INVERTEBRATE SURVEY OF IDLECOMBE DOWN AND ROWBOROUGH DOWN, ISLE OF WIGHT 2004

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INTRODUCTION.
Idlecombe Down and the adjacent Rowborough Down are situated some 2Km. to the North of Shorwell, Isle of Wight, on the central chalk ridge that runs West to East across the Island.The soil is consequently calcareous in nature and flinty.The area under consideration in the current survey comprises some 68 hectares and contains a variety of habitats, including calcareous grassland, chalk heath, scrub, deciduous and coniferous woodland. Much of the downland is South - facing in aspect.This land is currently leased and managed by Mr. M. Poland, largely for nature conservation purposes, although several areas within the site are used by the landlord's agents for pheasant rearing. Public access is limited to the use of a single right of way along a track close to the southern edge of the site, so human disturbance on the bulk of the site is minimal. A herd of Highland and Highland - cross cattle is maintained on site; these constitute a valuable management tool in terms of scrub control.

Because the land is privately owned, and public access is extremely limited,little was known of the insect fauna of Idlecombe and Rowborough Downs. In order to rectify this, and to gain useful information relating to the future management considerations of the site, the lessee commissioned an entomological survey to be carried out by the author during the main period of insect activity in 2004.

For the purposes of management the site has been split into 23 compartments; 11 of these are primarily grassland or scrub, the remainder being mainly woodland compartments. The grassland areas constitute approximately 55% of the site area.Brief descriptions of the compartments are detailed below:

GRASSLAND COMPARTMENTS.
Compartment 1.
This compartment consists of scrub going into dense Sycamore *Acer pseudoplatanus* plantation.It is of little value entomologically, but serves as a useful boundary buffer zone.

Compartment 2.
This more or less linear compartment comprises an area of scrub to the North of the site. Some *Salix* was present which provided a Spring nectar source.

Compartment 3.
One of the compartments where scrub clearance has been implemented mechanically. Additional scrub control has been undertaken by the cattle present in previous years, although they were not noted in this compartment during the course of this survey. Gorse *Ulex europaeus*, which is abundant here, and Ground Ivy *Glechoma hederacea* within this compartment provided valuable Spring pollen and nectar sources.Where scrub clearance has occurred species such as Rosebay Willowherb *Chamerion angustifolium*, Wood Sage *Teucreum scorodonia*, Ragwort *Senecio jacobaea*, Musk Thistle *Carduus nutans* and Creeping Thistle *Cirsium arvense* are becoming dominant. A richer flora is developing in parts, for example in the North - west of the compartment around SZ 45051 85462 there is an area where Bird's - foot Trefoil *Lotus corniculatus* and White Clover *Trifolium repens* are abundant. Also, an area in the South - western corner of the compartment around SZ 44943 85283 supports Bird's - foot Trefoil, Common Centaury *Centaureum erythraea* and Viper's Bugloss *Echium vulgare*.

Compartment 4.
This area has been cleared of scrub fairly recently. Unfortunately, restoration to chalk grassland appears to have been unsuccessful to date, and much of this compartment is dominated by Rosebay Willowherb, Wood Sage and Foxglove *Digitalis purpurea*. Some Gorse is present. Calcicolous plants including Common Rock Rose *Helianthemum nummularia* and Thyme *Thymus polytrichus* occur towards the eastern end of the compartment. There is an old chalk pit at SZ 45549 85503; immediately to the West of this is an area of bare ground of considerable entomological interest.

Compartment 5.
Restoration of chalk grassland and chalk heath in this section has met with considerable success.Gorse and Ground Ivy were plentiful in Spring.Later in the season Common Rock Rose and Bird's - foot Trefoil flowered in some quantity.Common Centaury, Common Rock Rose and Nettle - leaved Bellflower *Campanula trachelium* were all well represented.Rosebay Willowherb and Wood Sage were also present in quantity. Considerable areas of this compartment, especially at the eastern end, contain some sizeable areas of regenerating chalk heath dominated by Bell Heather *Erica cinerea*. The best areas are around SZ 45359 85379, SZ 45394 85372 and SZ 45331 85357.

