

**STUDIES OF PLANT AND SOIL NEMATODES. 12. THE
EUCALYPT CYSTOID NEMATODE CRYPHODERA
EUCALYPTI N.G., N.SP. (NEMATODA:HETERO-
DERIDAE), A PARASITE OF EUCALYPTS IN
QUEENSLAND**

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SUMMARY

A new genus, *Cryphodera*, is erected and the type species *C. eucalypti*, a parasite of eucalypts, is described. This genus resembles *Meloidodera* Chitwood, Hannon and Esser, from which it is distinguished by the more posterior position of the vulva.

In 1964, larvae and males of a new species of Heteroderidae were obtained from soil in eucalypt forest at Long Pocket, Brisbane. Females were found partially embedded in small ungalled roots of *Eucalyptus major* (Maiden) Blakely (a grey gum) (Figure 1).

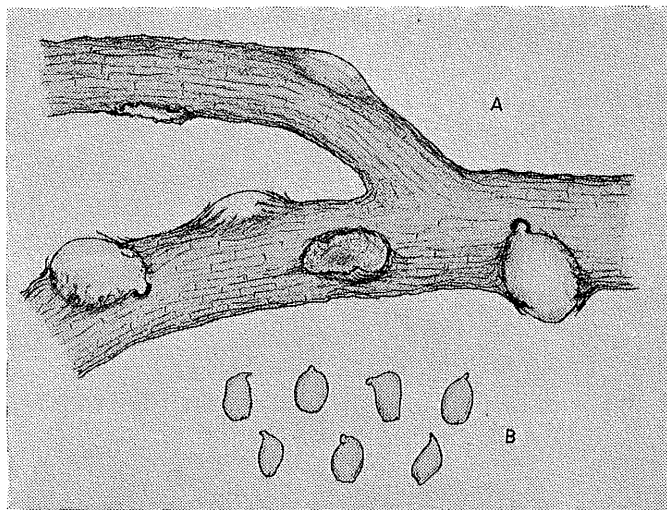


Fig. 1.—*Cryphodera eucalypti* n.sp. A, females infesting eucalypt root; B, variation in shape of females.

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The species reproduced on *E. sideroxylon* A. Cunn. ex Maiden (red iron-bark), *E. crebra* F. Muell. (narrow-leaved ironbark) and *E. punctata* DC. (a grey gum) planted in soil from the type locality.

Mature females were covered with a loose subcrystalline layer which dissolved in lactophenol. The cuticle did not harden to form a protective cyst as in *Heterodera*.

A new genus *Cryphodera* is erected for this species, which appears to link *Heterodera* Schmidt and *Meloidodera* Chitwood, Hannon and Esser.

CRYPHODERA n.g.

Definition.—Heteroderidae. *Females:* Body ovoid with a distinct neck usually bent laterally. Cuticle thick with transverse striae and subcuticular dots. Excretory pore behind neck. Vulva 45–70 μ from anus. Area between vulva and anus flat to concave. Eggs not deposited in external sac. *Males:* Body not constricted behind lip region. Lip cap present. Lateral lips smaller than subdorsal and subventral lips. Amphid apertures slit-like. Posterior cephalids opposite middle of stylet. *Larvae:* Cephalic sclerotization well developed. Lip region consists of lip cap and three post-labial annules. Amphid apertures slit-like. Phasmids large, a short distance behind anus.

Type species.—*Cryphodera eucalypti* n.sp.

Females (10).—Length = 400–636 μ ; neck = 79–181 μ ; width = 201–274 μ ; stylet = 27.0–35.0 μ ; prorhabdion = 19.0–22.8 μ .

Holotype.—Length = 402 μ ; neck = 102 μ ; width = 217 μ ; stylet = 34.0 μ ; prorhabdion = 22.6 μ .

Body ovoid with a distinct neck usually bent laterally. Length along ventral line longer than along dorsal line. Cuticle 8–9 μ thick. Transverse striae about 1.0 μ apart in mid-body. Subcuticular dots not arranged in rows. Lateral fields marked by anastomoses in striae. Lip region not set off; hexaradiate sclerotization weaker than in males and larvae. Labial disc flat, broad. Stylet knobs rounded, 5.0 (5.0–7.2) μ wide, directed posteriorly. Dorsal oesophageal gland orifice 5.1 (5.1–7.4) μ behind stylet. Oesophagus with spherical metacarpus and short terminal lobe. Excretory pore behind neck. Vulva transverse, 45 (44–49) μ wide, 47 (46–70) μ from anus. Ovaries paired, prodelfic, coiled; developing oocytes in 3–4 rows. Phasmids dot-like, 19.8 (13.0–21.0) μ apart, 20.0 and 24.0 (12.0–25.5) μ from subterminal anus. Area between vulva and anus flat to concave, cuticle folded.

