light-trap network in Hungary from the early times of operating. The collected data given by the normal and BL light-trap network, operated parallel in Hungary, can give an unprecedented possibility to make some important examinations. We would like to get answers to these questions in our present work:

– Is there a significant difference between the caught of two trap types examining species and families?

– Is the normal or BL light-trap more favourable for caught of different species?

– Which species are, with their different, catching results can be explained by the local circumstances (the microclimate of light-traps, the different distance of each species' living territory) and not by the different light-source?

– Are there any species that can be caught by only normal light-trap or BL one?

– Are there any species that can be caught better by one of the trap types?

With the inclusion of 630 Macrolepidoptera species by use of material yielded by the national light-trap network in order to answer the above questions have determined which type is more suitable to collect 384 selected species.

**Material and Methods**

The operating periods for each observing stations of normal and BL light-traps are shown in Table 1.

We has used the old nomenclature and taxonomy (Karsholt & Razowski 1996) this study. We will use the adopted in Europe, new nomenclature and taxonomy in the future studies.

We could not use the data of Mohora and Tass from the county plant protection stations because their phenological data were not correct. We also could not use the data of Keszthely in 1962 because there were not normal light-trap data between the middle of May and the late autumn. Probably there was a mistake during this period. We could use all the data of Macrolepidoptera species provided by observing stations.

Generally the light-traps worked in the yard of plant protection stations Mészáros (1966). We had information about the distance between the two light-traps and their isolation only from Tanakajd and Nagytétény. There were 300 meters between the two light-traps and they worked totally isolated at Tanakajd but there were only 10 meters between them at Nagytétény.

The individual Macrolepidoptera species' number of caught individuals was summarized for each observing station and type of light-trap but the samples coming from different generations were not separated. The Mann-Whitney test was used in calculating the significance level of difference between the individual's number caught by normal and BL light-traps for each species. The theoretical base and use of test was explained in detail by Hajtman (1971), Odor & Iglói (1987). There was made a mixed model using the data of normal and BL light-traps at all the observing stations. The element number of model was the same as the double of observing stations (two light-traps were in work at every observing station), where one of the species was caught by a light-trap. The number of samples was summarized separately in the mixed model. The significance level of difference was determined by making a comparison to the value of the table.

Making a comparison between the data of normal and BL light-trap at Nagytétény was very important, because the two light-traps were nearby each other so the microclimate, the vegetation and the living territory of each species was the same that is why the moths could select between the light-traps operating with different light-source. There was an investigation to determine the number and percentile proportion of species can be caught successfully by normal and BL light-trap for each family. We also made an examination to find non-significant differences in some species' catching data of two type light-trap, although the number of light-traps would be enough to determine the significant difference. We could not make the examinations with those species, which were caught at less than four observing stations because the test used can not give a significant difference in this case.

We could not make a comparison between the specific combination and the sample number of each species belonging to the different observing stations because:

The catching period was not the same at all the observing stations, the environmental factors (weather situations, vegetation etc.) were not the same, the individual species might have been in

**Table 1.** The collecting period and examined period of normal and UV light-traps at the observing stations

| *N* | *Light-trap stations* | *Years* | *Normal* | *BL* | *Examined periods* |
|---|---|---|---|---|---|
| 1. | Baj | 1963 | 12. 04. - 30. 10. | 04. 04. - 11. 11. | 12. 04.- 30. 10. |
| 2. | Csopak | 1963 | 25. 03. - 12. 11. | 18. 04. - 20. 11. | 18. 04. - 12. 11. |
| 3. | Fácánkert<br>with the exception of | 1963 | 29. 03. - 19. 11. | 28. 05. - 29. 11.<br>15. 06. - 30. 06. | 28. 05. - 19. 11.<br>15. 06. - 30. 06. |
| 4. | Gyöngyös | 1963 | 27. 03. - 20. 11. | 12. 04. - 07. 11. | 12. 04. - 07. 11. |
| 5. | Győr-Kismegyer | 1963 | 09. 04. - 28. 11. | 12. 04. - 12. 11. | 12. 04. - 12. 11. |
| 6. | Hódmezõvásárhely | 1963 | 29. 03. - 17. 11. | 08. 05. - 16. 11. | 08. 05. - 16. 11. |
| 7. | Kaposvár<br>with the exception of | 1963 | 14. 05. - 20. 11. | 10. 05. - 28. 11.<br>27. 07. - 30. 09. | 14. 05. - 20. 11.<br>27. 07. - 30. 09. |
| 8. | Kállósemjén | 1963 | 14. 04.- 31. 10. | 15. 04. - 25. 10. | 15. 04. - 25. 10. |
| 9. | Kenderes | 1963 | 30. 03. - 10. 11. | 09. 05. - 17. 11. | 09. 05. - 10. 11. |
| 10. | Mikepércs<br>with the exception of | 1963 | 31. 03. - 27. 11. | 12. 05. - 27. 11.<br>06. 06. - 27. 06. | 12. 05. - 27. 11. 06. 06.<br>- 27. 06. |
| 11. | Miskolc | 1963 | 28. 04. - 08. 11. | 28. 04.- 08. 11. | 28. 04. - 08. 11. |
| 12. | Pacsa | 1963 | 21. 03. - 23. 10. | 03. 04. - 05. 11. | 03. 04. - 23. 10. |
| 13. | Szederkény | 1963 | 20. 03. - 15. 10. | 10. 07. - 10. 10. | 10. 07. - 15. 11. |
| 14. | Tanakajd | 1963 | 29. 03. - 14. 11. | 10. 04. - 25. 11. | 10. 04. - 14. 11. |
| 15. | Tarhos<br>with the exception of | 1963 | 29. 03. - 26. 11. | 15. 04. - 26. 11. 01.<br>06. - 15. 05. | 15. 04. - 26. 11. 01. 06.<br>- 15. 05. |
| 16. | Tass | 1963 | 11. 04. - 14. 11. | 13. 04. - 09. 11. | 13. 04. - 09. 11. |
| 17. | Velence | 1963 | 28. 03. - 09. 11. | 28. 08. - 16. 11. | 28. 08. - 09. 11. |
| 18. | Nagytétény | 1962 | 10. 04. - 03. 11. | 17. 05. - 28. 10. | 17. 05. - 28. 10. |
| 19. | Nagytétény | 1963 | 03. 05. - 09. 11. | 06. 04. - 25. 11. | 03. 05. - 19. 11. |
| 20. | Keszthely | 1963 | 21. 03. - 20. 11. | 07. 05. - 18. 11. | 07. 05. - 18. 11. |
| 21. | Keszthely | 1964 | 29. 03. - 24. 11. | 20. 03. - 15. 11. | 29. 03. - 15. 11. |
| 22. | Keszthely | 1966 | 20. 04. - 27. 10. | 11. 05. - 17. 09. | 11. 05. - 17. 09. |

