ALIEN GALLS AND THE MEDIA

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Gall-wasps of the Cynipid genus *Andricus* have made a considerable visual impact on the English countryside over the past one hundred and fifty years.

The Marble Gall (fig. 1a) of the oak caused by *Andricus kollari* was introduced into Devon during the early 1830s after several unsuccessful attempts to introduce the Aleppo Gall (caused by *Andricus gallae-tinctoriae* on *Quercus infectoria* from Turkey). The Aleppo Gall had long been a commercial source of tannins used in dyeing, ink-making, the tanning of leather and as a source of astringent drugs. It seemed at the time a step in the right direction for the dyeing and tanning industries but it nearly had disastrous consequences. Such was the success of *A.kollari* in becoming established that many people were apprehensive that the spread of this insect and its gall would lead to substantial damage to oak twigs with a consequent failure of the acorn crop, acorns at this time being an important source of winter feed for pigs. A press campaign was held encouraging agricultural workers to 'rally round the pig' and destroy the alien Marble Gall. In fact the tannin content of Marble Galls is relatively low (Leach 1986) compared with the Aleppo Gall and it is improbable that they were much used for dyeing, making inks or tanning. Subsequently they have become an established feature of our countryside, silhouetted against the winter sun on bare twigs and our oaks have not suffered.

A second new alien gall – the Knopper Gall (from the Dutch word for gristle or cartilage, referring to its consistency) – caused by *Andricus quercus-calicis* was discovered in England in Devon in 1962 and first recorded from the Island in 1976 (Biggs 1976). Subsequently this caused a great deal of attention from the media as it is a more obvious and a rather more bizarrely-shaped object than most plant galls (fig. 1b). '*Tiny wasp threat to the mighty oak*' was a typical newspaper heading to columns which threatened that '*Britain's entire acorn crop has nearly been destroyed . . .*' (Brown 1983). In fact it is true that, of all our oak galls (and there are at least thirty-five species of oak-gall producing insects some of which produce two totally different galls), it is the only one which develops from and subsequently destroys the acorn. It will be many years, however, before we are in a position to say whether the invasion of the gall-wasp has in fact affected our future population of oaks. Not all acorns are affected and of course only a very small percentage of acorns go on to develop into the 'mighty oaks' of the future. All successful parasites have evolved *pari passu* with their hosts and no doubt a balance will be achieved.

The Knopper Gall by 1984 had been recorded from each English county, except Durham and Northumberland which means that in just over twenty years this new-comer has spread from the South Coast to the Scottish border – an average of seventeen miles per year. Taking its somewhat peculiar life-cycle into account this seems a remarkable achievement and at the very least is surely a classic example of the exploitation of an empty ecological niche.

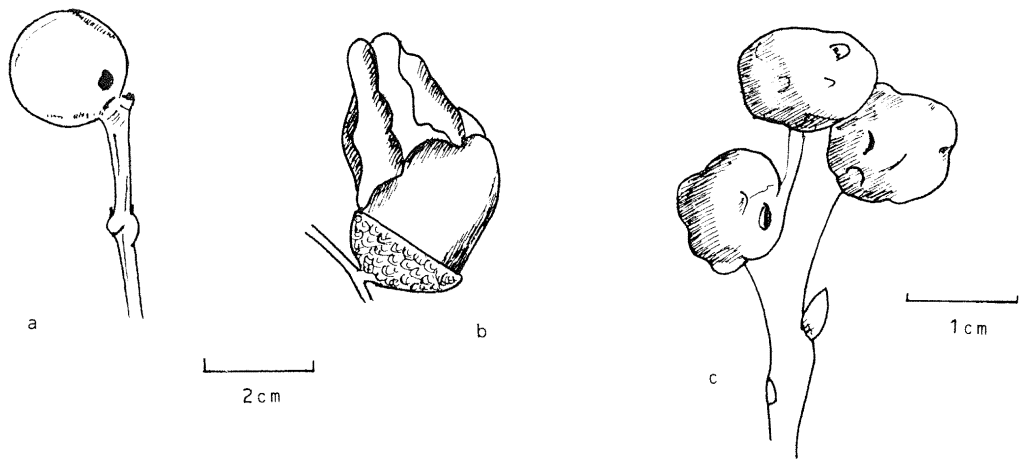

Figure 1. Andricus spp. induced oak-galls.
a. *Andricus kollari*
b. *Andricus quercus-calicis*
c. *Andricus lignicola* (after Darlington 1968)

The third recent arrival is the gall known as the Cola-nut Gall from its resemblance to the stimulant-containing nut of the West African tree *Cola acuminata*. It too is caused by a gall-wasp of the same genus, *Andricus lignicola*. This is a far less noticeable object than either *kollari* or *quercus-calicis*. It affects the bud as does *kollari*. At first it could be mistaken as an aborted Marble Gall but closer examination will reveal differences. It is smaller (7mm diameter, compared to 15mm.) and not smoothly spherical (fig. 1c). In fact it is oddly flattened – an oblate spheroid rather than a sphere; it starts green and rapidly turns grey and scaly and by autumn there are red flecks on the surface where the scales have come away.

It was described from Jersey in 1902 but did not reach the mainland until 1972 when it was found in the New Forest. I noticed it first on the Island in 1985 in Gurnard and at Osborne. It seems to have spread across England since 1972 even more rapidly than *quercus-calicis*. It has yet to interest the media.

Each of these three galls is produced by a gall-wasp of the family Cynipidae of the order Hymenoptera. Each is a member of the genus *Andricus*. Altogether twenty-three species of *Andricus* gall-wasps parasitise oak in England (*Quercus robur, petraea* and hybrids). One of the characteristics of Cynipid wasps is that they demonstrate an alternation of generations. One generation consists only of females which lay unfertilised eggs and promote the growth of one type of gall. From that gall emerge both male and female insects which mate, the female then laying fertilised eggs which result in the growth of a second sort of gall, morphologically quite distinct, always on a different part of the host, often on a different species. From this second gall hatch the females which lay the parthenogenetic eggs. However, in England so far males of *A. kollari*, *quercus-calicis* and *lignicola* have not been found in the wild, although on the continent of Europe they exist and indeed they have been identified emerging from artificially cultured galls of *A. lignicola*. The bisexual generation seems not to function in England, and each species apparently subsists here without male intervention. Is this perhaps a factor somehow involved in their recent rapid and successful spread in this country?

Table 1. Characteristics of *Andricus* spp. induced oak-galls

Causer	*Andricus kollari*	*Andricus quercus-calicis*	*Andricus lignicola*
Name	Marble Gall	Knopper Gall	Cola-nut Gall
Host for agamic generation	*Quercus robur* *Quercus petraea*	*Quercus robur* *Quercus petraea*	*Quercus robur* *Quercus petraea*
Host for bisexual (Europe) Generation	Axillary buds of *Quercus cerris*	Male catkins of *Quercus cerris*	Buds of *Quercus cerris*
Size	15–25mm	20mm	up to 10 × 8mm
Shape	Sphere	Pyramid	Oblate spheroid
Colour	Green becoming brown	Green becoming dark brown	Green rapidly becoming grey with reddish patches later
Texture	Smooth	Knobbly and very sticky	Scaly
Number of cells	Unilocular	Unilocular	Unilocular
Number of larvae	Unilarval	Unilarval	Unilarval
Persistence	Persistent	Falls with the acorn	Persistent
Secondary parasitism	Frequently parasitised	?	?

References

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