

THE NEW DISTINCTIVE CHARACTER OF *RHIZOTROGINI* LARVAES OF NORTH AFRICA (*COLEOPTERA SCARABAEIDAE, MELOLONTHINAE*)

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Abstract

The investigation concerning systematic study of Rhizotrogini (Coleoptera Scarabaeidae) of the North Africa. The occurred larva classified into new varieties on its apparent characteristic features which are anal ecusson and the position of the silk. These marker features differentiate them from European chafer with (oval) shape and the Asiatic beetle with V shape. They appear in two varieties, parenthesis () and U shaped forms. They were occurred in the (INPV, Benchergui, Ziouani Ferme-Ain smara) sections east and west Constantine in semi-arid bioclimatic period.

Keywords: White grubs, Rhizotrogini, Systematic, silks anal ecusson.

1. INTRODUCTION

The Rhizotrogini group is widely occurred in North Africa represented by 64 species belonging to Amphimallon, Berthold, (1827) *Rhizotrugus Guer* *Pseudoapterogyna Escalera*, (1914) and *Geotrogus Peyrimhoff* 1945, also he described some undifferentiated forms. They were constructing approximately 1/3 of Rhizotrogini of the world. The last two genres are endemic for the studied region (1). In North Africa, Bulk of *Rhizotrogini* species is occurred in limited geographic region and in particular biotop. They are concentrated in Algeria and well developed in the study region. Some of the known species also found in Morocco and Tunisia. They exist mainly in the Tell and high plateau, and some species also found in northern Sahara Algeria. Their geographic distribution is limited to northern region which is also including northern Sahara Algerian Peyrimhoff (1945). So far, *Rhizotrogini* species has not been recorded in northern Sahara Algeria, due to lack of published studies. Their biotop is variable including: stepic plain forests, cereal zones, rising plateau, littoral or bank sands and montains *Pseudoapterogyna editorum* Peyrimhoff (1945) species are found at 1800m high of Djurdjura mountains and *Pseudoapterogyna grossus* Peyrimhoff (1945) at 1750m high in the Azures mountains.

The Rhizotrogini of North Africa is considered as the most important enemy of different vegetation: cereals, market gardening cultures, nurseries, gardens and vineyards. *Geotrogus Guérin - Méneville* (1842) *Pseudoapterogyna Escalera* (1914) are frequently occur and harmful more than *Amphimallon Berthold* (1827). Generally biology of the group require more study and more detail work. Rhizotrogues appearance is cyclic, in some years their occurrence are very common. In other years they are rarely appearing. In some regions (France) these insects' causes great damaging that reach 50% of cereal crop. Rhizotrogini were causing great

damages in the high plateau of Algeria, especially for the 1955.

Many species of Rhizotrogini are used by entomologists (2,3,4) as main objects for their studies and observations. The hazardous specimens who concerns North Africa are those of the *Pseudoapterogyna Escalera* (1914) types and *Geotrogus Guérin-Méneville* (1842), The group is characterized by the antenna of 10 articles and the female apterism. The taxonomic characters of these specimens are feeble, made differentiation between these specimens very tricky. Thus they were formulating on five groups Peyrimhoff (1945).

The warms of different phases were brought to the Mentouri-Constantine University for their systematic study. The adults were determined; using many keys of determination (7,8, 9, 10, 11, 12, 13). The best conserved studied specimens were figured, using Zeiss camera.

The most wide spread species occurred in studied region, are *Pseudoapterogyna tusculus* *Buquet* (1840) and *Pseudoapterogyna dispar* *Buquet* (1840).

The adults of *Pseudoapterogyna tusculus* *Buquet* (1840) and *Pseudoapterogyna dispar* *Buquet*, 1840 to 15 mm long; their color is not consistent but usually they are ochre yellow in color. These two Rhizotrogues are very harmful for wheat in Constantine region.

It is very difficult to identify and distinguish between these two species confidently as did Peyrimhoff (1945); this is due to their cohesive taxonomic characters. However, they were identified correctly based on solid bases by examine the ecusson anal silks were situated on their last abdominal segment of the larvae, with the help of magnifying glass. This is because each specimen presents an anal ecusson of different form.

The identification of specimen will permit to determine the time of its feeding and the moment were it can be battled more effectively.

