

## Why casual cider drinking impacts widely on populations.

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### Introduction

The problems that random disposal of glass bottles may create in the countryside are well-attested to, nowhere perhaps more so than on the Malvern Hills where direct insolation can exacerbate fire risk.

Discarded bottles also impact on invertebrates and in some instances the negative impacts on populations can be considerable. The acquired invertebrate content of an empty cider bottle discarded in *Ulex* scrub-grassland at 297 m a.s.l. on the western flank of Pinnacle Hill on the Malvern Hill range is discussed.

### Discussion

Empty un-stoppered glass bottles discarded in the countryside can have significant impacts on the immediate invertebrate fauna depending on a number of factors. Foremost amongst them is precisely what the bottle originally contained, whether any of the original content remained and, on a hill slope, how the bottle orientated.

In some instances discarded bottles can be comparatively innocuous, but they have the ability to entrap distinctive assemblages of invertebrates that develop over time. Whitehead (2007) described how the remains of 448 invertebrates representing 74 species were recovered from a single milk bottle buried in a Worcestershire hedgerow for 39 years.

On 19 November 2020 an un-stoppered Weston's cider bottle was observed on grassland on the western flank of Pinnacle Hill in Colwall civil parish (52°07'N 02°34'W VC36 SO766418) with its long axis inclined upslope (01). It was found to contain a noxious mass of dead invertebrates which were decanted and subjected to cursory analysis in the field; no doubt small species were overlooked. Many of the insects remained intact and were believed to have assembled over a period of some eight weeks.



01. Discarded Weston's cider bottle and its invertebrate content, Pinnacle Hill, Malvern Hills, 19 November 2020.

The contents included isopods *Porcellio scaber* Latreille, 1804 and remains of sarcophagid flies *Sarcophaga* sp. and calliphorid flies *Lucilia* sp. There was a notable assemblage of Coleoptera all of which were imagines. It included grassland carabid Ground Beetles *Carabus problematicus* Herbst, 1786 (5) and *Pterostichus madidus* (Fabricius, 1775) (2) with three species of silphid or Carrion Beetles, *Thanatophilus rugosus* (Linnaeus, 1758) (2), *Nicrophorus vespillo* (Linnaeus, 1758) (1) and *Nicrophorus vespilloides* Herbst, 1783 (5). This is an assemblage of habitat quality indicators. *Carabus problematicus* is wide-ranging on the Malvern Hills but is an

important top end invertebrate predator; it is unfortunate that four of these were female. Silphids of the genus *Nicrophorus*, the Burying Beetles, have key functionality in biological systems; I have few Malvern Hill records of this group.

### Interpretation

When the bottle was first discarded it is contended that it contained some cider which provided an olfactory cue for the ground beetles and a preservative for them after death. As the numbers of dead invertebrates increased the olfactory cue altered and became so concentrated that it would have attracted silphids, sarcophagid and calliphorid flies. The invertebrate assemblage in the bottle can be regarded as a thanatocoenosis or death assemblage.

### References

Whitehead, P.F., 2007. Message in a bottle: evidence for four decades of faunal turnover in an English enclosure hedge bottom. *Entomologist's Monthly Magazine* **143**:1-6.