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ABSTRACT. *Thalassogenus archaeops* n.sp., the second species belonging to the extraordinary enoplid genus of predatory terrestrial nematodes first described by Andrássy (1973), is described from Western Samoa. The importance of the arrangement of the stoma, structure of the cardia and its accompanying glands, and the presence of an eye-spot and six caudal glands is discussed and a new family Thalassogeneridae is proposed for the genus.


In recent years a number of unusual nematodes have been discovered in Australia, New Zealand and the islands of the Central and South Pacific, resulting in the erection of several genera that have not always fitted easily into existing classifications. During preliminary examination of material from a survey of Pacific Island groups collected by one of us (KJOW) in 1976-1977, an interesting nematode, apparently a mononch, was noted in a single sample. On closer investigation it proved to belong to the monotypic enoplid genus *Thalassogenus* Andrássy, 1973, which was described from Papua New Guinea. Our species, from Western Samoa, though closely related to the generitype, *T. paradoxus* Andrássy, 1973, represents a new species. The observations on its morphology given in the description below throw more light on this remarkable genus and its affinities.

**Materials and Methods**

Specimens were heat-fixed in F.A. 4:10, cleared in warm lactophenol and processed to a glycerine mountant containing traces of picric acid by a modified Baker method. One female and the single juvenile were processed to the same mountant by a glycerine-alcohol slow evaporation technique.

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*Thalassogenus archaeops* n.sp.

Figs 1-18

**Dimensions.** Females (4): L = 1.66-1.90 mm (mean 1.81); a = 29-34 (31); b = 4.3-4.7 (4.4); c = 34-47 (38); V = 59-62 (61).

Holotype female: L = 1.9 mm; a = 30; b = 4.7; c = 36; V = 62.

**Description.** Females. Body stout, an open spiral on heat death with a slight taper anteriorly and posteriorly. Cuticle smooth, about 3.5 μm at base of lip region, 3.5-4.5 μm at midbody, increasing to 5 or 6 μm on tail. Hyaline portion of terminus 6-8 μm thick.

Lip region continuous, 36-41 μm wide at level of amphid apertures, flattened anteriorly to produce a truncate outline. Lips six, four submedian and two lateral, rounded, each bearing two projecting labial papillae, one on the inner and one on the outer side. Papillae consisting of small convex base thinning abruptly to short setose apex and arranged in two circles; the inner circle with narrower bases inclined towards the mouth, the outer circle with wider bases inclined outwards. Four additional submedian cephalic papillae present at level of amphids. Amphid aperture a small slit about 3.5 μm wide, located at 32-34 μm from the base of stoma, leading into a large sensillar pouch about 8 μm wide which extends posteriorly to a maximum of 15 μm from amphid aperture.

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T. paradoxus, Andrássy, 1973 but can be differentiated by its smaller body length (1.66–1.90 mm compared to 2.3–2.5 mm in T. paradoxus), smaller length of buccal cavity (41–47 µm compared to 61–63 µm), truncate lip region, inward orientation of the inner ring of labial papillae, amphid apertures that are slit-like not pore-like and presence of four cardiac glands not three. According to the original description T. paradoxus possessed three caudal glands. However, examination of a female and the juvenile paratype showed that six glands were actually present arranged in three pairs as in T. archaeops. The generic diagnosis is accordingly emended.

**Type habitat and locality.** Soil around roots of taro, *Colocasia esculenta* (L.) Schott at 3,000 ft (914 m) on Mt Mata o le Afi, Savai'i Island, Western Samoa. Collected September 1976.

**Type material.** The holotype, one female paratype and one juvenile have been deposited at the Commonwealth Institute of Parasitology, St. Albans, Herts, England. An additional female, cut and mounted in several ways is in the same collection. One further female paratype is with the Department of Zoology, Aligarh Muslim University, Aligarh, India.

