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## Family Amabiliidae Braun, 1900

A. JONES

*International Institute of Parasitology, 395A Hatfield Road, St Albans,  
Herts AL4 0XU, UK.*

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### Introduction

This family is characterized by possession of accessory or supplementary ducts associated with the female reproductive organs. It was originally established as the subfamily Amabiliinae in the Taeniidae by Braun (1900) and raised to family rank by Fuhrmann (1907a) as the Amabilinidae, amended to Amabiliidae by Ransom (1909). According to the ICZN, Article 36(a), Braun, 1900 is the authority for the family.

The family originally contained *Amabilia* Diamare, 1893 (syn. *Aphanobthrium* Linstow, 1906), *Schistotaenia* Cohn, 1900 and *Tatria* Kowalewski, 1904 and was accepted with this composition by Ransom (1909), Wardle & McLeod (1952) and Yamaguti (1959). Subsequent additions are *Diporotaenia* Spasskaya, Spasskii & Borgarenko, 1971, *Laterorchites* Fuhrmann, 1932, *Pseudoschistotaenia* Fotedar & Chishti, 1976, *Joyeuxilepis* Spasskii, 1947 and *Ryjkovilepis* Gulyaev & Tolkacheva, 1987.

Subfamilies were introduced when Johri (1959) revived the Amabiliinae for *Amabilia* and proposed Schistotiinae, later amended to Schistotaeniinae, for *Schistotaenia* and *Tatria*. Ryzhikov & Tolkacheva (1975) erected the Diporotaeniinae for *Diporotaenia*. These subfamilies were recognized by Ryzhikov & Tolkacheva (1981) but not by Schmidt (1986). The Amabiliinae was distinguished chiefly by paired male organs and a dendritic ovary, the Diporotaeniinae by a scolex with petaloid lobes and the Schistotaeniinae mainly by single male gonads in combination with a normal scolex. Variations in the route of the accessory ducts were also used as characters. These features are regarded here as significant at the generic rather than subfamilial level and subfamilies have not been adopted.

*Pseudoschistotaenia* Fotedar & Chishti, 1976 was originally named in a conference abstract and later described in more detail (Fotedar & Chishti, 1976, 1980). It was distinguished from *Schistotaenia* by regularly alternating male pores, seminal receptacles linked in successive proglottids, a small rather than wide ovary

and absence of a blindly-ending, aporally-directed accessory duct. These characters occur in species of *Schistotaenia* (see Baer, 1940; Chandler, 1948; Schell, 1955; Johri, 1959; Rausch, 1970), with which *Pseudoschistotaenia* is considered synonymous. The type-specimens of *P. indica* Fotedar & Chishti, 1976, the type-species, were not available for examination.

*Joyeuxilepis* Spasskii, 1947 was first proposed for *Echinorhynchotaenia biuncinata* Joyeux & Baer, 1943, based on a cysticeroid, the adult of which was unknown, with distinctive rostellar armature (Joyeux & Baer, 1943; Spasskii, 1947). Originally in the Hymenolepididae, it was transferred to the Amabiliidae as a subgenus of *Tatria* by Spasskii & Spasskaya (1976) who considered the species *biuncinata* to be a synonym of *T. (J.) decacantha* Fuhrmann, 1913. *Joyeuxilepis* was raised to generic rank by Gulyaev & Tolkacheva (1987), distinguished from *Tatria* by the shape of the rostellar hooks ('aploparaksoid-like') and protandric maturation of the reproductive organs. They also erected *Ryzhikovilepis* for *Tatria* (sensu lato) *dubininae* Ryzhikov & Tolkacheva, 1981, with hooks similar to *Joyeuxilepis* but different in characters of the osmoregulatory system, male terminal ducts and accessory ducts.

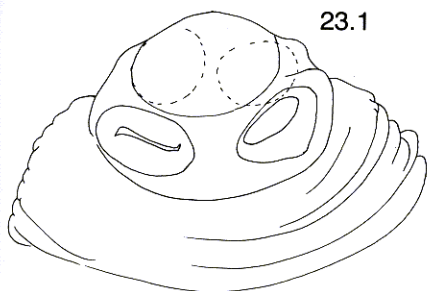
Borgarenko & Gulyaev (1990) described the adult of *J. biuncinata* for the first time and considered its synonymy with *J. decacantha* to be doubtful. They found that important points, which would be taxonomically significant, relevant to species of *Tatria* s.l. remain to be clarified and considered it premature to present a generic diagnosis for *Joyeuxilepis*. In view of this, *Joyeuxilepis* is provisionally maintained here as a synonym of *Tatria*, pending further investigation.

