

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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**IN THE NAME OF GOD**

FAUNA OF THE TRIBE AGABINI OF IRAN:  
REVISION OF THE GENUS AGABUS LEACH  
(Coleoptera, Dytiscidae, Colymbetinae)

**BY**

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## ABSTRACT

### FAUNA OF THE TRIBE AGABINI OF IRAN : REVISION OF THE GENUS *AGABUS* LEACH (Coleoptera, Dytiscidae, Colymbetinae)

By

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Six species of the genus *Agabus* were identified among all the specimens of the aquatic Coleoptera collected since 1969 through February 1999 from different aquatic habitats all over Iran, in 314 out of more than 2000 collecting attempts, and which are kept in the "Insect Collection", Department of Biology, Shiraz University (CBSU). The identifications were verified by Dr. Nilsson (Sweden) and Dr. Wewalka (Austria). One new species for the Iranian fauna, namely *A. nebulosus*, is introduced. The detail of geographical and habitat distribution of the other species, which had been reported from Iran in literature (Iran, or Persia), is also worked out.

Upon the full description and detail drawings made on these species (all original for the Iranian species from the type localities mentioned for each), a revision of the genus was attempted, using

the descriptions given for the genus in some of the well-noted and relatively complete references for the Palearctic species, also by comparing the Iranian species with some of the species from other Palearctic regions available in the "Insect Collection" (CBSU). The results, showing some differences between the morphological characteristics of the Iranian species of the genus and those from other Palearctic regions, in some cases are not indicative of significant differences between them. This, of course, should not be considered as completed. Certainly further work, including observing and studying as many specimens of these species from Iran and other Palearctic regions as possible, plus using all the data (at least those published), should make the revision more conclusive.

The species were also compared with each other morphologically, and showed considerable variations in almost any parameter that was considered. In other words, they are outstandingly distinct from each other, while, at the same time, all fit, more or less, the general characteristics of the genus. It might be that these species are diverging, converging, or they belong to more than one genus. A further work in this line is also necessary and recommended, based on the result of the present work.

The sexes can be recognized externally very easily, male having pads of adhesive setae on the first three fore and mid tarsal segments, female not having. Nevertheless, several other than external morphological characteristics, distinguishing the two sexes

of the species of this genus, were also detected. Some of these are mentioned in references but some others have been recognized in this work ; they include coloration of dorsum, puncturations on dorsum, number, shape and arrangement of tibial spurs and femoral spines, size and shape of tarsal claws, and several others.

A brief look at the geographical distribution of these species in Iran showed that three species, *A. conspersus*, *A. biguttatus*, and *A. faldermanni* have representatives mostly in western provinces, along the zagross mountain range.

Also, a preliminary survey on the habitat diversity of these species has been made indicating, roughly, the habitat preferences of each species as follows :

*A. conspersus* and *A. nebulosus* prefer lentic habitats, while the other species were more collected in the lotic waters.

*A. conspersus* outnumbered other species in the number of specimens, habitats and geographical distribution, while *A. faldermanni* was present with the least number.

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## CHAPTER I

# INTRODUCTION

### 1.1 Preliminaries

Over one and a half million species of animals have been described and according to some sources it is estimated that about 3 to 10 million living species still await discovery. Each species (population) usually occurs in nature in many different forms or morphs like male and female sexes, larvae, nymphs, pupae, seasonal forms, and other phenotypes (41).

It is naturally very important to know the living organisms (species) around us, and knowing them is through the science of taxonomy. The aim of modern taxonomy, or biosystematics, is to identify, describe, and arrange organisms in proper categories; and the next step would be to understand their evolutionary histories and mechanisms (phylogeny). Earlier approaches were mainly based exclusively on a few observed characters without going into the question of intraspecific differences. In other words, taxonomy was focused on as few characters as one (diagnostic

character) in as few specimens as one. Many of the species are, therefore, known by a few, or one, character. (41).

The new systematics, or biosystematics, approaches the identification of the species in many different ways. The old concept of "morphological" species is now replaced by "biological" one, because, in addition to the morphological studies of the species, other aspects are also considered, such as ecology, behavior, life histories, embryology, anatomy, biochemistry, molecular studies, and so on. It is obvious that no one person can do all these studies on a single species, but the accumulation of different data presented by different workers about any one species would finally help to understand the status of the species, temporally and spatially. Needless to say, that the first step to undertake would be the morphological studies, taking into account as many characters as possible (numerical taxonomy). This is particularly important when the general aim of a particular study would be to work on the fauna of a group, be it local or that of the world.

The present study is part of a ground project, "Study of the fauna of the aquatic Coleoptera of Iran." The general aim of this project is to collect water beetles from different localities and habitats all over Iran, identify the species, describe them, and produce patterns of their habitat and geographical distribution.