Compartment 6.

A small area with some large Beech *Fagus sylvatica*, it is generally heavily shaded and has a limited ground flora. This compartment is much favoured by the cattle, which lie up here during hot weather.

Compartment 7.
The eastern end of this compartment was quite diverse, with Ground Ivy and Dog Violet *Viola riviniana* plentiful. Bramble *Rubus fruticosus* agg. and Dog Rose *Rosa canina* were also present , and a large *Salix* was a major nectar source in the Spring. Further West, parts of this compartment degrade to low scrub, and several areas are suffering from Bracken *Pteridium aquilinum* invasion.Rosebay Willowherb and Wood Sage are also reaching overbearing proportions in places. Gorse is widely distributed within this compartment. There is a small area of regenerating chalk heath with regenerating Bell Heather around SZ 45057 84951.

Compartment 8.
The scrub element in this compartment is currently quite high. Bramble, Gorse and Rosebay Willowherb were all common.

Compartment 9.
This compartment is in the process of being reclaimed as chalk grassland. However, much of the area remains quite densely scrubbed. Elder *Sambucus nigra* and Traveller's Joy *Clematis vittalba* were present in some quantity on the lower slopes. This compartment was being actively grazed by the Highland cattle on a regular basis.

Compartment 10.
Another area recently reclaimed from scrub, and in the process of being restored to chalk grassland.Ground Ivy was plentiful in the Spring. Some Blackthorn *Prunus spinosa* was present. Foxglove, together with Creeping Thistle and Musk Thistle, were abundant. Some Bracken is present.

Compartment 11.
This is another recently cleared area,which has been reclaimed from scrub by mechanical means. This recent disturbance has resulted in the development of a flower rich area, which includes calcicolous species in addition to early successional species. Musk Thistle was particularly abundant here, although Creeping Thistle and Spear Thistle *Cirsium vulgare* were also present. Lesser Burdock *Arctium minus*, Weld *Reseda luteola*, White Campion *Silene latifolia*, Common Mallow *Malva sylvestris*, Great Mullein *Verbascum thapsus* and Foxglove were also frequent.

WOODLAND COMPARTMENTS.
Compartment W1.
Most of this compartment was densely shaded coniferous woodland, although some Ash *Fraxinus excelsior* was present. Generally the ground flora was poor, although Ramsons *Allium ursinum* was present in some quantity.

Compartment W2.
This compartment consisted of mixed woodland, most of which was dense. Some good Blackthorn bushes were present along the northern boundary adjacent to the track.

Compartment W3.
Another primarily coniferous compartment, although some Beech was present.

Compartment W4.
The bulk of this small compartment consisted of densely shaded coniferous woodland.

Compartment W5.
Much of this compartment was densely shaded. It comprised mixed woodland containing Scots Pine *Pinus sylvestris* and Norway Maple *Acer platanoides* in addition to Sycamore. Some Ash is present. The southern boundary of this compartment was more open and contained some good pollen and nectar sources. Small patches of Ground Ivy and Dog Violet were present in the Spring; later in the season Nettle - leaved Bellflower, Creeping Thistle and Teasel *Dipsacus fullonum* were noted.

Compartment W6.
A densely shaded compartment consisting largely of coniferous plantation.

Compartment W7.

The bulk of this compartment is dense coniferous woodland containing Scots Pine and some Corsican Pine *Pinus nigra*. The woodland floor is heavily shaded and subsequently the ground flora was generally poor. Some exotic *Sorbus* have been planted adjacent to the track forming the southern boundary of this compartment.

Compartment W8.
Much of this compartment is dense conifer plantation, although there are some Primrose *Primula vulgaris* along the southern edge of the compartment. Additionally an open corner where a track leads down to Rowboroughdown Bottom was sunlit and provided nectar and pollen sources from Dogwood *Cornus sanguinea*, Hawthorn *Crataegus monogyna* and Hogweed *Heracleum sphondyllium* .

Compartment W9.
Largely composed of dense coniferous woodland.

