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Anarhichotrema ochotense gen. et sp. n., a New Digenetic Trematode from the Bering Wolf-fish, *Anarhichas orientalis*, from the Okhotsk Sea (Trematoda : Lissorchiidae)

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Small digenetic trematodes were found from the middle and posterior parts of small intestine of a single male specimen of the Bering wolf-fish*, *Anarhichas orientalis* Pallas (Teleostei : Perciformes : Anarhichadidae), 546 mm in total length, caught in the Okhotsk Sea on August 20, 1972. A careful study of these worms showed that they represent a new genus and species, which is provisionally assigned to the family Lissorchiidae Poche, 1926.

Five of the six gravid trematodes obtained were flattened with the moderate coverslip pressure, fixed in AFA fixative, stained with Delafield's hematoxylin, and mounted in Canada balsam. Another worm, fixed in AFA without pressure, was serially sectioned, frontally at 10 μ, stained with hematoxylin and eosin, and mounted in balsam.

Five whole mounts and ten eggs in balsam were measured by means of a screw-micrometer eye-piece. Drawings were made with the aid of a camera lucida and microprojector. The description is based on the five whole mounts and serial sections.

* The wolf-fish examined was caught by the otter trawl-net from "Taiki-Maru No. 3" of the Ueno Fisheries Co., Ltd., Wakkanai, to which I am indebted for kind offer of the material. It contained small crabs and sea urchins in its stomach at necropsy on August 21, 1972, at the Hokkaido Wakkanai Fisheries Experimental Station, Wakkanai.

Anarhichotrema gen. n.

Lissorchiidae : Lissorchiinae. Body small, oval, spinose. No eye-spots. Oral sucker ventroterminal ; ventral sucker larger than oral sucker, anterior to middle of body. Prepharynx very short ; pharynx muscular ; esophagus comparatively long ; ceca bifurcating dorsally to ventral sucker, simple, extending to posterior end of body. Cervical glands well developed. Testes directly tandem, in posterior third of body. Cirrus pouch posterolateral to ventral sucker, containing tubular, winding seminal vesicle, prostate glands, short pars prostatica, and protrusible, unarmed cirrus. Genital atrium very shallow. Genital pore marginal, sinistral or dextral, at midlevel of ventral sucker.

Ovary multilobed, median, pretesticular. Seminal receptacle present but apparently non-functional. Laurer's canal present. Mehlis' gland free in parenchyma. Receptaculum seminis uterinum conspicuous. Uterus much folded, occupying from anterior border of ventral sucker to post-testicular area ; metraterm tubular, aspinose. Eggs numerous, operculate, filamented. Vitellaria acinous, distributed from behind ventral sucker to posterior end of body. Excretory system of a mesostoma type ; vesicle tubular, moderately long ; pore terminal. Intestinal parasites of marine teleosts.

Type and only species : *Anarhichotrema*

ochotense sp. n.

The genus *Anarhichotrema* is provisionally assigned to the subfamily Lissorchiinae (Poche, 1926) Dollfus, 1930, the family Lissorchiidae Poche, 1926, because of its closer morphological resemblance to the genus *Lissorchis* Magath, 1917, the type and only one genus of that subfamily. It differs from *Lissorchis* (=*Triganodistomum* Simer, 1929) in possessing the tubular seminal vesicle, unarmed cirrus, more extensive vitellaria, filamented eggs, and excretory system being of a mesostoma type, and further in being parasitic into the marine fish.

Anarhichotrema is similar in morphology to the genus *Cypseluritrema* Yamaguti, 1970, the family Zoogonidae Odhner, 1911. But it is separated from the latter by its directly tandem testes, multilobed ovary, more extensive vitellaria, and filamented eggs. The new genus bears a morphological resemblance to several members of the family Monorchiidae Odhner, 1911. But *Anarhichotrema* has a difficulty in belonging to that family, because its cirrus and metraterm are aspined distinctly.

