

***Gronops inaequalis* Boheman, 1842 (Coleoptera: Curculionidae) and other notable
Coleoptera at a brown-field site in Flintshire, North Wales**

Mark Nason

School of the Environment and Natural Resources, Bangor University, Gwynedd LL57
2UW. Email: m.nason@bangor.ac.uk

History and characteristics of the site

The following species were found at 'Area A4', approximately 30 Ha of mostly open ground at the northern edge of the now disused site of the former Shotton steelworks, Deeside, Flintshire (OS SJ 305 728). Area A4 is situated on land reclaimed from the Dee Estuary during the late 1940s and is completely enclosed by roads with the main A548 along its northern edge and the Shotton Paper Mill to the South. Steel workings (including a by-products recovery plant and tar lagoons) on Area A4 were decommissioned in the 1980s leaving soil and rubble contaminated with volatile organic compounds (VOCs) including benzene, toluene and xylene (Watkin 2002). As a 'remedial' measure the contaminated land was capped with between one and four metres depth of dredgings from the Dee estuary. Consequently, developing surface soils at Area A4 comprise mostly sand infill over estuarine sands and silt.

As a result of the contamination, only one abortive attempt at developing the site has been made. In 2000, a roughly square area of approximately 2 Ha was cleared and compacted in preparation for development. In May 2005 this area was still only sparsely vegetated (95 % bare cover in quadrats) and it is likely that by inhibiting natural

succession of the vegetation toward grassland (as has happened over much of Area A4), the aborted development has helped to maintain high quality habitat for rarer Coleoptera (Small *et al.* 2006).

Sampling

Pitfall traps consisting of plastic pots (110 mm diameter x 115 mm depth) covered with 12 mm mesh were placed at the site on the 4th July 2006 and emptied on the 13th July 2006. 192 traps were placed as part of a formally designed experiment assessing the effect of compost applications on soil properties, vegetation establishment and insect diversity.

Species

Gronops inaequalis Boheman (1842), Coleoptera: Curculionidae. RDB K (Red Data Book Insufficiently Known; Hymn and Parsons 1992). Fifteen individuals were collected from 14 pitfall traps. The first British record of *G. inaequalis* is from a landfill site in Kent, 1982 (Clemons 1983). Since then *G. inaequalis* has been reported from Suffolk and North Lincolnshire and this is the first record for Wales (A. Fowles, pers. comm.). Larvae of *G. inaequalis* are associated with plants in the genus *Chenopodiaceae* (Morris 2002, Bullock 1992), for example *Atriplex prostrata sens.str.* Boucher ex DC. (spear-leaved orache) is a major food-plant (Morris 2002). Comprehensive vegetation surveys of the site in March and July 2006 revealed the presence of *A. prostrata sens.str.* together with the following *Chenopodiaceae*, all of

which are ruderal species: *Chenopodium album* L. (fat hen), *Atriplex patula* L. (common orache) and *Bassia scoparia* L. (Voss) (summer-cypress).

Gronops lunatus F. (1775), Coleoptera: Curculionidae. Notable B. Twelve individuals were collected from 12 pitfall traps. *G. lunatus* is locally established at several sites on the south coast of England, the only other previous Welsh records are from Ynyslas Dunes, Cardiganshire, and Newborough Warren, Anglesey (A. Fowles, pers. comm.). *G. lunatus* is associated with plants in the genus *Caryophyllaceae* including *Spergularia* (spurreys) and *Cerastium* (mouse-ears) spp. (Morris 2002, Bullock 1992). *Cerastium fontanum* L. is ubiquitous in the UK and a significant component of the vegetation at Area A4.

Aclypea opaca L. (1758) (Syn. *Blitophaga opaca* L.), Coleoptera: Silphidae. Notable A. Two individuals were collected from two pitfall traps. This is the first record from eastern Wales, although there are 13 records from west Wales and *A. opaca* has been noted on Anglesey (A. Fowles, pers. comm.) and in Merionethshire (Whitehead 1991). As a point of interest, *A. opaca* has been identified in late Pleistocene silts deposited in Worcestershire some 42,000 years before present (Coope *et al.* 1961) and remains of *A. opaca* have also been recovered from a Roman-British ditch terminal (c. 200 AD) in Northumberland (Kenwood 2001). *A. opaca* is frequently associated with light soils (as at Area A4) and often feed on wild *Chenopodiaceae* (Balachowsky 1962, cited in Savage 1980). At Area A4, *C. album* is a likely food plant of *A. opaca*. Larvae of *A. opaca* are an occasional pest of beet and spinach and have occasionally been responsible for widespread damage to potato crops (Savage 1980).

Acknowledgements

The author would like to thank Adrian Fowles for identifying *Gronops inaequalis* and *G. lunatus*, providing information on previous records of species and for suggesting helpful references. I thank my colleagues at Bangor University (particularly Susan Tandy, Jon Holmberg, Julie Williamson and Rhidian Jones) and Nabila Devos for helping to place and retrieve pitfall traps, Karoliina Riika and John Bratton for sorting and identifying pitfall samples and Mike Prosser and Hilary Wallace for vegetation data. This work was funded by the European Commission under the *Life* – Environment Programme.

References

Bullock JA (1992). *Host plants of British beetles: A list of recorded associations*. The amateur entomologist series, **11a**. Amateur Entomologists' Society.

Clemons L (1983) *Gronops inaequalis* Boheman (Col., Curculionidae): a weevil new to Britain. *Entomologist's Record and Journal of Variation* **95**: 213-215.

Coope GR, Shotton FW, Strachan I and Dance SP (1961). A late Pleistocene fauna and flora from Upton Warren, Worcestershire. *Philosophical Transactions of the Royal Society of London. Series B, Biological Science* **244**: 379-421.

Hyman PS and Parsons MS (1992). *A review of the scarce and threatened Coleoptera of Great Britain. Part 1*. UK Nature Conservation. 3. Joint Nature Conservation Committee, Peterborough.

Kenward H (2001). Insect remains from the Romano-British ditch terminal at the Flodden Hill rectilinear enclosure. *Reports from the Environmental Archaeology Unit, York* **2001/49**.

Morris MG (2002). *True weevils (Part 1) Coleoptera: Curculionidae (subfamilies Raymondionyminae to Smicronychidae)*. Handbooks for the Identification of British Insects, **5: (17b)**. Royal Entomological Society, UK.

Savage MJ (1980). Damage to potatoes by the beet carrion beetle, *Aclypea opaca* (L.) (Coleoptera: Silphidae). *Plant Pathology* **29**: 54.

Small EC, Sadler JP and Telfer MG (2006). Do landscape factors affect brownfield carabid assemblages? *Science of the Total Environment* **360**: 205-222.

Watkin D (2002). Due Diligence Audit: Area A4, Shotton, Flintshire, North Wales. Smith Grant LLP Environmental Consultancy, Wrexham, Clwyd.

Whitehead PF, (1991). *Aclypea opaca* (L.) (Silphidae) behaving gregariously in Merionethshire. *Coleopterist's Newsletter* **42**: 8-9.