



## An Intkey example: identification

13 September 2005

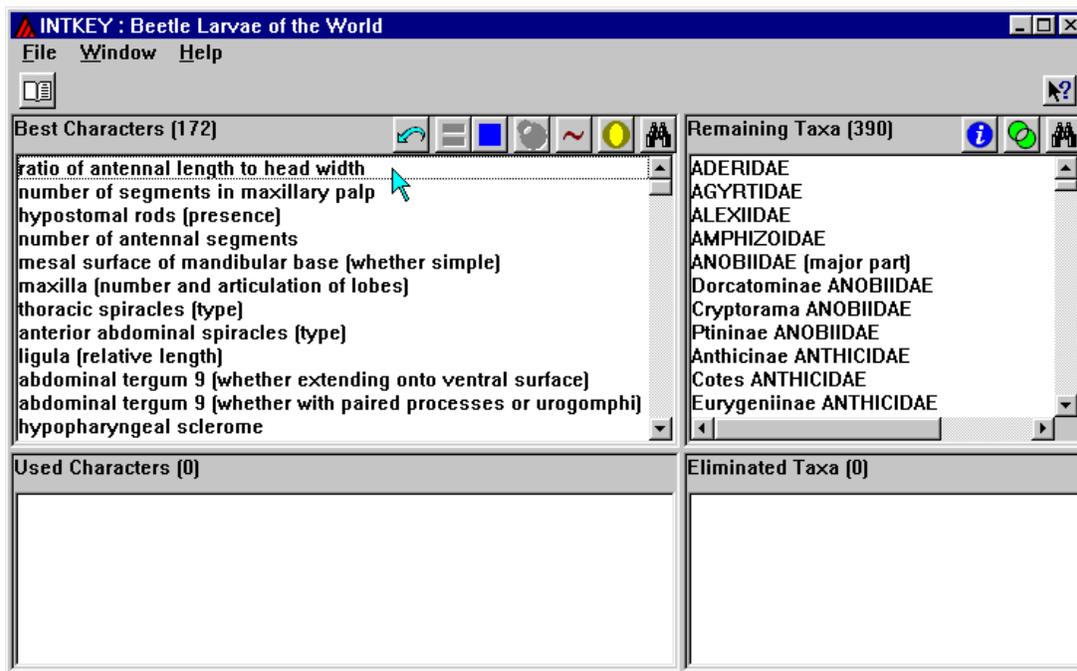
M. J. Dallwitz

This example uses the data from the CD-ROM 'Beetle Larvae of the World' (Lawrence, Hastings, Dallwitz, Paine and Zurcher 1999).

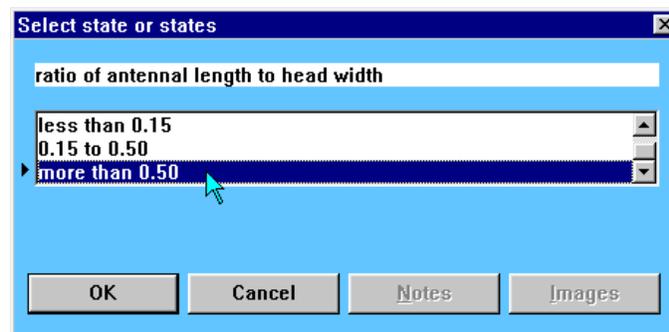
When the data are opened, the screen shown below appears. The 'Remaining Taxa' pane shows the taxa in contention at the current stage of the identification (at the start, all of them). The number of these taxa is shown in parentheses (390).

The 'Best Characters' pane shows the best characters for separating the remaining taxa, in descending order of their separating power and reliability or ease of use. The number of these characters is shown in parentheses (172). You can use any of the characters, depending on how easily and accurately you think you can apply them to the current specimen.

Click on the best character, 'ratio of antennal length to head width'.

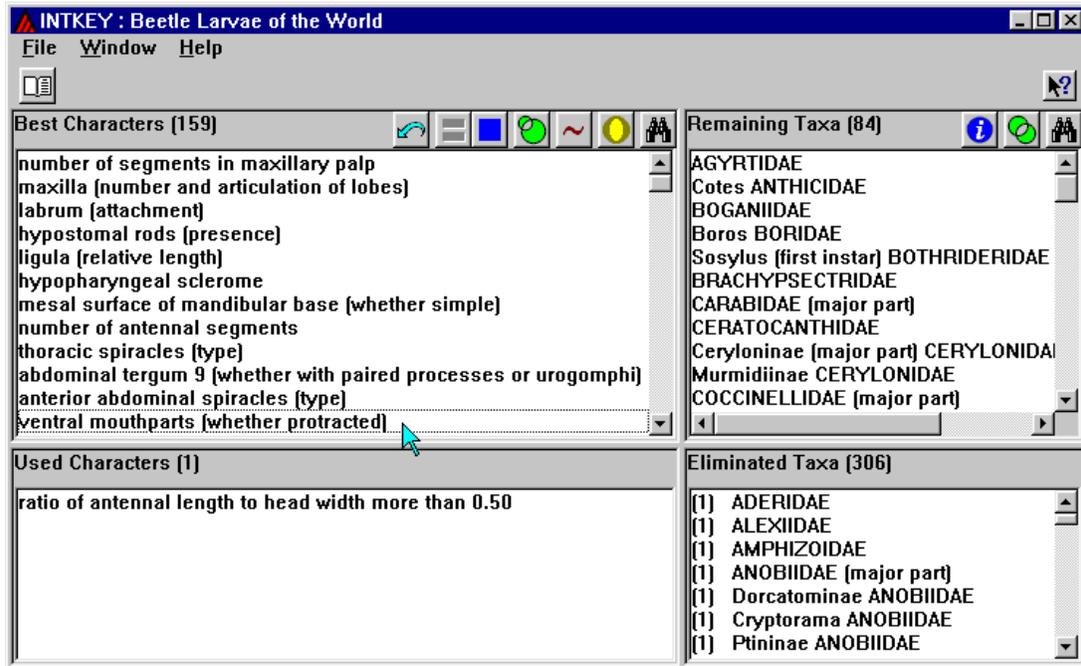


The following window appears. It shows the three states of the character. Select the last state, 'more than 0.50', by clicking on it. Then press 'OK'. (Alternatively, you can double click on the state.)

