# Hydro Aluminium Deeside Ltd.

# Grizzled Skipper Survey

**By:**
**Conops Entomology Ltd**





**Date: 27 June 2023**

**Report Number: 23.32**




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# 1 Introduction

1.1 Conops Entomology Ltd was commissioned to undertake a survey of the grizzled skipper butterfly (*Pyrgus malvae*) on land at Hydro Aluminium Deeside Ltd on the Wrexham Industrial Estate, Wrexham.

1.2 The site is located at OS grid reference SJ 37565 49193.

1.3 The site is located on the southern side of Wrexham Industrial Estate, to the east of Wrexham city.

1.4 The site comprises two areas of wildflowers, short sward grass and bare ground, including large areas of creeping cinquefoil (*Potentilla reptans*).

# 2 Grizzled skipper ecology

**UK status**
The grizzled skipper is a butterfly listed in Section 42 of the Natural Environment and Rural Communities Act (NERC Act) as a species of principal importance (referred to as S42). It is also a species listed by Butterfly Conservation as 'high priority', as it has declined by 49% since the 1970s[1].

**Habitat preferences**
The grizzled skipper is one of a suite of butterflies that depend upon early succession habitats, also referred to as open mosaic swards. The habitat mosaic includes areas of bare ground and short patchy swards that include one or more of the preferred larval food plants. The crucial and critical feature of high-value habitat is that the larval food plants are able to grow prostrate over the bare ground in order to elevate the microclimatic conditions that the grizzled skipper females preferentially select when laying their eggs. This elevated microclimate increases the developmental rates of the egg and young larvae, and possibly increases the success of larval hatching.
The adults also utilize the bare ground and short turf areas for foraging and basking, and are frequently observed basking on bare ground areas, particularly on cool but sunny days. Areas of taller sward grassland may also be beneficial for roosting and sheltering adult butterflies.

**Food plants**
The larvae are reliant upon plant species of the Rosaceae family. The most frequently utilized are wild strawberry (*Fragraria vesca*), creeping cinquefoil (*P. reptans*), and agrimony (*A. eupatoria*).

**Life cycle**
The life cycle of the species is dominated by the spring period when it is an adult and when eggs are laid. The approximate broad timings of each life cycle stage are as follows:

ova: May–June (laid on the larval host plant)
larva: late May–late July (largely stays on the leaves of the host plant, forming a small tent made from a leaf)
pupa: late July–May (pupates within a cocoon of leaves in low-growing vegetation less than 30 cm in height)
adult: Late April–June.

[1] Butterfly Conservation (2023). *Grizzled skipper species page*. [online] Available at: http://butterfly-conservation.org/50-1011/grizzled-skipper.html [Accessed on 20 June 2023].

# 3 Methods and timings

3.1 The survey comprised an initial walk over of all areas (see Map 1) to locate any suitable breeding habitat (areas 1–3 on Map 1) for the grizzled skipper and areas of adult foraging or roosting.

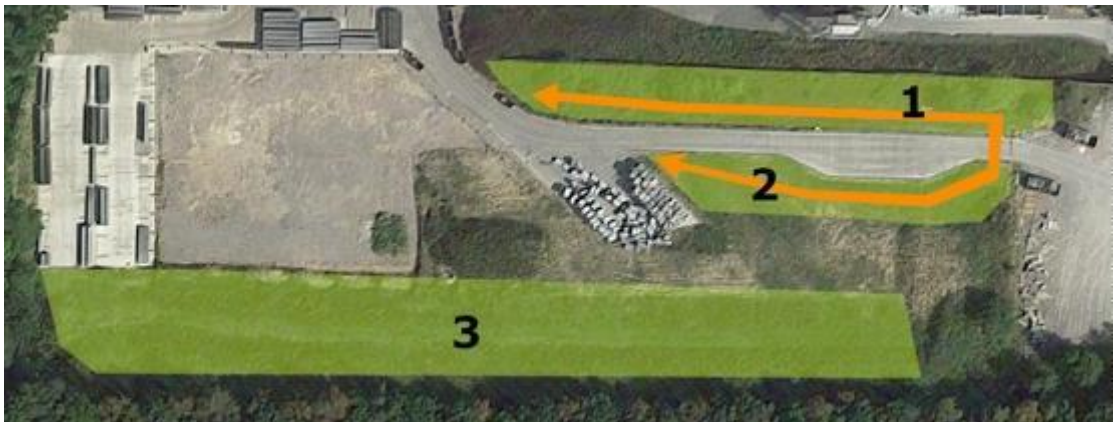
3.2 Suitable habitats are areas where the larval food plants are present, these being low-growing Rosaceae including creeping cinquefoil (*Potentilla reptans*) and over bare ground or very short turf.