different phase of their hypercycle.

Because of these problems we could make comparison between the catching data of normal and BL light-trap at of the ilk. The weather was the same at the territory of a village and the hypercycle of each species also was in the same section. We made the examinations only on those days, when both light-traps operated. Because of these factors the reasons for differences in the data of normal and BL light-traps can be the quality of used light-source, the difference of microclimate, the different dispersition and distance of living territory of species.

**Results**

From among the examined 630 species we managed to establish 384 ones which trap type is more suitable for their collection.

There are 394 species shown in Table 2 that were caught at least by four observing stations with normal and BL light-trap. Those light-traps and number of observing station is marked, near the name of species, which were caught significantly more numbers of moths. The numbers of observing stations are also marked if that species were caught with the light-traps. There are given

for every species, which light-trap caught more individuals at Nagytétény in 1962 and 1963.

**Discussion**

It is characteristic of those families (*Notodontidae, Lasiocampidae* and *Geometridae*), which ones are rich in species, most of their species fly well to both normal and BL light-trap and there is no significant difference between the number of individuals caught by the different light-traps. The conclusion can be drawn that these species were caught by the normal or BL light-trap because of local influences (microclimate, vegetation, distance of living territory). It is very remarkable examining those species where there was not any significant difference in the result of all the observing stations, they were caught at Nagytétény by BL light-trap in 82%. This proportion was nearly the same in the largest families (*Noctuidae* - 83% and *Geometridae* - 79%). If the moths can choose between the two light-traps, operating not far off each other, they fly to BL light-trap.

This finding is true especially for species of family Geometridae. Where the traps have worked in isolation from each other, the species is only 29 percent chose the BL trap, however, both could see 9 percent of species fly to BL trap out and away.

Probably it is because of the shorter wavelength of light as it is known from literature (Mikkola 1972).

It is characteristic of *Sphingidae* family (nearly 70%) can be caught successfully by BL light-trap, and normal light-trap does not catch any species in numerous specimen. The species of *Notodontidae, Arctiidae* and *Noctuidae* families can be caught better by BL light-trap but the species of *Geometridae* family relatively prefer to fly to the normal light-trap. We could not find any species in the families which were caught alone by the normal or BL light-trap.

Today the establishment of Mészáros (1966) is also true because of the complicated operation and poor quality data the use of BL light-traps in numerous places is not useful for the purpose of phenological data collecting. The operating of BL light-traps is justified in the cases of "purpose light -trap" or faunistical trapping. In these cases the mentioned problems have to be solved. If the collected moths can be separated according to their dimension, the smaller bodied and breakable insects can be unhurt. To solve this problem, the literature can give correct method (Pataki 1973, Varga & Mészáros 1973).

The number of species data caught by normal and BL light-traps in each family was very different in each observing station.

