Wheat Bug

Nysius huttoni

PLANT PEST FACTSHEET

Figure 1. Adult *Nysius huttoni* collected by Nigel Cuming
Photo copyright James Turner - National Museum Wales

Background

While surveying North Warren RSPB Reserve, Suffolk, in September 2007, Heteroptera recorder Nigel Cuming found large numbers of an unfamiliar species of ground bug. Heteroptera experts Bernard Nau and Bill Dolling confirmed the identity of the bug as *Nysius huttoni* White (Heteroptera: Lygaeidae). Commonly known as the Wheat Bug, this New Zealand endemic is a polyphagous pest of large number of weeds and crops. Currently on the EPPO Alert List, *N. huttoni* is established in parts of Northern Europe. This was the first discovery of this pest in the UK.

Geographical Distribution

Nysius huttoni is endemic to New Zealand where it is widespread and has a wide ecological distribution from coastal locations to altitudes of over 1800 m. In 2002, *N. huttoni* was found at different localities in the extreme south-west of the Netherlands (province of Zeeland) and the adjacent north-western part of Belgium (provinces of West-and Oost Vlaanderen and Brabant). The initial observations were close to Antwerp harbour, so accidental arrival on shipments from New Zealand was suggested. In the autumn 2005 edition of Het News, Dutch heteropterist Berend Aukema suggested that this pest might reach UK shores. Since his first east Suffolk find in 2007, Nigel Cuming has surveyed further sites along the coast in consecutive years and discovered large numbers of adults and nymphs. In July 2009 it was found at a gravel pit in Essex by Jerry Bowdrey, Colchester Museum's Natural History curator. He noted that he hadn't previously recorded the insect during his many previous surveys of the site in the past 10 years so believes it to be a very recent arrival.

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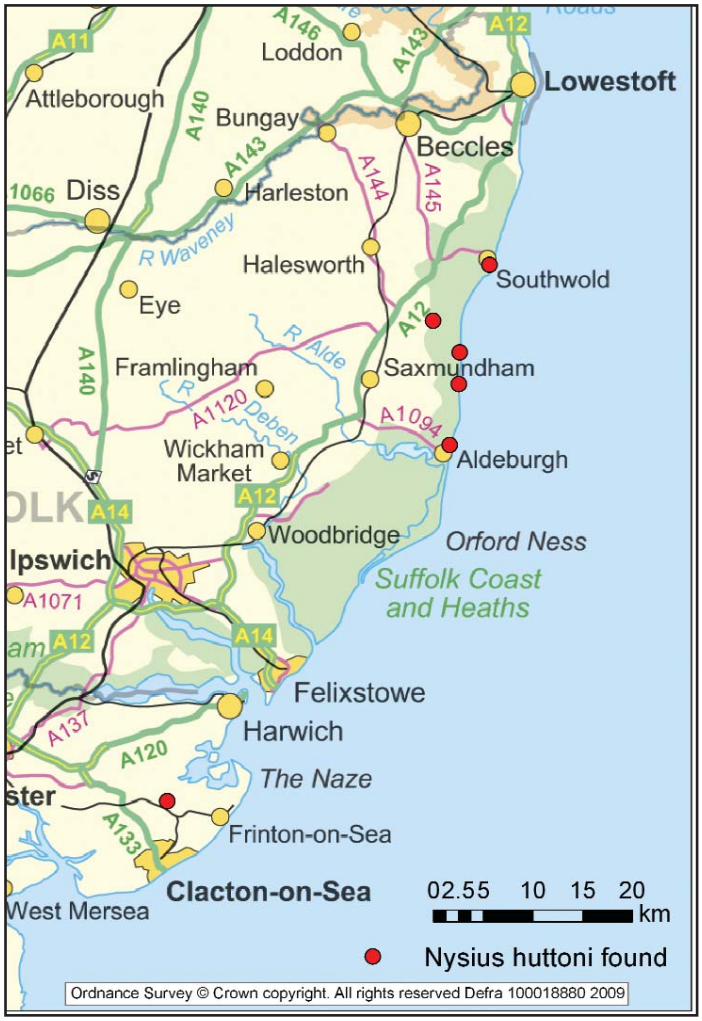

Figure 2. Locations where *Nysius huttoni* has been found in England

Host Plants

N. huttoni feeds on a large number of weeds and crops. In New Zealand it is reported as feeding on and damaging *Linum usitatissimum* (linen flax), *Fragaria* spp. (strawberry), *Medicago sativa* (lucerne or alfalfa), *Trifolium dubium*, *T. pratense*, *T. repens* (clovers), *Nasella trichotoma* (nassella tussock grass), *Brassica napus* (rape), *Beta* spp. (beets), *Triticum aestivum* (wheat), and other wild and cultivated crucifers. It attacks Poaceae such as *Avena sativa* (oat), *Bromus* spp., *Hordeum sativum* (barley), *Lolium* spp., and *Secale cereale* (rye).