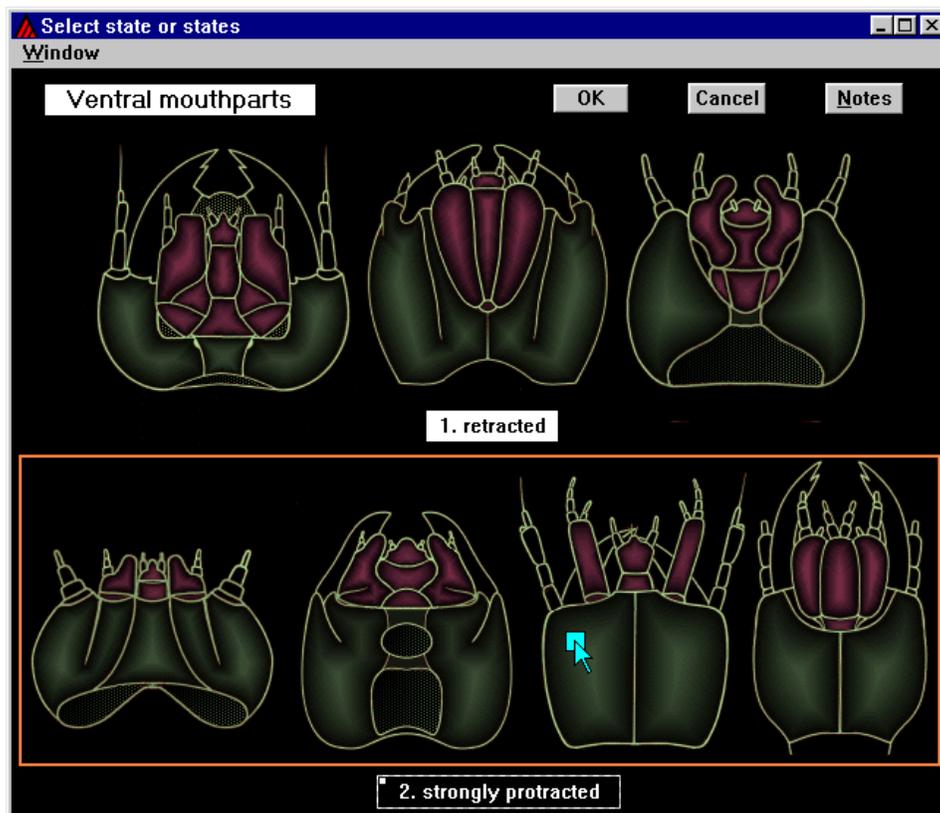


The 'Used Characters' pane now shows the information that has been entered about the specimen. The 'Remaining Taxa' and 'Eliminated Taxa' panes show respectively the taxa that are consistent with this information, and those that are inconsistent with it. In the 'Eliminated Taxa' pane, the number in parentheses next to each name is the number of differences between that taxon and the specimen. The best characters for separating the remaining taxa are automatically recalculated.

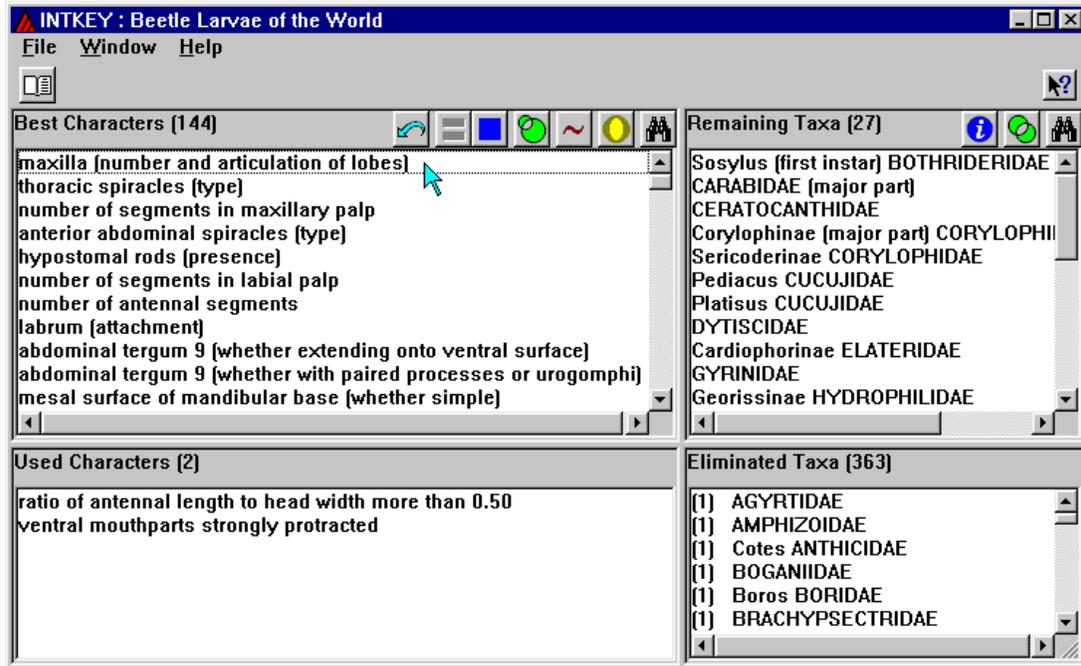
In the list of best characters, click on 'ventral mouthparts (whether protracted)'.