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**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| SPHINGIDAE | | | | |
| 1. Herse convolvuli L. | BL | 14 | - | - |
| 2. Sphinx ligustri L. | BL | 19 | BL | N |
| 3. Hyloicus pinastri L. | BL | 11 | - | - |
| 4. Marumba quercus D. & Sch. | = | 5 | - | - |
| 5. Mimas tiliae L. | BL | 12 | BL | BL |
| 6. Smerinthus ocellata L. | BL | 21 | BL | = |
| 7. Laothoe populi L. | BL | 17 | N | = |
| 8. Macroglossum stellatarum L. | = | 5 | - | - |
| 9. Celerio euphorbiae L. | BL | 21 | BL | BL |
| 10. Pergesa elphenor L. | BL | 14 | - | - |
| 11. Pergesa porcellus L. | BL | 14 | - | BL |
| NOTODONTIDAE | | | | |
| 1. Cerura furcula Cl. | BL | 12 | BL | - |
| 2. Cerura bifida Hbn. | BL | 16 | - | BL |
| 3. Drymonia querna F. | = | 7 | - | - |
| 4. Drymonia trimacula Esp. | = | 6 | - | - |
| 5. Drymonia chaonia Hbn. | = | 4 | - | - |
| 6. Dicranura vinula L. | BL | 7 | - | - |
| 7. Pheosia tremula Cl. | BL | 14 | BL | - |
| 8. Notodonta dromedarius L. | = | 5 | - | - |
| 9. Notodonta ziczac L. | BL | 17 | - | BL |
| 10. Notodonta phoebe Sieb. | BL | 6 | - | - |
| 11. Spatalia argentina D. & Sch. | BL | 11 | - | - |
| 12. Lophopteryx camelina L. | = | 5 | - | - |
| 13. Pterostoma palpinum L. | N | 20 | N | N |
| 14. Ptilophora plumigera Esp. | = | 6 | - | BL |
| 15. Phalera bucephala L. | BL | 17 | BL | BL |
| 16. Gluphisia crenata Esp. | = | 13 | - | - |
| 17. Pygaera anastomosis L. | = | 14 | - | BL |
| 18. Pygaera curtula L. | N | 14 | BL | BL |
| 19. Pygaera pigra L. | = | 9 | - | N |
| THAUMETOPOIDAE | | | | |
| 1. Thaumetopoea processionea L. | = | 8 | BL | - |
| THYATIRIDAE | | | | |
| 1. Habrosyne pyrithoides Hufn. | = | 5 | - | - |
| 2. Polyploca ruficollis F. | = | 4 | - | - |
| 3. Tethea or F. | = | 7 | - | - |
| 4. Tethea ocularis L. | BL | 4 | - | - |
| DREPANIDAE | | | | |
| 1. Drepana falcataria L. | = | 6 | - | - |
| 2. Drepana binaria Hufn. | = | 10 | - | - |
| 3. Drepana harpagula Esp. | = | 5 | - | - |
| 4. Cilix glaucata Scop. | = | 20 | BL | N |
| SATURNIDAE | | | | |
| 1. Saturnia pyri D. & Sch. | = | 7 | BL | - |
| 2. Eudia pavonia L. | BL | 5 | BL | - |

**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| LASIOCAMPIDAE | | | | |
| 1. Poecilocampa populi L. | = | 6 | - | - |
| 2. Trichiura crataegi L. | = | 5 | - | - |
| 3. Malacosoma neustrium L. | = | 12 | - | - |
| 4. Pachygastria trifolii Esp. | = | 6 | BL | - |
| 5. Macrothylacia rubi L. | = | 11 | - | - |
| 6. Odonestis pruni L. | BL | 17 | - | - |
| 7. Epicnaptera tremulifolia L. | BL | 11 | - | - |
| 8. Gastropacha quercifolia L. | BL | 17 | BL | N |
| LYMANTRIIDAE | | | | |
| 1. Dasychira pudibunda L. | = | 7 | - | - |
| 2. Orgya antiqua L. | BL | 7 | BL | - |
| 3. Stilpnotia salicis L. | = | 7 | - | - |
| 4. Lymantria dispar L. | BL | 18 | BL | - |
| 5. Ocneria rubea F. | = | 6 | = | - |
| 6. Porthesia similis Fssl. | = | 5 | - | - |
| 7. Euproctis chrysorrhoea L. | = | 15 | N | BL |
| ARCTIIDAE | | | | |
| 1. Comacla senex Hbn. | = | 12 | - | - |
| 2. Miltochrista miniata Forst | = | 4 | - | - |
| 3. Lithosia quadra L. | = | 12 | BL | - |
| 4. Eilema pygmaeola ssp. pallifrons Z. | = | 14 | BL | = |
| 5. Eilema unita Hbn. | BL | 7 | BL | - |
| 6. Eilema complana L. | BL | 15 | BL | - |
| 7. Eilema lurideola Zinck. | = | 4 | - | - |
| 8. Eilema sororcula Hufn. | BL | 5 | - | - |
| 9. Pelosia muscerda Hufn. | = | 7 | - | - |
| 10. Pelosia obtusa H-Sch. | = | 8 | BL | - |
| 11. Ocnogyna parasita Hbn. | = | 5 | - | - |
| 12. Chelia maculosa Gern. | = | 11 | = | BL |
| 13. Phragmatobia fuliginosa L. | BL | 22 | BL | BL |
| 14. Spilosoma lubricipedum L. | = | 18 | BL | = |
| 15. Spilosoma menthastri Esp. | = | 20 | = | = |
| 16. Spilosoma urticae Esp. | = | 18 | = | - |
| 17. Hyphantria cunea Drury | = | 21 | BL | BL |
| 18. Arctinia caesarea Goeze. | = | 7 | BL | BL |
| 19. Diaphora mendica Cl. | = | 8 | - | BL |
| 20. Diacrisia sannio L. | = | 14 | - | - |
| 21. Arctia caja L. | BL | 21 | BL | BL |
| 22. Arctia villica L. | BL | 14 | N | = |
| 23. Dysauxes ancilla L. | = | 12 | - | - |
| NOLIDAE | | | | |
| 1. Roeselia albula D. & Sch. | = | 5 | - | - |
| 2. Celama centonalis Hbn. | = | 7 | - | - |
| NOCTUIDAE | | | | |
| 1. Euxoa temera Hbn. | BL | 10 | BL | - |
| 2. Euxoa obelisca D. & Sch. | BL | 11 | BL | BL |
| 3. Euxoa aquilina D. & Sch. | = | 10 | - | - |
| 4. Scotia cinerea D. & Sch. | = | 7 | = | - |