2. MATERIAL AND METHODS

Option of study station:

The study located between 36° 36' latitude and 6° 62' longitude, 660m high at Constantine region. Two stations were selected in order to locate reliable profiles. The first site is located in kilometer 4 (the vegetables garden protection) and the second mark is situated in Ain Samara (pot of cereals).

The studied positions were chosen adequate to the function of cultures located in the region (cultures of cereals or market-gardening). All observable lacks in the field of culture « pelages » confirm the presence of larva of Rhizotrogini.

Methodology:

Profiles of 20 to 30 cm of deep and 15cm of wide were excavating in order to find larvae of Rhizotrogues in different stages (L1, L2 and L3). Larvae collected and sealed in alcohol bottles of 60% concentration to be maintained. Each bottle was marked with date and place of collection. The actual work is taken during March, April and May 2011 with the frequency of three trips a month.

The warms of different stages were brought to the Mentouri-Constantine University in order to lead the systematic study. The adults were determined, used many keys of determination (7, 8, 9, 10, 11, 12, 13). Some specimens are photographed using Zeiss microscope.

3. RESULTS AND DISCUSSIONS

The 45 larvae recognized in the two studied stations, they are plotted in table (1). This is showing number of larvae at each station and stages during months of culmination.

Table 1: Showing number of larvae and stages during months of culmination.

Month/station	INPV			Ain Smara		
	L1	L2	L3	L1	L2	L3
Larvae stage						
March	40	30	40	60	40	10
April	40	20	10	20	10	10
May	20	40	10	30	10	10

Using anal ecusson of the larva character two new forms was distinguished.

The first form parentheses (), the silks of the last anal ecusson are disposed two half circles. They are nearly similar to specimen indicate by (5) in 1990 which concerns the *Pseudoapterogyna tusculus* Buquet (1840). The other form or the silks of the last anal ecusson are disposed the form U. This form is very specific for the second discovery which is almost similar to those suggested by the same author (5) in 1990, which are concerns *Pseudoapterogyna dispar* Buquet (1840). The presence of adults in the studied stations substantiate that

the two larvae's belong to the species (Figure 1a) and (Figure 1b).



Figure 1(a) : Pseudoapterogyna dispar Buquet, (1840)



Figure 1(b): Pseudoapterogyna tusculus Buquet, (1840) (brown in color)

The two new forms (Figure 2a and 2b) are differ from hanneton commun European with silks of the last ecusson anal of two parallel lines (16, 17, 20) (Figure 3), and those of Euroasiatic hanneton with silks of the last ecusson anal in Y form (21) (Figure 4).



Figure 2(a): Ecusson anal of the silks in form U



Figure 2 (b): Ecusson anal of the silks having the form of parentheses ()



Figure 3: The oval form of anal ecusson of the larvae of hanneton common European

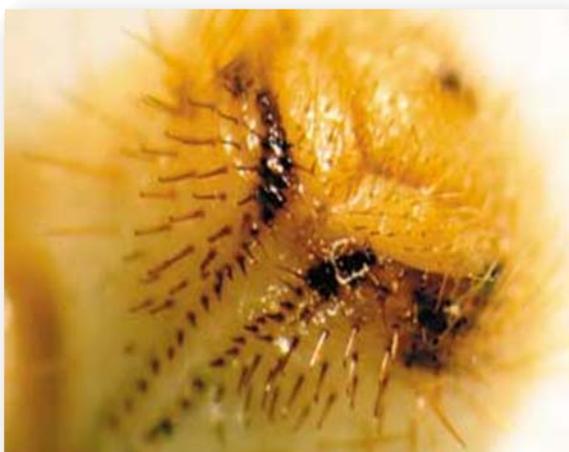


Figure 4: The form « Y » of anal ecusson of silks of Hanneton euroasiatic

The new method is used to determine the new forms of Rizotrogues. The method is more appropriate and applied instead of using morphologic character) of adults (13, 14, 15, 20, 21, 22).

The Rizotrogues with growing cycle of more than three years (1, 3, 4), are permits to protect vegetables and making the best charge of methods seeking for fighting devastators.

4. CONCLUSION

The new method is very eminent to determine new forms of disposition of silks which is in form of (brackets () and U). They are very distinctive and distinguish them from European and Asian forms and they are very useful to determine the forms of warms of Rhizotrogues. The profound study is based on the disposition of the form of silks which is contributed to differentiate Rhizotrogues species of North Africa.

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