

Parasitylenchus orthotomici sp. n. (Tylenchida: Allantonematidae) from *Orthotomicus angulatus* (Coleoptera: Scolytidae), with Note on Parasitism

소나무빨나무좀(*Orthotomicus angulatus*) (딱정벌레목 : 나무좀과)에서
발견된 천적선충 신종과 기생율

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ABSTRACT *Parasitylenchus orthotomici* sp. n. is described as a nematode parasite of *Orthotomicus angulatus* in Korea. In a sample of 170 beetles randomly collected from *Pinus densiflora* S. et. Z, 51.8% were parasitized by nematodes. The number of nematodes per bark beetle was ranged from 1 to 97. The parasitisms of F₁ generation were ranged from 43.2% to 52%. There was no positive tendency in nematode parasitism between sun-side and shade-side.

KEY WORDS *Parasitylenchus orthotomici*, *Orthotomicus angulatus*, bark beetle, *Cryphalus fulvus*, nematode parasitism

抄 錄 나무좀인 *Orthotomicus angulatus*에서 천적기생선충인 *Parasitylenchus orthotomici*가 신종으로 기술되었으며, 적송에서 채집된 170마리의 표본에서 51.8%가 선충에 기생되어 있었다. 한마리의 나무좀에서 발견된 선충수는 1~97마리였다. F₁ 세대의 기생율도 43.2%~52%로 높았으며 양지 쪽과 음지쪽의 서식나무간좀에는 기생율에 일정한 경향이 없었다.

檢 索 語 *Parasitylenchus orthotomici*, *Orthotomicus angulatus*, 수피나무좀, *Cryphalus fulvus*, 선충기생율

The bark beetles, *Orthotomicus angulatus* (Eichhoff) and *Cryphalus fulvus* Nijima are common species encountered from pine forest in Korea. These beetles attack the stem, branch, or twig of the pine trees. The first author found nematode parasite and observed high nematode parasitism from these beetles.

Nematodes are one of the major biotic factors affecting bark beetle population (Massey 1974), that is, these nematodes generally do not kill their insect hosts, but are capable of altering host behavior, reducing fecundity,

reducing longevity, reducing flight ability, or delaying emergence (Kaya 1984). This paper will provide the description of a new species of nematode parasite found from *O. angulatus* and their parasitism.

MATERIALS AND METHODS

Adult of *O. angulatus*(OA) were collected from the red pine (*Pinus densiflora*) at Sacheon County, and *Cryphalus fulvus* from the black pine (*P. thunbergii*) at Chinju, Gyeon gnam province in 1987. All the beetles taken were dissected in 0.75% Ringer's solution. The *Parasitylenchus* specimens removed from the beetle's hemocoel were killed and fixed in hot (80°C) 10% formalin and processed to pure glycerin (Southey 1970).

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The boles of red pine infected with OA were kept with three 50cm freshly cut boles of black pine in each emergence cage(60×65 cm) at room temperature ($25\pm 2^{\circ}\text{C}$) for 25~30 days to compare the nematode parasitism of parent and offspring generation, and between two different host trees. The beetles emerged from black pine were dissected in 0.75% Ringer's solution and checked endoparasitic nematodes.

Description of New Species

Parasitylenchus orthotomici sp. n.

Adult parasitic female(n=8) : Length=1,093(833~1,173) μ : Width=78.9(48~96) μ : a=

13.9(12.1~17.5) : V=97.9%(97.1~97.9%)

Body ventrally curved when fixed, C-shaped, stout cuticle thick; lip region distinct, nipple-shape; stylet 8 μ , slender, with fine basal knob; esophagous not well visible; ovary single, reflexed twice; excretory pore, nerve ring not visible; vulva well-developed; anal opening not distinguishable, but at slightly anterior to terminus; tail strongly pointed.

Diagnosis: Distinct because of prominent strongly pointed tail. Somewhat related to *Parasitylenchus hylastis*(Wülker 1923) Filipjev, but differs in more stouter, stylet length, and vulval position.

Type host: *Orthotomicus angulatus* Eich-

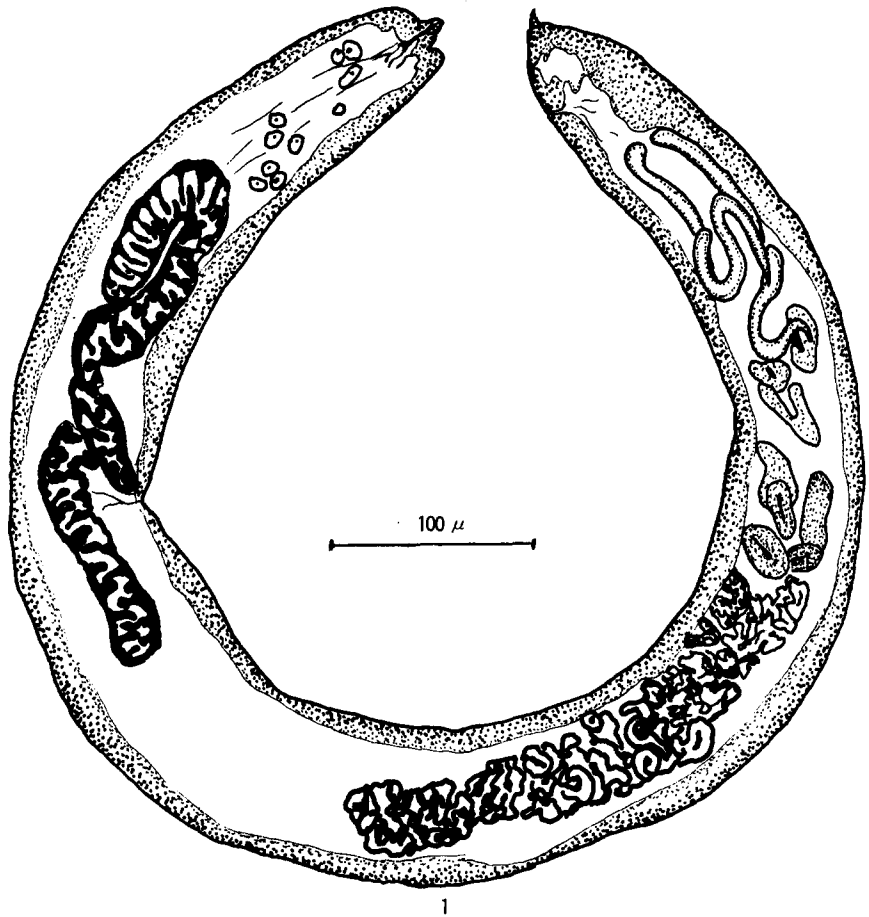


Fig. 1. General shape of *Parasitylenchus orthotomici* sp. n.

hoff) (Scolytidae: Coleoptera) from *Pinus densiflora* S. et Z.

Type locality: Sacheon county, Gyeongnam province, Korea, Feb. 3 1987.

The number of nematodes per bark beetle was ranged from one to ninety-seven.

Incidence of parasitism: Of 170 *Orthotomicus angulatus* beetles emerged from the red pine in the parent generation, 51.8% (88 beetles) were parasitized by nematodes. In F₁ generation, parasitism was 43.2% (137/317) in experiment 1 whereas 52% (52/100) in experiment 2 even reared on different host trees.

There were no positive tendencies in parasitism between sun-side and shade-side, i.e., *Cryphalus fulvus* of sun-side was parasitized by nematodes at 31.1% while shade-side 16.4%. However, in *Orthotomicus angulatus*, the parasitism of sun-side was 10.7%, but that of shade-side was 15.8%.

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