**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| 5. Scotia vestigialis Hufn. | = | 4 | - | - |
| 6. Scotia segetum D. & Sch. | BL | 22 | BL | BL |
| 7. Scotia ipsilon Hufn. | BL | 22 | BL | BL |
| 8. Scotia exclamationis L. | BL | 22 | BL | BL |
| 9. Scotia crassa Tr. | BL | 18 | BL | BL |
| 10. Ochropleura plecta L. | BL | 21 | BL | BL |
| 11. Eugnorisma depuncta L. | BL | 10 | - | - |
| 12. Rhyacia fugax Tr. | = | 5 | - | - |
| 13. Rhyacia ravida D. & Sch. | = | 8 | BL | - |
| 14. Rhyacia saucia Hbn. | BL | 11 | BL | BL |
| 15. Noctua pronuba L. | BL | 22 | BL | BL |
| 16. Noctua comes Tr. | = | 4 | - | - |
| 17. Noctua fimbriata Schreb. | BL | 14 | BL | BL |
| 18. Noctua janthina D. & Sch. | BL | 6 | BL | - |
| 19. Diarsia rubi View. | = | 6 | BL | - |
| 20. Amathes c-nigrum L. | BL | 22 | BL | BL |
| 21. Amathes triangulum L. | BL | 15 | - | BL |
| 22. Amathes xanthographa D. & Sch. | BL | 11 | BL | BL |
| 23. Cerastis rubricosa D. & Sch. | = | 9 | - | = |
| 24. Mesogona acetosellae D. & Sch. | BL | 5 | BL | - |
| 25. Discestra trifolii Hufn. | BL | 5 | BL | - |
| 26. Discestra dianthi Tausch. | = | 8 | - | BL |
| 27. Sideritis albicolon Hbn. | BL | 14 | N | BL |
| 28. Heliphobus calcatrippae View. | = | 9 | N | BL |
| 29. Polia nebulosa Hufn. | = | 4 | - | - |
| 30. Pachetra sagittigera Hufn. | = | 7 | - | BL |
| 31. Mamestra brassicae Hufn. | BL | 21 | BL | BL |
| 32. Mamestra persicariae L. | BL | 4 | - | - |
| 33. Mamestra w-latinum Hufn. | BL | 17 | = | BL |
| 34. Mamestra thalassina Hufn. | BL | 11 | BL | - |
| 35. Mamestra suasa D. & Sch. | = | 22 | BL | BL |
| 36. Mamestra oleracea L. | BL | 22 | BL | BL |
| 37. Mamestra aliena Hbn. | = | 5 | - | - |
| 38. Mamestra nana Hufn. | = | 12 | - | - |
| 39. Mamestra pisi L. | = | 10 | BL | - |
| 40. Mamestra dysodea D. & Sch. | BL | 9 | - | BL |
| 41. Harmodia cucubali D. & Sch. | BL | 11 | BL | BL |
| 42. Harmodia lepida Esp. | = | 13 | - | - |
| 43. Harmodia luteago D. & Sch. | = | 20 | N | BL |
| 44. Harmodia bicruris Hufn. | BL | 18 | BL | BL |
| 45. Tholera cespitis F. | = | 15 | BL | - |
| 46. Tholera decimalis Poda | = | 21 | BL | BL |
| 47. Xylomania conspicillaris L. | BL | 13 | - | BL |
| 48. Hyssia cavernosa Ev. | = | 10 | - | - |
| 49. Orthosia cruda D. & Sch. | BL | 10 | - | - |
| 50. Orthosia miniosa D. & Sch. | BL | 8 | - | - |
| 51. Orthosia opima Hbn. | = | 5 | - | - |
| 52. Orthosia populi Ström. | = | 4 | - | - |
| 53. Orthosia gracilis D. & Sch. | = | 10 | - | BL |