**Etymology of specific epithet.** Archaeops, Greek, from αρχαιός = ancient + ὤψ = eye.

**Discussion**

Andrássy (1973) considered *Thalassogenus* a true marine residual because of several of its unusual morphological features, in particular the presence of an eye-spot which had hitherto been reported only in marine nematodes. He placed *Thalassogenus* in the order Enoplida Chitwood, 1933; suborder Oncholaimina De Coninck, 1965; superfamily Pelagonema-

*Thalassogenus* bears a strong resemblance to predatory nematodes of the order Mononchida Jairajpuri, 1969, particularly forms such as *Cobbonchus* or *Miconchus*. This lead Jensen (1976) to the belief that it was not a member of the Pelagonematidae but belonged in either the Tripyloidea De Man, 1876 or the Mononchida. Lorenzen (1981) took this one step further and transferred *Thalassogenus* to the family Mononchidae Filipjev, 1934 of the order Mononchida because of its stoma, oesophagus and tail.

Our study clearly shows that despite superficial resemblances, *Thalassogenus* cannot be a member of the Mononchida because it possesses partly setose papillae (papillae in the Mononchida are mamilliform), a stoma composed of unarmed vertical plates and armed oblique plates (only the vertical plates are ever armed in the Mononchida), oesophageal gland ducts opening through the dorsal tooth (not into the oesophageal lumen) and cardiac glands and an eye-spot (both of which are absent in the Mononchida). We consider these differences to be of a fundamental nature and agree with Andnissy's classification of the genus in the Enoplida, Oncholaimina and Pelagonematoidea. However, we do not accept its placement with the Pelagonematidae. In our opinion the characters of the stoma and the presence of an eye-spot in a terrestrial nematode justify the creation of a new family. This is formally set out below.

The position of the eye-spot in *Thalassogenus*, its mode of connection to the nerve ring, its lenticular shape in optical cross section, its greater width than length in ventral view, even the fact that the cuticle has to bulge over it slightly to accommodate it are all very reminiscent of the hemizonid of the Tylenchoidea and it is not impossible that the hemizonid and eye-spot are homologous structures.

This is not to suggest that *Thalassogenus* is a near relative of the tylenchs; rather, its two species appear to have evolved from a single marine form that came ashore, adapted to a terrestrial predatory habit, speciated and left its descendants as relicts on their respective mountains separated by nearly 4000 kilometres of sea.

**Family THALASSOGENERIDAE n.fam.**

**Diagnosis.** Pelagonematoidea. Stoma large, vertical plates unarmed, basal oblique plates armed with three sharply-pointed teeth of equal size, apices directed anteriorly. Oesophagus very muscular, cylindrical. Cardiac glands large. Single eye-spot present immediately posterior and ventral to nerve ring. Two sets of three caudal glands present. Predatory, terrestrial.

**Type and only genus.** *Thalassogenus* Andrássy, 1973.

**Generic diagnosis (emended).** Head with six lips bearing two rings of six papillae. Papillae setose at least in part. Four additional cephalic papillae borne at level of amphid apertures. Amphid apertures small, pore-like or slit-like, in anterior half of buccal cavity. Buccal cavity barrel-shaped, longer than wide, mainly parallel, sided, composed of vertical and oblique plates, the latter forming the base and armed with three teeth of equal size, one dorsal, two sublateral. Oesophagus cylindrical, muscular. Eye-spot present immediately posterior and ventral to nerve ring, connected to it by short commissure. Cardiac glands prominent. Female gonads paired, reflexed. Tail rounded with six caudal glands arranged in two lines of three. Sexpartite terminal sac present communicating to exterior by fine duct. Juveniles similar to female except for gonad development, replacement teeth absent. Male unknown.

**Type species:** *T. paradoxus* Andrássy, 1973.

**Other species:** *T. archaeops* n.sp.

**References**


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Figs 1–7. *Thalassogenus archaeops* n.sp. adult female. 1, entire animal. 2, anterior end. 3, face view. 4, cross-section of stoma. 5, cross-section of oesophagus near stoma. 6, posterior end. 7, habitus.
Figs 8–15. *Thalassogenus archaeops* n.sp. 8–13, adult female. 8, nerve ring and eye-spot, lateral. 9, nerve ring and eye-spot, ventral. 10, oesophageal-intestinal junction showing cardiac glands. 11, reproductive system. 12, posterior end (see also Fig. 6). 13, posterior end, ventral view. 14, juvenile, anterior end. 15, juvenile, posterior end.
Figs 16-18. *Thalassogenus archaeops* n.sp., adult female. 16 & 17, anterior end. 18, detail of eye-spot.