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A pictorial key to current genus groups of “Rhabditidae”

V. S. SCHOLZE¹ AND W. SUDHAUS^{2*}

Summary. - A pictorial key to the identification of 38 genus taxa as well as the species groups of five genera of rhabditids is presented in five plates. Four character complexes are used in the key, namely lip region and stoma, posterior body region of both sexes, and spicules and gubernaculum.

Key words: Identification, pictorial key, Rhabditidae

Resumen. - Se presenta una clave pictórica para la identificación de 38 táxones genéricos de rhabditidos, así como para los grupos de especies de cinco géneros. Cuatro complejos de caracteres se utilizan en la clave, a saber región labial y estoma, región corporal posterior de ambos sexos, y espículas y gubernáculo.

Palabras clave: Identificación, clave pictórica, Rhabditidae.

We have good experience with pictorial keys showing synoptically several characteristics of a taxon as opposed to using dichotomous keys with only words. These pictorial keys allow one to use different characters to begin an identification which is of practical advantage, even though this procedure does not necessarily follow any systematic or taxonomic hierarchy. Therefore, we suggest that more such keys should be prepared to facilitate the identification of nematodes. Here we give a new example and provide a pictorial key to the valid genus taxa of the paraphyletic „Rhabditidae“. Based on a new analysis by Sudhaus (this volume) only 38 genus taxa are accepted, which implies many changes in nomenclature compared to the last revision by Andr  ssy (2005). In our key all these genus taxa are represented (and *Noteodiplogaster* is added), and some of them are considered with two or three subgroups (*Oscheius*, *Pelodera*, *Poikilolaimus*, *Rhabditis*, and paraphyletic “*Protorhabditis*”).

The idea of this key is that a quick comparison of very different but easily visible characters of female or male nematodes on a slide should be possible that might help narrow down the assignment to a certain group. The focus is on four essential character complexes that are more or less easily visible: (i) anterior end showing special features of lips and stoma; (ii) female posterior region showing

shape of tail, rectum length and position of the vulva in taxa with a posteriorly shifted genital opening; (iii) male posterior region with genital papillae and bursa in lateral view as it is mostly seen on slides; and (4) spicules and gubernaculum in lateral view. The scale is not the same in the different sketches.

To make an identification we first suggest making some drawings or a series of photos with different optical sections of the above features of a specimen under the microscope and then compare these documents with the pictorial key to see which sketches of a particularly noticeable character fit best. Then, the consistency with the other characters in the columns should be tested. If two female features or two or three male features approximately agree with the drawings or photos, one should scrutinise the resulting group with the diagnosis of the taxon given in Sudhaus (this volume). We hope that this procedure will lead to a correct result. If there are inconsistencies we will be happy to get feedback to improve this key. The aim for the next step will be to prepare a pictorial key to identify specimens also on species level.

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A	B	C	D	E	F	G	H	I
<i>Matthesonema</i>	<i>Distolabrellus</i>	<i>Teratorhabditis</i>	<i>Cruzinema</i>	<i>Rhabpanus</i>	<i>Mesorhabditis</i>	<i>Parasito- rhabditis</i>	<i>Crustorhabditis</i>	<i>Pelodera Strongyloid.-gr.</i>

FIGURE 1. Pictorial key for comparing the genus taxa of "Rhabditidae". In the four rows, characteristic features are combined: anterior end with lip region and stoma, female posterior body region (showing if a posterior vulva exists) and tail shape, male tail with genital papillae and perhaps bursa, spicules and gubernaculum. Arrows point to special characters. One taxon, with which we have no or only limited experience, is scanned from the original descriptions to avoid any misinterpretations. Figures not to scale. A: after Osche (1955); B: after Anderson (1983); C: after Sudhaus (1974b, 1985); D: after Weingärtner (1953) and Sudhaus (1974b); E: from Massey (1971); F: after Sudhaus (1978); G: after Rühm (1956); H: after Sudhaus (1974c); I: after Sudhaus & Schulte (1986), Hirschmann (1952) and Sudhaus *et al.* (1987).

