



## > About Us

Within APS Entomological Consultancy (APSEC) there are over 30 years of research and practical experience of the management of nuisance insects, including mosquitoes, biting and non-biting midges, ticks, and other biting insects.

Our mission is the development and implementation of management solutions for pest problems associated with both humans and livestock. No project is too big or too small for us; we will work with the client's needs, expectations and budget to deliver a bespoke solution.

This brochure details primarily our approaches for *Culicoides* biting midges but our services can be applied for other nuisance and vector insects, on an international scale.

### **STANDARDISED**

We work within robust protocols to ensure we meet the standards required.

### **CLIENT**

### **FOCUSED**

We will work with you to provide the best service possible and tailor our services to your needs.

### **EXPERT**

### **KNOWLEDGE**

With over 30 years' experience in insect control, we guarantee excellent service.

Contact us using the details below to discuss your insect-management requirements.

✉ [apsec@apsbiocontrol.com](mailto:apsec@apsbiocontrol.com)

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# Midge Management Solutions

## > Project Types: Some Examples



Our core services can be provided to nuisance or vector insect projects, both in the UK and overseas. Below are just a few examples:

### Property Survey & Midge Management

A private estate in Ross-shire was experiencing a biting midge problem around the residential property on the estate, which totalled 7,000 acres in size. An ecological survey, including extracting midge larvae from breeding sites was carried out by APSEC, allowing the identification of primary and secondary breeding sites. A proposal was derived based on both cultural and management strategies to tackle the midge problem. This included some habitat management to reduce midge breeding grounds in the immediate vicinity of the property, as well as the strategic deployment of several midge traps.



### Outdoor Events

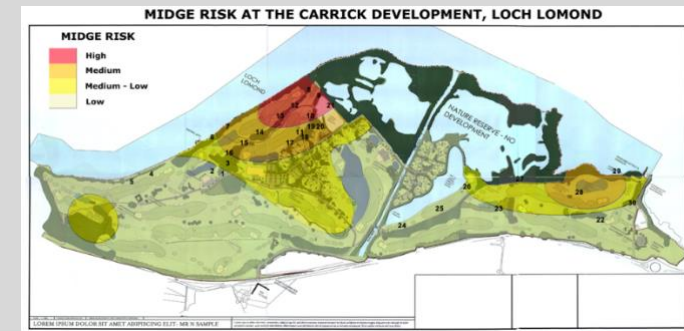
APSEC is frequently called upon by organisers of outdoor events concerned about the potential impact of midges on their visitors. This has included various outdoor music festivals, where we have installed midge traps prior to the event to reduce the midge population. We have even travelled to a remote site in Western Norway, to tackle the midge problem in an ancient assembly site of the ancient Norwegian empire, once more to be used as a festival site.

We have also worked on sporting events, where we have been on-hand to tackle midge attacks with our repellent product, Smidge®



### Complete Midge Management

A £50m development was being planned by De Vere's Resort Ownership, including a challenging new golf course on the banks of Loch Lomond ("The Carrick") and with the 5-star Cameron House Hotel at its heart. Realising that midges can be a problem in the area and not wanting their guests to be compromised, APSEC was invited onto the site at the inception of the project. An ecological survey was carried out, resulting in a "midge risk" map that we were able to effectively deploy midge traps.



APSEC managed the traps, including maintenance, data collection and reporting, with a significant decrease in the midge population being recorded over the duration of a season.

### Livestock Protection & Surveillance

APSEC have worked with the farming and equine industries to assess the potential threats caused by biting midges. This includes leading a previous Scottish Government bluetongue-virus surveillance programme, trapping on farms across Scotland over 3 years to document the distribution of midge species in relation to livestock density, allowing calculations of midge risk and economic assessment of disease incursions. We have also developed vector-protection programmes for livestock breeders.





## > Our Insect Management Services

We offer a range of insect management solutions for dealing with various insect pests such as midges, mosquitoes and other biting flies.

