

A study of *Forficula lesnei* Finot, 1887 (Dermaptera: Forficulidae) along the Stour Estuary

TIM GARDINER

Environment Agency, Fisheries, Recreation & Biodiversity (FRB), Icen House, Cobham Road, Ipswich, Suffolk IP3 9JD, U.K.
tim.gardiner@environment-agency.gov.uk

Synopsis

A small-scale survey of Lesne's Earwig, *Forficula lesnei* Finot, 1887 (Dermaptera: Forficulidae) along the Stour Estuary on the border of Essex and Suffolk was undertaken in August 2012. In four hours of standardised beating, four *F. lesnei* males were recorded, compared to 131 Common Earwigs, *Forficula auricularia* Linnaeus, 1758. Mature trees fringing a sea wall flood defence and along a railway embankment were utilised by *F. lesnei* during this study.

Key words: Dermaptera: Forficulidae, *Forficula lesnei*, *F. auricularia*, Essex, Suffolk.

Introduction

Lesne's Earwig, *Forficula lesnei* Finot, 1887, is a Nationally Scarce (Nb) insect that has a scattered distribution throughout southern England and Wales (Haes & Harding, 1997). *Forficula lesnei* is smaller and paler in colour than the Common Earwig, *Forficula auricularia* Linnaeus, 1758, and is notable for the absence of, or much reduced, hindwings (Marshall & Haes, 1988). The most distinctive identification feature is the flattened cerci that are straight for up to half their length in *F. lesnei* (Harvey, 2005). This earwig is probably under-recorded in the U.K., as recent survey efforts in Essex have shown the insect to be widespread but localised (see Harvey, 2005). In Suffolk there are only six records shown on the National Biodiversity Network (NBN) Gateway online database, with recent sightings from near the River Gipping at Bramford and at Bures adjacent to the River Stour. It is the aim of this short paper to describe a small-scale, standardised beating survey in riparian habitats along the Stour Estuary from Flatford Mill to Manningtree to determine the presence or absence of *F. lesnei*. The results are discussed in relation to the conservation of *F. lesnei* along the Stour Estuary, with particular reference to tidal flood defences (sea walls) where scrub has recently been cleared by the Environment Agency (EA).

Study sites and method

Hedgerow beating was used to locate earwigs using the method devised by Gardiner (2010a). To standardise sampling effort, a total of 30 minutes was spent beating hedgerows at eight sites that are located from Flatford Mill to Manningtree. The aim was to sample four sites on the northern side of the tidal Stour Estuary in Suffolk and four on the southern (Essex) side. The eight survey sites (four in Essex and four in Suffolk) are detailed in Table 1.

Beating was conducted randomly throughout a range of hedgerow, scrub and woodland habitats, and approximately 40 locations were sampled (as the 30 minute period allowed) at each of the eight sites. Tree branches were struck five times at each beating location at varying heights with a one-metre pole. A plastic

bowl (area 30 × 30 cm: sides 20 cm high) was used to collect earwigs dislodged from the branches. Beating was conducted between 12–23 August 2012.

Results and discussion

Forficula lesnei was recorded at three of the eight survey sites (two new 10 × 10 km square records: TM03 and TM13), with four males recorded in this study (Table 1). *Forficula auricularia* was the most frequently observed species (97% of sightings) along the Stour Estuary, which is in line with a survey of green lanes in Essex where 98% of earwigs beaten were this species, with only five sightings of *F. lesnei* (Gardiner, 2010a). Records of *F. lesnei* were obtained from both the Essex and Suffolk side of the Stour in TM13 but only on the Essex side in TM03. Males were beaten from *Fraxinus excelsior* L. and *Quercus robur* L. in this study, two trees from which they have been taken in Essex (Harvey, 2005). Surprisingly, no *F. lesnei* were beaten from *Prunus spinosa* L., *Rubus fruticosus* aggr. or *Rosa canina* L., woody species from which they have been taken in the Essex green lane study (Gardiner, 2010a). *Forficula lesnei* has also been beaten from coastal scrub on Skippers Island in Hamford Water, Essex, suggesting that unmanaged woody growth is favourable for this insect (Gardiner, 2010b)

The Environment Agency has recently cleared scrub and trees on the flood embankments that stretch from Judas Gap to Manningtree on the Essex side of the tidal River Stour. Woody growth was cleared from the raised banks over the winter of 2010/2011 so that the sea walls could be inspected by engineers and to improve the structural integrity of the banks. To this end much *P. spinosa*, *R. canina* and *R. fruticosus* aggr. was cut down and is only now starting to regenerate on the sea walls. No *F. lesnei* were beaten from the regenerating scrub, suggesting that this clearance may have had a negative impact on this species. However, where mature *P. spinosa* thickets were not cut back by the Environment Agency on several sections of the Cattawade Marshes flood embankments and in hedgerows to the north of the Estuary, no *F. lesnei* were recorded either, suggesting that scrub may not be an important habitat for the insect along this stretch of the Stour Estuary.

Fortunately, mature scrub and trees which were on the flat areas bordering the raised sea wall banks were not cleared, a deliberate Environment Agency policy to conserve woody vegetation where it did not pose an engineering risk to the embankments, and it was from these locations that *F. lesnei* was beaten. It is important that future clearance of woody growth on these flood defences leaves mature scrub and trees along the borrowdyke, folding (flat area between the landward toe of the sea wall and borrowdyke) and tidal shelf (gently shelving area between seaward toe of the sea wall and river) of sea walls which protect Manningtree and Cattawade Marshes from tidal flooding. Mature *F. excelsior* and *Q. robur* in particular should remain uncut where the trees pose no risk to the structural integrity of flood defences. The discovery of *F. lesnei* adds further ecological value to these sea walls, already noted for their large populations of the Nationally Scarce plant *Lepidium latifolium* L.