*Laterorchites* Fuhrmann, 1908 was transferred from the Dilepididae to the Amabiliidae by Spasskii (1969a) and again by Rysavy & Macko (1973). This was accepted by Ryzhikov & Tolkacheva (1981). The generic diagnosis given below is based on the redescription of *L. bilateralis* (Fuhrmann, 1908) by Rysavy & Macko (1973).

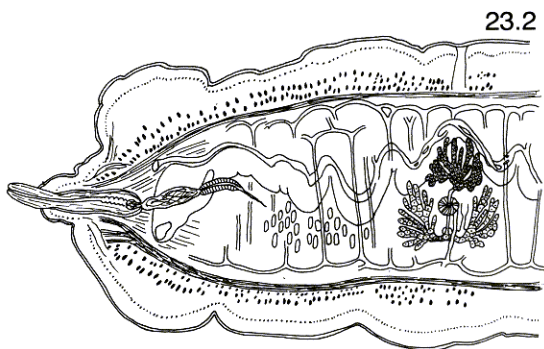
The illustrations are original or modified and redrawn from the sources acknowledged in the captions.

## Family Amabiliidae Braun, 1900

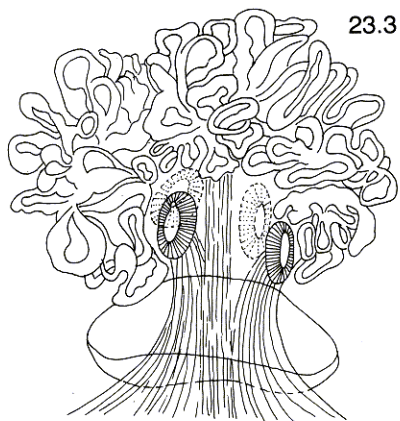
**Diagnosis:** Small to medium cestodes. Proglottids usually craspedote, wider than long with prominent lateral processes (rarely absent). Scolex usually normal, rarely hypertrophied to form petaloid lobes. Armed rostellum usually present, with single crown of rostellar hooks. Spines present or absent on rostellum, scolex or suckers. Testes posterior or lateral, may surround female organs. Male ducts single or double. Male pores alternate regularly or irregularly. Cirrus-sac reaches osmoregulatory canals or not. External seminal vesicle present, internal present or absent. Prostatic vesicle present or absent. Cirrus armed. Female organs single. Ovary and vitellarium median, lobed, rarely dendritic. True vagina absent, may be functionally replaced by accessory ducts. Accessory or supplementary ducts may connect seminal receptacles between successive proglottids, with apertures on dorsal and ventral surfaces, or with osmoregulatory anastomosis; they may pass from seminal receptacle to open or end blindly near lateral margin aporal to male



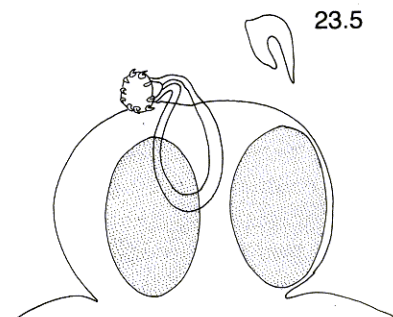
23.1



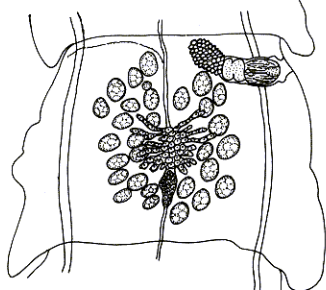
23.2



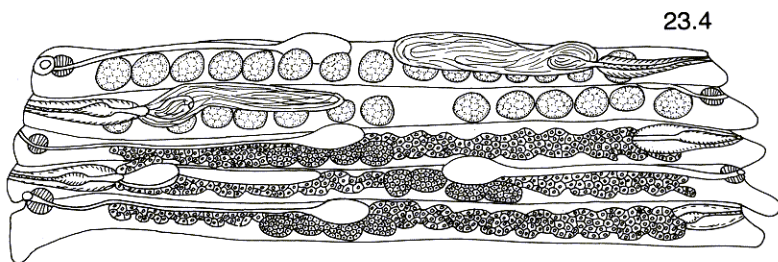
23.3



23.5



23.6



23.4

**Figs 23.1, 23.2** *Amabilia lamelligera* (Owen, 1832). 23.1. Scolex. 23.2. Transverse section of part of mature proglottid, redrawn after Clausen (1915).