We will carry out an initial technical survey, from which a management programme will be recommended. If appropriate, we will design protocols, implement, monitor and report on the proposed programme.

Alternatively, we can either provide training to in-house personnel for these activities, or contract appropriate external services.

The following are just some of the services we have on offer:

- **Basic Trap Positioning**

- ◆ This is recommended for small organisations that require one or two insect traps to help reduce the impact of midges (or mosquitoes).
- ◆ We can supply traps and recommend where they are placed on your property in relation to insect breeding, emergence and resting sites.
- ◆ This can be done through a site visit but also, remotely *via* photographs or sketches.

- **Site Visit**

- ◆ This includes a basic site visit, where we will visually inspect the area. We may also take photographs, which we will use to create an annotated map together with the appropriate advice on trap placement.
- ◆ We can provide a more accurate assessment of midge breeding grounds (which directly relate to midge emergence sites) through taking soil samples to analyse in the lab for midge larvae. A full reporting detailing findings and recommendations will be provided.

- **Complete Midge Management**

- ◆ This is aimed at larger organisations that require professional midge management, including golf courses, country estates and sporting venues.
- ◆ We will assess your needs, provide traps, create "midge barriers" and offer hands-on support and advice in their use.

## > How Do Management Systems Work?

Attractant-based traps are central to our management programmes, enhanced by advice on habitat management and the deployment of other technologies as appropriate.

The traps mimic the potential blood-meal host of a female biting insect, *via* a series of cues that are associated with the normal host (usually a mammal). In this way, they can attract female insects over an area of approximately 500 m<sup>2</sup>. The cues involved include:

1. **breath:** the traps emit warmed carbon dioxide, which is the primary activator of host-seeking female insects;
2. **odour:** odour baits are included, which enhance the attractiveness of CO<sub>2</sub>, drawing the insects closer to the trap. We use octenol, which is a by-product of ruminant digestion (and also smells of mushrooms!);
3. **movement:** some traps feature a flashing light to emulate host movement, enhancing the odour cues to help the insects home in on the trap.

In other situations, we might use light-suction traps to monitor insect populations.

When traps are used effectively with sensible positioning, over time they can distract insects away from a populated area and start to reduce the overall abundance of insects.



## > Our Partners

We work with strategic partners to provide the best-possible technologies, supported by experienced technical advice as required.

### Traps

Effective traps are key to both surveillance and management programmes for nuisance and vector species of insect.

For on-farm surveillance programmes we tend to use APSEC's own light-suction traps which are robust in any weather and can be sited well away from any hungry livestock.



For management programmes with nuisance insects, particularly biting midges, we recommended odour-based traps and work closely with **Midge-Free-Zone** to supply the most suitable trapping solution, depending on the area to be protected, the insect pressure and the client's budget. The Mosquito Magnet® range of traps are a proven solution for biting insects, requiring minimum maintenance and providing maximal population management.



### Air Barriers

The Barrfly™ midge and mosquito barrier uses air curtain technology to provide a method of keeping midges and mosquitoes from tracking the CO<sub>2</sub> plumes given off by humans and so keeping them out of areas you want to protect and keep midge or mosquito free.

APSEC works closely with the inventor of the Barrfly™, **Innovent (Scotland) Ltd.** to assess the areas you want to protect and if appropriate, make suggestions as to where the technology could help keep an area insect-free; this could be a garden patio, beer garden, hotel terrace, marquee or outdoor event.



*Barrfly™ (arrowed) protecting an outdoor terrace of The Carrick golf club house*

Barrfly™ can be adapted to suit most applications and can be installed using textile ducting to provide a lightweight and portable solution which allows it to be incorporated into tent, marquee and gazebo structures, ideal for outdoor events and individual marquee-based events. We can provide a vast range of colours and also, screen print advertising and logos to suit your event or location.

