There be aliens in our midst

In the autumn these days its is quite a frequent occurrence to walk under oak trees and find the ground littered with little woody asteroids instead of acorns.

However, these asteroids have not arrived from outer space but in a roundabout way from southern Europe and South East Asia as a result of the gall wasp *Andricus quercuscalis*. This gall wasp's appearance in Britain in the early sixties was at least 200 years after the one of its essential host trees the Turkey Oak was introduced into this country.

The Arboricultural Association's Research Note 55.84 Ent. on the Knopper gall – the popular name for the asteroids, gives an excellent, informative account of the gall wasp's fascinating life cycle. Individual gall wasps, about the size of a house fly, over winter in the fallen asteroid. They emerge in the early spring and seek out Turkey Oaks and lay eggs around and on the developing male catkins. The eggs hatch and the grubs stimulate the tree to envelope them in a small conical gall. Later on in May, minute wasps only a fraction of the size of the previous generation, emerge from the galls on the Turkey Oak and lay eggs almost exclusively on the flowers of our oak *Quercus robur*. For some unknown reason they appear to completely ignore our other oak *Quercus petrea.* The tree responds to the presence of the grubs by producing the woody asteroid or Knopper Gall instead of a healthy acorn. The asteroid falls to the ground and the cycle starts once more.

Naturally any introduced species has the potential to have an impact on the environment and will generate debate about the positive and negative aspects about their presence. The Turkey Oak undoubtedly forms a beautiful open grown tree in a parkland setting and much more quickly than many other trees. Nor is it defoliated in the early summer. No wonder landscape architects have appreciated its introduction.

Turkey oak seems to be ideally suited to our climate and it soon over tops other broadleaved trees of similar age when planted in woodland. At Windsor acorns were collected by school children and planted into commercial plantations. However they did not discriminate between oak species and as a consequence many were from Turkey Oaks. As the plantations developed, forestry operations favoured the Turkey Oaks because they had rapidly become the dominant trees with the best straight form. They now comprise the major species in the stands at a time when it is realised that the timber is of poor quality and therefore little value.

Jays, like the schoolchildren, do not discriminate between acorns of different species. In poor acorn production years they will still fly miles miles to collect acorns from Turkey Oaks and take them back to their territories to bury for their winter larder. Jays, which make caches of tree seeds, often in areas where there are few or no trees, have therefore contributed to the spread of the Turkey oak. Turkey Oak seeds are much richer in tannin than our oak acorns and jays may well find them less palatable and reject them if alternatives are more readily available. This gives the Turkey Oak acorns a competitive advantage over others and enhances its reputation as a rapid and successful coloniser.

Unlike our two native species of oak the Turkey Oak has very few other insect species living in with it. As few of the insects associated with it generate a large biomass, the Turkey Oak registers low down on the league table for trees important for insects. While it is unclear

which mycorrhizal species of fungi are connected with Turkey Oaks, the fungi essential in the recycling or decomposing of oak wood are commonly found on Turkey Oaks. As a host for these fungi the Turkey Oak can and has provided an important continuity of habitat between generations.

In recent acorn producing years there has been very little or no production of viable English Oak acorns where Turkey Oak is present. Those animals and birds which rely on acorns are also affected. There are potentially significant implications for woodland ecosystems as low levels of acorns affect animal and bird populations and there is little seedling recruitment.

Fortunately nature does not stand still and a glimmer of the fight back is on the horizon. Although the natural parasites of the Knopper gall wasp in its natural range have not yet appeared in the UK, it appears that several parasites of our native oak gall wasps have taken to the Knopper gall wasp. In time this may moderate their effect. Also there are reports of tits, nuthatches and woodpeckers pecking at the woody asteroids to remove the adult wasps or grubs; asteroids have been found wedged into the crevices of bark of oaks with holes pecked in them.

Due to its large numbers of mature, over mature and ancient oaks and the continuity of these old trees over the millennia, Windsor is considered one of the most important sites for English or pedunculate oak throughout its natural range. But Windsor also has many mature Turkey oaks and there are many mature Turkey Oaks in the surrounding area. This demonstrates their ability to successfully colonise new areas. The Crown Estates have recognised the potential threat to the English Oak and the gradual eradication of the Turkey Oak is underway. Similarly the Forestry Commission in the New Forest has launched a new programme to remove all Turkey Oaks. Very positive action for two of the most important areas for English Oak in the country.

Opinions are gradually changing regarding the nature of the tree and other vegetation cover of Europe before the profound effects of man. The patterns and distribution of tree species would have been continually changing and would probably never have been replicated in the same area and in a similar situation. In time, Turkey Oak, as a vigorous aggressive colonist, may well have eventually arrived on our shores by its own accord. In these circumstances we would now accept it as a native and like the landscape designers love it. However the day man decided he could manage woodland and forest better than nature the situation changed. Today for various reasons, Britain plays host to at least 80% of the veteran English oaks and perhaps the next generation of veterans remaining in Europe. These veterans and future veterans are important to our UK and European heritage. We therefore have a responsibility to manage the Great British Treescape without Turkey Oaks and the asteroids of the future.