Summary of the Invention

The present disclosure provides, according to an aspect, an insect trap including: a body, wherein the body comprises a base and a plurality of walls forming an interior of the insect trap; a trapping area within the interior arranged to capture insects; at least one entrance to the interior of the insect trap; and a ramp at the entrance for insects to access the interior of the insect trap; wherein the ramp is flexible.

In an embodiment of the above aspect, the ramp includes a supporting structure and a flexible layer, the flexible layer extending beyond the supporting structure on an outermost edge of the ramp such that the flexible layer forms a tapered edge of the ramp; wherein the tapered edge of the ramp formed of the flexible layer is configured to rest on a floor that the insect trap is placed on.

In an embodiment of the above aspect, the flexible layer is made from rubber.

As disclosed herein, there is provided an insect trap comprising:

a body, wherein the body comprises a cover, a base and a plurality of walls forming a substantially enclosed interior of the insect trap,

a trapping area within the interior arranged to capture insects;

a first entrance to the interior of the insect trap formed of an aperture in a first wall of the plurality of walls, and

a second entrance to the interior of the insect trap formed of an aperture in a second wall of the plurality of walls;

wherein the first entrance is opposite the second entrance such that the trap has two entrances on opposite ends of the body.

More insects are likely to enter the insect trap as they are able enter via either the first entrance or the second entrance. Insects in the surrounding area on either of the two sides may enter the interior of the insect trap by one of the two entrances being in their path.

The substantially enclosed interior of the insect trap provides an attractive space for insects as it is warmer and/or darker than the surrounding area.

The insect trap may be moveable between a closed configuration, wherein the insect trap forms the substantially enclosed interior, and an open configuration, wherein a user can access the interior of the insect trap, for example for servicing or monitoring.

The trapping area may comprise an adhesive layer. Additionally or alternatively, the insect trap may comprise a drop such that insects fall down the drop into the trapping area.

The substantially enclosed interior may be such that only minimal, if any, light from the surrounding area enters the insect trap. The skilled person will appreciate that a substantially enclosed interior does not exclude the presence of apertures in the body, for example apertures forming an entrance for insects to enter the insect trap.

The substantially enclosed interior may be such that insects caught in the insect trap are not visible from the outside of the insect trap when the insect trap is in a closed configuration.

The features discussed in relation to the invention may also be incorporated into the following aspects of the invention.

As disclosed herein, there is also provided an insect trap comprising:

a body, wherein the body comprises a cover, a base and a plurality of walls, forming a substantially enclosed interior of the insect trap,

a trapping area within the interior arranged to capture insects, and

at least one entrance to the interior of the insect trap;

wherein the trapping area comprises a layer of adhesive for trapping insects.

The layer of adhesive of the trapping area in the substantially enclosed interior of the insect trap remains effective for a longer period of time than if it was instead in a substantially exposed interior. Particularly, the cover of the body is such that it reduces the amount of dust particles and/or fibres from the surrounding environment landing on the layer of adhesive which reduces its effectiveness. Insects crawl into the insect trap and onto the layer of adhesive, becoming trapped.

The cover of the body may cover more than 50% of the trapping area. Preferably the cover of the body covers the entirety of the trapping area.

The at least one entrance may be formed of an aperture in one of the plurality of walls. The at least one entrance may be a first entrance and the trap may have an additional second entrance, like in the invention.

The layer of adhesive may be located on the base of the body forming a sticky bottom surface of the interior of the insect trap. The layer of adhesive may cover more than 50% of the surface area of the base of the body, preferably the layer of adhesive covers more than 70% of the surface area of the base of the body.

The insect trap may further comprise a removable board wherein the removable board comprises the layer of adhesive for trapping insects, the removable board forming at least part the trapping area of the insect trap.

Preferably, the removable board forms the trapping area of the insect trap.

The base of the body of the insect trap may comprise a cavity. The cavity in the base of the body may be of a greater surface area than the material base, the bottom of the interior of the trap being formed of a material border surrounding the cavity. The cavity in the base of the body may be rectangular. Alternatively, the base of the body may be

least one ramp, they fall down the drop into the trapping area. The ramp may extend over the trapping area, beyond an outer edge or perimeter of the trapping area.

The insect trap may comprise a divider between a first entrance and a second entrance of the insect trap. The divider may be for blocking light. The divider may extend down from the cover of the body into the interior, dividing the layer of adhesive and forming two sub-trapping areas.

The features discussed in relation to the invention may be incorporated into the preceding aspect of the invention.