Compartment W10.
Again, this compartment was largely dense conifer plantation, although the northern boundary, which abuts woodland compartment 11 had some Hazel *Corylus avellana* and Wild Cherry *Prunus avium* present.

Compartment W11.
This large (11.32 ha.) compartment contains several different habitats. The South - western end of this compartment, which slopes down to Rowboroughdown Bottom is dominated by Beech , some of which are mature and post - mature trees. There is a dead wood element within this area. Large quantities of Ramsons were present in much of the woodland component within this compartment. The South - eastern end of this slope degrades into conifer plantation, although some Beech are present within this.
A wide track runs from West to East through Rowboroughdown Bottom. This supports a rich and varied flora including Nettle - leaved Bellflower, Cowslip *Primula veris*, Musk Thistle, Red Bartsia *Odontites vernus*, Wild Parsnip *Pastinaca sativa*, Ground Ivy, Hogweed, White Bryony *Bryonia dioica*, Bramble and Hawthorn, all of which are valuable pollen and nectar sources.The width of the track was sufficient to allow plenty of light to penetrate the area, which proved to be an entomological hot spot, particularly at it's eastern end.
To the North of this track is an area of primarily Beech woodland, with Ash, Hazel, Oak *Quercus robur* and Hawthorn also present. Some of the Beech here are probably the oldest trees on the site, and include some veteran specimens. Perhaps surprisingly, the dead wood element within this area is comparatively low. A clearing within this section of woodland has recently been created; as this develops it is likely to be an entomologically important feature.

Compartment W12.
Parts of this compartment were reasonably open, although other sections were composed of dense Scots Pine. Several good Blackthorns and patches of Ground Ivy provided a valuable early Spring pollen and nectar source. The southern boundary of this compartment, adjacent to the path, was gently sloping and sunny. Some good areas of Ground Ivy and Dog Violet were present here. There are large patches of Bird's - foot Trefoil in the South - western corner at SZ 45334 84939.

METHODS.
Survey methods were confined to visual searching, the use of a hand net to capture individual species, sweeping vegetation, beating foliage and grubbing.The site was visited on 15 occasions between 30th March 2004 and 31st August 2004. All visits were made in good weather. Species were recorded by compartment as discussed above, thus records can easily be attributed to particular areas of the site. This is useful where species have specific habitat requirements which may be represented in a restricted number of compartments. Additionally, for scarce species having an obligate association with a particular foodplant, a 10 figure grid reference of the location of the host plant was made using a "Garmin etrex" global positioning system. This system was also used to log exact positions of sightings of particular rarities, where practicable. Locations of these are shown on **Map 1** (appended).

RESULTS.
A full list of all insect species recorded during the course of survey is appended as **Appendix 1**.This appendix also shows which compartments individual species were recorded from, with the grassland compartments being represented by a number only, and the woodland compartments being prefixed by the letter W. A number of the species encountered are considered to be Nationally Scarce or Red Data Book species. These are marked as such within **Appendix 1** and are discussed in more detail below.The status category definitions and criteria for individual species are those devised by the JNCC and are as follows :

STATUS CATEGORY DEFINITIONS AND CRITERIA.

RDB 1 - Endangered.
Taxa in danger of extinction and whose survival is unlikely if causal factors continue operating.

Species which are known or believed to occur as only a single population within one 10km square of the National Grid.
Species which only occur in habitats known to be particularly vulnerable
Species which have shown a rapid or continuous decline over the last twenty years and are now estimated to exist in five or fewer 10km squares.
Species which are possibly extinct but have been recorded in the 20th century and if rediscovered would need protection.

RDB 2 - Vulnerable.
Taxa believed likely to move into the endangered category in the near future if the causal factors continue operating.

Species declining throughout their range.
Species in vulnerable habitats.

RDB 3 - Rare.
Taxa with small populations that are not at present Endangered or Vulnerable, but are at risk

Species which are estimated to exist in only fifteen or fewer post 1970 10km squares. This criterion may be relaxed where populations are likely to exist in over fifteen 10km squares but occupy small areas of especially vulnerable habitat.

Nationally Scarce (Na).
Taxa which do not fall within the RDB categories but which are none - the - less uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid.