Interestingly, *F. lesnei* was not beaten upstream of Judas Gap sluice and weir in the Flatford Mill area, despite the presence of several *F. excelsior* and *Quercus robur* trees which looked suitable as habitat. Therefore, it seems unlikely that the earwig is continuously distributed along the Essex or Suffolk side of the River

Table 1. Number and location of *Forficula lesnei* from a survey of eight sites along the Stour Estuary in Essex and Suffolk and the relative abundance of *Forficula auricularia* as a comparison.

County/site	Grid square	<i>F. lesnei</i> location	No. <i>F. lesnei</i>	No. <i>F. auricularia</i>
Essex				
Cattawade Marshes sea wall	TM0832	Tidal shelf	1	34
Cattawade Marshes sea wall	TM0932	–	–	11
Dedham flood wall	TM0732	–	–	2
Manningtree sea wall	TM1032	Folding	1	17
Suffolk				
Flatford Mill	TM0733	–	–	11
Hog's Lane	TM0833	–	–	25
Hogmarsh Nature Reserve	TM1033	Bank	2	12
Stour Valley Path hedge	TM0933	–	–	19
Total			4	131

Stour, where it is localised in patches of favourable woody habitat. *Forficula lesnei* has been recently recorded along the upper reaches of the Stour (at Bures in 2003), so may be found on more inland stretches of the river. Beating on Kersey Brook, a tributary of the River Brett, on 22 August 2012 revealed only *F. auricularia*, so it is possible that *F. lesnei* is not particularly widespread along rivers in south Suffolk and north Essex.

The overall abundance of earwigs (of both species combined) was higher in this survey (16.9 earwigs/site) than in the green lane study reported by Gardiner (2010a; 10.6 earwigs/site). The abundance of earwigs was approximately similar between the Essex (16.5 earwigs/site) and Suffolk (17.3 earwigs/site) sites. On the Suffolk side of the River Stour particularly high numbers were beaten from an old, species-rich hedgerow adjacent to the Stour Valley Path and from Hog's Lane, a green lane (Table 1). This seems to suggest that high numbers of earwigs were associated with diverse, species-rich hedgerows and green lanes as in the Gardiner (2010a) study where a direct correlation was detected between the number of woody plant species per 30-metre stretch of green lane hedgerow and the abundance of Dermaptera.

On the Essex side of the Stour, earwigs were in the highest abundance in trees on a tidal shelf between a sea wall flood defence and the Estuary and in woody vegetation along the borrowdyke edge of the flood banks. Therefore, woody growth left uncut along the borrowdyke edge and on the tidal shelf during flood defence works could be an extremely important habitat for earwigs due to the diverse range of tree species present. Interestingly, the highest number of earwigs was beaten from mature trees such as *F. excelsior* and *Q. robur*, which suggests that continuity of woody cover is as important along the Stour Estuary as it is on green lanes in other areas of Essex (Gardiner, 2010a).

Conclusion

Forficula lesnei was observed in two new 10 km grid squares (TM03 and TM13), which indicates that the insect may be more frequent along the Stour Estuary in north Essex and south Suffolk than current NBN Gateway records

suggest. This is partly due to under-recording but also a genuine absence of the earwig along some stretches of river such as Kersey Brook and sections of the Stour near Flatford Mill. It may be worth beating at greater distances from main rivers (as reported in Thorpe-le-Soken by Bowdrey (2003)), as the species is found in a wide variety of habitats in Essex including those in disused quarries and other post-industrial, brownfield sites. It appears that *F. lesnei* is found in much smaller numbers than *F. auricularia* and sustained beating effort is required to locate it (e.g. in four hours beating only four *F. lesnei* were observed). Mature *F. excelsior* and *Q. robur* fringing sea wall flood defences is an important habitat that has been left untouched during recent Environment Agency clearance of woody growth from raised embankments to improve their structural integrity and allow inspection of the flood banks by engineers.

References

- Bowdrey, J.** 2003. Lesne's Earwig *Forficula lesnei* Finot (Dermaptera: Forficulidae) at Thorpe-le-Soken. *Essex Naturalist* (N.S.) **20**: 49.
- Gardiner, T.** 2010a. Hedgerow species richness influences the presence of Orthoptera and Dermaptera along green lanes in Essex, U.K. *Entomologist's Gazette* **61**: 53–64.
- 2010b. Species richness of orthopteroid insects and incidence of a rare moth on an island nature reserve in the Walton Backwaters in eastern England. *Entomologist's Gazette* **61**: 251–261.
- Haes, E. C. M. & Harding, P. T.** 1997. *Atlas of Grasshoppers, Crickets and allied Insects in Britain and Ireland*. London.
- Harvey, P.** 2005. New records of Hop-garden or Short-winged Earwig *Apterygida media* (Hagenbach) and Lesne's Earwig *Forficula lesnei* Finot (Dermaptera: Forficulidae) in Essex. *Essex Naturalist* (N.S.) **22**: 45–46.
- Marshall, J. A. & Haes, E. C. M.** 1988. *Grasshoppers and allied Insects of Great Britain and Ireland*. Colchester.