**Figs 23.3, 23.4** *Diporotaenia colymbi* Spasskaya, Spasskii & Borgarenko, 1971. 23.3. Scolex. 23.4. Mature proglottids. After Spasskaya *et al.* (1971).

**Figs 23.5, 23.6** *Laterorchites bilateralis* (Fuhmann, 1908). 23.5. Scolex and rostellar hook. 23.6. Mature proglottid. After Rysavy & Macko (1973).

pore. Uterus usually saccate, rarely reticulate or initially horseshoe-shaped. Eggs round or oval, or fusiform with polar filaments. In birds. Type-genus *Amabilia* Diamare, 1893.

## Key to genera

- 1a. Male genital ducts double .....  
 ..... *Amabilia* Diamare, 1893. (Figs 23.1, 23.2)  
 (Syn. *Aphanobothrium* Linstow, 1906.)

**Diagnosis:** Robust cestodes. Proglottids imbricated with conspicuous lateral processes. Armed rostellum apparently absent. Suckers unarmed. Testes in two lateral fields, occasionally confluent. Cirrus-sac extravascular, muscular. Cirrus robust, armed. Small internal seminal vesicle present. Male ducts pass between osmoregulatory canals. Ovary and vitellarium median, dendritic. Vagina absent. Seminal receptacle communicates with dorsoventral accessory canal which opens on both surfaces in mid-line of strobila and also opens into ventral transverse osmoregulatory anastomosis. Uterus finely reticulate. Eggs fusiform with polar filaments. In Phoenicopteriformes. Africa, India, Asia. Type-species *A. lamelligera* (Owen, 1832).

- 1b. Male genital ducts single ..... 2.

- 2a. Scolex hypertrophied, forming petaloid lobes .....  
 ..... *Diporotaenia* Spasskaya, Spasskii & Borgarenko, 1971. (Figs 23.3, 23.4)

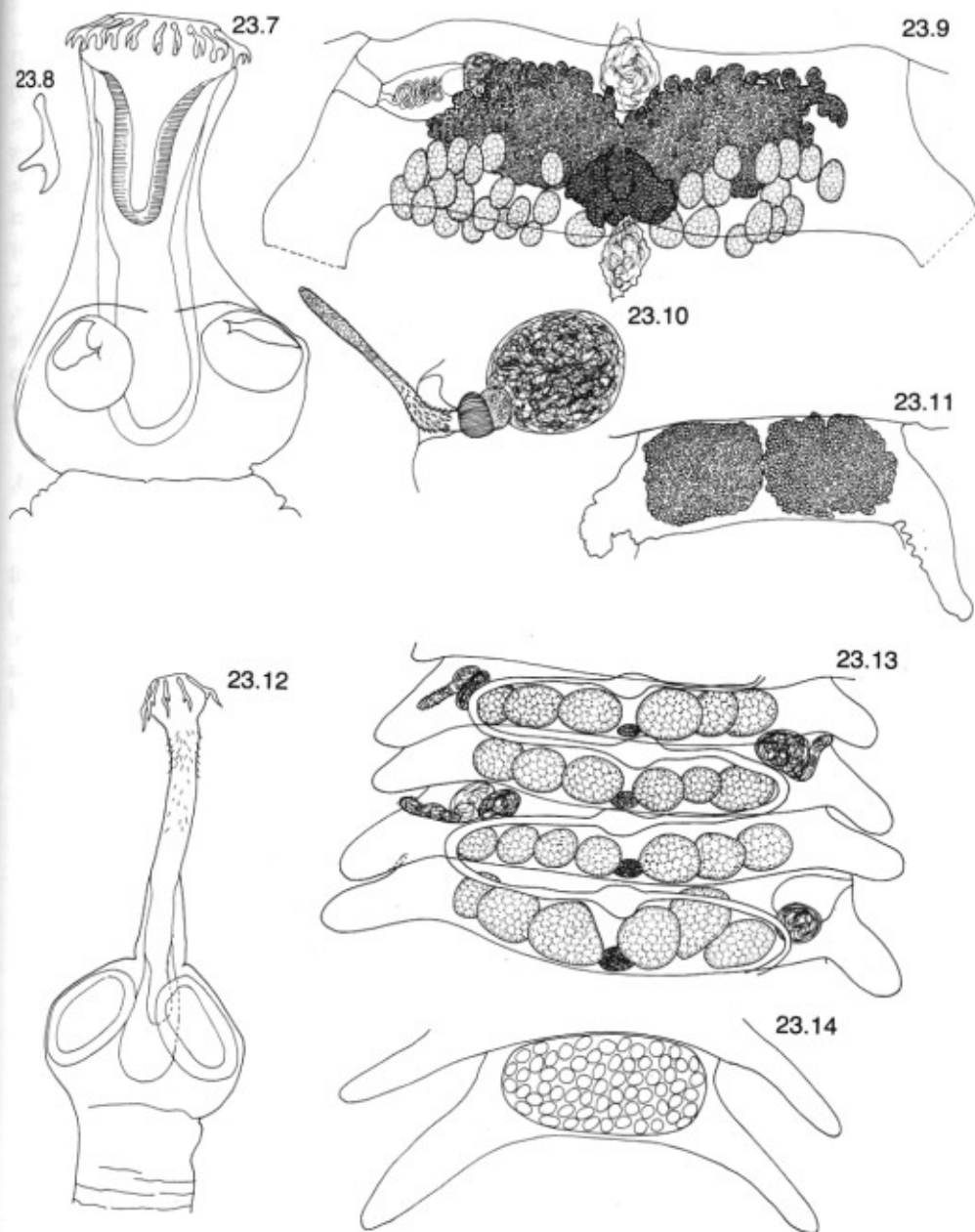
**Diagnosis:** Strobila medium-sized. Proglottids short, very wide. Anterior part of scolex modified, obscuring armed rostellum. Suckers unarmed. Fleshy collar present behind suckers. Testes in single transverse row. Cirrus-sac small, reaches osmoregulatory canals. Cirrus armed. Internal seminal vesicle small, external seminal vesicle conspicuous. Male pores alternate regularly. Ovary wide, slightly lobed. Vitellarium lobed, slightly aporal to male pore. Accessory duct with distal sphincter passes from seminal receptacle to open on lateral margin aporally to male pore. Uterus saccate, lobed. In Colymbiformes. Tadzhikistan, Turkmenia. Type-species *D. colymbi* Spasskaya, Spasskii & Borgarenko, 1971.