**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| 54. Orthosia stabilis D. & Sch. | BL | 9 | - | - |
| 55. Orthosia incerta Hufn. | BL | 11 | BL | - |
| 56. Orthosia munda D. & Sch. | BL | 9 | - | - |
| 57. Orthosia gothica L. | = | 11 | - | - |
| 58. Mythimna ferrago F. | BL | 7 | BL | - |
| 59. Mythimna turca L. | BL | 8 | - | - |
| 60. Mythimna albipuncta D. & Sch. | BL | 20 | BL | BL |
| 61. Mythimna pudorina D. & Sch. | = | 4 | - | - |
| 62. Mythimna vitellina Hbn. | BL | 10 | BL | - |
| 63. Mythimna pallens L. | BL | 22 | BL | BL |
| 64. Mythimna l-album L. | BL | 21 | BL | BL |
| 65. Mythimna obsoleta Hbn. | BL | 12 | BL | BL |
| 66. Cucullia lactuceae D. & Sch. | BL | 5 | - | - |
| 67. Cucullia chamomillae D. & Sch. | = | 4 | BL | - |
| 68. Cucullia umbratica L. | BL | 22 | BL | BL |
| 69. Cucullia fraudatrix Ev. | = | 6 | - | - |
| 70. Calophasia lunula Hufn. | = | 18 | BL | = |
| 71. Brachionycha sphinx Hufn. | = | 11 | - | - |
| 72. Derthisa glaucina Esp. | = | 9 | N | BL |
| 73. Derthisa trimacula D. & Sch. | BL | 11 | BL | - |
| 74. Aporophyla lutulenta D. & Sch. | = | 7 | - | - |
| 75. Allophyes oxyacanthe L. | = | 7 | BL | BL |
| 76. Lamprosticta culta D. & Sch. | BL | 4 | - | BL |
| 77. Ammoconia caecimacula D. & Sch. | BL | 10 | BL | BL |
| 78. Eupsilia transversa Hufn. | = | 13 | - | - |
| 79. Conistra erythrocephala D. & Sch. | = | 7 | - | - |
| 80. Conistra rubiginosa Scop. | = | 6 | - | - |
| 81. Conistra vaccinii L. | = | 16 | - | BL |
| 82. Agrochola helvola L. | = | 4 | - | - |
| 83. Agrochola humilis D. & Sch. | BL | 6 | - | - |
| 84. Agrochola lota Cl. | = | 9 | BL | - |
| 85. Agrochola circellaris Hufn. | = | 5 | - | - |
| 86. Agrochola litura L. | BL | 15 | BL | BL |
| 87. Agrochola lychnidis D. & Sch. | BL | 19 | BL | BL |
| 88. Atethmia xerampelina Esp. | = | 4 | BL | - |
| 89. Cirrhia gilvago Esp. | BL | 4 | - | - |
| 90. Cirrhia ocellaris Bkh. | = | 8 | BL | BL |
| 91. Craniophora ligustri D. & Sch. | BL | 10 | - | - |
| 92. Apatele rumicis L. | BL | 21 | BL | BL |
| 93. Apatele psi L. | = | 7 | - | BL |
| 94. Apatele tridens D. & Sch. | BL | 16 | BL | BL |
| 95. Apatele aceris L. | BL | 4 | - | BL |
| 96. Apatele megacephala D. & Sch. | BL | 20 | BL | BL |
| 97. Symira albovenosa Goeze. | = | 10 | - | N |
| 98. Symira nervosa D. & Sch. | = | 7 | - | - |
| 99. Oxycesta geographica F. | N | 4 | N | N |
| 100. Cryphia simulatricula Gn. | = | 9 | - | - |
| 101. Cryphia raptricula D. & Sch. | BL | 10 | - | - |
| 102. Cryphia algae F. | BL | 4 | - | - |

