

ARTUR CHRZANOWSKI¹, ROBERT KUŹMIŃSKI¹, ANDRZEJ ŁABĘDZKI¹, ANDRZEJ MAZUR¹,
PAWEŁ RUTKOWSKI²

¹Department of Forest Entomology
Poznań University of Life Sciences

²Department of Silviculture
Poznań University of Life Sciences

OCCURRENCE OF *ERIOGASTER CATAX* (LINNAEUS, 1758) (LASIOCAMPIDAE, LEPIDOPTERA) AND THE PROPOSED PROTECTIVE ACTIONS ON THE POLISH TERRITORY*

WYSTĘPOWANIE *ERIOGASTER CATAX* (LINNAEUS, 1758)
(LASIOCAMPIDAE, LEPIDOPTERA) ORAZ PROPOZYCJA
POSTĘPOWANIA OCHRONNEGO NA TERENIE POLSKI

Summary. The study presents the location of *Eriogaster catax* in Poland. Research from this point of view was conducted in 2006-2007. As a result of analysis of this position, it was found that the main host plant of *E. catax* – *Prunus spinosa* is over 50% refugia. It was not stated that any other tree species were host plants. For the most appropriate habitats of the species refugia, were considered those located in habitats of fresh and fresh mixed sites. The most important threats to species and propositions of methods of protection of sites on Polish territory have been presented.

Key words: *Eriogaster catax*, Nature 2000, the deployment in Poland, safeguard proceedings

Introduction

During the past decade the policy of protecting rare and unique species of plants and animals in Europe has been focused on the creation of special areas functioning under one general name of “Nature 2000 Program”. In 2006-2007 an inventory of wildlife habitat was conducted on the Polish territory, which aim was to investigate the wealth

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of valuable items which are in focus of the European Union. In doing so, foresters have participated with the help of naturalists and scientists. As a result of a two-year study a very large amount of data that are currently still being analysed was received. One of the major consequences of this inventory was the development of actions aiming at improving the living conditions and preserving the elements of nature regarded as particularly important for future generations.

Eriogaster catax is a very interesting species of moths from the Lasiocampidae family. Although it has the characteristics of an eurybiont it is an endangered species. In no country of the European Union it is common and it appears within very specific places. In Poland it is possible to distinguish one larger centre in the Lower Silesia and four small ones, distant from each other.

Biology of the species on Polish territory

Imago *E. catax* occurs in the summer-autumn period roughly from mid-September to mid-October. The female lays eggs on the sprouts of various species of trees and shrubs. Egg deposits are covered with hairs and well camouflaged. Wintering phase are the eggs. In spring the caterpillars eat their way out of the eggs and feed on the nests on leaves of various species of deciduous trees and shrubs. Larvae are clearly characterised by polyphagie. Depending on the availability of food in Poland, the larvae can feed on hawthorn (*Crataegus* spp.), plum-tree (*Prunus* spp., especially *Prunus spinosa* L.), birch (*Betula pendula* L.) (BUSZKO 1997). In addition, juvenile larvae of *E. catax* in Spain prey on field elm (*Ulmus minor* Mill.) (PÉREZ DE-GREGORIO et AL. 1992). In France, they are to be found on willows (*Salix* spp.), alders (*Alnus* spp.), pears (*Pyrus* spp.) and they were noticed on barberry (*Berberis* spp.) (www.centre.ecologie.gouv.fr/Natura2000/). In Italy, the caterpillars feed on the leaves of poplars (*Populus* spp.) (www.sibillini.net/il_parco/siti_natura_2000/specie/specie_eriogaster.html). The larvae feed for about mid-June, then they pupate in a cocoon. The generation is, therefore, annual. According to the literature, *E. catax* lives in well sunlit, southern exhibitions of forest extremities and trees on the southern and south-western slopes of hills, rivers, ravines, thickets of forest edges, at roadside stands and tree restorations (OLEKSA 2002, 2004). Suitable habitats from Nature 2000 lists are mostly dry grasslands (*Festuco-Brometea*) (code 6210) and southern exhibitions of thermophilous oak forests (code 9010) (BUSZKO 2004).