3.3 Following the identification of key areas, a series of transect walks covering each area were conducted at least 10 times during each visit and all of the key areas.

3.4 Other notable (section 42) butterfly species were also noted during the transect walks.

3.5 The surveys were undertaken on the following dates:
17 May 2023: cool to warm and sunny, 14–17°C; and
30 May 2023: warm and sunny, 18–24°C.

**Map 1 Areas of suitable habitat**



**Photograph 1 Looking west along area 1**



**Photograph 2 Looking west along area 2**



**Photograph 3  Looking west along area 3**



# 4 Results summary

4.1 Grizzled skipper survey results:

**Table 1 Grizzled skipper search**

| Survey date | Period of search (not including breaks) | Evidence |
|---|---|---|
| 17/05/2023 | 9:30–13:00 | *P. malvae* – average transect count = 4 adults<br><br>No other butterflies of principal importance recorded |
| 30/05/2023 | 12:00–14:40 | *P. malvae* – average transect count = 2 adults<br><br>No other butterflies of principal importance recorded |

# 5 Discussion

## Habitat suitability

5.1 The survey area is approximately 160 × 60 metres. Both sides of the road (areas 1 and 2 on Map 1) and an area on the southern side of the site (area 3 on Photograph 4) have a suitable breeding habitat with creeping cinquefoil (*P. reptans*) over bare ground.

5.2 The site, being industrial land, is low nutrient soils and rubble, which suits early successional plants and provides a warm microclimate. There is an abundance of creeping cinquefoil (*P. reptans*) along many areas of the site along with common bird's-foot trefoil (*Lotus corniculatus*), oxeye daisy (*Leucanthemum vulgare*), and common knapweed (*Centaurea nigra*) towards the boundaries.

5.3 Tall ruderals and brambles are also present, especially along the southern side of the site.

5.4 Grizzled skippers were noted on areas 1 and 2, but none were seen on area 3. The raised elevation of this area and its slightly cooler microclimate may be a factor limiting its suitability for breeding.

**Photograph 4 Area 3, potential grizzled skipper breeding habitat**



5.5 The short turf and bare ground component of the site is small and may be a limiting factor for sustaining a robust grizzled skipper colony.

5.6 However, Wrexham Industrial Estate is well known for its landscape-wide metapopulation of the species, and as such all sites, whether large or small, on which the species is recorded contribute to the robustness of the estate-wide resource of the butterfly, and all have a value because of that.

**Other species of note**

5.7 The NERC Act Section 42 dingy skipper butterfly (*Erynnis* tages) was not recorded from the site, despite there being patches of bird's-foot trefoil (*Lotus* spp.) plants on which it lays its eggs.

# 6 Site assessment

6.1 The site comprises three areas of suitable habitat for the grizzled skipper butterfly (see Map 1). However, adult activity was only recorded on areas 1 and 2. Area 3, being slightly elevated, may be suboptimal for the butterfly, but as it has a suitable habitat, it may be used intermittently by the butterfly.

6.2 The numbers of recorded adults are low (average of 3 adults per visit). This, however, is not the total colony size, only a gauge of the overall robustness of the species on the site. The colony size may be small, limited in size by the available suitable breeding habitat, but given the location of the site, being within the Wrexham Industrial Estate, it highly likely forms part of a metapopulation across the estate. This means that despite the site only holding a small colony, these individuals are highly likely to be mingling with other colonies across the Industrial Estate. This elevates the site's status, as these small colonies may be dependent upon each other to remain viable.

