

THE ROLE OF ANDROCONES AND PHEROMONE PRODUCTION IN MALES OF *MORPHO PELEIDES*

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The genus *Morpho* is a very common genus in butterfly houses and famous for its big size and beautiful blue wings that nicely reflects the light. There are many species known within this genus and many subspecies are described. However, not so much is known about the role of pheromones in this butterfly. Recently, androcones, organs that are likely to produce odours, are discovered in *Morpho peleides*. To identify the role of androcones of *M. peleides* males in courtship, a study began in 2011, next to Montegrotto Terme's Living Butterfly Exhibition, data have been collected about the behaviour of *M. peleides* males prior to mating. In addition, the androcones of males were removed to test the effect on mating success. Many hundreds of individuals have been marked during that period and at random times observations were carried out. The sequence of the observed behavioural acts were analysed and showed a stereotyped series of acts that differed significantly from a random sequence. The male that follows other males is more likely to succeed in mating with a female than males that are being followed by its competitors. An essential part prior to mating is pushing its head on the abdomen of the female butterfly. Often, it has been observed that this behaviour is being accompanied by showing the androcone and a clear sweet odour could be perceived by the observer. The androcones that produce the smell, are only used when one female is visited, not randomly spread in flight. It seems that the androcones function to convince a female to mate with a male, rather than as an attractant. First steps are being made with GC-MS analysis to unravel the chemical composition of the pheromone. Headspace volatile collection revealed compounds from male individuals that were absent in female samples. Experiments with androcone removal have to be extended to draw conclusions on the effect on the mating success. Furthermore, results of additional discoveries about *M. peleides* in general, will be discussed.



Рис. Морфо пелеидес (*Morpho peleides*) (фото М. Березина)
Fig. Peleides blue morpho (*M. peleides*) (photo by M. Berezin)

Реферат

РОЛЬ АНДРОКОНИЕВ И ПРОДУЦИРОВАНИЕ ФЕРОМОНОВ У САМЦОВ МОРФО (*MORPHO PELEIDES*)

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Виды бабочек из рода *Morpho* обычны для домов бабочек и известны своими размерами и отражающей свет голубой окраской крыльев. Этот род включает много видов и подвидов. Однако о значении феромонов в жизни этих бабочек известно немного. Исследования, начатые автором в 2011 г., имели целью изучение роли андрокониев у самцов *Morpho peleides*. На экспозиции живых бабочек Дома бабочек в г. Монтегротто Терме проводились наблюдения за поведением самцов *M. peleides* в период перед спариванием. При этом у части самцов андроконии удалялись. Анализ поведенче-

ских актов у самцов перед спариванием показал наличие достоверных стереотипных последовательностей. Выявлены типичные формы поведения самцов, приводящие к успешному спариванию. Показано, что сладковатый запах, продуцируемый андрокониями, возникает только при приближении самки к самцу, а не распространяется в полете случайным образом. Вероятно, функция андрокониев состоит в побуждении самки к спариванию, а не в продуцировании аттрактантов. Проводятся результаты исследования по расшифровке химического состава феромонов *M. peleides*.