- 2b. Scolex normal ..... 3.

- 3a. Proglottids with well-developed lateral processes ..... 4.

- 3b. Proglottids without well-developed lateral processes .....  
 ..... *Laterorchites* Fuhrmann, 1932. (Figs 23.5, 23.6)

**Diagnosis:** Strobila small to medium. Proglottids usually craspedote. Rostellum armed with single row of ten hooks. Suckers spinose. Testes surround female organs. Prostatic vesicle present between cirrus-sac and external seminal vesicle. Cirrus armed. Male pores alternate irregularly. Ovary median, lobed. Vitellarium postovarian. Accessory duct from seminal receptacle ends blindly near aporal lateral margin. Uterus initially horseshoe-shaped, becoming lobed. In Podicipediformes. Central America. Type-species *L. bilateralis* (Fuhrmann, 1908).



**Figs 23.7-23.11** *Schistotaenia colymba* Schell, 1955. 23.7. Scolex. 23.8. Rostellar hook. 23.9. Mature proglottid. 23.10. Male terminal ducts. 23.11. Gravid proglottid.

**Figs 23.12-23.14** *Tatria biremis* Kowalewski, 1904. 23.12. Scolex. 23.13. Mature proglottids, male organs. 23.14. Gravid proglottid.

4a. *Strobila medium*. Scolex robust. Rostellar hooks 16–26 .....

..... *Schistotaenia* Cohn, 1900. (Figs 23.7–23.11)  
(Syn. *Pseudoschistotaenia* Fotedar & Chishti, 1976)

