

Guide to the bee flies (Diptera: Bombyliidae) of the Grand Staircase-Escalante National Monument

Proposal

Bee flies, of the family Bombyliidae, consist of a family of flies that mimic bees and other stinging insects. There are about 800 species and 62 genera of this family in North America (Hall 1981). Considerable work with this family has been done with the taxonomy of these interesting flies, but there is still much more to be done. Bombyliids are most commonly found in sandy, arid and semiarid regions where they parasitize a wide variety of other insects (Painter and Painter 1965). Utah provides a nearly ideal suite of habitats for this family and is known as being rich in flies of this species (Maughn 1935). The Grand Staircase-Escalante National Monument in southern Utah is a hot bed of bombyliid activity and diversity, although detailed counts of species have never been made there. Even a casual visitor to this area would note the diversity of these flies during hikes in the deserts and mountains there. A survey of the insects and other invertebrates of the Grand Staircase has been going on for several years under the direction of Dr. Riley Nelson and Dr. Richard Baumann, both of Brigham Young University (BYU). Dr. Nelson has considerable expertise with this group of flies and suggested that I examine their taxonomy in greater detail. They, along with their technicians found that the monument is an extremely rich area for diversity and abundance of bombyliids. Many specimens have been collected, and the appropriate taxonomic authority, Dr. Neal Evenhuis (of the Bishop Museum in Hawaii), has been contacted to help with identifications. He expressed enthusiastic interest, but was not able to devote time to the identification of these fascinating specimens. He suggested that more researchers should be trained to work with this diverse family of flies. There is currently no mechanism in place to properly identify bombyliids from the inland deserts of North America at this time. Someone needs to create identification guides and keys that will be easy to follow so that the specimens can be recognized. I can be that person.

I am a senior majoring in Conservation Biology with a Wildlife Emphasis. I am extremely interested in entomology and am planning on continuing this interest at the graduate level. I have taken two entomology courses and have worked as a research assistant identifying insects. Presently, I have an internship in an entomology lab on campus. A project like this would increase my knowledge of the field and I could focus on identification skills and learning a lot about morphology. My purpose would be to delve into the specimens and learn them sufficiently to create a key to the generic level. This key would be simple enough to allow others to identify specimens with minimal effort and would be accompanied by illustrations to important morphological features.

My goal is to create an identification guide to the Bombyliids of the Grand Staircase-Escalante National Monument, with biogeographic distributions, photographs, scanning electron micrographs, and technical drawings. I would also produce a key to the generic level in all cases and to the specific level whenever possible.

BYU has many resources that I would be able to take advantage of. The Monte L. Bean Museum on campus has an excellent collection of bombyliids, and would allow me the references I would need to learn to identify them. A computerized literature search in the Harold B. Lee Library would give me access to the literature not in personal

collection of Dr. Nelson. BYU also has an advanced microscopy lab with a scanning electron microscope, and next semester I plan on taking a class on how to use it. I would be able to use the scanning electron microscope in my study and in producing images to be used in the identification guide.

With these resources and with the help of my faculty mentor, I will be able to complete my project by 31 August 2002.

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Painter, R. H. and E. M. Painter. 1965. A catalog of the Diptera of Namerica North of Mexico. U. S. Dept. Agr., Agr. Res. Serv., Washington, D.C. 1969 pp. (Bombyliidae, pp. 407-446).

Maughn, L. 1935. A systematical and morphological study of Utah Bombyliidae, with notes on species from intermountain states. Kansas Ent. Soc. Jour. 8 (1-2): 27-80.