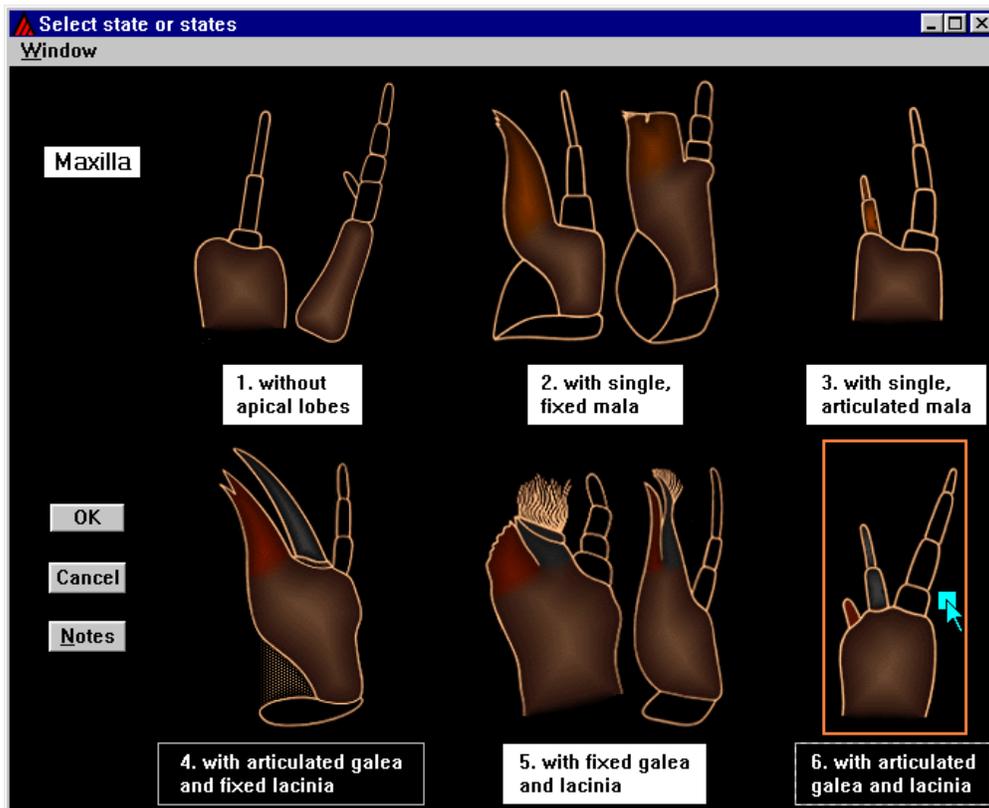
This character has an illustration, which is automatically displayed. A state can be selected by clicking on either the text of the state or the area that illustrates the state. The area illustrating the state is outlined whenever the cursor is over the text or over the area itself. Select the state 'strongly protracted', and press 'OK' (or double click on the text or illustration of the state).



Click on the best character, ‘maxilla (number and articulation of lobes)’.

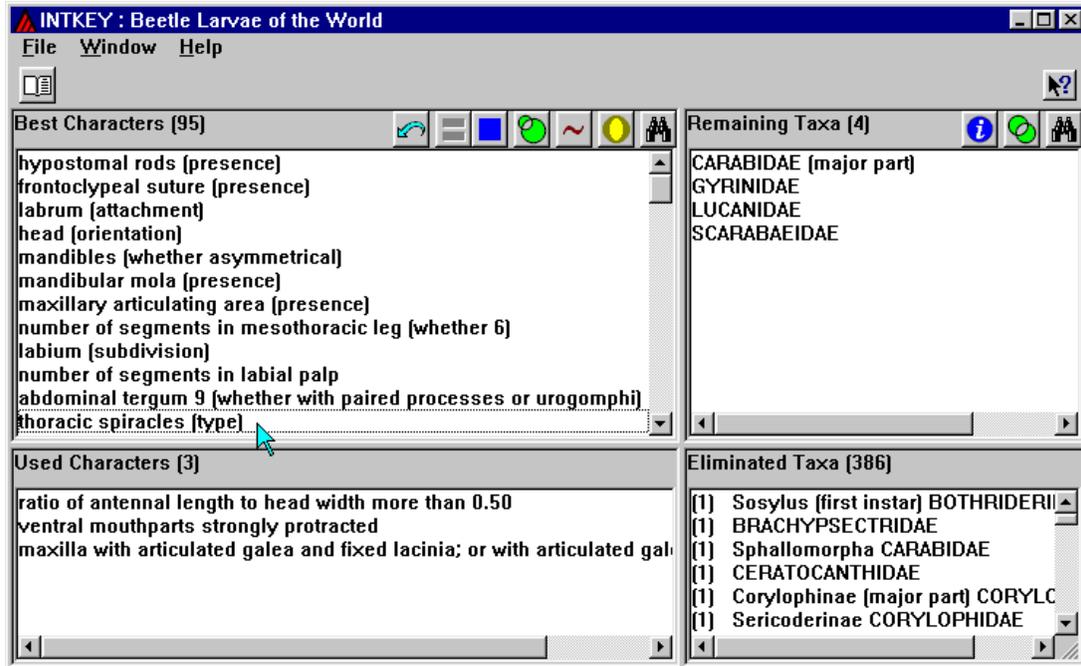


The specimen has an articulated galea, but it is difficult to see whether the lacinia is fixed or articulated, so select states 4 and 6, and press ‘OK’.