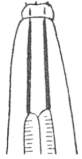
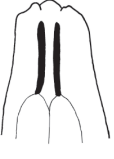

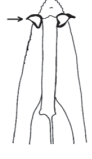
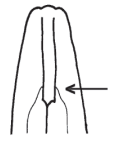
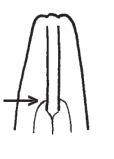

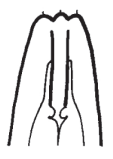




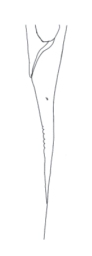




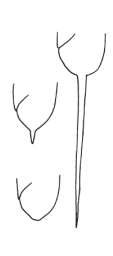

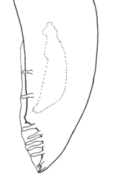

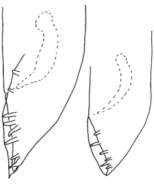
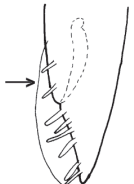
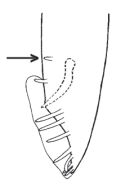
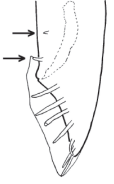
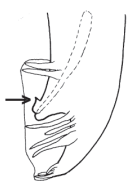
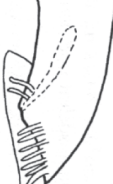


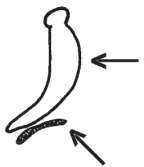
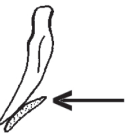

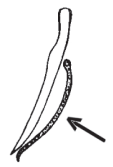

A	B	C	D	E	F	G	H	I
<i>Neorhabditis</i>	<i>Xylorhabditis</i>	<i>Sclerorhabditis</i>	<i>Diploscapter</i>	" <i>Protorhabditis</i> " <i>Xylocola</i> -group	" <i>Protorhabditis</i> " <i>Oxyuroides</i> -group	<i>Prodontorhabditis</i>	<i>Caenorhabditis</i>	<i>Pelodera</i> <i>Coarctata</i> -group
								
								
 <i>unknown</i>		 <i>unknown</i>						
								

FIGURE 2. Pictorial key for comparing the genus taxa of "Rhabditidae". In the four rows, characteristic features are combined: anterior end with lip region and stoma, female posterior body region (showing if a posterior vulva exists) and tail shape, male tail with genital papillae and perhaps bursa, spicules and gubernaculum. Arrows point to special characters. Two taxa, with which we have no or only limited experience, are scanned from the original descriptions to avoid any misinterpretations. Figures not to scale. A: from Schuurmans Stekhoven, 1951; B: after Rühm (1964); C: from Ahmad *et al.* (2007); D: after Eyuaem *et al.* (1998), Wahab (1962) and Völk (1950); E: after Körner (1954); F: after Sudhaus (1974b); G: after Sudhaus (1974b); H: after Sudhaus (1974c); I: after Sachs (1950) and Völk (1950).

