

NEW OR UNUSUAL RECORDS

## A further record of the New Zealand flatworm *Artioposthia triangulata* (Dendy) in England

B. BOAG, R. NEILSON, L. F. PALMER and H. D. JONES\*

Scottish Crop Research Institute, Invergowrie, Dundee DD2 5DA, and

\*Department of Environmental Biology, University of Manchester, Manchester M13 9PL, UK

Studies have shown the New Zealand flatworm to be a predator of earthworms and to be widely distributed throughout most of Ireland and Scotland. Except for one record in 1965, it had not been found in England until, in December 1992, it was positively identified from a garden centre near Manchester. Viable and empty egg capsules were also found suggesting that it had reproduced and become established in that nursery. During 1993 other confirmed reports were received from Yorkshire and East Anglia, indicating that it may be able to survive and multiply across large areas of England.

### INTRODUCTION AND DISTRIBUTION

*Artioposthia triangulata* was originally described from New Zealand in 1894 (Dendy, 1894) where its distribution is now restricted to relict woodlands and gardens in the South Island (Boag *et al.*, 1993). In 1963 it was found in Northern Ireland (Anonymous, 1964) and recorded from both England and Scotland in 1965 (Willis & Edwards, 1977; Wakelin & Vickerman, 1979). Except for the single recovery from near Carlisle and from visits to likely sites by one of the authors, no other sightings had been recorded from England or Wales during the last 27 years until it was found in a garden centre in the Manchester area in December 1992. The fact that adult, live, mature flatworms plus empty capsules were recovered from beneath plant pots and under stones, ornaments and polythene sheeting in a number of borders and areas set aside for the sale of containerized plants would suggest it had been present throughout the summer in the garden centre. Although widely publicized in England and Wales its distribution in these two countries contrasts significantly with its widespread distribution in Ireland (Blackshaw & Stewart, 1992) and in Scotland (Boag *et al.*, 1993), where a recent survey has located it in over 450 separate sites as far apart as Orkney in the north to the Solway Firth in the south. It has also been recorded from the Faroe Islands and Iceland (Bloch, 1992).

### IDENTIFICATION AND LOCATION

The majority of British planarians live in a marine or freshwater environment (Ball & Reynoldson, 1981). There are only 12 terrestrial species and of these only three are considered native (Jones, 1988). *Artioposthia triangulata* is easily recognized since it is the largest terrestrial flatworm to be found out of doors in the British Isles. The specimens found near Manchester were positively identified by B.B. and H.D.J. *Artioposthia triangulata* can measure up to 17 cm in length, is flattened dorsally and ventrally and covered with a sticky mucus. The dorsal surface is a dark purplish brown colour with a narrow buff/pale yellow margin with numerous small specks of grey in it (Fig. 1). The ventral side is also buff coloured with many minute grey specks. The mouth or peripharyngeal aperture and the genital aperture are situated on the mid line. In cross-section the dorsal surface can have a shallow dorsal ridge that virtually disappears when the flatworm elongates and narrows. When at rest it is usually broad and flattened and takes up a characteristic coiled habitus but it is also capable of relatively rapid movement, compared with that of an earthworm. *Artioposthia triangulata* is normally found under plant pots, stones, pieces of wood or polythene bags which are lying on bare soil but can be found below the soil surface if no shelter is available (Fyfe, 1937). In the absence of flatworms their presence can be suspected when black shiny egg capsules 4.5–8.5 mm long and



Fig. 1. *Artioposthia triangulata* (bar = 1 cm).

3.0–6.0 mm wide are found. Each capsule can contain 2–10 young, cream coloured flatworms. A peak in oviposition in early summer has been noted by Blackshaw in Northern Ireland (Blackshaw & Stewart, 1992) but capsules with young have been observed throughout the summer and autumn in Scotland.

#### IMPACT ON EARTHWORMS

Earthworms are the major constituent of the soil fauna throughout most of the British Isles and significantly affect the nutrient cycling, physical and chemical properties of the soil as well as the yield of crops (Lee, 1985; Logsdon & Linden, 1992) and act as a source of food for wildlife (MacDonald, 1983). Laboratory observations have shown that *A. triangulata* feeds on earthworms (Willis & Edwards, 1977; Blackshaw, 1991) and field observations and experiments by Blackshaw (1989, 1990) indicate that *A. triangulata* is responsible for decreasing earthworm numbers below detectable levels. However, under field conditions there may be a hierarchy of earthworm vulnerability to *A. triangulata*, with those species living near the soil surface being more vulnerable than those usually found inhabiting the deeper horizons of the soil; e.g. a residual population of *Octolasion cyareum* may have survived after other species had been eradicated from a field in Northern Ireland (Blackshaw & Stewart, 1992). These data, plus less well-documented evidence from nurserymen, farmers and domestic gardeners, would suggest that the appearance of *A. triangulata* is usually associated with the disappearance of earthworms. However, in eastern Scotland, there are a few well-documented examples from nurseries and domestic gardens where earthworms have survived over a decade after *A. triangulata* was first observed.

#### FUTURE IMPLICATIONS AND CONTROL

*Artioposthia triangulata* may not pose a serious problem to earthworms in England and Wales. It has been suggested that it may be too dry or warm for it to become widespread. *Artioposthia triangulata* does not occur in the warmer, drier North Island of New Zealand but has recently been recorded from cooler, wetter countries such as the Faroes and Iceland; the only record from England was in 1965 and as no other records have occurred from the Carlisle area it may have died out; in Ireland and Scotland initial single records from the same period have increased markedly until there are now over 400 from Scotland alone. However, the present record of *A. triangulata* being found throughout much of a garden centre near Manchester would suggest it has multiplied and spread from contaminated material which has been bought from Ireland and/or Scotland. The survival and reproduction of the flatworm in this garden centre would suggest that it may have the capability to become established throughout large parts of England and Wales, especially the cooler, wetter areas in Wales, the Pennines and the Lake District. This is particularly true when it is considered that this first record from England for over two decades is from a garden centre that sells thousands of containerized plants which are likely to be distributed throughout much of northern/central England.

There is no approved method of controlling the flatworm or eradicating it from contaminated premises. The propagation of planting material in soil free of flatworms and thereafter keeping them under hygienic conditions that do not allow them to become infected would seem to be the only prudent way of slowing down, if not containing, the future spread of *A. triangulata* within and between Britain and other countries which may be at risk. During 1992 the Department of the Environment had *A. triangulata* included on Schedule 9, Section 14 of the Wildlife and Countryside Act 1981 which makes it an offence knowingly to distribute the flatworm and puts an onus on nurseries and garden centres to control its spread.

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