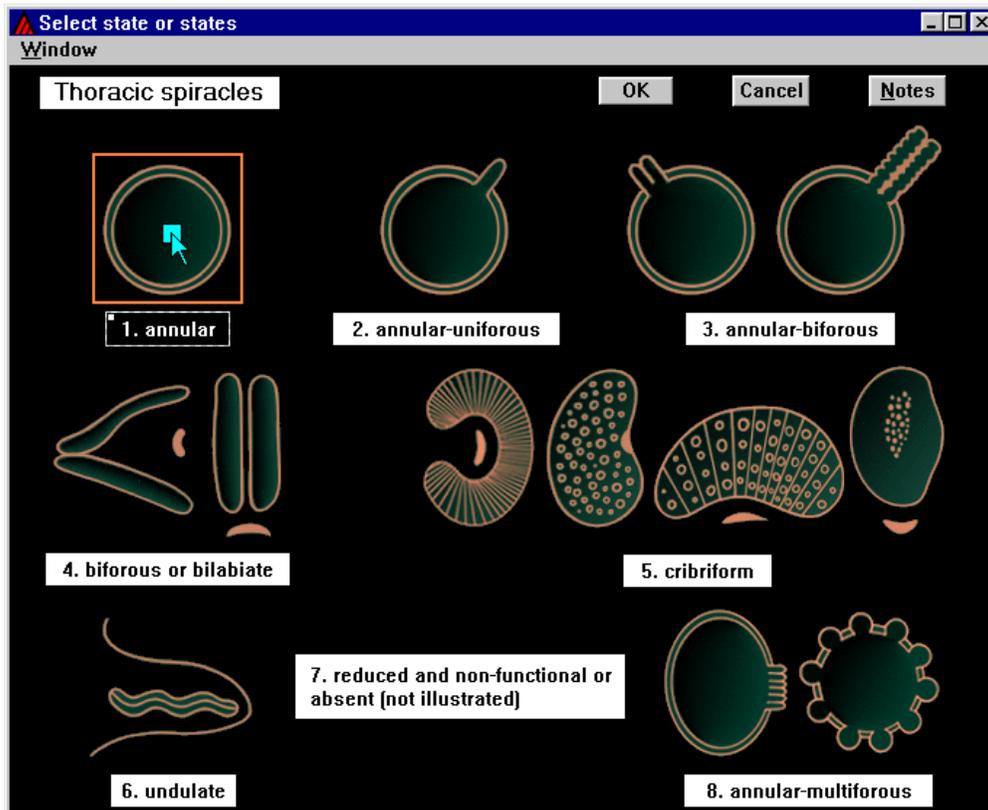


*It is important to express any uncertainty in this way, rather than selecting a single state by guessing. If there are no states that you can confidently say are not exhibited by the specimen, do not select all the states. Instead, simply press the ‘Cancel’ button, and select a new character from the ‘best’ list.*

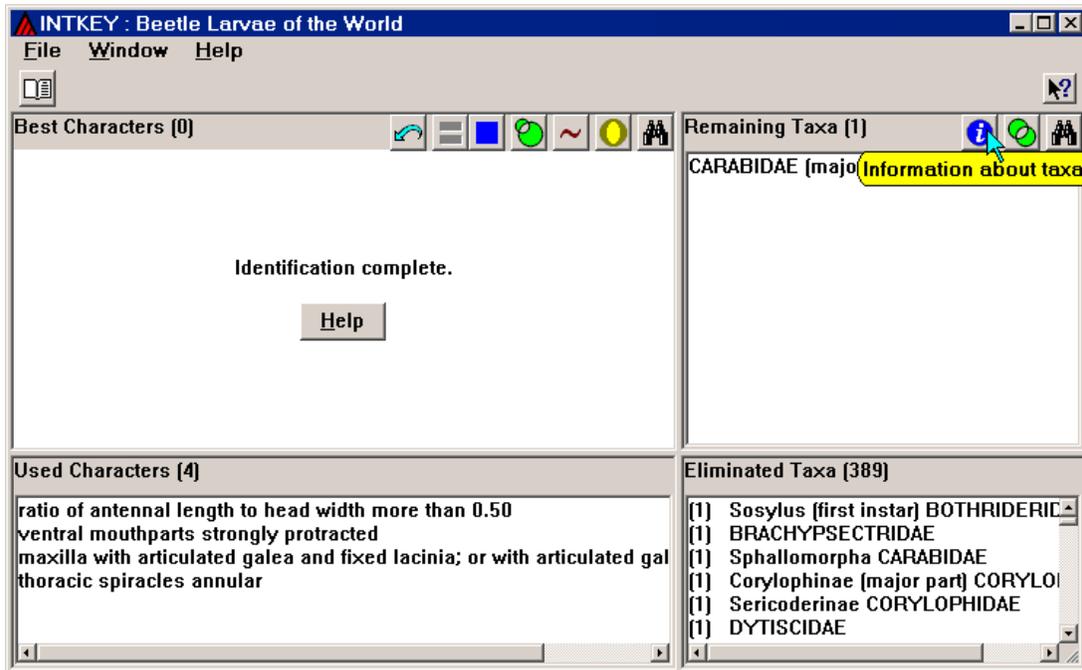
In the new 'Best Characters' list, click on 'thoracic spiracles (type)'.



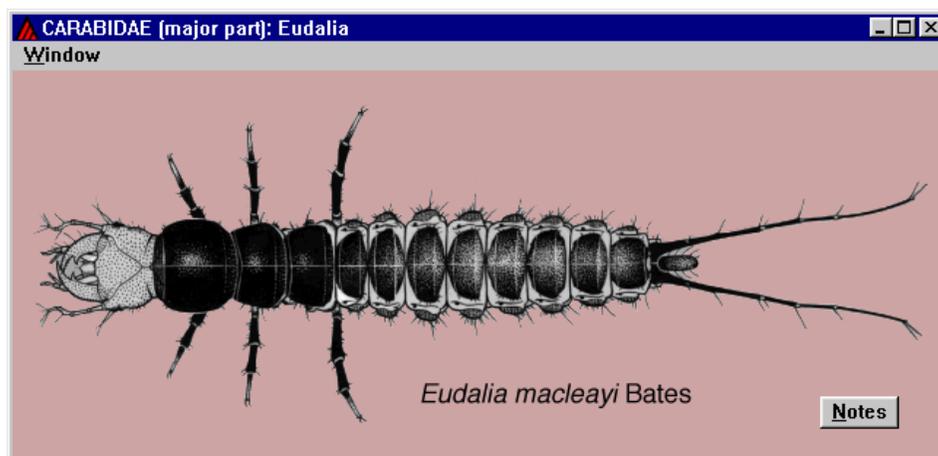
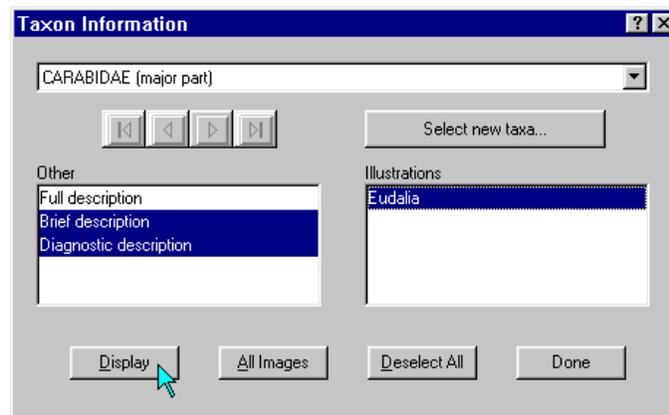
Select state 1 (annular) and press 'OK'.