Nationally Scarce (Nb).
Taxa which do not fall within the RDB categories but which are none - the - less uncommon and thought to occur in between 31 and 100 10km squares of the national Grid.

Nationally Scarce (N).
Species which are estimated to occur within the range of 16 to 100 10km squares.

Additionally, some of the species found are included in either the National or Isle of Wight Biodiversity Action Plan (BAP) species listings. Again, these are clearly marked in **Appendix 1**.

LEPIDOPTERA.
A total of 27 species of butterfly was recorded during the survey, despite the fact that the author tends to concentrate on other groups of insect that are less well - recorded. This represents almost 65% of the total Island list, excluding migrants. Amongst these, the following species are worthy of note.

The Essex Skipper *Thymelicus lineola* was recorded in Rowboroughdown Bottom from the main ride of woodland compartment 11, where it was present in low numbers. Although not classed as scarce, records of this species from the Isle of Wight are relatively few. This may be due in part to under - recording; nonetheless the author does not encounter this species frequently despite checking numerous specimens. Caterpillars of the Essex Skipper feed on coarse grasses such as *Brachypodium* species.

The Dark Green Fritillary *Argynnis aglaja* was recorded from four of the grassland compartments, and also from the main open track running through woodland compartment 11. Although only small numbers of individuals were seen on any one visit, this butterfly was recorded on four separate dates,strongly suggesting that a breeding population occurs on the site. Larvae of this species feed on Common Dog Violet *Viola riviniana*, which is quite widely scattered across the site.This butterfly is classified as Nationally Scarce (N) and in view of a major local decline over the last few decades, the Dark Green Fritillary is included in the Isle of Wight BAP listings.

A single example of the rare (RDB3) Glanville Fritillary *Melitea cinxia* was found at the eastern end of the main track in compartment W11, at SZ 45587 85114 on 23rd May 2004. This butterfly is now native only to

the Isle of Wight within the UK, and is largely restricted to coastal localities along the South of the Island between Sandown Bay and Compton Bay. However, occasionally inland colonies are formed,particularly along the southern slopes of the central chalk ridge from Afton Down to Brighstone Down, although these tend to be transitory. Pope (1999) states that such a colony was present on Rowborough Down post 1984, although the exact date is not given.The larvae feed on Ribwort Plantain *Plantago lanceolata*. In view of it's highly restricted distribution,the Glanville Fritillary is included in the national BAP listings as a species of conservation concern.

Moths were not recorded in detail on the survey. However small numbers of the diurnal Six - belted clearwing *Bembecia scopigera* were observed on a sunny bank in the South - western corner of woodland compartment 12, around SZ 45334 84939. This area supports several clumps of Bird's - foot Trefoil *Lotus corniculatus*, the larval foodplant of *B. scopigera*. Adult specimens of the Six - belted clearwing were observed flying rapidly around the flowers of this plant on June 8th and 15th 2004. This nationally scarce (Na) species is found quite regularly along the soft rock cliffs of the Island where *L. corniculatus* is present, but the author has not previously recorded it inland on the Island. Nationally it has a scattered distribution through England as far North as Yorkshire. It has also been recorded in Wales. *B. scopigera* is included in the Isle of Wight BAP listings.

The Red - necked Footman *Atolmis ruficollis* was also found around SZ 45334 84939 on 15th June 2004, when several individuals were seen in slow flight. Further specimens were recorded on the same date in woodland compartment 11, flying along the main ride in Rowboroughdown Bottom. This local species is known primarily from southern England and Wales, where it inhabits both deciduous and coniferous woodland. Larvae of the Red - necked Footman feed on lichens and algae growing on the trunks of Oak, Beech and several coniferous species. Goater (1974, 1992) offers Parkhurst Forest, America Woods, East Cowes and Cranmore as Isle of Wight localities, but some of these records appear quite old. This species is included in the Isle of Wight BAP listings.

DIPTERA.