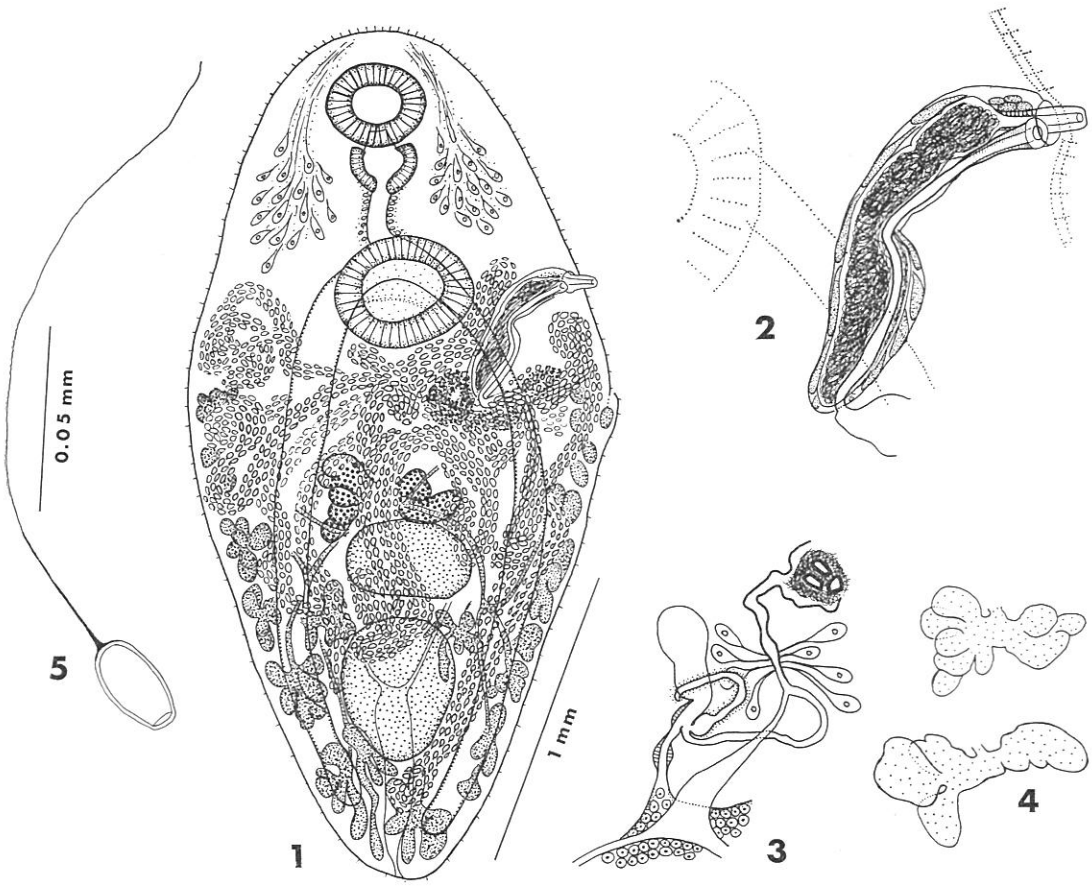

Fig. 1 *Anarhichotrema ochotense* gen. et sp. n., holotype, ventral view.
Fig. 2 Terminal genitalia of holotype, ventral view.
Fig. 3 Ovarian complex of paratype, ventral view.
Fig. 4 Ovaries of holotype and paratype.
Fig. 5 Egg capsule.

Anarhichotrema ochotense sp. n.

Figs. 1-5

Host : *Anarhichas orientalis* Pallas.
Habitat : Small intestine.
Locality : Okhotsk Sea.
Date : August 21, 1972.

Specimens : Holotype deposited in Meguro Parasitological Museum, Coll. No. 19075 ; paratypes in author's collections.

Description : Body small, oval, flattened dorso-ventrally, 1.75–2.75 mm long by 0.90–1.38 mm in maximum width at middle of body ; forebody bluntly rounded anteriorly, 0.46–0.82 mm long ; hindbody triangular in shape, pointed posteriorly ; forebody-hindbody length ratio 1 : 2.12–2.80. No eye-spots. Cuticle spinous ; spines becoming more minute and more coarse posteriorly. Cervical glands large, many, in each side of forebody, with ducts opening at anterior tip of body. Oral sucker round, 0.18–0.28 mm long by 0.22–0.32 mm wide, ventroterminal. Prepharynx very short. Pharynx globular, 0.17–0.18 mm long by 0.17–0.22 mm wide. Esophagus 0.15–0.17 mm long, surrounded with small gland cells, bifurcating dorsally to ventral sucker. Intestinal ceca simple, terminating blindly at posterior end of body. Ventral sucker round, 0.26–0.38 mm long by 0.34–0.48 mm wide, at anterior third of body ; sucker width ratio 1 : 1.32–1.54.

