# THE FORVM

## Comments on the Bruchine Chrysomelidae

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Although it may seem that the controversy over the relationship of the distinctive bruchines to other chrysomelids is relatively new, this is hardly the case. In early 19th Century classifications, for example, Bruchidae were included in the Rhynchophora. In 1874, Chapuis suggested they may best be treated as Phytophaga (equivalent to today Chrysomeloidea). LeConte and Hom (1883) agreed with this placement. Although Reid (1996) is correct in asserting that many authors have recognized the problem with keeping Bruchidae as a family, finding explicit statements, rather than vague (or clear) suggestions about their categorical rank, is more difficult. Böving & Craighead (1931), and Crowson (1953, 1960) doubted the verity of a family Bruchidae, but not until the study of Mann & Crowson (1981), were the Bmchinae explicitly treated as a subfamily within Chrysomelidae. Since then, this categorical rank has been supported by researchers including Chen (1985), Lawrence (1991), Lawrence & Britton (1994), and Reid (1995). Kingsolver (1995) and Verma & Saxena (1996) unintentionally solidified the case to maintain Bruchinae as a subfamily of Chrysomelidae. Kingsolver (1995) said: 1) The Bruchidae sprang from a common ancestor with Sagrinae, and 2) bruchids are relatively recently derived from this ancestor. Verma & Saxena (1996) further support this by providing a phylogeny with the Bruchinae clearly evolving from within the Chrysomelidae and as a sister group to the Sagrinae. Despite this, Mayr (1969) was used by Verma & Saxena (1996) to support the idea of Bruchinae as a family based on their ecological distinctiveness. We believe that adaptive zones or ecological distinctiveness are descriptors that may appear to be significant—when they are not—sound more significant than they actually are. We can all think of taxa that have some unusual attribute or natural history and we can all think of distantly unrelated taxa which share the same attribute or natural history.

How can it be logically demonstrated whether or not these features are necessary and sufficient for such ecological distinctiveness? Usually, the adaptive zones or ecological distinctiveness of a group of taxa grow fuzzy around the edges with time and additional knowledge of the group. An example of this is the Geadephaga versus Hydradephaga groups (Beutel, 1995). Aside from the grade/clade arguments (sufficiently discussed in Nelson, 1974), the inability to apply these descriptors consistently and the inherent variability of their significance among researchers clearly renders them useless for classification. Although we could cite any number of phylogeneticists, the principle concerning the taxonomic level of Bruchinae was addressed by Mayr, an evolutionary systematist. Mayr & Ashlock (1991:151) state, In ranking, no taxon should fall out of step with its sister groups. Reid (1995), Kingsolver (1995), and Verma & Saxena (1996) have all suggested the sister group relationship of Bruchinae to Sagrinae (either in words or illustrations). Therefore, following the argumentation of Mayr, the Bruchinae must be ranked as a subfamily, comparable to its sister taxon. Classification must follow accepted phylogeny or it is not predictive.

Since most coleoptensts agree on the close relationship of Bruchinae to Sagrinae, why maintain a classification that obscures this relationship? If a different classification is proposed, it can only be because the relationship is not accepted. In this case, it is the responsibility of that researcher to present reasons for a new hypothesis of relationships. This has not been done by any of the proponents for a family status of Bruchinae. We concur with Reid's (1996) conclusion that Kingsolver (1995) amply demonstrated the monophyly of the Bruchinae. To accept Bruchinae as a family, however, is to say that the shared, derived features it has with Sagrinae (summarized in Reid, 1995), are irrelevant. In our opinion, all available evidence continues to show Bruchinae as a subfamily of Chrysomelidae. This conclusion cannot logically be overturned by unique characters (autapomorphies), primitive characters (plesiomorphies), or ecological distinctiveness of the Bruchinae.

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*The Forvm is a place for exchange and discussion of idear related to the Chrysomeloidea. Opposing points of view are always welcome—ed.*

# To Begin Immediately: A Review of the Subgenera of *Chrysolina*

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***Chrysolina*** is one of the largest genera of the Chrysomelinae. It is distrubuted in almost all parts of Europe, Asia, Africa and North America. Some species were introduced into Australia. About 450 species of this genus are grouped in 67 subgenera. In many instances, the limits of the subgenera are questionable, and phylogenetic relationships are not clear.

