

GARDEN TIGER MOTH, *ARCTIA CAJA* L. (LEP.: ARCTIIDAE) — A CLUE TO THE IDEAL HABITAT FOR THE SPECIES?

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I READ with interest the notes on *A. caja* in this Journal (West, 1989). As in previous papers Mr West again draws attention to the apparent gaps in the literature concerning the habits of even the more common British moths and their larvae and to the need for more quantitative information. I would therefore like to record some observations on the comparative abundance of *A. caja* at Woodwalton Fen National Reserve, Cambs.

On the night on 13th/14th August 1987 I operated six actinic Heath traps (Heath, 1965) all night on Woodwalton Fen and recorded a total of 49 *A. caja* including at least two females which laid eggs on the egg boxes lining the traps. The highest numbers of adults were recorded on the edges of two sites which consisted of tall fen vegetation heavily dominated by several years' growth of standing reed, *Phragmites australis*, but with herbs and forbs present, particularly stinging nettle, *Urtica dioica* (NCC compartments 29 and 56). Each of these two traps contained 12 *A. caja*, an impressive sight. On a site where the fen vegetation was growing back after having been cut and removed the previous year, a trap captured nine adults (compt. 46). A trap on the edge of sallow carr (compt. 51) captured six adults and a trap on the edge of the "copper-fields" (compt. 37) which are now also dominated by reed, captured three adults. Only the sallow carr and copper-field sites had trees and shrubs nearby on which eggs might have been laid as proposed by Shaw (1985).

The larvae of *A. caja* are also seen regularly by visitors to the fen. On 5th May 1987 I saw over twenty part-grown, post-hibernation larvae. These were in several groups feeding on young stinging nettle plants amongst dry reed litter on the edges of paths through the fen vegetation. The larvae were not concealed and were easy to spot as they sat in the weak sun. They were not under trees or shrubs. On 3rd June 1989 I photographed a final instar larvae feeding on a taller nettle plant on the edge of a bank of reeds on the margin of the fen. The larvae have also been reported on several occasions feeding on the great water dock, *Rumex hydrolapathum*, that grows on the fen (R. Harold, reserve warden, pers. comm.).

I have encountered *A. caja* in many places in Britain, both as adults and larvae but no-where have I had so many adults in a Heath trap or seen so many larvae in a day as at Woodwalton Fen. Chippenham Fen, Cambs also has a large population of *A. caja*. I have not trapped there at the peak of the flight period for this species but on a visit on 18th/19th August 1987 a total of 13 were captured in six Heath traps (including five in one) and the species had already been on the wing there a month earlier, for on the night of 20th/21st July 1987 I recorded four using six Heath traps.

My experience from a variety of sites indicates two results which may prove to be general. Firstly the larvae of *A. caja* do not conceal themselves when feeding and are often found in full sun. Probably their black colour assists them to warm up at the beginning and end of the year to facilitate activity and digestion, as has been shown by Porter (1982) for the black larvae of the Marsh Fritillary butterfly *Eurodryas aurinia*. Secondly the sites in which I have trapped most adults have been in open habitat where rank herbs and forbs are present in quantity. The moth is present in woodlands but less numerous. For example between 1984 and 1986 in Bernwood Forest on the Oxon/Bucks border adult *A. caja* turned up at the rate of one or two per night per Robinson trap (Robinson and Robinson 1950) in late July and August if the trap was situated on a ride. At Heath traps only three *A. caja* were recorded in two years of weekly trapping at six sites within the wood. Two of these moths were on rides, one was trapped in a recently-coppiced plot and none were recorded under the canopy of broadleaved trees, so the moth could hardly be described as common in Bernwood. It was more frequently seen at my family home eight miles away at Kidlington, Oxon, where I operated a Robinson trap most weeks of most years from 1976 to 1986 in a large garden surrounded by other gardens and also fields grazed by cattle and horses. Here I sometimes caught three *A. caja* per night in the Robinson trap, seldom more, and in 1985 when I also operated a Heath trap on a weekly basis I caught none in the latter. At Park Farm larvae were occasionally found feeding on broad-leaved dock, *Rumex obtusifolius* and dandelion, *Taraxacum* spp. but at this and other sites they were usually encountered when full-grown, running across roads, tracks or open ground, and so provided no host-plant information.

Clearly *A. caja* is more common in some habitats than in others. The apparent variation in numbers of moths on different parts of Woodwalton is of interest and would be worth further investigation. The sites on the fen where most *A. caja* were trapped and where the larvae were seen all have a plentiful supply of dry stubble and litter. This was less well developed at the other sites on the fen though it was present within 50 m of each, over which distance *A. caja* presumably has no difficulty flying.

Another site where I trapped rather more *A. caja* in a night than elsewhere (ten in a Robinson trap on 29th/30th July 1979) was a sunny open bank at Sydlings Copse nature reserve, Oxon. A prominent feature of this bank was dry bracken and gorse litter. This year R. Louch (pers. comm.) trapped 22 *A. caja* in two Heath traps on 8th/9th July 1989, on the edge of Otmoor, Oxon. This is another area which is wet, open, has much rank vegetation and also much tussock grass, *Deschampsia cespitosa*, and other litter for winter refuges. However, these numbers are completely dwarfed by the colossal totals of over a hundred specimens in a Heath trap in a night reported by Dunn and Parrack (1986) "among the more mature

coastal dune systems" in Northumberland and Durham. Elsewhere in these counties they report that *A. caja* is fairly common in lowland "areas of rough grassland with mixed vegetation".

I am not aware of any reports of overwintering *A. caja* larvae burrowing below the soil surface. This is unlikely considering their pelage of long hairs and such places on the fens are likely to be water-logged. In captivity the larvae are best overwintered outdoors, among absorbant tissues (R. Fry pers. comm.) or on corrugated card, in shelter. If conditions are too airy the larvae dry out but heavy losses occur in damp conditions (R. Fry pers. comm.). The presence of plants which die down to produce dry litter which does not completely collapse and lose its structure over the winter may be of value in providing suitable overwintering sites for the young larvae. This could be as important in supporting large populations of *A. caja* as the availability of suitable host-plants growing in sunny situations. If so, then the species will be vulnerable to over-tidiness in gardens, hedgerows, ditches, field margins and elsewhere during both summer and winter.

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Melanism in *Biston betularia* L. (Lep.: Geometridae) in Kent.

In *Ent. Rec.* **100**: 39 I noted apparent changes in the relative proportions of the three forms of *B. betularia* attracted to mv light at Dartford from 1970 until 1985. Based upon four year periods the statistics indicate a distinct decline in form *carbonaria* Jdn. The period 1986 to 1989 shows a continued



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