6.3 It is recommended that the site be viewed in this context and that efforts be made to retain the species on site through retention of a suitable breeding habitat, or if this cannot be retained, then another suitable habitat should be provided. This habitat should be at least of the same size as that which may be lost and of high value to the species. Advice on a suitable habitat for grizzled skipper is provided in the Recommendations section.

# 7 Recommendations

7.1 The success of any mitigation for loss of part or all of the site's key features will be dependent on incorporating the following habitats and features in juxtaposition with one another and creating features that are both extensive and optimal.

7.2 All invertebrate-related compensation should be undertaken on low-fertility soils.

7.3 It is important that all of the features noted in the recommendations form a mosaic and are retained or created in close proximity to one another and are in an optimal state. An optimal state for most of the features will be relatively easily achieved when utilizing nutrient-poor subsoils and/or reworking on-site materials.

**Open mosaic swards**

7.4 The bare ground constituent of the mitigation should include open areas that are exposed to full sun for much of the day, including the key period between 10:00 and 16:00 h.

7.5 The bare ground should include a minimum of 30% bare ground; the rest of the resource should be short turf and patchy short turf swards. The ground surface can be uneven, with divots and shallow depressions. The microtopography is an important feature, as it increases the value of the mitigation. Overworking of the material should be avoided, as this tends to result in an even surface, which is undesirable for invertebrate mitigation.

7.6 The floral composition should follow that of the following butterfly bank.

**Butterfly banks**

7.7 These are an important feature that benefits brownfield butterflies (such as the grizzled skipper and dingy skipper) and also a wider resource of pollinating invertebrates that require thermophilic features and high-density flower stands.

7.8 Butterfly banks are essentially mounded materials. These features are partially compacted with machinery, but other parts of the banks can be allowed to settle naturally to encourage niche variation, through slumping.

7.9 Medium, coarse aggregate material should be used for these banks. A limestone or other high-pH material is preferable, as this gives rise to a richer flora and promotes the important low-growing Rosaceae.

7.10 Optimally, the banks should have a southerly facing aspect for greatest sun exposure and in a crescent or sinuous shape, which further varies the microclimate of the feature.

7.11 Ideally, the banks should be *very sparsely* sown with a suitable flower mix from a *reputable source and of UK provenance*, allowed to colonize naturally, or plug-planted with suitable grizzled skipper larval food plants. A combination of all options can be used.

7.12 The following plants are essential and mandatory for inclusion on the banks and also open mosaic areas:

Grizzled skipper:

- creeping cinquefoil (*Potentilla reptans*)
- wild strawberry (*Fragaria vesca*)

- agrimony (*Agrimonia eupatoria*)

Dingy skipper:
- common bird's-foot trefoil (*Lotus corniculatus*)

**Flowering swards**

7.13 As part of the wider mosaic of feature used by grizzled skippers, principally for foraging and roosting, taller flowering areas should be sown with an appropriate mix of flowering plants from a reputable source and of UK provenance. This mix will also benefit the wider pollen- and nectar-foraging invertebrates and therefore can include the following:

- hawkweeds (*Hieracium* spp.)
- common bird's-foot trefoil (*Lotus corniculatus*)
- St. John's wort (*Hieracium* spp.)
- vetches (*Vicia* spp.)
- hawkbits (*Leontodon* spp.)
- red clover (*Trifolium pratense*)
- other trefoils (Fabaceae)
- meadow vetchling (*Lathyrus pratensis*)
- woundworts (*Stachys* spp.)
- wild carrot (*Daucus carota*).

7.14 The flowering swards should have a high density of flowers, and most standard mixes do not have a high enough proportion of flowering plants that are suitable for brownfield site mitigation, so a bespoke mix or additional ordering of supplementary flower seed is advised.