At this time, I am beginning a taxonomic revision of the genus at the subgeneric level. This work will include the following items:

- systematic position of *Chrysolina* within the subtribe Chrysolinina;
- subgeneric keys and diagnoses;
- lists of species (with subspecies and synonyms);
- larvae and host plant information will be added, where available.

In order to do this work, I need to examine as many specimens of *Chrysolina* as possible. currently I have at my disposal, specimens representing 210 species from 53 subgenera. I am in particular need of specimens from Africa, India and China and would appreciate the opportunity to examine specimens from these areas.

If you have specimens available for examination, please contact me.

# Book Review

Konstantinov, A. S. and N. J. Vandenberg. 1996.

***Handbook of Palearctic Flea Beetles (Coleoptera: Chrysomelidae: Alticinae).*** Contrib. Ent. Internat. 1(3): 233-439; V. K. Gupta, ed. Associated Publishers, Gainesville, FL.

The first part of this handbook presents the most significant comprehensive key to the Palearctic flea beetle genera since Heikertinger (1941). Of the 59 recorded Palearctic genera, the 57 included are separated in a well-illustrated pictonal key. Each genus is bnefly summarized regarding its diagnosis, taxonomic derivation, number of species in the Palearctic and worldwide, geographic range, and host plants, as well as a habiatus illustration of a representative species. Four new synonymies are given and the publication date is corrected for 10 genera.

In their overview of the Palearctic flea beetle fauna, the authors in "Table 1", which is a listing of the number of species known for the 57 Palearctic genera for each zoogeographic region and a world-wide total, use the term "present" for the majority of the entries under nearctic; "present" indicating that species numbers cannot be estimated from the available literaturebut'thegenus is definitely known to occur there. However, Amett (1960), *The Beetles of the United States,* is listed under the Literature Cited section. Arnett gives reasonable species numbers for the nearctic genera.

The stated design of the handbook is to especially aid biological control workers in the identification of *Aphthona* species sought to suppress leafy spurge *(Euphorbia esula L.).* The purpose of part one, the generic key, is to allow the separation of *Aphthona* from closely allied genera. In general, this key is well written and exceptionaily well illustrated. Given the target audience, it's unfortunate that the authors occasionally use specialized terms, such as canaliculate, incrassate, callosity, shagreened, rugopunctate, and ogival, without definition or explanation (in some cases the illustration helps). The secondary character of body size used in couplet 46 to separate *Hemiphxis* (3.5-5 mm) from the remaining 13 genera (1.0-3.0 mm) which includes ***Phyllotreta*** is in error; ***Phyllotreta armoraciae*** (Koch) ranges from 2.48-3.62 mm in length.

Three minor suggestions would make the key easier to use. In couplet 38, the user is referred to illustrations located 2 pages later (43, 43) and 5 pages later (52) for (38) versus 5 pages later (52) and 7 pages before (13, 13') for (38'); itwould be much easier if these illustrations were repeated for couplet 38. Secondly, if the page number where the detailed genenc diagnosis is located was indicated where that genus keys out, one could more quickly access this additional information. Finally, the use of an arrow(s) on the illustration(s) to indicate the character(s) being used would avoid possible confusion.

The second part of this handbook is devoted to the 30 species of ***Aphthona*** found in the Palearctic and Oriental regions which are associated with ***Euphorbia,*** as well as other ***Aphthona*** which are likely to be encountered in field collections because of their ubiquitous nature; included are all species introduced into the United States for biocontrol of leafy spurge. These 30 species are presented/given in a pictonal key. The geographical scope of the key is Middle and East Europe, Caucasus, South Siberia, and Middle Asia; two suspected Chinese introductions are included.

The pictonal key is exceptionally well illustrated. Where a species keys out, a bnefbut pretinent diagnosis is given along with distribution and reference to other illustrations. The other illustrations consist of the antenna, hind tibia and tarsus, spermatheca, vaginal palpi, tignum, and penis (aedeagus) of each species. The authors make use of characteristics of the female vaginal palpi and tignum, a first-time taxonomic use of these.

Overall, this is an outstanding presentation of the material contained. The illustrations by Konstantinov are superb and make the text easy to understand and use. The authors are to be congratulated!

***—Eric H. Smith***
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