The Nationally scarce soldierfly *Beris fuscipes* was found at rest on a Hazel leaf in woodland compartment 11. This is a species of damp woodland and marshy areas. Larvae of *B. fuscipes* are believed to develop in decaying roots and decaying vegetable matter.Although this species is quite widely distributed nationally, it is patchy within this distribution, and remains a decidedly local species. Falk (1991a) cites "around a dozen post 1960 sites", although the author has found this species at another Island site and suspects that Falk's figure is a considerable underestimate.

The Hornet Robber Fly *Asilus crabroniformis* is one of Britain's largest fly species, reaching a body length of up to almost 30mm. It was recorded in late Summer from compartments 3, 5, and 7, and was present in some numbers. Adults of this formidable insect prey upon large insects including grasshoppers, bees and wasps beetles and other robber flies. Larvae develop in dung, particularly that of cattle ,horses and rabbits, where they prey upon the larvae of dung beetles. Main strongholds for the Hornet Robber Fly are now centred around the southern heaths and chalk downland, and it remains a reasonably common insect on the Isle of Wight where suitable habitat occurs in conjunction with large grazing animals. Elsewhere, and particularly in East Anglia, *A. crabroniformis* has suffered major recent declines. These are in part due to habitat loss and fragmentation, but also due to the widespread use of avermectins which clear gut parasites in domestic stock, but which make the resultant dung from these animals toxic to dung beetles in certain circumstances. Concerns for the future of this Nationally Scarce (N) species are such that it is classified as a national BAP Priority species.

The Dotted Beefly *Bombylius discolor* is a Nationally Scarce (N) Spring - flying species which proved to be widespread over Idlecombe and Rowborough Downs, with records from 5 downland and 4 woodland compartments. Good numbers of *B. discolor* were found in several compartments, and oviposition was observed on several occasions, particularly around nesting aggregations of the mining bee *Andrena flavipes*. Larvae of *B. discolor* are ectoparasitic on the larvae of this bee. Although *B. discolor* remains a reasonably common species on the Isle of Wight in areas where it's host may be found (especially soft rock cliffs), Stubbs & Drake (2001) state that the species has declined nationally to the stage where it is regarded as a rarity. It is classed as a national BAP Priority species.

One of the most exciting finds of the survey was the rare (RDB3) hoverfly *Callicera aurata*. A single specimen was found nectaring from the flower of a Teasel *Dipsacus fullonum* on the southern edge of woodland compartment 5 at SZ 45402 84809 on 29th July 2004. Larvae of this species develop in water filled cavities in trees, with Beech being the most favoured host, although they have also been found in

Birch. Stubbs & Falk (2002) consider this one of the most difficult hoverflies to find as an adult; indeed this was the first living specimen the author had seen. *C. aurata* occurs mainly in southern forests, with the New Forest being it's major stronghold. This record constitutes only the second Isle of Wight record for *C. aurata* , which has also been recorded from woodland at Tolt (S. Colenutt, pers. comm.). *Callicera aurata* is an Isle of Wight BAP species.

A strong population of the Nationally Scarce (N) hoverfly *Epistrophe diaphana* was present at the eastern end of the main track through Rowboroughdown Bottom in woodland compartment 11. Adults were regularly seen vising the flowers of Hogweed *Heracleum sphondyllium* between late May and mid June.This Nationally Scarce(N) southern species is usually found along woodland edges. The larvae are believed to be aphidophagous. Locally, *E. diaphana* is known to the author from two other Island sites. It is included in the Isle of Wight BAP listings.

A single specimen of *Eumerus ornatus*, a Nationally Scarce (N) hoverfly, was observed along the eastern margin of the Kingsgate Copse section of woodland compartment 11, sunning itself on a Hazel leaf on 13th July. The larval habits of this species are unknown, although it is likely to be associated with the roots or bulbs of one or more woodland plants. *E. ornatus* has a strong association with ancient semi - natural woodland, particularly in southern England. *E. ornatus* has been found by the author in four other Island woodlands. It is classified as a national BAP species of conservation concern.