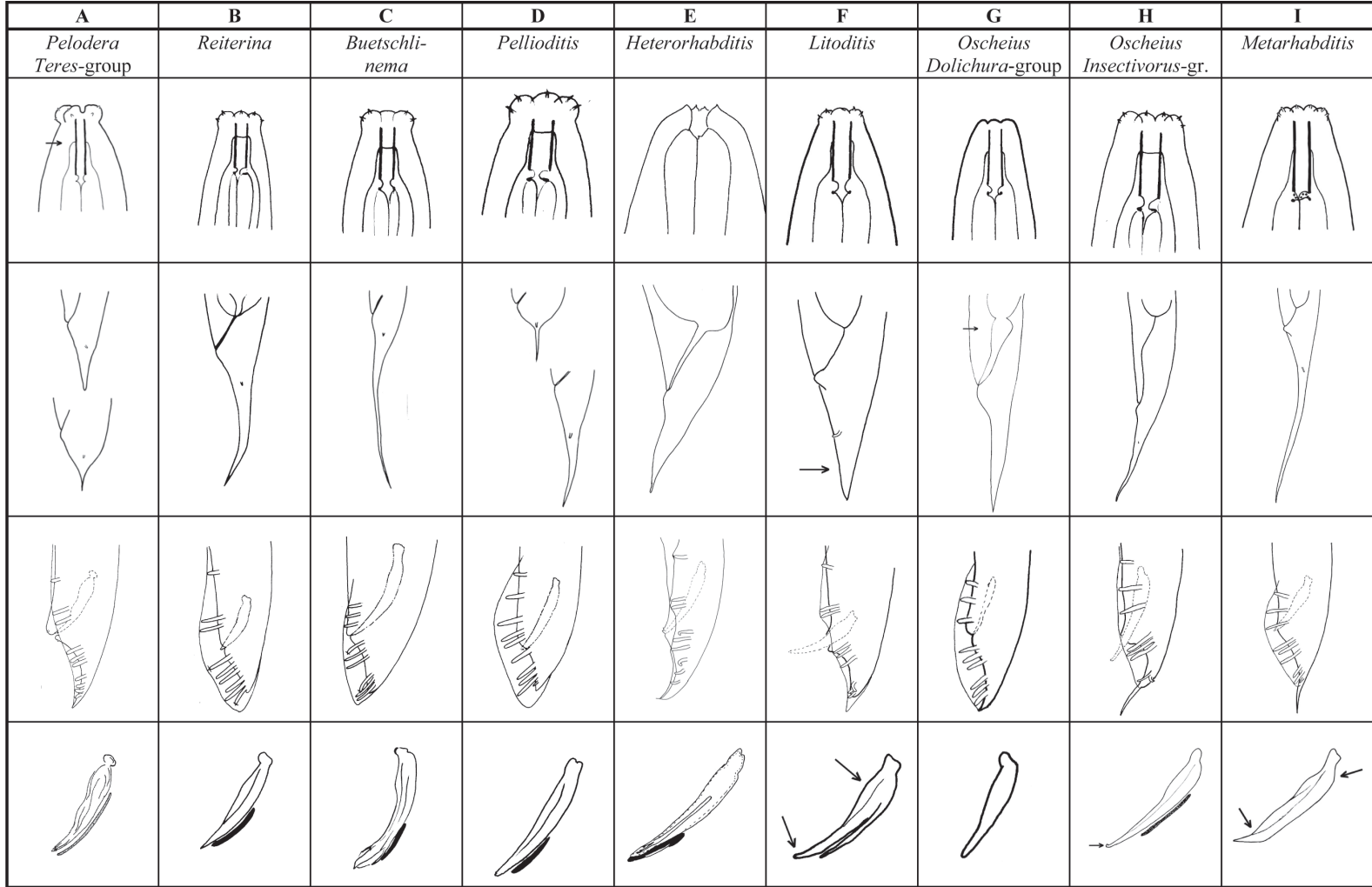


FIGURE 3. Pictorial key for comparing the genus taxa of "Rhabditidae". In the four rows, characteristic features are combined: anterior end with lip region and stoma, female posterior body region (showing if a posterior vulva exists) and tail shape, male tail with genital papillae and perhaps bursa, spicules and gubernaculum. Arrows point to special characters. Figures not to scale. A: after Schulte (1989); B: original; C: original; D: original and Osche (1954); E: after Khan *et al.* (1976) and Poinar *et al.* (1987); F: after Sudhaus (1974a); G: after Sudhaus (1974c, 1976); H: after Körner (1954) and original; I: after Sudhaus (1974c).



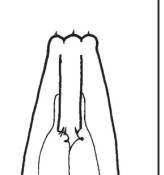
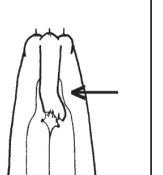

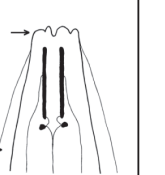
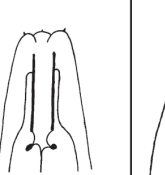
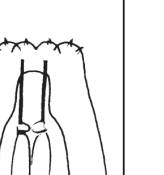
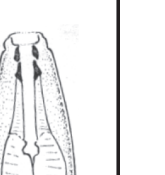


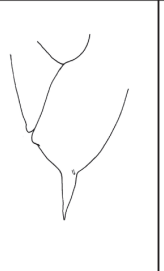
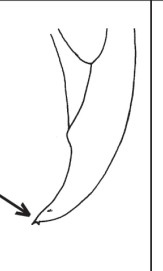
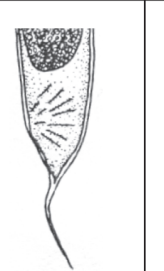

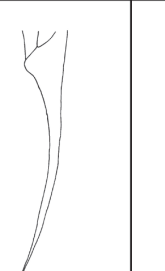
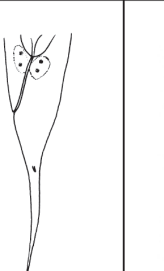
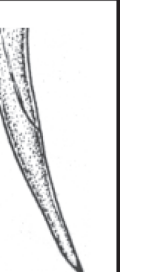


