3. Introduction

The Family Psychidae

This volume of the "World Catalogue of Insects" treats the family Psychidae (bagworms, case bearers, bag moths). The name-giving character of these lepidopterans is a case produced with larval silk covered with parts of higher plants, algae, lichens, stones, sand or dead insects. Depending on species, the case length varies from 4 millimetres (e.g., *Postsolenobia nanosella* Petru & Liška, 2003) to about 32 centimetres (*Oiketicus aristocosma* Lower, 1908). The entire larval development takes place inside the case, as does pupation, and for some species the adult lifespan of the wingless females remains within the pupal exuvia including oviposition.

Wing reduction in females, often together with reduction of antennae, mouthparts, legs and integumental sclerites, gives the adult a vermiform habitus called neoteny, resulting in some of the strongest sexual dimorphism known among Lepidoptera. Such reductions are known from more than half of the known species and from 9 of the 10 currently recognised psychid subfamilies, but only Oiketicinae are known to have always species with apterous females. Remarkably, female aptery is often associated with high fecundity resulting in temporally high population densities. Dispersal of those species is basically realised by larval dispersal on silk threads supported by wind. This sightless locomotion is accompanied with polyphagy of larvae, assuring food availability after landing. Indeed, most psychid species are polyphagous on green plants, fungi and / or lichens. Species of Taleporiinae and Naryciinae are mostly lichenophagous. In tropical regions, some species of Psychidae are known as serious pests of agricultural and ornamental plants (Kamarudin et al. 1994; Syed 1978).

Other life habits shared by many species include a short embryonic period, developmental synchrony, sexual segregation of pupation sites, short lifespan of adults, male-biased sex ratio, earlier emergence of females and protogyny as well as parthenogenesis (Davis 1964, Hättenschwiler 2004, Rhainds et al. 2009). One of the most peculiar life habits is parthenogenesis, known from several species of five genera in four subfamilies of the otherwise bisexual Psychidae. It is best studied in *Dahlia triquetrella* (Hübner, 1813) which is known to have a diploid bisexual form as well as diploid and a tetraploid parthenogenetic forms. The study of parthenogenesis of this species alone resulted in more than 50 publications comprising altogether over 1,000 pages (see Seiler 1961, 1967, 1972 and references cited therein). For some of the parthenogenetic psychids, parthenogenesis is not a unique condition. Bisexual populations occur in parts of the distribution area or males occur extremely rarely within otherwise parthenogenetic populations.

According to morphology based classifications, Psychidae, together with Tineidae Latreille, 1810, Acrolepiidae Heinemann, 1870, Eriocottidae Spuler, 1898, Lypusidae Heinemann, 1870 and Arrhenophanidae Walsingham, 1913 formed the Tineoidea, which were regarded as sister group to Gracillarioidea (Robinson 1988: 127). In contrast, Mutanen et al. (2010) in a molecular phylogenetic analysis discovered that Psychidae are found in a Hennigian comb composed of Eriocottidae + (Psychidae + (Tineidae + ( ... ) ), without Acrolepiidae, Lypusidae and Gracillarioidea as close relatives. In that study, Arrhenophan-’idae’ is found to be an in-group of Psychidae, but this result is based on the Oriental genus *Dysoptus* Walsingham, 1914 only. The group is known from the Neotropics and with one genus each from Australia and Southeast Asia. Davis (2003) revised the Arrhenophanidae with five genera and 26 species and stated as autapomorphy the terminal position of the female ostium at the
caudal end of the prolonged and partially separated eighth sternite. Since Davis (2003) provided a complete overview including a catalogue of Arrhenophilidae, this group is not included in this catalogue.

According to morphology, the monophyly of Psychidae is still ambiguous. So far, the presence of fused metathoracic furcal bridges is a supposed synapomorphy of psychids when including the Arrhenophilidae (Rhainds et al. 2009: 210). Otherwise, Psychidae (excluding Arrhenophilidae) are characterised by a combination of the following characters: (1) male genitalia lack gnathos or brachia, (2) male phallus surrounded by membranous manica, (3) female 7th abdominal segment with corethrogyn extremely dense, and consisting of very fine woolly hairs, (4) prothoracic tergal plate of larvae continuously expanded laterally to include prothoracic spiracles and lateral setae group; (5) crochets of larval abdominal prolegs reduced and arranged in a lateral penellipse, (6) larval labrum with 4 pairs of ventral setae, (7) anal plate of larvae with pair of campaniform sensilla on anterior region and (8) larvae construct a movable case (circular, trigonal or quadrigonal in cross section with anterior and posterior openings), and bear it till pupation (Saigusa & Sugimoto 2005: 21).

There are few fossil records of Psychidae. Two genera (Psychites Kozlov, 1989 and Sucinopsycyhe Sobczyk nom. nov.) and three species (Psychites pristinella Rebel, 1934, Sucinopsycyhe secundum Sobczyk & Kobbert comb. nov., 2009 and Sucinopsycyhe transversum Sobczyk & Kobbert comb. nov., 2009) are described from Baltic amber. An overview of Psychidae in Baltic amber is given by Sobczyk & Kobbert (2009). *Psyche pineella* Heer, 1849 is described from the Upper Miocene of Öningen (Germany).

### Data sources and arrangement of the catalogue

Main sources of global information on Psychidae are the catalogue published by Dalla Torre & Strand in 1929 and the Zoological Record from the first volume in 1862 till present. Hagen (1863) and Horn & Schenkling (1928–1929) were used to find pre-1865 works. Nye & Fletcher (1991) and the online database “Butterflies and Moths of the World, Generic Names and their Type species” (Pitkins & Jenkins 2004) were consulted for genus group names. The online version of the card index of Lepidoptera names at the Natural History Museum, London has been checked against all compiled data (Beccaloni et al. 2003).

For zoogeographic regions works basically used were Davis (1964) for the Neotropical and Nearctic regions, Sauter & Hättenschwiler (1991, 1999, 2004) for the Palaearctic region, Nielsen et al. (1996) for Australia, Dugdale (1988) for New Zealand as well as Bourgogne (many publications, see references) and Vári et al. (2002) for the Afrotropical region.

To the best of my knowledge, all taxonomic literature on Psychidae has been checked to verify the reference of original description of a given name, its original spelling, availability, homonymy, authorship, year of publication, page numbers, original rank. For every species-group name, its original combination is cited with reference of the description, type locality, and information on the type specimens. Additionally, information is given of its type locality taken from the original description and if applicable, corrected or complemented by label data of the type specimens. Attempts were made to locate the type specimens. If found, their deposition is mentioned, together with additional information on the number of type specimens, genitalia slide numbers and lost types.

All names of Psychidae published before 31 December 2010 are treated in this