Males (10).—L = 596–894 μ ; a = 27.1–42.4 μ ; b = 5.9–8.0 μ ; b¹ = 3.6–4.7; stylet = 29.4–37.1 μ ; prorhabdion = 16.5–20.0 μ ; P.E. = 15.6–18.1; spicules = 21.2–28.0 μ ; gubernaculum = 6.4–9.0 μ .

Allotype.—L = 786 μ ; a = 41.6; b = 7.5; b¹ = 4.4; stylet = 32.6; prorhabdion = 19.1 μ ; P.E. = 18.1; spicules = 26.5 μ ; gubernaculum = 6.5 μ .

***Cryphodera eucalypti* n.sp.**
(Eucalypt cystoid nematode)

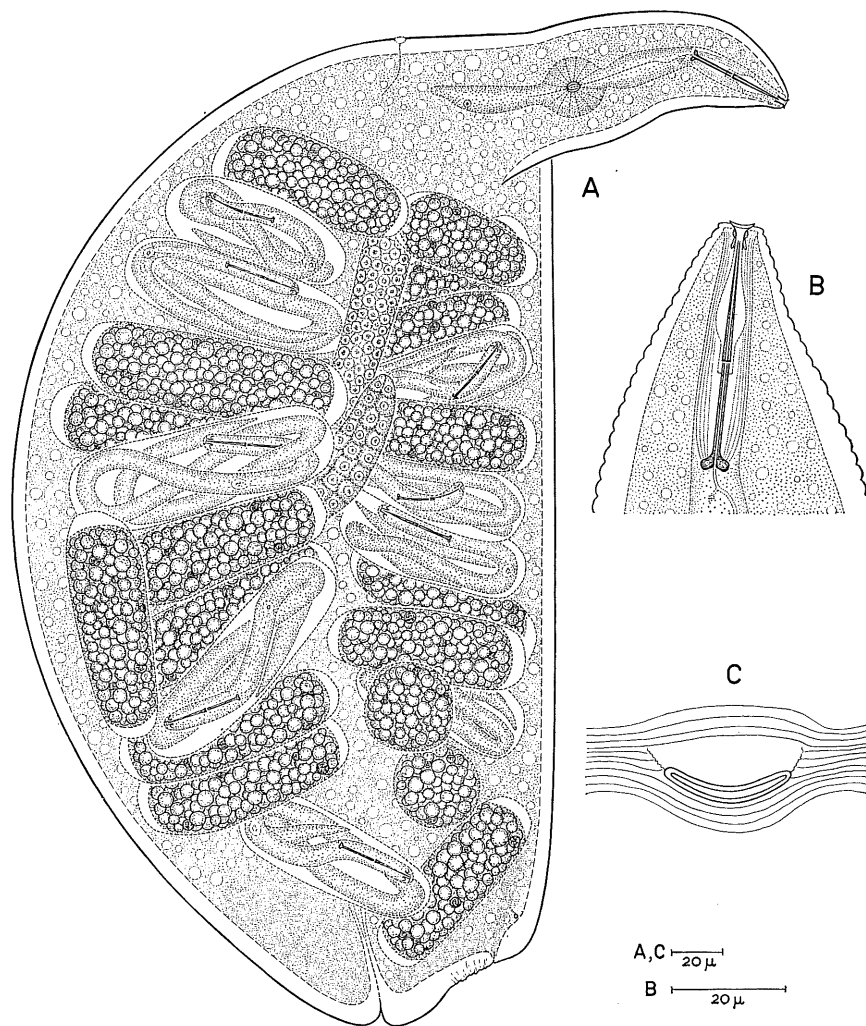


Fig. 2.—*Cryphodera eucalypti* n.sp. female. A, lateral view; B, head; C, pattern of striations around vulva.