**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in Hungary

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| 103. Amphipyra pyramidea L. | BL | 5 | - | BL |
| 104. Amphipyra livida D. & Sch. | = | 8 | BL | BL |
| 105. Amphipyra tragopoginis L. | BL | 17 | BL | - |
| 106. Dypterygia scabriuscula L. | = | 13 | BL | - |
| 107. Rusina tenebrosa Hbn. | = | 9 | - | - |
| 108. Euplexia lucipara L. | = | 7 | - | - |
| 109. Apamea monoglypha Hufn. | BL | 13 | BL | = |
| 110. Apamea sublutris Esp. | = | 5 | N | - |
| 111. Apamea anceps D. & Sch. | BL | 15 | - | - |
| 112. Apamea sordens Hufn. | = | 16 | N | BL |
| 113. Apamea secalis L. | BL | 7 | - | - |
| 114. Oligia strigilis L. | BL | 17 | N | BL |
| 115. Oligia latruncula D. & Sch. | = | 19 | N | BL |
| 116. Mesoligia furuncula D. & Sch. | = | 9 | BL | - |
| 117. Luperina testacea D. & Sch. | = | 22 | BL | BL |
| 118. Gortyna flavago D. & Sch. | = | 9 | - | - |
| 119. Trachea atriplicis L. | = | 12 | - | - |
| 120. Phlogophora meticulosa L. | BL | 12 | BL | - |
| 121. Hydraecia micacea Esp. | = | 5 | - | BL |
| 122. Callogonia virgo Tr. | = | 13 | - | - |
| 123. Actinotia polyodon Cl. | = | 5 | - | - |
| 124. Laphygua exigua Hbn. | BL | 12 | BL | - |
| 125. Laphygua morpheus Hufn. | = | 17 | BL | BL |
| 126. Caradrina kadenii Fr. | BL | 8 | - | BL |
| 127. Caradrina clavipalpis Scop. | BL | 21 | BL | BL |
| 128. Acosmetia caliginosa Hbn. | N | 10 | N | BL |
| 129. Athetis gluteosa Tr. | = | 19 | BL | BL |
| 130. Athetis furvula Hbn. | = | 11 | - | - |
| 131. Athetis lepigone Mschl. | = | 20 | BL | BL |
| 132. Hoplodrina alsines Brahm. | BL | 17 | - | BL |
| 133. Hoplodrina blanda D. & Sch. | BL | 14 | BL | BL |
| 134. Hoplodrina ambigua D. & Sch. | BL | 19 | BL | BL |
| 135. Hoplodrina respersa D. & Sch. | = | 4 | - | - |
| 136. Meristis trigrammica Hufn. | = | 16 | - | BL |
| 137. Cosmia pyralina D. & Sch. | = | 4 | - | - |
| 138. Cosmia affinis L. | BL | 7 | - | - |
| 139. Cosmia trapezina L. | = | 13 | BL | - |
| 140. Rhizedra lutosa Hbn. | BL | 18 | BL | BL |
| 141. Nonagria typhiae Thnbg. | = | 6 | BL | - |
| 142. Arenostola pygmina Haw. | = | 10 | - | BL |
| 143. Arenostola fluxa Hbn. | = | 9 | BL | - |
| 144. Archanara sparganii Esp. | = | 8 | - | - |
| 145. Archanara geminipuncta Haw. | = | 5 | BL | BL |
| 146. Archanara dissoluta Tr. | = | 4 | - | - |
| 147. Archanara cannae O. | = | 7 | - | - |
| 148. Chilodes maritima Tausch. | = | 7 | BL | BL |
| 149. Calamia tridens Hufn. | = | 13 | = | BL |
| 150. Aegle koekeritziana Hbn. | = | 9 | N | N |
| 151. Agrotis venustula Hbn. | = | 7 | - | - |

**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in Hungary

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| 152. Chloridea maritima Grsl. | BL | 22 | BL | BL |
| 153. Chloridea viriplaca Hufn. | BL | 21 | BL | BL |
| 154. Chloridea scutosa D. & Sch. | = | 5 | - | - |
| 155. Pyrrhia umbra Hufn. | = | 15 | - | BL |
| 156. Pyrrhia purpurina D. & Sch. | BL | 18 | BL | BL |
| 157. Chariclea delphinii L. | BL | 19 | BL | BL |
| 158. Axylia putris L. | BL | 21 | BL | BL |
| 159. Eublemma arcuinna Hbn. | = | 4 | BL | BL |
| 160. Porphyrinia respersa Hbn. | BL | 8 | - | N |
| 161. Lithacodia deceptoria Scop. | = | 4 | - | - |
| 162. Jaspidia pygarga Hufn. | = | 9 | - | - |
| 163. Eustrotia uncula Cl. | = | 13 | - | - |
| 164. Eustrotia olivana D. & Sch. | = | 11 | - | - |
| 165. Eustrotia candidula D. & Sch. | = | 21 | BL | BL |
| 166. Erastria trabealis Scop. | = | 22 | BL | BL |
| 167. Tarache lucida Hufn. | BL | 22 | BL | BL |
| 168. Tarache luctuosa Esp. | = | 22 | BL | BL |
| 169. Nycteola asiatica Krul. | BL | 15 | BL | - |
| 170. Earias chlorana L. | = | 14 | BL | BL |
| 171. Earias vernana Hbn. | = | 11 | BL | BL |
| 172. Bena prasinana L. | BL | 15 | - | BL |
| 173. Colocasia coryli L. | = | 10 | - | - |
| 174. Episema coeruleocephala L. | = | 15 | - | - |
| 175. Chrysaspidia festucae L. | BL | 12 | - | - |
| 176. Macdunnoughia confusa Steph. | = | 21 | BL | BL |
| 177. Autographa gamma L. | BL | 21 | BL | BL |
| 178. Plusia chrysitis L. | BL | 21 | BL | N |
| 179. Abrostola triplasia L. | = | 10 | - | - |
| 180. Abrostola trigemina Werb. | = | 10 | - | BL |
| 181. Catocala elocata Esp. | BL | 10 | BL | BL |
| 182. Gonospileia glyphica L. | = | 14 | BL | N |
| 183. Scoliopteryx libatrix L. | = | 11 | - | N |
| 184. Lygephila craceae D. & Sch. | BL | 7 | - | BL |
| 185. Aedia funesta Esp. | BL | 20 | N | BL |
| 186. Colobochyla salicalis D. & Sch. | = | 7 | - | - |
| 187. Prothymia viridaria Cl. | = | 9 | BL | - |
| 188. Rivula sericealis Scop. | = | 21 | BL | N |
| 189. Zanclognatha lunalis Scop. | N | 7 | - | - |
| 190. Zanclognatha tarsipennalis Tr. | = | 5 | - | - |
| 191. Zanclognatha tarsicrinalis Knoch. | = | 8 | N | - |
| 192. Herminia tentacularia L. | = | 4 | - | - |
| 193. Simplicia rectalis Ev. | = | 6 | BL | - |
| 194. Paracolax glaucinalis D. & Sch. | = | 11 | - | - |
| 195. Schrankia costaestrigilis Steph. | N | 5 | - | - |
| 196. Hypena proboscidalis L. | = | 4 | - | - |
| 197. Hypena rostralis L. | = | 12 | N | BL |
| GEOMETRIDAE | | | | |
| 1. Alsophila aescularia D. & Sch. | = | 4 | - | - |
| 2. Chlorissa viridata L. | N | 20 | N | N |

