

1971

P. A. A. LOOF
Org. Prinslaan 22
EDE

Description of the Larval stages of *Criconema vishwanathum* Edward & Misra, 1965 and *Hemicriconemoides communis* Edward and Misra 1963

SOHAN LAL MISRA* and J. C. EDWARD**

Criconema vishwanathum Edward and Misra, 1965 syn. *C. multisquamatum* Siddiqi, 1961. (Fig. 1 A-J).

Measurements:

20 Females: L=0.40—0.63 mm; a=5-14; b=2.5—5; c=11-20; v=91-94; spear=80-98 μ, body annules=42-48.

7 2nd stage larvae: L=0.19—0.26 mm; a=6:10; b=2-3; c=12-23; spear=40-50 μ; body annules=55-65.

6 3rd stage larvae: L=0.25—0.36 mm; a=6-10; b=2.4-4; c=15.33; spear=55-65 μ; body annules=50-65.

8 4th stage larvae: L=0.27-0.45 mm; a=6-10; b=2.5-4; c=15-25; spear=65-80 μ; body annules=60-65.

8 young females inside the third moult: L=0.30-0.45 mm; a=6-8; b=2.5-4; c=13-0; v=86-91; spear=85-95 u; body annules=45-50.

2nd stage larve: Body cylindrical, tapering evenly at both ends to a convex conoid bead end and posteriorly to a narrowly conical tail end. Head consisting of two annules. 1st annule 13 μ across with its outer margins anteriorly pointed; 2nd annule 11 μ across, non-retrorse with the outer margins straight. Body annulations not very distinct, bearing 6 rows of scales with 2-5 μ long setae. An oval labial disc present over the 1st annule. Sub-lateral lobes not prominent.

3rd stage larve: Body cylindrical, tapering evenly at both ends to a convex conoid head end as in the 2nd stage larvae and posteriorly to a narrowly conical tail end. Head consisting of two well defined annules, 1st annule 15 μ across with the outer margin pointing slightly forward, 2nd annule 12.5 μ across, non-retrorse with the outer margins straight. Body bearing 6-8 rows of scales with backwardly pointed setae, measuring 5-7 μ long. A slightly convex liable disc present over the 1st annule with prominent sublateral lobes. Body with straight broken lines running obliquely along its length. Suggestion of vulva 30 μ from posterior end; genital primordium somewhat indistinct due to thick body cuticle, however, appearing as undifferentiated mass of cells, 30-35 μ long and 15-18 μ wide.

4th stage farvae: The details of the body contour same as in the case of 3rd stage larvae. Head similar to the 3rd stage larvae. Body with 6-8 rows of scales bearing 14-16 μ long setae. Body with broken lines along its length as in the case of 3rd stage larvae. Vulva distinct on 9th annule from tail end, gonad 50-60 μ long with oocytes in two to three rows except near the anterior end.

Young female inside the 3rd moult: Body contour of the young female inside the moult similar to that of the adult, however having a continuous fringe of spines, numbering

*Department of Zoology, University of Allahabad, Allahabad, U. P., India.

**Department of Biology, Allahabad Agricultural Institute, Allahabad, U. P., India.

50-65 (increasing to 65-75 when mature).

2. *Hemicriconemoides communis* Edward and Misra, 1963, syn. *Criconema mangilerae* Edward and Misra, *H. cocophyllus* Siddiqi, 1961.

(Fig. 2 A-J)

Measurements:

200 Females: L=0.34-0.55 mm; a=12-25; b=4-5.5; c=14-21; V=89-95; spear=50-60 μ body annules=100-130.

15 males: L=0.27-0.33 mm; a=20-25; b=4-5; c=18-22; T=20-30; spicules=15-17 μ ; gubernaculum=4.2-4.9 μ .

5 2nd stage larvae: L=0.15-0.23 mm; a=8-11; b=3-4.5; c=14-16; spear=28-23 μ body annules=100-110.

50 3rd stage larvae: L=7.16-0.35 mm; 6-11; b=2-2.5; c=10-23; spear=35-45 a= μ ; body annules=110-130.