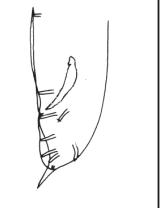
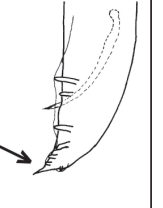
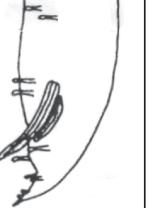
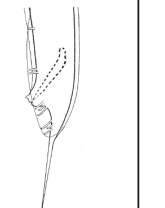
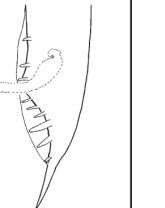



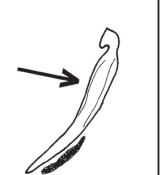
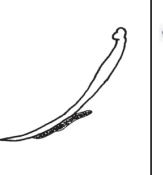

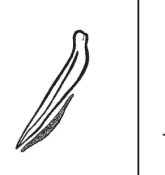
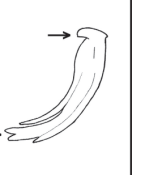

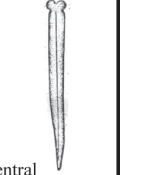
A	B	C	D	E	F	G	H	I
<i>Himatidiophila</i>	<i>Saprorhabditis</i>	<i>Poikilolaimus</i> <i>Oxycercus</i> -group	<i>Poikilolaimus</i> „Micoletzkyi-gr.“	<i>Noteo-</i> <i>diplogaster</i>	<i>Choriorhabditis</i>	<i>Rhabditis</i> <i>Brassicæ</i> -gr.	<i>Rhabditis</i> <i>Maupasi</i> -gr.	<i>Eudronema</i>
								
								
	 ♂ <i>unknown</i>							
								

FIGURE 4. Pictorial key for comparing the genus taxa of “Rhabditidae”. In the four rows, characteristic features are combined: anterior end with lip region and stoma, female posterior body region (showing if a posterior vulva exists) and tail shape, male tail with genital papillae and perhaps bursa, spicules and gubernaculum. Arrows point to special characters. Four taxa, with which we have no or only limited experience, are scanned from the original descriptions to avoid any misinterpretations. Figures not to scale. A: from Rahm (1924); B: from Khera (1969); C: after Sudhaus (1980); D: after Sudhaus (1980); E: from de Villalobos *et al.* (1998); F: after Reiter (1928); G: original; H: original; I: from Remillet & Van Waerebeke (1973).

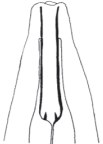

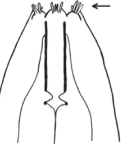
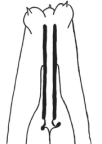
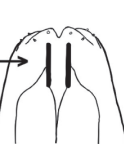
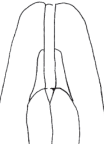
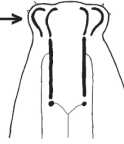

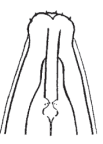


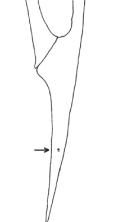






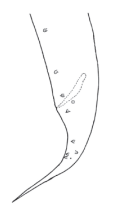



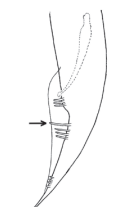
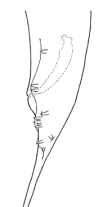




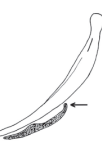


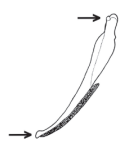

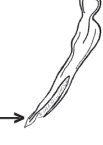
A	B	C	D	E	F	G	H	I
<i>Stomachorhabditis</i>	<i>Rhabditonema</i>	<i>Rhabditoides</i>	<i>Haematozoon</i>	<i>Rhomborhabditis</i>	<i>Oryctonema</i>	<i>Diploscapteroides</i>	<i>Rhabditella</i>	<i>Cephaloboides</i>
								
					no drawing available			
								
								

FIGURE 5. Pictorial key for comparing the genus taxa of “Rhabditidae”. In the four rows, characteristic features are combined: anterior end with lip region and stoma, female posterior body region (showing if a posterior vulva exists) and tail shape, male tail with genital papillae and perhaps bursa, spicules and gubernaculum. Arrows point to special characters. Figures not to scale. A: after Andr  ssy (2001); B: after K  rner (1954); C: after Reiter (1928); D: original; E: after V  lk (1950); F: after Poinar & Triggiani (1979); G: after Altherr (1938); H: after Osche (1954) and Sudhaus (1976); I: after Osche (1952).

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