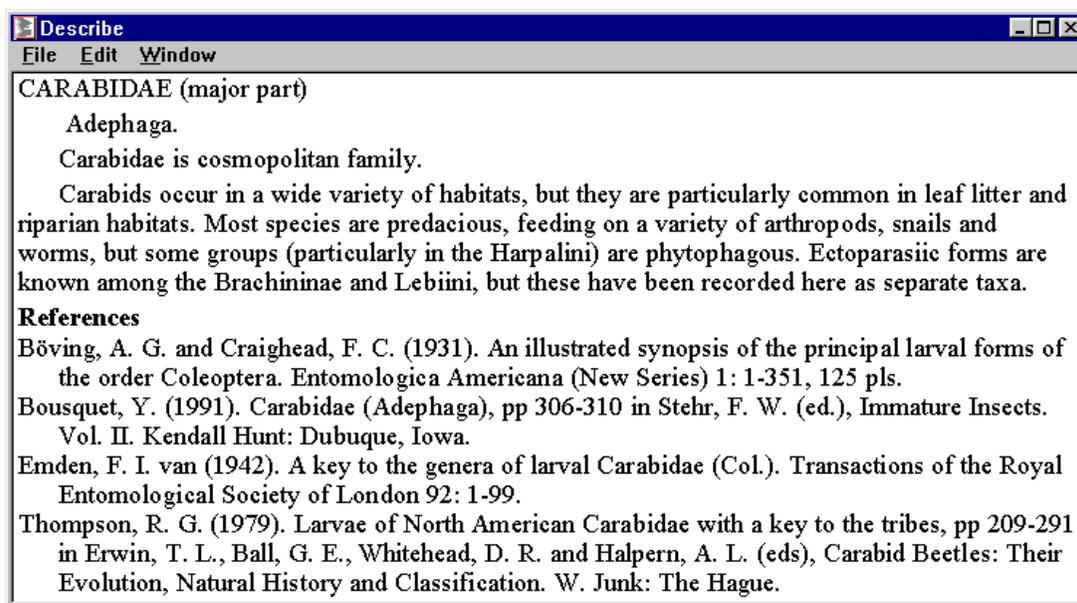
One taxon, CARABIDAE (major part), remains, so you have made a tentative identification. The 'Help' button provides information about how to confirm (or reject) an identification. One way to do this is to compare the specimen with taxon illustrations and descriptions, which may be obtained by pressing the 'Information about taxa' button.



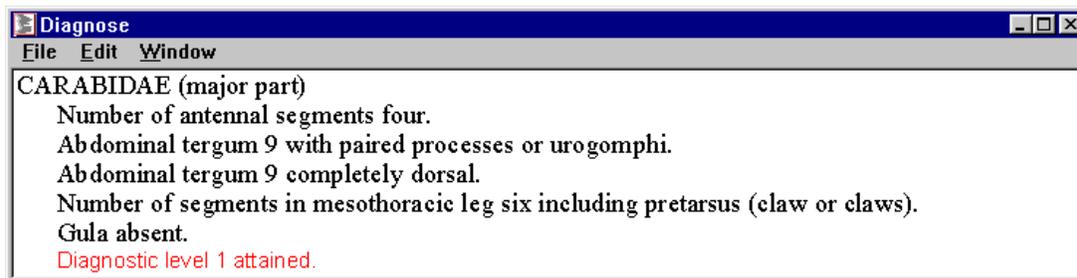
In the 'Taxon Information' dialog, select 'Brief description', 'Diagnostic description', and the illustration (of a species of *Eudalia*), and press 'Display'.



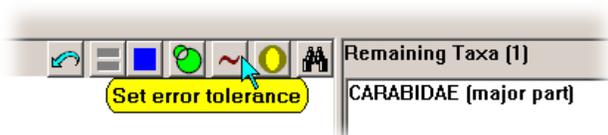
The brief description comprises synonymy (there is none for this taxon), classification, geographical distribution, biology, and references.



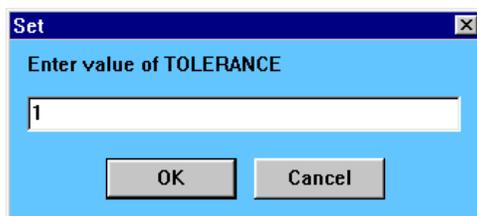
The diagnostic description, which uses only characters not already used in the identification, distinguishes the taxon in at least one respect from all the other taxa.



If the identification seems to be wrong, you can increase the 'error tolerance'. (This is also appropriate if the specimen does not match any of the taxa in the data.) Let us suppose that the specimen has two antennal segments. This contradicts the first attribute in the diagnostic description.