It has also been reported feeding on the following weeds: *Anagallis arvensis*, *Calandrinia caulescens*, *Capsella bursa-pastoris, Cassinia leptophyla, Chenopodium album, Coronopus didymus, Hieracium, Polygonum aviculare, Rumex acetosella, Senecio inaequidens, Silene gallica, Soliva sessilis, Spergularia rubra*, and *Stellaria media*. In the UK, *N. huttoni* is reported to favour habitats of sandy soil sparsely vegetated with sheep's sorrel, *Rumex acetosella*. In July 2009 there was a finding of the pest in a field of barley, though it was not observed feeding on the plants.

Pest Biology, Dispersal and Detection

The eggs are creamy white when first laid but turn orange before hatching. There are five wingless nymphal instars. The first instar is approximately 0.5 mm long and pale to dark orange; later instars are grey or brown-grey and up to 2.5 mm long. The adults, which are 2.5-4 mm long are usually pale green when they emerge but quickly darken to brownish grey. The adults have a variegated outline with a conspicuous silvery triangle at the posterior end. The bug is distinguished from the six species of *Nysius* native to Britain by its conspicuous pubescence (hairiness). It has long erect hairs covering the pronotum, scutellum, clavus and corium and a distinctive double row of punctures along the claval

suture. The bug is variable in form with three states of wing-development; during a survey in Belgium only 19.1% of the collected adults were macropterous (large winged) thus capable of flight.

In New Zealand mating takes place from early spring to late summer and up to 174 eggs can be laid, typically in cracks in the soil. Eggs hatch approximately 10 days after egg laying, and adults form 50-65 days after hatching. Adults overwinter in decaying vegetable debris around the base of plants. In New Zealand, 2-4 generations per year have been recorded.

N. huttoni thrives best under hot, dry conditions and prefers sunny spots. The main feeding period is the middle of the day, and the bugs conceal themselves under debris on the ground as soon as the temperature drops in the evening, rain also inhibits activity. Nigel Cuming observed that the UK populations are very susceptible to changing weather conditions and he tended to see more on warm, sunny days, often as many as 80 to 100 individuals.

Economic Importance and Damage

In New Zealand, *Nysius huttoni* usually feeds on weeds growing on waste lands or roadsides, however in hot dry years, the pest can migrate to, and damage crops, notably wheat and *Brassica* spp.. *Nysius huttoni* has not been known to cause crop damage in the UK to date; however, it is possible that it may cause damage in the future. The damage is only likely to occur in hot dry summers and is therefore more likely to occur in the drier parts of the UK.

Damage to a small proportion (1%) of wheat grains can make the whole crop unsuitable for baking. The insect's sucking mouthparts pierce the developing grain wheat grain in the milk-ripe stage. Saliva is injected into the grain through one stylet and nutrients sucked out through the other. An enzyme within the saliva can affect the flour protein when the grain is milled. This enzyme rapidly breaks down the dough structure, producing runny, sticky dough making it unsuitable for baking. The worst recorded outbreak in New Zealand was in 1970, when approximately 10,000 tons of wheat were damaged by *N. huttoni*.

Nysius huttoni can cause significant damage to *Brassica* spp. seedlings. Cruciferous crops attacked by *N. huttoni* are known to develop cankerous growths on the stems, causing leaves to wither and die and stems to collapse.

Control Measures

Statutory action is not being taken against this pest because it would not be feasible to try and eradicate it nor prevent further introductions from Europe or New Zealand. It is a notoriously difficult pest to control, because the pest can re-invade treated crops from weeds in the areas around the crop. Products containing chlorpyrifos have been used to control *Nysius huttoni* in New Zealand, however other insecticides may also be effective. Pesticide approvals are constantly changing, therefore the status of pesticide approval should be checked before application, with particular reference to harvest intervals.

Advisory Information

Suspected findings of *Nysius huttoni* or any other non-native plant pest should be reported to the local Fera Plant Health and Seeds Inspector or to PHSI Headquarters, Sand Hutton, York.
Tel.: 01904 465625, Fax: 01904 465628
Email: planthealth.info@fera.gsi.gov.uk
Web: www.defra.gov.uk/fera/plants/plantHealth

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