5 Juvenile male inside last moult: L=0.30-0.36 mm; a=7-11; b=3.5-4.5; c=10-15; V=88-91; spear=45-55 μ ; annules= body 110-130.

10 Juvenile males inside last moult: L=0.29-0.34 mm; a=14-20; b=3.5-5; c=13-16; spicule=22-25; gubernaculum=110:130.

In all two moults were observed outside the egg.

2nd stage larva: (Hatched from the egg): Body cylindrical, tapering anteriorly to a flat head end and posteriorly to a broadly conical tail end. Body coarsely annulated into 100-110 annules, not bearing any spines or setae. Head continuous with the body contour, consisting of two annules, 1st annule angular, directed outwards, 8 μ across and the 2nd rounded non-retorse, 2 μ across. Style 34 μ long with prorhabdion measuring 27 μ Basal knobs 7 μ across and 3 μ high with margins anteriorly arcuate. Oesophagus

fairly well developed, median bulb 10 μ across, isthmus 7 μ long and basal bulb 5.5 μ across. Oesophagus occupying 1/3-1/2 of the body length. Genital primordium approximately 20 μ long.

3rd stage larva: Body contour similar to that of 2nd stage larvae; cuticle having 8-12 rows of scales with setae, resembling those of *Criconema*. Body annules 110-130, each bearing a girdle of 8-12 retrorse scales with hyaline setae measuring 2.5 μ to 4 μ and the number of scales increasing with the diameter of the body. Head consisting of 2 annules, continuous with the body contour, 1st annule angular, 10 μ across bearing two small preoral lobe-like projections, the 2nd rounded, 11 μ across. Head contour entirely different from that of the adult. Style 35-45 μ long with prorhabdion measuring 32-41 μ long. Basal knobs with anteriorly arcuate margins Oesophagus well developed, occupying 1/3-1/2 of the body length, typical criconematoid with median bulb 10 μ across, isthmus 6 μ long and basal bulb 6.5 μ across. The genital primordia measuring 40-50 μ long, with groups of small rounded cells arranged in 2-3 rows except near the anterior end where the number of rows becomes one.

The 3rd stage larva moults (i.e. 2nd moult outside the egg) to become the adult female or male. Only in this stage, the larvae which are to develop into males after moulting are differentiated from those developing into females by their relatively slender and longer body.

Ensheathed males: Head similar to that of the adult male. Body enveloped by the last larval moult bearing 10-12 rows of retrorse scales with small setae. Spear shedding and oesophagus degenerating during the 3rd moult and adult without spear and oesophagus, spicules and gubernaculum, 24-25 μ

and 4-4.5 μ long respectively. The cuticle sheds at cdysis.

Synonymy of *Criconema mangiferae* Edward Misra, 1963, with *H. communis*.

Since the paratypes of *Criconema mangiferae* in the possession of the authors were few and distorted and requests for them were made by some investigators, the need for collection of fresh specimens from type locality arose. After continued and diligent search for a period of nearly one year only various stages of the life cycle of *Hemicriconemoides communis* were recovered. A thorough study of the larval stages revealed that *C. mangiferae* described earlier was not different from the third stage larvae of *H. communis*. In view of this *C. mangiferae* is synonymised with *H. communis*.

REFERENCES

1. Edward, J. C., and Misra, S. L. (1963a): *Criconema mangiferum* n.sp. associated with roots of mango in India. *Nematologica* **9**: 222-224.
2. ———(1963b): *Hemicriconemoides communis* n.sp. and *H. fitchi* n.sp. (Nematoda: Criconematidae) from Uttar Pradesh, India. *Nematologica* **9**: 405-411.
3. ———(1965): *Criconema vishwanathum* n.sp and four other hitherto described Criconematinae. *Nematologica* **11**: 566-572.
4. Siddiqi, M. R. (1961): Studies on species of *Criconematinae* (Nematoda: Tylenchida) from India. *Proc. helm. Soc. Wash.* **28**: 19-34.