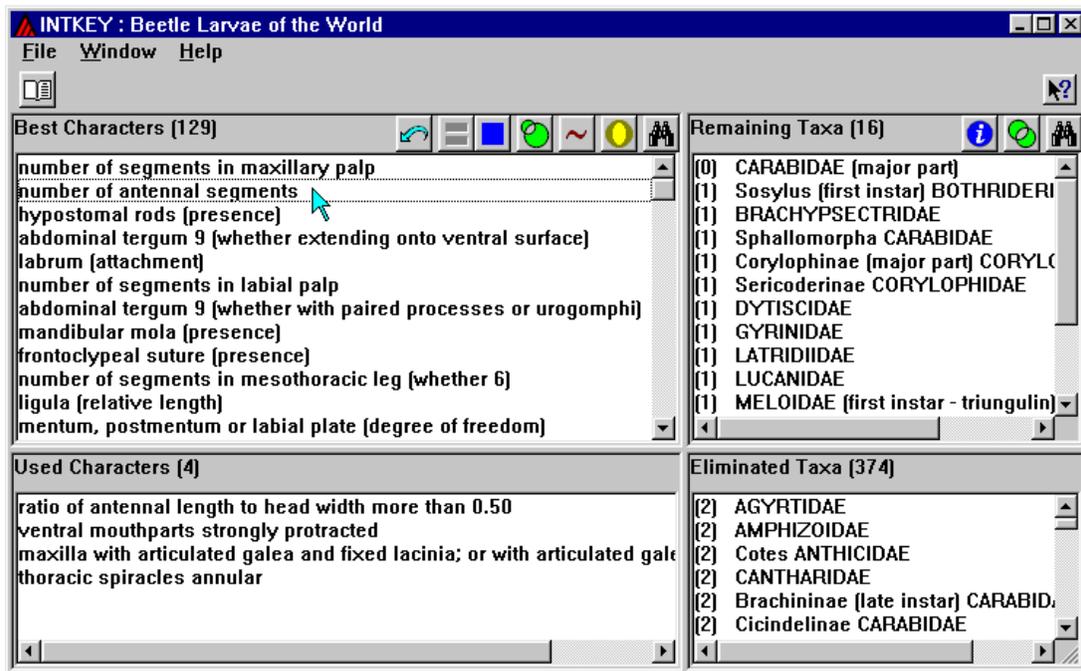


Set the error tolerance to 1.

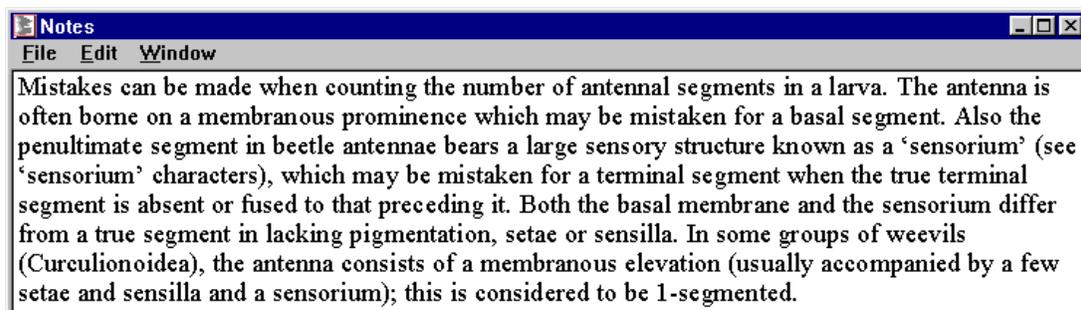
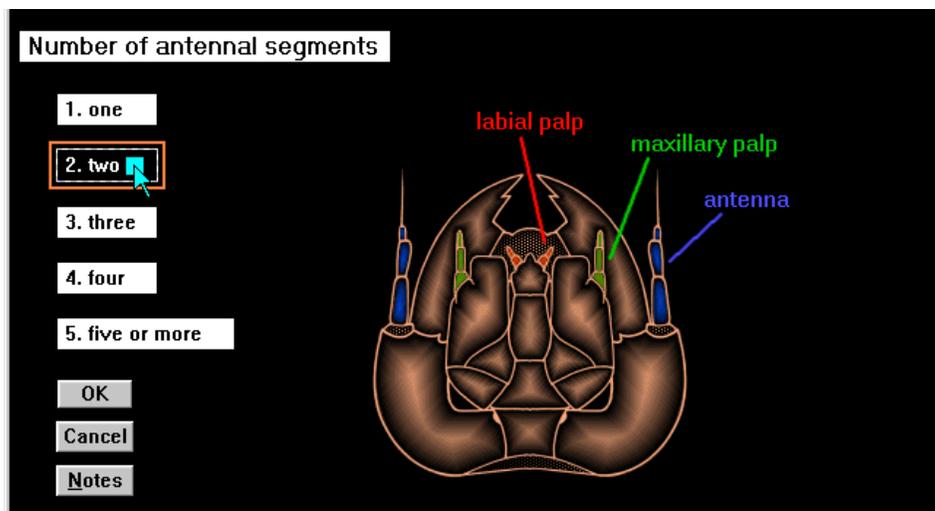


This brings back into contention all taxa differing in only one respect from the specimen. The 'Remaining Taxa' pane shows, in parentheses, the number of differences between each taxon and the specimen. You can then proceed with the identification as before.

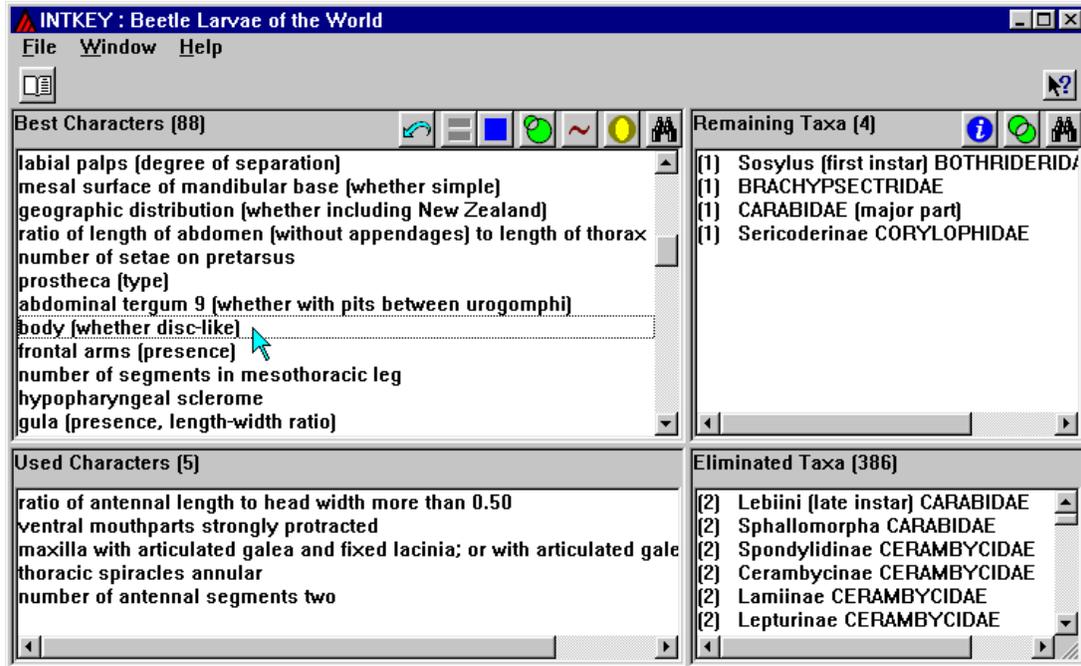
Click on the character 'number of antennal segments'.



