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Coleoptera from the middle-upper Eocene European ambers: generic composition, zoogeography and climatic implications

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Abstract

The paper contains a review of coleopteran genera known from Baltic, Bitterfeld and Rovno amber localities. Altogether 420 genera (191 extinct and 229 extant) from 78 families are listed from these three Lagerstätten (as of 7 March 2017). The listed beetles were analyzed zoogeographically and distributional maps for 72 genera were compiled. One-quarter (56) of the genera that have survived since the Eocene have cosmopolitan ranges at present; 35 extant genera have been extripated from the Palaearctic since the Eocene. Approximately 40% of beetle genera from the middle-upper Eocene European ambers can be encountered in the wild in present-day Europe, while 5 of these genera are supposed to be European relict endemics originating in Fennosarmatia. The general similarity of the Baltic amber (*s.l.*) beetle assemblage to modern south Palaearctic fauna is the strongest, the Nearctic elements are more numerous in the middle-upper Eocene European ambers than the Oriental taxa. The simplified Mutual Climatic Range (MCR) method was used for palaeoclimate reconstruction based on fossil beetles. The coleopteran assemblage of Baltic amber is interpreted as indicative of warm temperate, humid, equable climate with reduced thermal seasonality [annual average temperatures range from +10–20˚C; mean of the coldest month temperatures around +10˚C; mean of the hottest month temperature around +20–24˚C; annual precipitation around 750–1500 mm]. The primary importance of high humidity for existence of the Eocene biota is pointed out.

Key words: Paleogene, Neogene, beetles, extant genera, range overlaps, palaeoclimate reconstruction, ecological zoogeography

Работа посвящена обзору родов жесткокрылых балтийского, биттерфельдского и ровенского янтаря. По состоянию на 7 марта 2017 года в приводимом списке жуков этих трех лагерштетов 420 родов (191 вымерший и 229 современных) из 78 семейств отряда. Указанные таксоны родового уровня проанализированы зоогеографически, для 72 из них составлены карты современных ареалов. Четверть жуков, известных из сукцинита (56 родов), в настоящее время—космополиты, 35 современных родов полностью вымерли в Палеарктическом регионе. Около 40% жуков из европейских янтарей среднего-позднего эоцена обитают в современной Европе, 5 родов—предположительно реликтовые эндемики этой территории, возникшие в Фенносарматии. Сходство фаунистического комплекса жуков сукцинита с современной фауной южной Палеарктики наиболее сильно; доля современных неарктических элементов в европейском средне- позднеэоценовом янтаре больше, нежели доля представителей Индо-Малайского региона. Проведена реконструкция палеоклимата на основании современных представителей родов жуков эоценового янтаря по упрощенной методике перекрывающихся ареалов. Состав жесткокрылых сукцинита интерпретирован как указание на умеренно-субтропический гумидный климат без выраженных сезонных перепадов температур: значение среднегодовой температуры в пределах +10–20˚C; средняя температура самого холодного месяца предположительно около +10˚C; значение температуры самого жаркого месяца приблизительно +20–24˚C; годовое количество осадков 750–1500 мм. Подчеркивается исключительное значение высокой влажности климата для существования эоценовой биоты.

Ключевые слова: палеоген, неоген, жуки, современные роды, перекрывание ареалов, реконструкция палеоклимата, экологическая зоогеография

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