Material and methods

The paper uses data obtained from the inventory of natural habitats and of wild fauna and flora (according to the Habitats Directive). The inventory was conducted in forest areas managed by the State Forests National Forest Holding during the period of 2006-2007 (Decision No. 61 of the Director General of the State Forests of 25.07.2006 – DECYZJA... 2006). Positions of the animal species demonstrated during the inventory have been assigned to the sub-units (excretion). This method allowed to obtain a precise

characterisation of habitat conditions and stands of these species. The next step was to analyse the preferences of the protected species in relation to the habitat conditions. The balance of the biology of the species with the approved forest management plan allows the development of the concept of conservation of the species and the identification of potential threats from forest management.

The study was conducted under the theme commissioned by the General Directorate of State Forests.

Results and discussion

As a result of the inventory work carried out by the State Forests 156 positions of *E. catax* were described (Fig. 1). Figure 2 presents the distribution of the state of the known positions at the time of Polish accession to the European Union.



Fig. 1. Positions of *Eriogaster catax* L. known from the forest inventory from years 2006-2007

Rys. 1. Stanowiska *Eriogaster catax* L. znane z inwentaryzacji leśnej z lat 2006-2007

The information on the biotopes was passed as a result of the detailed analysis in which close to or directly in them different stages of moth's growth were observed. The places located in the Wrocław Regional Directorate of State Forests (RDSF) (126 positions), Krosno RDSF (26), Toruń RDSF (3) and Białystok RDSF (1) were analysed in detail.



Fig. 2. Positions of *Eriogaster catax* L. on the basis of the “Polish red book of animals” (OLEKSA 2004)
 Rys. 2. Stanowiska *Eriogaster catax* L. na podstawie „Polskiej czerwonej księgi zwierząt” (OLEKSA 2004)

The biotope, where *E. catax* was found as most frequently occurring can be described as hawthorn scrubland at the forest edge or along the forest (Wrocław RDSF). On the Krosno RDSF area moth positions are described from sites designated as meadows. Implicitly, it can be assumed that those are the areas of mid-field shelterbelts. In Białystok RDSF *E. catax* was found on the marshy banks of the forest which is a meadow of alluvial forests and marshes. However, there is no information about the vegetation growing on this piece of land. Other refugia of *E. catax* were described as the sunny slopes of the valley of the Vistula with the blackthorns and hawthorns (Toruń RDSF) and periodical shrub lands on railway embankments. It turned out that the main host of vegetation on Polish territory is plum sloe (*Prunus spinosa*) – 50% of confirmed host plants. About 20% of the positions remained unidentified when it comes to host plants. The rest consisting of about 30% were woodlots Krosno RDFS, which as mentioned above, can be associated with blackthorn and hawthorn scrubs. A big surprise is that no refugium has been revealed, in which *E. catax* would occur on woody plants (*Populus*, *Betula*, *Quercus*, *Alnus*, etc.).

While analysing the data presented in Figure 3 attention should be paid to the considerable share of coniferous habitats, which provide refugia of *E. catax*. These are the data for the positions of moth found in Wrocław RDFS. However, those places should be seen as not necessarily appropriate, taking into account the fact that most *E. catax* were found on the edges of stands, where not always the same conditions prevail for the