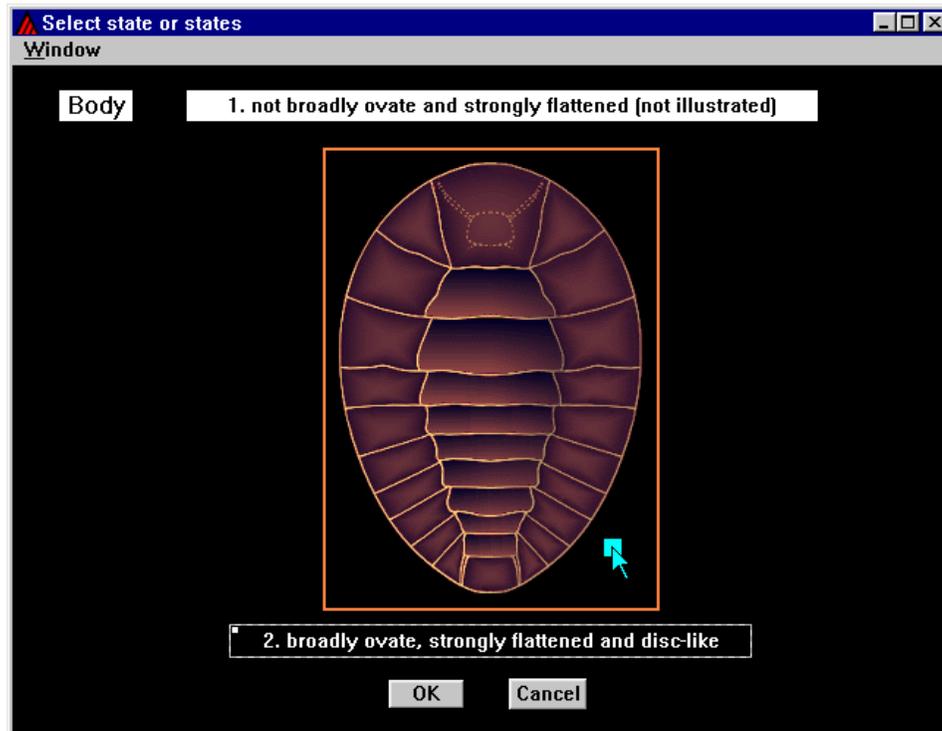
Press the 'Notes' button to display information about interpreting the character. Then select 'two', and Press 'OK'



Click on the character 'body (whether disc-like)' (30th in the list).



Select 'broadly ovate, strongly flattened and disc-like', and press 'OK'.



The tentative identification is now BRACHYPSECTRIDAE. This should be checked against a description or illustration, as before.

**INTKEY : Beetle Larvae of the World**

File Window Help

Best Characters [0]

Remaining Taxa [1]

Identification complete.