As disclosed herein, there is also provided an insect trap comprising:

a body, wherein the body comprises a base and a plurality of walls forming an interior of the insect trap,

a trapping area within the interior arranged to capture insects,

at least one entrance to the interior of the insect trap, and

a ramp at the entrance for insects to access the interior of the insect trap.

The body of the insect trap may further comprise a cover, similarly to the insect traps according to other aspects of the invention, such that the interior of the insect trap is substantially enclosed.

The insect trap may have a first entrance and a second entrance with a ramp at each entrance. Insects may ascend the first ramp to enter the interior of the insect trap via the first entrance and insects may ascend the second ramp to enter the interior of the insect trap via the second entrance.

Each ramp may have an outermost edge, which is farthest from the centre of the interior of the insect trap, and an innermost edge, which is closest to the centre of the interior. The outermost edge of the ramp may be tapered, the thickness of the ramp decreasing from the innermost edge to the outermost edge.

The ramp may comprise a supporting structure and a flexible layer. The flexible layer may be supported by the supporting structure. The flexible layer may extend beyond the supporting structure on the outermost edge of the ramp, such that the flexible layer forms a tapered edge of the ramp. The tapered edge of the ramp formed of the flexible layer may rest on a floor that the insect trap is placed on.

The ramp may be attached to the body of the insect trap by the supporting structure while the flexible layer is for insects to mount and climb on.

The at least one ramp, or the first and/or second ramp, may be outside the body of the insect trap such that it leads up to and terminates at the corresponding aperture of the body of the insect trap. Alternatively, the at least one ramp, or the first and/or second ramp, may be entirely within the interior of the insect trap such that the ramp starts at the corresponding aperture of the body of the insect trap, or even starts within the interior of the insect trap. Alternatively, the at least one ramp, or the first and/or second ramp may straddle the aperture of the body of the insect trap such that it starts outside the body of the insect trap and terminates within the interior of the insect trap.

The ramp may be integral with the body of the insect trap. Alternatively, the ramp may be attachable to, and removable from, the body of the insect trap. If attachable to and removable from, the ramp may be replaced once damaged or no longer effective so that the insect trap does not need to be replaced due to failure of a single component i.e. the ramp. Any suitable means of attaching the ramp to the main body may be used.

The insect trap may further comprise a drop to the trapping area such that insects, having entered the interior of the insect trap via the ramp, fall off the edge of the ramp and down the drop to the trapping area.

The drop may be formed of any suitable structure, for example the options discussed in relation to the invention. The trapping area may be below the highest point of the ramp thereby resulting in the drop.

The trapping area may comprise a layer of adhesive for trapping insects.

The layer of adhesive offers an additional means of keeping the trapped insects within the trapping area. The layer of adhesive may cover substantially the entire surface area of the trapping area, the layer of adhesive at least covers the area beneath the ramp.

An upper surface of the ramp may be textured.

Where the ramp has a flexible layer, the flexible layer may be textured.

Insects are more likely to enter the trap via a textured ramp as its texture may encourage the insects to walk along the ramp and into the interior of the insect trap.

The ramp may be textured in the sense that it is non-smooth. The surface of the ramp may have a surface roughness greater than 10 micrometres, more preferably having a

surface roughness greater than 15 micrometres. The ramp may comprise ridges on its upper surface such that the surface is non-smooth.

The ramp, or its flexible layer, may be made from rubber or have a rubber coating. Alternatively, the ramp may be made from a flexible polymeric material or any other suitable material.

The ramp may be flexible. In this way, when the insect trap is placed on an uneven surface, the ramp may compliantly adapt to the uneven surface.

The ramp may have a tapered edge. The tapered edge, or outer-most edge of the ramp, may maintain positive contact with a floor surface as a result of only the weight of the trap.

When the insect trap is placed on a floor, the outermost, lowest edge of the ramp may deform to conform with the surface of the floor. As such, insects need not step up to the base of the body of the insect trap, which may be raised above the floor as a result of imperfections in the surface of the floor.

The features discussed in relation to the invention may be incorporated into the preceding aspect of the invention.

As disclosed herein, there is also provided an insect trap comprising:

a body, wherein the body comprises a base and a plurality of walls forming an interior of the insect trap,

a trapping area within the interior arranged to capture insects, and

a sensing system configured to sense, along a sensing axis, the presence of an insect entering the insect trap;

wherein the sensing system comprises at least one emitter configured to emit radiation along the sensing axis, and at least one receiver configured to receive radiation along the sensing axis, the sensing system detecting an insect that intersects the sensing axis thereby preventing radiation emitted by the emitter being received by the receiver.