Testes tandem, subglobular or irregular in outline, anterior testis 0.23–0.34 mm long by 0.26–0.42 mm wide, posterior testis 0.26–0.41 mm long by 0.28–0.34 mm wide, located in posterior third of body. Cirrus pouch claviform, more or less curved, 0.51–0.55 mm long by 0.10–0.14 mm wide, lying diagonally in postero-sinistral or sometimes -dextral region of ventral sucker, containing tubular, winding seminal vesicle, short pars prostatica, and prostate glands. Cirrus short, protrusible, unarmed. Genital atrium very shallow. Genital pore on left or sometimes on right margin of body at midlevel of ventral sucker.

Ovary median, multilobed, initially 2-lobed symmetrically, 0.17–0.34 mm long by 0.35–0.55 mm wide, located just in front of or slightly overlapping anterior testis ; lobe of genital pore side of body further divided into 3–6 lobes, another lobe into 1–3 lobes. Oviduct bulbous proximally. Seminal receptacle small, usually dextral to median line, preovarian, containing no spermatozoa. Laurer's canal present. Mehlis' gland free in parenchyma, spreading widely, preovarian, usually sinistral to seminal receptacle. Receptaculum seminis uterinum conspicuous, in proximal part of uterus. Uterus much folded, occupying greater parts of hindbody, extending from anterior border of ventral sucker to post-testicular area ; metraterm tubular, long, aspinous, ventral to cirrus pouch, provided with circular muscle fibers in its distal part. Eggs numerous, golden yellow, 0.014–0.016 by 0.024–0.030 mm, operculate, possessing a slender filament about 0.130–0.170 mm long on non-operculated pole, not embryonated. Vitellaria acinous, distributed from behind ventral sucker to posterior end of body ; vitelline reservoir indistinct.

Excretory system of a mesostoma type ; vesicle tubular, reaching midlevel of posterior testis ; main collecting tubes divided into anterior and posterior collecting tubes at level of ventral sucker ; flame cell formula not worked out ; pore terminal.

Remarks : Of the six specimens examined, four possessed the sinistromarginal genital pore and the remaining two had the dextromarginal genital pore. In connection with the location of genital pore, the cirrus pouch, ootype-Mehlis' gland complex, and proximal part of uterus were usually deposited in the genital pore side of the body, and the seminal receptacle was in the other side of the body.

Summary

A new digenetic trematode, *Anarhichotrema ochotense* gen. et sp. n., has been described from the small intestine of the Bering wolf-fish, *Anarhichas orientalis* Pallas, caught in the Okhotsk Sea. The new genus is distinguishable from any of the previously described genera by its marginal genital pore

at the level of the ventral sucker, directly tandem testes, unarmed cirrus, aspinous metraterm, multilobed ovary, vitellaria extending from behind the ventral sucker to the posterior end of the body, and eggs with a polar filament. It is provisionally assigned to the subfamily Lissorchiinae, the family Lissorchiidae.

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オホーツク海産オオカミウオ *Anarhichas orientalis* に寄生する新属新種の吸虫 *Anarhichotrema ochotense* gen. et sp. n. について (Trematoda: Lissorhiidae)

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オホーツク海産オオカミウオ *Anarhichas orientalis* Pallas (雄1匹, 1972年8月21日) の小腸中・下部からえられた小形成熟吸虫の6個体に基づき, この吸虫を新属新種 *Anarhichotrema ochotense* gen. et sp. n. として記載命名した. 新属は既知属から次の点で区別される: (1) 生殖孔は腹吸盤位で体側に位置し, (2) 精巣は縦に並び, (3) 陰茎とメトラテルムは皮棘をもたなく, (4) 卵巣はいくつにも分葉しており, (5) 卵黄腺は腹吸盤後方から体後端にまで分布し, それと (6) 卵殻に1本の糸状突起があることなどである. いまのところ, 新属の分類上の位置を決めかねるが, 仮に Lissorchiidae 科 Lissorchiinae 亜科に含めておく.