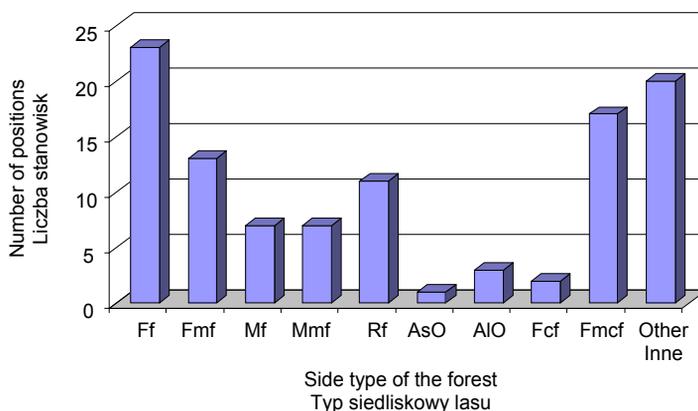


Fig. 3. Identified refugia of *Eriogaster catax* L. on the background of habitats of State Forests in years 2006-2007; Ff – fresh forest, Fmf – fresh mixed forest, Mf – moist forest, Mmf – moist mixed forest, Rf – riparian forest, AsO – ash oles, AIO – alder oles, Fcf – fresh coniferous forest, Fmcf – fresh mixed coniferous forest

Rys. 3. Rozpoznane refugia *Eriogaster catax* L. na tle siedlisk Lasów Państwowych w latach 2006-2007; Ff – las świeży, Fmf – las mieszany świeży, Mf – las wilgotny, Mmf – las mieszany wilgotny, Rf – las łęgowy, AsO – ols jesionowy, AIO – ols, Fcf – bór świeży, Fmcf – bór mieszany świeży

development of vegetation within the forest stand state, for which the forest site type is given. In case of the group named “other” in the absence of data, it was not possible to describe the habitats. Knowing the preferred habitats of the species it can be considered that the most suitable refugia are located in the habitats of fresh and mixed fresh sides.

The identified positions of *E. catax* in Poland indicate a very narrow group of host plants. Comparing with the data from the foreign literature it is highly puzzling why this is happening. The current state of research in no way gives the possibility of other interpretation of the results. One can reflect on whether it is a normal occurrence on the Polish territory known for generations, or whether it is the result of ongoing changes in caterpillars’ nourishment, guiding the species to being stenobionts and thus to an increased risk of extinction? Maybe too strong dispersion of the positions in Poland and Europe is due to other reasons (great pressure from predators, parasitoids, and loss of ecological corridors for this species).

In order to stop the threats for the species, several lines of protective actions have been developed.

First, the diagnosis of key threats to the moth habitat was conducted, and those are:

- complete cutting of vegetation near ditches during drainage,
- cutting out mid-field and roadside trees and bushes in order to make arable lands productive,
- burning down of vegetation on slopes, embankments and meadows,
- chemical treatment against plants and animals in fields,

- afforestation of locations in which the insect develops by damaging pre-existing vegetation (edafons, trees and bushes),
- chemical treatment combating harmful insects carried out directly at the junction between forest–refugium.

Secondly, procedures aimed at protecting refugia have been proposed:

- maintenance of bushes on the banks of the tree stands with simultaneous promotion of host insect species (i.e. removal of plants limiting the growth of host plants, planting crops in the event of their poor condition or disappearance),
- establishment of a new generation of trees in and near refugia, with particular interest to take account of species such as biocenotic hawthorns, plums, especially on the exposed edges of the warm tree stands,
- nurturing trees and running with ruthless felling cuts, leaving in biogroups the vegetation eaten by host caterpillars,
- education of owners and lessees of meadows and pastures, on which positions of *E. catax* are found, in terms of how to conduct agricultural activities to preserve and not to destroy the refugia species, with particular emphasis on compliance with the ban on grass burning,
- maintenance of chemical treatment to combat forest insects including *E. catax* refugia areas on condition that the following will be applied:
 - from September till the end of the first decade of November 500-meter buffer zone,
 - from the second decade of November till the end of August 100-meter buffer zone.

In the case of using the bacterial preparation to forest protection from July to August, the buffer zones do not need apply.

Conclusions

The best way to effectively protect the existing places of development of the species would be to create earmarked fund subsidies for selected species of insects, as it takes place with respect to certain birds and plants in the EU's environmental programs. Measurable benefits to the owners of forests and fields would be the best motivation for the implementation of protective programs for these insects.