**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in Hungary

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| 3. Chlorissa cloraria Hbn. | = | 6 | - | - |
| 4. Chlorissa pulmentaria Gn. | N | 9 | - | = |
| 5. Euchloris smaragdaria F. | = | 15 | - | - |
| 6. Thalera fimbrialis Scop. | = | 16 | - | - |
| 7. Hemistola chrysoprasaria Esp. | = | 10 | - | - |
| 8. Scopula rufaria Hbn. | = | 6 | N | = |
| 9. Scopula serpentata Hufn. | = | 5 | - | - |
| 10. Scopula aureolaria D. & Sch. | BL | 4 | - | - |
| 11. Scopula muricata Hufn. | = | 8 | - | - |
| 12. Scopula rusticata D. & Sch. | = | 17 | BL | - |
| 13. Scopula obsoletaria Hbn. | N | 4 | - | - |
| 14. Scopula fuscovenosa Goeze. | = | 12 | - | BL |
| 15. Scopula humiliata Hufn. | N | 12 | N | N |
| 16. Scopula seriata Schrk. | = | 5 | BL | - |
| 17. Scopula politata Hbn. | N | 5 | - | - |
| 18. Scopula dimidiata Hufn. | N | 17 | - | N |
| 19. Scopula nitidata H.-Sch. | = | 4 | - | BL |
| 20. Scopula aversata L. | = | 16 | - | BL |
| 21. Scopula degeneraria Hbn. | = | 7 | BL | - |
| 22. Scopula inorata Haw. | = | 10 | BL | - |
| 23. Scopula immorata L. | = | 17 | N | BL |
| 24. Scopula corrivalaria Kretschm. | = | 5 | - | - |
| 25. Scopula nigropunctata Gze. | = | 4 | - | - |
| 26. Scopula virgulata D. & Sch. | N | 20 | BL | N |
| 27. Scopula ornata Scop. | N | 11 | - | N |
| 28. Scopula rubiginata Hufn. | = | 19 | BL | N |
| 29. Scopula marginepunctata Gze. | = | 18 | BL | N |
| 30. Scopula immutata L. | N | 17 | BL | N |
| 31. Scopula flaccidaria Z. | = | 14 | - | N |
| 32. Scopula incanata L. | = | 7 | - | - |
| 33. Rhodostrophia vibicaria Cl. | = | 16 | BL | BL |
| 34. Cyclophora annulata Schlze. | = | 15 | BL | BL |
| 35. Cyclophora ruficiliaria H.-Sch. | = | 4 | - | - |
| 36. Cyclophora punctaria L. | = | 14 | - | - |
| 37. Cyclophora trilinearia Hbn. | BL | 8 | - | - |
| 38. Calothysanis amataria L. | N | 22 | BL | N |
| 39. Lythria purpuraria L. | = | 15 | BL | BL |
| 40. Mezotype virgata Hufn. | = | 7 | BL | - |
| 41. Lithostege farinata Hufn. | = | 19 | N | BL |
| 42. Lithostege asinata F. | = | 11 | BL | - |
| 43. Anaitis plagiata L. | = | 12 | BL | - |
| 44. Operophthera brumata L. | N | 11 | - | - |
| 45. Philereme vetulata D. & Sch. | = | 9 | - | BL |
| 46. Lygris pyraliata D. & Sch. | = | 4 | - | - |
| 47. Xanthorrhoe fluctuata L. | = | 20 | BL | BL |
| 48. Xanthorrhoe spadicearia D. & Sch. | = | 4 | - | - |
| 49. Xanthorrhoe ferrugata Cl. | N | 16 | - | N |
| 50. Orthonama vittata Bkh. | = | 7 | - | - |
| 51. Nycterosea obstipata F. | = | 16 | BL | = |

