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Case study: BP CATS, Teesside

The early 1800s saw the Teesside area expand into a sprawling industrial centre. To support the increasing demand for land for heavy engineering, shipbuilding and chemical industry, large areas of mudflat in the estuary were reclaimed by in-filling with blast furnace slag, a by product of iron extraction. The BP CATS facility was built on this reclaimed land in the 1970s to receive and process offshore gas. The large area of non-operational reclaimed land offers a valuable low nutrient habitat resource for the region's invertebrates.

The reclaimed land from the Tees Estuary which now holds the BP CATS facility was created using blast furnace slag revetment walls and infilling with river dredgings. The area was then covered and capped with blast furnace slag. Over time, the raised pH has developed a calcareous flora with a mosaic of vegetation. Lower levels are dominated by sparsely vegetated, early successional habitats with fine grasses and herbs such as Common bird's-foot trefoil (*Lotus corniculatus*), Carline thistle (*Carlina vulgaris*), Common centaury (*Centaurium erythraea*) and Kidney vetch (*Anthyllis vulneraria*) in a mosaic with sandy and stony bare ground. Raised areas including mounds and banks support dense herb-rich grasslands.

An artificially created pond and feeder pool support dense stands of Common reed (*Phragmites australis*) and appropriate habitat for a range of coastal wetland invertebrates including many notable moths. Deeper layers of subsoil throughout the site have developed rough

grassland, a useful additional habitat feature providing diversity and sheltering opportunities in an open area.

Buglife habitat work undertaken

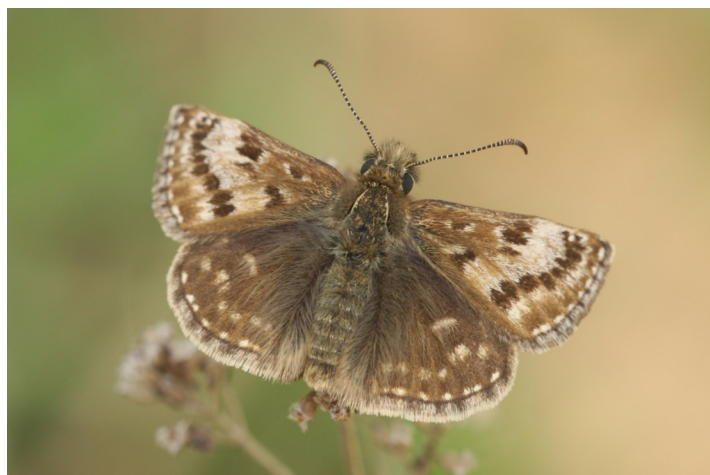
- A 100m long, south-facing, vegetated bank was scraped using an excavator to remove the nutrient enriched face and expose the underlying low nutrient subsoil containing

Key species of the site

- Butterflies: Dingy skipper (*Erynnis tages*), Grayling (*Hipparchia semele*).
- Solitary bees & wasps: *Nysson trimaculatus*, *Gorytes quadrifasciatus*, *Andrena nigriceps*.
- Flies: snail-killing fly *Coremacera marginata*, conopid fly *Thecophora fulvipes*, soldierfly *Oplodontha viridula*, hoverflies.
- Fen wainscot moth (*Arenostola phragmitidis*).



Mosaic of sparsely vegetated bare ground © Clare Dinham



Dingy skipper (*Erynnis tages*) © Greg Hitchcock

Key features for invertebrates

- Reedbeds, supporting coastal wetland flies and moths outside their normal range
- Sparsely vegetated early successional habitat, with areas of bare sandy ground and rock ideal for rare butterflies to bask
- Open herb-rich grassland providing forage for hoverflies and bees
- Vertical faces on mounds and banks, providing nesting areas for ground-nesting bees and wasps
- Young developing scrub providing shelter

blast furnace slag and sandy dredgings. This created new south-facing nesting habitat for solitary bees and wasps. The scraped off material was used to create an undulating surface along the base of the slope with a range of aspects and microhabitats. These new bare areas have developed a complex mosaic of sparsely vegetated habitats to provide forage and nesting areas for a range of invertebrates. Early surveys results suggest that there has been an increase in species number and diversity compared to baseline data.

- Extensive scrapes were created using an excavator to strip nutrient enriched topsoil and species-poor vegetation. A gently undulating, low nutrient surface with a range of aspects and hollows was created to provide opportunities for scarce thermophilic species such as Dingy skipper and Grayling.
- Bee banks were created using material scraped from across the site. Banks were made 1m high, ensuring that the



Newly created bee bank with bare ground © Clare Dinham



The mining bee *Andrena nigriceps* © Paul Brock

longest face had a south-facing aspect, but with varied slopes and aspects for a larger range of species including active ground beetles and spiders. Adjacent gently undulating surfaces were also created using scraped off material to create localised microclimate variation to encourage a more diverse wildflower resource.

Monitoring and management

Long-term management and monitoring at BP CATS will be undertaken by the BP Green Team under the direction of INCA (Industry Nature Conservation Association). Activities such as thistle pulling on bee banks and re-facing vegetated scrapes will be required on a rotational basis to maintain the open mosaic of habitats. Rabbit grazing will help maintain an open sward with bare ground.



Maturing sparsely vegetated bee bank © Clare Dinham

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Bug House, Ham Lane, Orton Waterville, Peterborough, PE2 5UU

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