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## Streaked bombardier management sheet

The Streaked bombardier beetle (*Brachinus sclopeta*) is one of the UK's most threatened invertebrates with modern records restricted to London's brownfields. This easily identifiable beetle is 5-7.5mm long and has a metallic blue-green elytra with a distinctive orange-red streak, and a slim orange-red body. Similar to all bombardier species, when threatened it can spray a boiling, chemical mixture of hydroquinones and hydrogen peroxide from the tip of its flexible abdomen to deter predators.

### Life cycle

Very little is known of their ecology, but adults have been recorded throughout the year in an apparently active state. It is likely that the Streaked bombardier follows a similar life cycle to closely related species, with reproduction in the warmer months before overwintering as adults. It is thought that larvae are ectoparasites of *Amara*, *Harpalus* and possibly *Ophonus* beetle larvae, attaching themselves to their prey and feeding before pupating.

### Distribution

Historical records of the Streaked bombardier are restricted to a handful of sites on the south coast of England, with the last individual noted in 1928. The species was presumed extinct in the UK but was re-discovered on a brownfield site near the Thames Barrier in 2006. Since their re-discovery, only a handful of populations have been recorded, all on brownfields in the London Borough of Newham, as well as a single individual in Mile End Park, Tower Hamlets.

### Habitat

Streaked bombardier in the UK are now exclusively associated with brownfields that support open mosaic habitat on previously developed land, a Priority Habitat. They require sites with a mosaic of dry open ground, ruderal vegetation and large debris such as broken bricks and rubble. Soil and rubble bunds created by site clearances appear to provide them with optimal habitat, perhaps providing them with a range of microclimates, aspects, temperature and moisture. The beetles are often found tightly embedded between broken brick or rubble and soil. A range of microclimates and different ruderal species are also likely to improve the number and diversity of seed eating *Amara* and *Harpalus* prey species.

### Habitat creation

Suitable habitat can be created using recycled aggregates such as screened topsoil, crushed concrete (75mm is ideal) and broken bricks. Consider including sand and chalk areas to encourage a more diverse flora and habitat mosaic, with the



Streaked bombardier beetle © Craig Slawson



Soil and rubble bund showing ideal habitat © Jamie Robins



Recycled rubble piles © Stuart Connop

aim of attracting more beetle prey species. With planning these can also be attractive landscaping features.

- Brick pavements can be created by hand, by simply laying bricks in areas of suitable low-nutrient and disturbed ground where there is a rich ruderal resource. As the bricks settle in to the ground, the beetle's desired tight interface of brick and soil develops.
- A bund or mound can be constructed using a range of materials to mimic site clearance features. First a layer of brick or rubble should be laid at ground level, preferably in a configuration with a long south-facing edge. Lay alternate layers of broken brick or rubble with soil, creating a mound or bund, or alternatively combine the materials before laying on the mound. There is no minimum height requirement, however, a height of at least 0.5m is preferable to provide a greater diversity of microclimates. Aim for variation across the mound in the proportions of soil and rubble, while including hollows and undulations.



Low-level bunds with developing vegetation © Eleanor Passingham

- Consider burying or half burying tyres in mounds and the surroundings for shelter and to diversify the range of microclimates available.
- Ruderal plant species typical of brownfields quickly colonise new features however, if an instant visual enhancement is needed, consider hand sowing a diverse seed mix. This could include a range of Asteraceae and Umbellifers, including Knapweeds (*Centaurea* spp.), Hawkweeds (*Hieracium* and *Hypochaeris* spp.), Wild carrot (*Daucus carota*) and Mignonettes (*Reseda* spp.). Seed should simply be scattered in pinches across bare ground and mound areas.

#### Habitat management

Only limited management is required, by rotational cutting back of vegetation. It is important that no more than half of the vegetation is cut back in any given year. Cutting can either be undertaken using hand tools or a strimmer if available, with arisings removed from the site to reduce site nutrients.

#### Options for new development projects

It is essential that brownfield developments in Newham undertake surveys for the Streaked bombardier beetle. Whether or not they are recorded, it would be beneficial for new developments to consider creating mounds and bunds for the Streaked bombardier and other brownfield wildlife. This could help reduce the risk of localised extinctions of brownfield species, particularly as regeneration has led to the loss of a significant area of high quality habitat. If habitat is being created to mitigate for losses, new habitats must be in place prior to the loss of existing habitat with time in the most active season (April-September) for invertebrates to colonise the new resource.



Ruderals colonising new bunds © Stuart Connop

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