Volucella inflata, another Nationally Scarce hoverfly, was recorded in small numbers along the East - West track forming the southern margin of woodland compartment 8, and also further West within woodland compartment 11.Specimens were seen visiting the flowers of Dogwood *Cornus sanguinea* on several occasions. Larvae of this species develop in sap runs on overmature trees, and there is a strong association with mature deciduous woodland. *V. inflata* is seldom encountered North of the Severn - Wash line. The Weald, South Hampshire, Dorset and the Isle of Wight are considered to be it's strongholds. Locally, this species can be frequent in some of the older woodlands, but it curiously absent from other apparently suitable sites. *V. inflata* is an Isle of Wight BAP species.

A single specimen of the Thick - headed fly *Myopa extricata* was collected from Hawthorn blossom in woodland compartment 11 on 26th April. This fly lays its eggs on the abdomen of mining bees and the larvae develop as solitary internal parasites within the host bee. Observations by the author suggest that the mining bee *Andrena cineraria* is a likely host; this bee was common in several areas of Idlecombe and Rowborough Downs. Although Falk (1991a) cites only two post 1970 localities for *M. extricata* and classifies at as rare (RDB3) , Clements (pers. comm.) knows of modern records for at least five English counties. Most records for *M. extricata* are from chalk grassland. Locally, the author has found *M. extricata* at four other Isle of Wight localities. The Isle of Wight is considered to be a stronghold for this species.

The rare (RDB3)Picture - winged fly *Urophora solstitialis* was found in association with Musk Thistle *Carduus nutans* in grassland compartments 5 and 11, and also along the main track through Rowboroughdown Bottom in woodland compartment 11. Larvae of this species form galls in the capitulum of Musk Thistle; they hatch in August and overwinter as larvae within the gall, and emerge as adults the following May and June. Thus their life cycle is highly dependent upon stability of the host plant. There are only two previous Isle of Wight records for *U. solstitialis*, one of which is for Bowcombe (1944. J. W. Saunt). Although this locality data is rather vague , it does serve to indicate that the species has been present in the general area for many years. The current author has not recorded this species previously.
The distinctive Tachinid fly *Lophosia fasciata* was found visiting the flowers of Wild Parsnip *Pastinaca sativa* along the main track of Rowboroughdown Bottom in woodland compartment 11 on 24th July. This fly is parasitic on the Hawthorn Shield Bug *Acanthosoma haemorrhoidale*. It is associated with downland, coastal grassland and dry woodland, and confined to southern England. There is a record for Glamorgan in Wales. Falk & Ismay (unpublished) cites 20 post 1960 records nationally for this species, which is classed as Nationally Scarce. The author is unaware of any other Isle of Wight records for *L. fasciata*.

HYMENOPTERA.

The social wasp *Dolichovespula media* was observed visiting the flowers of Bramble *Rubus fruticosus* agg . at the eastern end of woodland compartment 10. This tree - nesting species is believed to be a recent colonist to the UK. It was first recorded in Sussex in 1980, and has subsequently spread quite rapidly. *D. media* does not have restricted habitat requirements. It is classified as Nationally Scarce (Na) by Falk (1991b), although Edwards (1997) notes that it has become widely distributed and suggests that the status of *D. media* should be downgraded. Locally, it remains a fairly scarce species; the author has recorded this large wasp from two other Island sites.

The solitary wasp *Crossocerus binotatus* was swept from foliage in woodland compartment 11 on 29th July. This Nationally Scarce (Nb) wasp nests in dead wood in a variety of habitats, and preys on medium sized flies. It is widely but very sparingly distributed across England. Locally, the author has recorded *C. binotatus* on the Island on one previous occasion (Priory Wood, 2002) and Edwards & Telfer (2001) additionally give one other Isle of Wight record.

Two nationally scarce species of mining bee of the genus *Andrena* were recorded during the survey. The diminutive species *Andrena minutuloides* was found to be well established along the main track of Rowboroughdown Bottom in woodland compartment 11. This species is primarily associated with chalk grassland and chalk heath in southern England, where it has a requirement for warm , dry, sparsely vegetated areas. Falk (1991b) gives Hampshire, Sussex and Kent as strongholds for *A. minutuloides*. Locally, the author has previously found this species on calcareous grassland in the Castle Haven area. *A. minutuloides* is classified as Nationally Scarce (Na).