The insect trap may further comprise at least one entrance, or a first entrance and a second entrance, through which the insects enter the insect trap. The body of the insect trap may further comprise a cover such that it forms a substantially enclosed interior of the insect trap, as in other aspects of the invention.

The sensing system may comprise four sensing pairs, a first sensing pair and a third sensing pair at a first height and a second sensing pair and a fourth sensing pair at a second height, wherein the first and second sensing pair are located at a first distance along the length of the body of the insect trap such that the first and second sensing pairs can be used detect a height of an insect that has entered via a first entrance, and wherein the third and fourth sensing pair are located at a second distance along the length of the body of the insect trap such that the third and fourth sensing pairs can be used detect a height of an insect that has entered via a second entrance.

The sensing system may further comprise a camera for detecting insects entering the insect trap.

The camera may be used in conjunction with some image processing to generate further data on the insects in the interior of the insect trap.

The sensing system may comprise a reset mechanism configured to reset data collection of data from the sensing system.

The reset mechanism may be used in data processing for registering a change of location such that the data can be used to optimise future placement of the insect trap. Additionally or alternatively, the reset mechanism may be used when a replaceable board with a layer of adhesive is replaced such that a user can monitor when the insect trap may have become full so that it can be replaced again.

The reset mechanism may comprise an actuatable button on the surface of the cover which can be pushed to trigger the reset. Additionally or alternatively, the reset mechanism may be entirely electronic and triggered by a command issued by the user, for example through a remote device.

The optional features discussed in relation to the invention apply to the preceding aspect of the invention discussed.

Any of the aspects of the invention may incorporate any of the preceding or subsequent optional features discussed, irrespective of which aspect they are discussed in relation to. The following features may be incorporated into any of the aspects of the invention and in any combination with previously disclosed optional features.

The outer surface of the body may be smooth so that insects cannot crawl across the outer surface.

Claims

1. An insect trap comprising:

a body, wherein the body comprises a base and a plurality of walls forming an interior of the insect trap;

a trapping area within the interior arranged to capture insects;

at least one entrance to the interior of the insect trap; and

a ramp at the entrance for insects to access the interior of the insect trap;

wherein the ramp is flexible.

2. An insect trap according to claim 1, wherein the ramp comprises a supporting structure and a flexible layer, the flexible layer extending beyond the supporting structure on an outermost edge of the ramp such that the flexible layer forms a tapered edge of the ramp; wherein the tapered edge of the ramp formed of the flexible layer is configured to rest on a floor that the insect trap is placed on.

3. An insect trap according to claim 1 or claim 2, wherein the flexible layer is made from rubber.

4. An insect trap according to any preceding claim wherein an upper surface of the ramp is textured.

5. An insect trap according to any preceding claim, wherein the insect trap further comprises a drop to the trapping area such that insects, having entered the interior of the insect trap via the ramp, fall off an edge of the ramp and down the drop to the trapping area.

6. An insect trap according to any preceding claim, wherein the trapping area comprises a layer of adhesive for trapping insects.

7. An insect trap according to claim 6, further comprising a removable board, wherein the removable board comprises the layer of adhesive for trapping insects, the removable board forming at least part of the trapping area of the insect trap.

8. An insect trap according to any preceding claim, wherein the body further comprises a cover, and wherein the cover, base and plurality of walls form a substantially enclosed interior of the insect trap;
wherein the insect trap further comprises a second entrance to the interior of the insect trap formed of an aperture in a second wall of the plurality of walls, wherein the first entrance is opposite the second entrance such that the trap has two entrances on opposite ends of the body; and
wherein the insect trap further comprises a divider between the first and second entrances, wherein the divider is for blocking light.

9. An insect trap according to claim 8, wherein the divider extends down from the cover of the body into the interior, dividing the trapping area and forming two sub-trapping areas.

10. An insect trap according to any preceding claim, wherein the outer surface of the body is smooth so that insects cannot crawl across the outer surface.

11. An insect trap according to any preceding claim, wherein at least part of the surface of the interior of the insect trap is smooth so that insects cannot crawl out of the trapping area.

12. An insect trap according to any preceding claim, wherein the interior of the insect trap is black.

13. An insect trap according to any preceding claim, wherein at least part of the interior of the insect trap is matt so that so that the interior surfaces of the insect trap reflect minimal light.

14. An insect trap according to any preceding claim, wherein the overall height of the insect trap is less than 40mm, preferably less than 35mm.

15. An insect trap according to any preceding claim, wherein the body comprises a hinge which enables movement of the insect trap between an open configuration and a closed configuration wherein, when the insect trap is in the closed configuration, the interior of the insect trap is not visible.