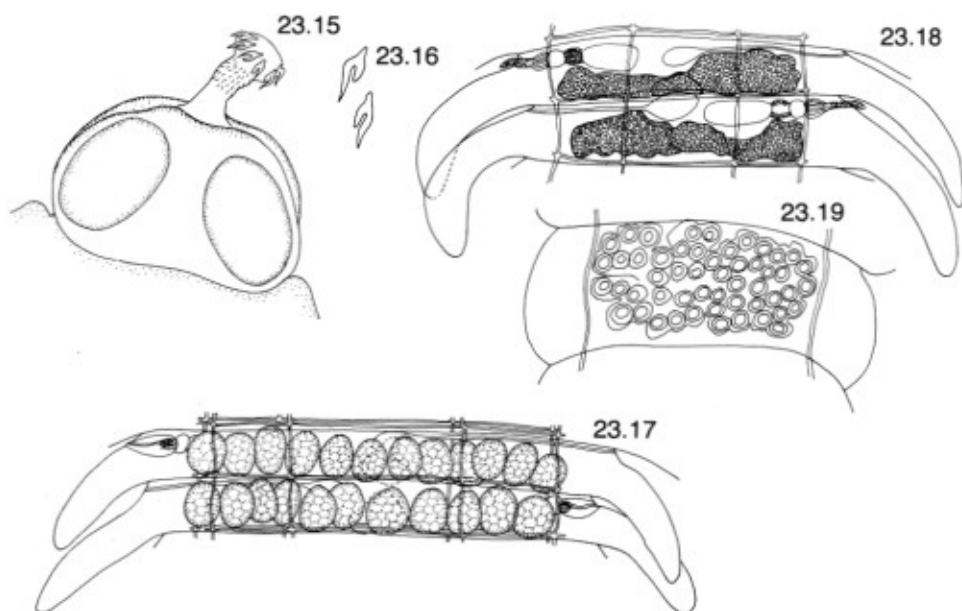
**Diagnosis:** Rostellum robust, armed with single row of strong hooks. Spines present or not on rostellum or suckers. Proglottids wide, with lateral processes. Testes usually in two groups, occasionally in one field. Cirrus-sac small. Prostatic vesicle present between cirrus-sac and external seminal vesicle. Cirrus armed. Male pores alternate regularly or irregularly. Ovary median, lobed, bi-alate or transversely elongated. Vitellarium median, postovarian, lobed. Accessory ducts present. Seminal receptacles interconnected by median longitudinal accessory duct; rarely, sigmoid duct also present. Additional accessory ducts from seminal receptacle open on dorsal and ventral surfaces or only ventrally. Uterus saccate. Eggs spherical. In Podicipediformes. Africa, Asia, Europe, North America. Type-species *S. macrorhyncha* (Rudolphi, 1810) Cohn, 1900.

4b. *Strobila small*, delicate. Scolex delicate. Rostellar hooks 8–14 ..... 5.

5a. Two pairs of longitudinal osmoregulatory canals .....

..... *Tatria* Kowalewski, 1904. (Figs 23.12–23.14)  
(Syn. *Joyeuxilepis* Spasskii, 1947.)

**Diagnosis:** *Strobila* small. Proglottids wide with digitiform lateral processes. Rostellum delicate, elongated, armed with single row of small hooks. Hooks stylet-like or aploparaksoid-like. Spines present or not on rostellum, scolex and



**Figs 23.15–23.19** *Ryjikovilepis dubininae* (Ryzhikov & Tolkacheva, 1981). 23.15. Scolex. 23.16. Rostellar hooks. 23.17. Mature proglottids, male organs. 23.18. Mature proglottids, female organs. 23.19. Gravid proglottid. 23.17 and 23.18 modified after Gulyaev & Tolkacheva (1987).

suckers. Testes relatively few, in two lateral groups or one transverse row. Internal and external seminal vesicles present. Cirrus-sac small. Cirrus armed. Male pores usually alternate regularly. Ovary median, lobed, bialate or very wide. Vitellarium postovarian, median or slightly poral. Seminal receptacles connected between successive proglottids by accessory ducts which are median longitudinal or sigmoid or, exceptionally, both. Uterus saccate. Eggs round or oval. In Podicipediformes. Africa, Asia, Europe, Russia, North and South America. Type-species *T. biremis* Kowalewski, 1904.

5b. Four pairs of longitudinal osmoregulatory canals .....  
..... *Ryjkovilepis* Gulyaev & Tolkacheva, 1987. (Figs 23.15–23.19)

**Diagnosis:** Strobila small. Proglottids with well-developed lateral processes. Rostellum with single crown of aploparaksoid-like hooks. Spines on rostellum and suckers. Testes in single row. Internal seminal vesicle absent; external seminal vesicle present, separated by prostatic vesicle into prebursal and postprostatic parts. Cirrus armed. Male pore alternates regularly. Vagina absent. Ovary bilobed, transversely elongate. Accessory duct passes from seminal receptacle to aporal lateral margin. Uterus saccular, not crossing osmoregulatory canals. Adult in Podicipediformes. Russia, Europe. Type-species *R. dubininae* (Ryzhikov & Tolkacheva, 1981).