References

- BUSZKO J., 1997. Atlas motyli Polski. Część II. Przędki, zawisaki, niedźwiedziówki (Lasiocampidae, Endromididae, Lemoniidae, Saturniidae, Sphingidae, Notodontidae, Thaumetopoeidae, Lymantriidae, Arctiidae). Grupa Image, Warszawa.
- BUSZKO J., 2004. Barczatka katax. In: Poradniki ochrony siedlisk i gatunków Natura 2000 – podręcznik metodyczny. T. 6. Gatunki zwierząt (z wyjątkiem ptaków). Eds. P. Adamski, R. Bartel, A. Bereszyński, A. Kepel, Z. Witkowski. Ministerstwo Środowiska, Warszawa: 47-48.

Chrzanowski A., Kuźmiński R., Łabędzki A., Mazur A., Rutkowski P., 2013. Occurrence of *Eriogaster catax* (Linnaeus, 1758) (Lasiocampidae, Lepidoptera) and the proposed protective actions on the Polish territory. *Nauka Przyr. Technol.* 7, 2, #24.

DECYZJA nr 61 dyrektora generalnego Lasów Państwowych z 25 lipca 2006 r. w sprawie przeprowadzenia w roku 2006 i 2007 powszechnej inwentaryzacji siedlisk przyrodniczych oraz dzikiej fauny i flory, o których mowa w dyrektywach Rady Europejskiej nr 92/43/EWG z 21 maja 1992 r. w sprawie ochrony siedlisk przyrodniczych oraz dzikiej fauny i flory oraz 92/62/WE z 27 października 1997 r. w sprawie dostosowania do postępu naukowo-technicznego dyrektywy 93/43/EWG w sprawie ochrony siedlisk przyrodniczych oraz dzikiej fauny i flory, a także uzupełnienia inwentaryzacji bociana czarnego, orla bielika, orlika krzykliwego, puchacza, żurawia i cietrzewia. ZO-732-2-19/2006. 2006. *Biul. Inf. LP* 9: 10-12.

OLEKSA A., 2002. Występowanie *Eriogaster catax* (Linnaeus, 1758) (Lepidoptera: Lasiocampidae) w Polsce. *Przeł. Przyr.* 13, 1-2: 103-106.

OLEKSA A., 2004. *Eriogaster catax* (Linnaeus, 1758) Barczatka kataks. In: *Polska czerwona księga zwierząt. Bezkręgowce*. Eds. Z. Głowaciński, J. Nowacki. Instytut Ochrony Przyrody PAN, Kraków: 232-235.

PÉREZ DE-GREGORIO J.J., RONDÓS M., MUÑOZ J., 1992. Lepidopters interessants recollits a les comarques gironines l'any 1992. *Butll. Soc. Catalana Lepidopt.* 70: 41-42.

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Streszczenie. W pracy zaprezentowano miejsca występowania *Eriogaster catax* w Polsce. Badania pod tym kątem prowadzono w latach 2006-2007. W wyniku analiz stanowisk stwierdzono, że główną rośliną żywicielską *E. catax* jest *Prunus spinosa* – występuje na ponad 50% refugium. Nie stwierdzono, aby rośliną żywicielską były jakiegokolwiek inne gatunki drzew. Za najbardziej właściwe biotopy gatunku można uznać refugia zlokalizowane na siedliskach świeżych i mieszanych świeżych. Przedstawiono najważniejsze zagrożenia dla gatunku oraz zaproponowano metody ochrony stanowisk na terenie Polski.

Słowa kluczowe: *Eriogaster catax*, Natura 2000, rozmieszczenie w Polsce, postępowanie ochronne

Corresponding address – Adres do korespondencji:

Artur Chrzanowski, Katedra Entomologii Leśnej, Uniwersytet Przyrodniczy w Poznaniu, ul. Wojska Polskiego 71 C, 60-625 Poznań, Poland, e-mail: chartur@up.poznan.pl

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