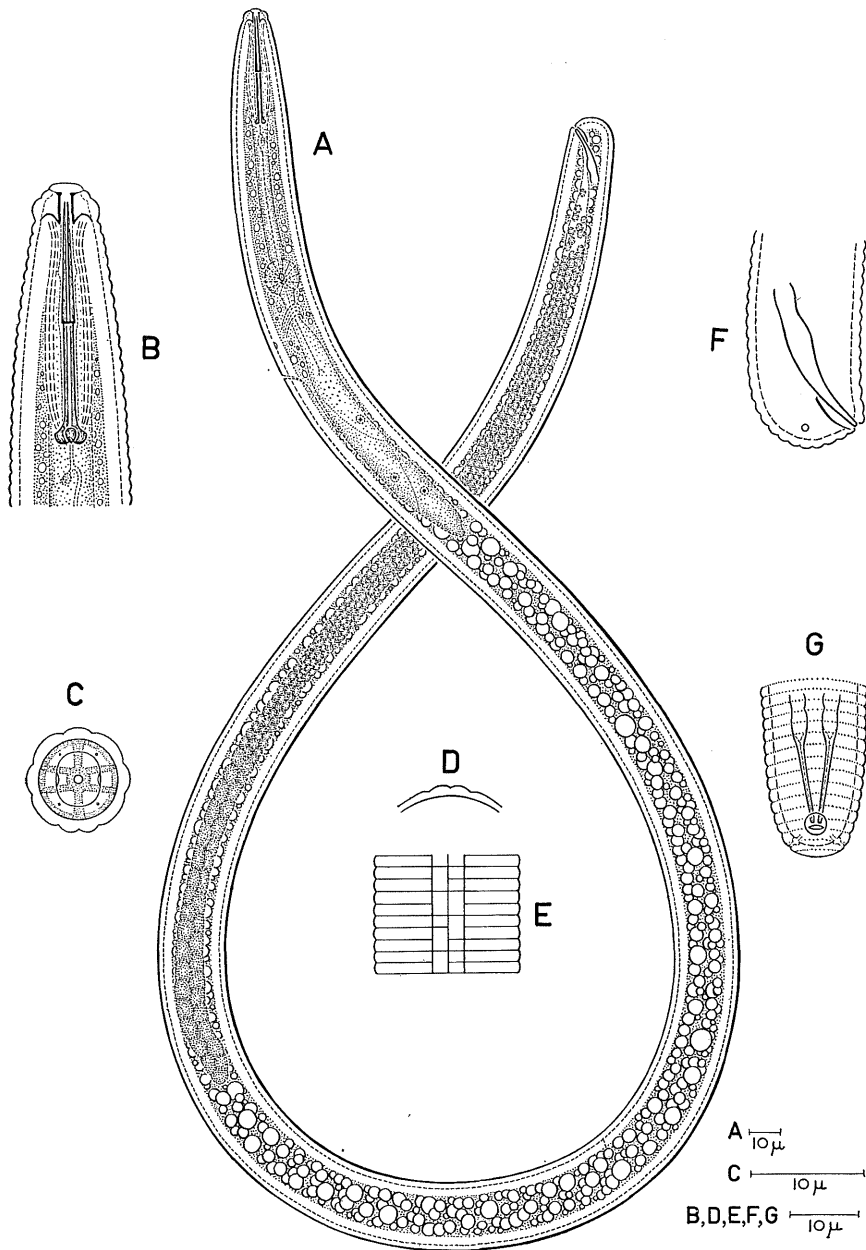


Fig. 3.—*Cryphodera eucalypti* n.sp. male. A, lateral view; B, head; C, en face view; D, cross-section of lateral field in mid-body region; E, lateral field in mid-body region; F, lateral view of tail; G, ventral view of tail.

