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NEW RECORDS OF PESTIFEROUS LAND MOLLUSCS FROM RAJASTHAN, INDIA

SEEMA KUMAR and S.I. AHMED
Arid forest Research Institute, P.O. Krishi Mandi, New Palsi Road, Jodhpur-342 005, Rajasthan, India

INTRODUCTION

More than 1500 species of land mollusc are recorded from India. Out of these, twelve species *viz. Achatina fulica Bowdich, Ariophanta bajadera* (Pfeiffer), *Ariophanta ligulata Ferrussac, Ariophanta solata* (Benson), *Bensonia monticola* Hutton, *Cryptozona belangiri* Deshayes, *Cryptozona (Nilgiria) semirugata* (Beck.), *Cryptozona (Xestina) bistrialis* Beck., *Macrochlamys indica* (Godwin-Austen), *Opeas gracile* (Hutton), *Zootecus insularis* (Ehrenberg) and *Mariaella dussumieri* (Gray) are known to cause damage to agricultural, horticultural and plantation crops in India (Raut & Ghosh, 1984; Srivastava, 1992 and Subba Rao, 1975). So far, only two pestiferous land mollusc *Opeas gracile* (Hutton) and *Zootecus insularis* (Ehrenberg) are reported from Rajasthan (Subba Rao & Mitra, 1979 and Raut & Ghosh, 1984). *Laevicaulis alte* (Ferussac) is reported from Udaipur, Rajasthan but not as a pest (Ray & Mukherjee, 1963). The present paper reports for the first time, two more pestiferous land mollusc - *Laevicaulis alte* (Ferussac) and *Macrochlamys indica* (Godwin-Austen), as severe pests of neem seedlings in forest nurseries of Rajasthan along with new distributional records.

SYSTEMATIC ACCOUNT

1. ***Laevicaulis alte*** (Ferussac, 1821)

Phyllum	:	MOLLUSCA
Class	:	GASTROPODA
Subclass	:	GYMNOMORPHA
Order	:	STYLOMMATOPHORA
Family		VERONICELLIDAE
Genus		***Laevicaulis*** Simroth, 1913.

Laevicaulis alte (Ferussac, 1821)

1821. *Vaginulus alte* Ferussac, Tabl. Syst. Anim. Moll., Paris, p. 14.

1925. *Meisenheimeria alte* Hoffman. Tena. Z. Naturw., Jena, 61 : 226-228. Pl. V, Fig. 45 b.

1953. *Laevicaulis alte* Forcart. *Ann. Mus. Congo, Zool. Wct. Sci. Zool. Tervuren*, 23 : 13, 15, 17, 22, 63-68, Pl. II. Fig. 4, Pl. IV. Fig. 7, Map & (p. 65), Table 14 (p. 64).

1961. *Laevicaulis alte* Ray, *Treubia*, 25 (3) : 275.

1977. *Laevicaulis alte* Bishop, *Mcm. Qd. Mus.* 18 (1) : 55.

1979. *Laevicaulis alte* Subba Rao & Mitra. *Rec. Zool. Surv. India*, 75 : 1.

Material examined 25 exs. AFRI, nursery, 06.xi.1995; 10 exs. Lokswell nursery, 10.viii.1994; 12 exs. Grass Farm nursery, 5.ix.1993. all from Jodhpur; 12 exs. SFD nursery, Oscian, 15.vi.1993; 16 exs. SFD nursery, Tinweri, 15.vi.1993; 12 exs. SFD nursery, Phalodi, 15.vii.1993. Coll. S. Kumar; and 10 exs. Grass Farm Nursery, Jaipur, Coll. S. Narayan.

Diagnostic Features Specimens young to adult, length 7 mm. to 62 mm. A soft bodied animal without shell. Body elongate, oval on contraction, linear when extended. Head with two pairs of tentacles, retractile. Dorsal surface blackish brown, mantle is pigmented with dark brown colour usually with a yellowish line down the middle. Ventral surface creamish white in colour, Hermaphrodite.

Distribution India Andaman and Nicobar Islands, Andhra Pradesh, Bihar, Gujarat, Maharashtra, Pondicherry, Punjab, Rajasthan (Udaipur), Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Australia, China, East Africa, Formosa, Hong Kong, Indonesia, Loyalty Islands, Madagascar, Mauritius, New Caledonia, Philippines, Reunion Islands and Sri Lanka. (Ray, 1961; Benthem Jutting, 1952).