**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in Hungary

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| 52. Euphya cuculata Hufn. | = | 4 | - | - |
| 53. Euphya rubidata D. & Sch. | N | 6 | N | - |
| 54. Euphya polygrammata Bkh. | = | 7 | - | - |
| 55. Epirrhoe alternata Müll. | = | 15 | BL | - |
| 56. Epirrhoe galiata D. & Sch. | = | 5 | - | - |
| 57. Pelurga comitata L. | = | 13 | BL | N |
| 58. Perizoma alchemillata L. | BL | 10 | - | N |
| 59. Eupithecia linariata F. | = | 14 | = | N |
| 60. Eupithecia oblongata Tnbg. | = | 22 | BL | BL |
| 61. Eupithecia vulgata Hw. | = | 7 | - | - |
| 62. Eupithecia millefoliata Rössl. | N | 8 | - | - |
| 63. Eupithecia subnotata Hbn. | = | 12 | BL | BL |
| 64. Eupithecia innotata Hufn. | = | 4 | BL | - |
| 65. Gymnoscelis pumilata Hbn. | = | 5 | - | BL |
| 66. Chloroclystis rectangulata L. | = | 5 | - | - |
| 67. Abraxas grossulariata L. | = | 5 | - | - |
| 68. Lomaspilis marginata L. | = | 11 | - | - |
| 69. Ligdia adustata D. & Sch. | = | 15 | - | BL |
| 70. Bapta temerata D. & Sch. | = | 4 | - | - |
| 71. Lomographa dilectaria Hbn. | = | 9 | - | = |
| 72. Cabera pusaria L. | = | 10 | - | - |
| 73. Cabera exanthemata Scop. | = | 15 | - | BL |
| 74. Ennomos autumnaria Wernbg. | = | 16 | BL | = |
| 75. Ennomos fuscantaria Haw. | BL | 11 | - | - |
| 76. Ennomos tiliaria Hbn. | BL | 12 | - | - |
| 77. Selenia lunaria D. & Sch. | = | 16 | BL | N |
| 78. Artiora evonymaria D. & Sch. | N | 4 | - | N |
| 79. Angerona prunaria L. | = | 9 | - | - |
| 80. Epione repandaria Hufn. | = | 7 | - | - |
| 81. Therapis flavicaria D. & Sch. | N | 5 | - | - |
| 82. Crocallis elinguaria L. | = | 5 | BL | - |
| 83. Elicrinia trinotata Metzn. | = | 6 | - | - |
| 84. Colotois pennaria L. | = | 8 | - | - |
| 85. Macaria alternaria Hbn. | = | 17 | - | = |
| 86. Chiasmia clathrata L. | = | 22 | BL | BL |
| 87. Chiasmia glarearia Brahm. | = | 14 | BL | BL |
| 88. Diastictis artesiaria D. & Sch. | = | 6 | - | - |
| 89. Tephrina murinaria D. & Sch. | = | 11 | BL | BL |
| 90. Tephrina arenacearia D. & Sch. | = | 22 | BL | BL |
| 91. Narraga tessularia Metzn. | = | 6 | - | - |
| 92. Erannis bajaria D. & Sch. | = | 7 | - | - |
| 93. Erannis aurantiaria Hbn. | = | 20 | N | BL |
| 94. Erannis defoliaria Cl. | = | 7 | - | BL |
| 95. Biston betularius L. | BL | 11 | BL | - |
| 96. Peribatodes gemmaria Brahm. | = | 13 | BL | - |
| 97. Cleora cinctaria D. & Sch. | = | 6 | - | - |
| 98. Boarmia danieli Whrli. | = | 7 | - | - |
| 99. Boarmia punctinalis Scop. | = | 12 | - | N |
| 100. Lycia hirtaria Cl. | = | 9 | - | BL |

**Table 2.** Macrolepidoptera species collected in numerous samples by normal and BL light-trap network in Hungary

| *Families and species* | *All light-traps* | | *Nagytétény* | |
|---|---|---|---|---|
| | *BL or Normal* | *Number of traps* | *1962 BL or N* | *1963 BL or N* |
| 101. Synopsia sociaria Hbn. | = | 5 | - | - |
| 102. Ascotis selenaria D. & Sch. | = | 21 | BL | BL |
| 103. Ectropis bistortata Gze. | N | 20 | BL | = |
| 104. Ematurga atomaria L. | = | 17 | - | BL |
| 105. Aethalura punctulata D. & Sch. | = | 5 | - | - |
| 106. Bupalus piniarius L. | BL | 4 | - | - |

**Fig. 1.** *Synopsia sociaria* Hbn.

**Fig. 2.** *Ascotis selenaria* D. & Sch.

**Fig. 3.** *Aethalura punctulata* D. & Sch.

**Fig. 4.** *Bupalus piniarius* L.