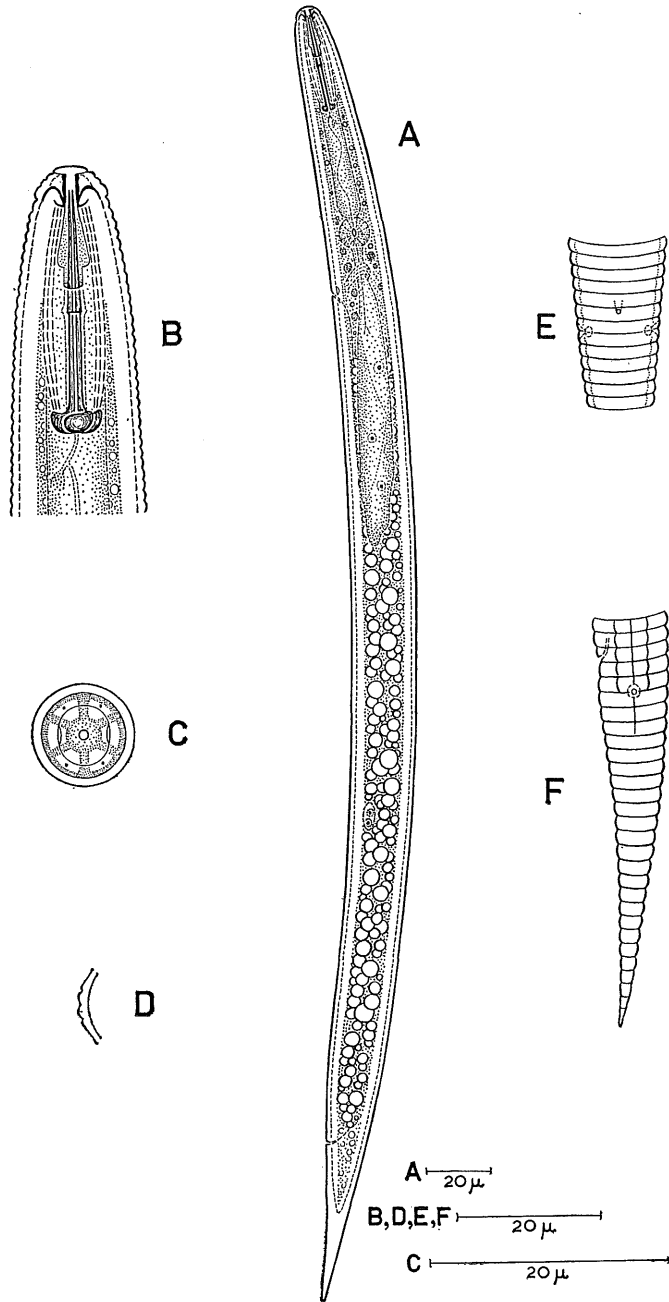


Fig. 4.—*Cryphodera eucalypti* n.sp. second-stage larva. A, lateral view; B, head; C, *en face* view; D, cross-section of lateral field in mid-body region; E, ventral view of anal region; F, tail.

Body slightly curved when relaxed, posterior end twisted. Transverse striae $1.6-1.9 \mu$ apart in mid-body. Lateral fields one-sixth as wide as body, marked by three incisures (2 contiguous longitudinal ridges) extending from tail terminus to anterior portion of stylet, completely areolated except in mid-body. Lip region set off, made up of labial disc and three post-labial annules (separation of second and third annules often obscure); internal hexaradiate sclerotization well developed. Longitudinal grooves at lower part of lip region. Amphid apertures slit-like. Lateral lips smaller than subdorsal and subventral lips. Stylet robust; knobbed base 4 (4-5) μ wide; knobs directed posteriorly. Dorsal oesophageal gland orifice 5.0 ($5.0-7.8 \mu$ behind stylet. Posterior cephalids opposite middle of stylet. Hemizonid 7 (4-7) annules anterior to excretory pore. Oesophagus with ovate metacarpus, short isthmus and long terminal lobe overlapping intestine laterally. Testis single, prodelphic, outstretched. Spicules arcuate, tips bluntly rounded. Gubernaculum thin, slightly arcuate. Phasmids small, in middle of tail.

Second-stage larvae (10).—L = 379-461 μ ; a = 22.0-26.0; b = 3.5-4.8; b¹ = 2.1-2.4; c = 7.9-9.8; stylet = 26.0-35.9 μ ; prorhabdion = 14.7-17.1 μ ; P.E. = 23.2-25.4.

Body practically straight when relaxed. Transverse striae $1.5-1.6 \mu$ apart in mid-body, slightly wider near anus. Lateral fields one-fourth as wide as body, bearing three incisures (2 contiguous longitudinal ridges) extending to phasmids, posterior to which a single incisure crosses 3-4 annules; fields areolated completely except in mid-body. Lip region set off, marked by four transverse striae; internal sclerotization hexaradiate, well developed. Lip region consists of lip cap and three post-labial annules; internal cephalic sclerotization hexaradiate, well developed. Amphid apertures slit-like. Stylet robust, knobbed base $4.0-5.0 \mu$ wide; anterior margin of knobs concave. Dorsal oesophageal gland orifice $4.3-5.0 \mu$ behind stylet. Hemizonid immediately anterior to excretory pore. Procorpus of oesophagus constricted near metacarpus. Oesophageal glands in long lobe overlapping intestine laterally. Tail elongate conoid, $3.7-3.9$ anal body diameters long; terminus bluntly rounded; hyaline portion slightly shorter than stylet. Phasmids large, 2-4 annules posterior to anus.

Eggs.— $101-111 \mu \times 33-43 \mu$. Fifty eggs were seen in the body of a female. Larvae in eggs were folded three times.

Types.—Holotype (female) and allotype (male) slides Reg. No. G4131 and G4132 respectively in the Queensland Museum; paratypes in the Nematology Collection of the Department of Primary Industries, Brisbane.

Type host.—*Eucalyptus major* (Maiden) Blakely.

Type locality.—Queensland: bank of the Brisbane River near the Department of Primary Industries Science Laboratories, Long Pocket, Brisbane.

Other records.—Females of *C. eucalypti* were found in the roots of *Eucalyptus andrewsi* Maiden (messmate) at Pozieres, Queensland (Portion 104, Parish of Marsh). Larvae were extracted from soil around eucalypts at Nambour.

Discussion

Cryphodera appears to be more closely related to *Meloidodera* than to *Heterodera*. Females do not develop into a hard resistant cyst, males have a labial disc and the phasmids in second-stage larvae are large and situated a short distance behind the anus. Females are distinguished from those of *Meloidodera floridensis* Chitwood, Hannon and Esser, 1956, *M. charis* Hopper, 1960, and *M. armeniaca* Pogosyan, 1960, by the position of the vulva in relation to the anus. Males have longer stylets than those of *Meloidodera floridensis* and are not constricted behind the lip region.

Acknowledgement

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