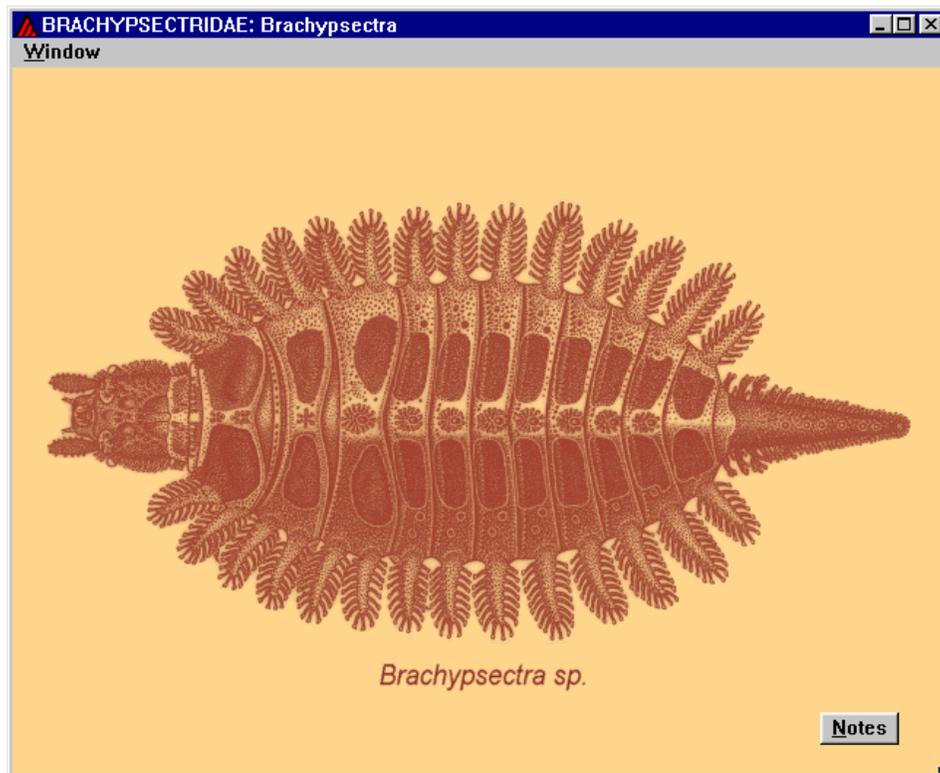
Help

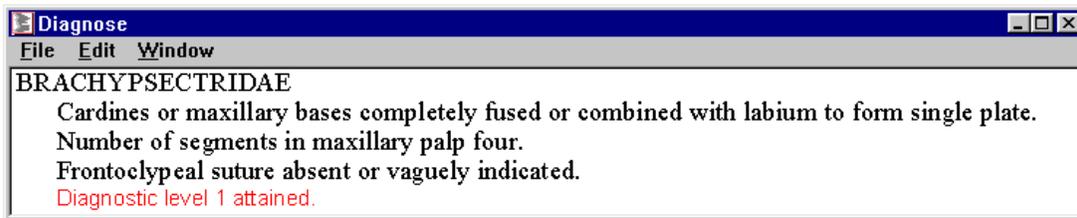
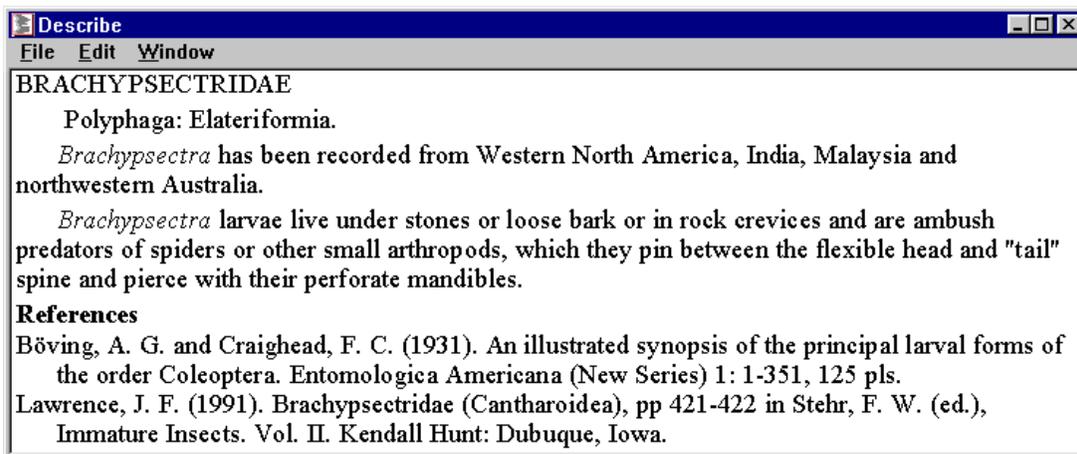
Used Characters [6]

ratio of antennal length to head width more than 0.50  
ventral mouthparts strongly protracted  
maxilla with articulated galea and fixed lacinia; or with articulated gale  
thoracic spiracles annular  
number of antennal segments two  
body broadly ovate, strongly flattened and disc-like

Eliminated Taxa [389]

[2] Sosylus (first instar) BOTHRIDERI  
[2] CARABIDAE (major part)  
[2] Corylophinae (major part) CORYLOPHINAE  
[2] Rypobiini Corylophinae CORYLOPHINAE  
[2] Sericoderinae CORYLOPHIDAE  
[2] DISCOLOMATIDAE



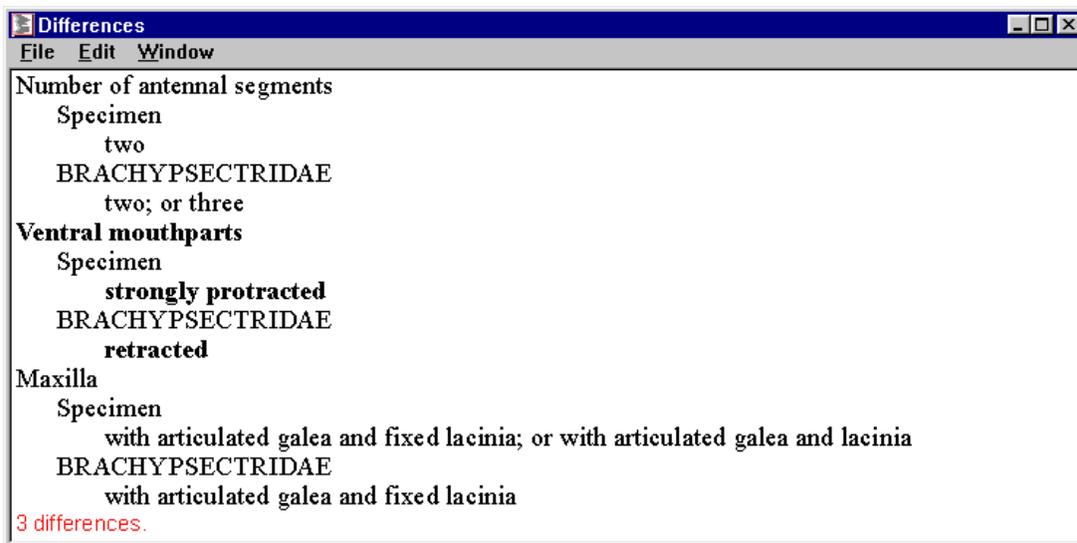


The differences between this taxon and the specimen can be found by pressing the appropriate button.

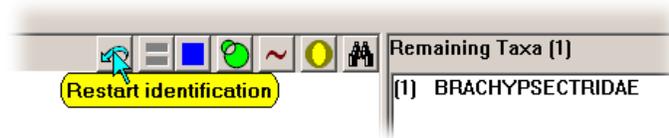


Notice that 3 differences are shown, whereas the ‘Remaining Taxa’ window indicated 1 difference. This is because attributes with any states in common, as in the first and third differences below, are not regarded as mismatches in the identification procedure.

If the discrepancy is due to your own error, it is worthwhile re-examining the character in question, with a view to improving your interpretation of it. If the discrepancy seems to be due to an error in the data, the authors would appreciate your feedback.



To start a new identification, click on the 'Restart identification' button.



## Reference

The data used in this example are from: J. F. Lawrence, A. M. Hastings, M. J. Dallwitz, T. A. Paine and E. J. Zurcher. 1999. 'Beetle Larvae of the World: Descriptions, Illustrations, Identification, and Information Retrieval for Families and Sub-families.' CD-ROM, Version 1.1 for MS-Windows. (CSIRO Publishing: Melbourne.)

The CD contains an earlier version of Intkey, but the latest version, available at <http://delta-intkey.com>, can be used with the CD.