Host Plants Known to cause extensive damage to garden plants (Subba Rao & Mitra, 1991) and vegetable crops (Rao & Ramdass, 1953).

Remarks : First time reported as pest of neem seedlings. All stages feed voraciously on neem seedlings in forest nurseries resulting in mortality.

2. ***Macrochlamys indica*** Godwin - Austen, 1883

Order : STYLOMMATOPHORA
Family : ARIOPHANTIDAE
Subfamily : MACROCHLAMYDINAE
Genus ***Macrochlamys*** Gray, 1847

Macrochlamys indica Godwin-Austen, 1883

1883. *Macrochlamys indica* Godwin - Austen, Moll. Indica, 1 : 97, Pl. 18 Fig. 1-8.

1908. *Macrochlamys indica* Blandford & Godwin-Austen, Fauna Brit. India, Mollusca : 95, text-fig. 43.

1979. *Macrochlamys indica* Subba Rao & Mitra, Rec. Zool. Surv. India, 75 : 15.

Material Examined 2 exs. M.L. Sukhadia Univ. Campus, Udaipur, 24.viii.1995; 4 exs. AFRI nursery, 12.viii.1993; 6 exs. Lokswell nursery, 10.viii.1993; 2 exs. Grass Farm nursery, 5.ix.1993. all from Jodhpur; 2 exs. SFD nursery, Oscian, 15.vi.1993; 6 exs. SFD nursery, Tinweri, 15.vi.1993. and 2 exs. SFD nursery, Phalodi, 15.vii.1993. Coll. S. Kumar.

Diagnostic Features : Shell perforate, pale brown with smooth and polished surface, with five and half whorls and low spire. Last whorl much wider than the rest, rounded at the periphery. Aperture is oblique, columellar margin curved and oblique, peristome thin.

Distribution : India : Andaman Islands, Assam, Bihar, Delhi, Maharashtra, Orissa, West Bengal, Kerala and Tamil Nadu.

Host Plants : It has been reported as a pest of *Luffa* sp. Beans, Lettuce, Cole crops, *Moringa oleifera, Amaranthus blitum. Abelmoschus esculentus, Tagetes* spp. and *Chrysanthemum* sp. (Raut & Ghosh, 1984) and Money plant (Subba Rao, 1975).

Remarks : It is being reported for the first time from Rajasthan and as a pest on neem seedlings. It is a voracious plant feeder and found devouring young neem seedlings in different forest nurseries of State Forest Department (SFD) Rajasthan and Arid Forest Research Institute, Jodhpur.

Habit and Habitat : Land molluscs are restricted to moist habitats. They hide during the day in holes, grass dumps etc, and become active at night. The snails and slugs aestivate or hibernate during adverse conditions. The aestivating/hibernating mollusc population is of great significance as this population becomes responsible for "restocking an infested area" With the onset of monsoon the snails and slugs which have survived the stress and strain of adverse climatic conditions during aestivation/hibernation becomes active again and resume their biological activities. Molluscs prefer slightly alkaline sandy soils (pH 7.0-8.0). The fallen leaves, debris, animal dung and dead snails serves as food for mollusc. The eggs are laid in moist places. The cluster contain 15-100 eggs, depending on the age of the mollusc. Mollusc rehabilitates itself by rebuilding its population, spread all over again and becomes a menance.

Nature of Damage : Both *Macrochlamys indica* and *Laevicaulis alte* are voracious plant feeders and devour all parts of the seedlings. The young molluscs prefer tender leaves and stem and avoid harder portions, while older ones attack young as well as grown up seedlings. They feed voraciously on the main tender stem above the collar region by licking the bark which results in the girdling of the stem and subsequently the seedlings die due to the damage to the cambium. The debarked stem becomes very fragile and weak and easily breaks off with the slightest movement of wind. It has been observed that damage is beyond survival, in seedlings ranging from 10 cm - 15 cm, as the seedlings are eaten up completely, older seedlings are defoliated and stem is debarked and the plant is able to revive when prevented from further attack.

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