The Spring brood of the Nationally Scarce (Nb) mining bee *Andrena trimmerana* was recorded from woodland compartments 11 and 12. Red - marked males of this species were seen on several occasions, most commonly visiting Blackthorn blossom. *A. trimmerana* nests in soft rock cliffs, landslips and on rough grassland. Locally, *A. trimmerana* may be encountered in a variety of habitats - including open woodland - but it is most frequently found on coastal cliffs or rough coastal grassland. Nationally, this species has declined significantly, particularly inland. *A. trimmerana* is predominantly southern in its distribution, with most records from coastal counties. Kent, Sussex and the Isle of Wight remain strongholds for this scarce species.

The small mining bee *Lasioglossum pauxillum* was recorded from woodland compartment 11. This species nests in sparsely vegetated light soils in warm, sunny conditions.It may be found in a variety of habitats including calcareous grassland, soft rock coastal cliffs and heathland. Although classified as Nationally Scarce (Na), *L. pauxillum* is a relatively frequent bee on the Isle of Wight, particularly in coastal locations. However, Falk (1991b) notes a national decline, and the majority of the UK's post 1960 records relate to the southern coastal counties of England. The Isle of Wight is probably one of the national strongholds for *L. pauxillum*.

The Nationally Scarce (Nb) cuckoo bee *Sphecodes crassus* was recorded from the sunny bank at the western end of woodland compartment 12 around SZ 45334 84939.This species is cleptoparasitic on mining bees of the genus *Lasioglossum*. It is scarce but widely distributed in southern and central England and in Wales, and has been recorded from both calcareous and sandy soils.Locally, the author has recorded *S. crassus* from three other Island sites.

The rare (RDB3) cuckoo bee *Sphecodes niger* was found in compartment 5 in an area of regenerating chalk heath around SZ 45331 85357. This species is believed to be cleptoparasitic on *Lasioglossum morio*, which is nesting within this compartment. Nationally, this species is restricted to southern counties of England, where it appears to undergone a considerable decline (Falk, 1991b). Kent and the Isle of Wight would appear to be strongholds for *S. niger*. Although the author has recorded this species from four other sites on the Island, this record for Idlecombe Down is my only inland record for this species.
The solitary bee *Melitta haemorrhoidalis*, which was recorded in compartment 5, and woodland compartments W5 and W11, proved to be present in fair numbers . This bee is an oligolectic species collecting pollen only from Bellflowers (*Campanulacae*). On Idlecombe and Rowborough Downs *M. haemorrhoidalis* was found visiting Nettle - leaved Bellflower *Campanula trachelium* in preference to Harebell *Campanula rotundifolia*. Nettle - leaved Bellflower has a highly restricted distribution on the Isle of Wight,being confined to the inland chalk outcrop West of the Medina (Pope , Snow and Allen, 2003); it is in decline. Within the survey area, this calcicolous plant was present as clumps and single plants scattered across the site. Wherever the larger clumps were noted in late July, *M. haemorrhoidalis* was present.These clumps were located as follows :
Compartment 5 : SZ 45564 85400.
Compartment W5 : SZ 45634 84816.
Compartment W11: SZ45448 85090, SZ 45441 85265, SZ 45550 85020, SZ 45575 85207.

Nationally, *M. haemorrhoidalis* is mainly found in South - east England. Although not listed by Falk (1991b), recent work reveals a significant decline in the distribution of this species and Edwards (1998) states that it's status requires review. Locally, the author has recorded *M. haemorrhoidalis* from Brook and Compton Downs, and Culver Battery. At these sites, where Nettle - leaved Bellflower is absent, *M. haemorrhoidalis* was utilising Harebell as a pollen source.

Another species of *Melitta*, the Nationally Scarce (Nb) *Melitta tricincta*, was also recorded on site, from grassland compartment 9 and woodland compartment 11. *M. tricincta* is monolectic on Red Bartsia *Odontites vernus*. Within the survey site, 3 areas of Red Bartsia were located by the author. Within woodland compartment 11 there was a large area of this plant around SZ 45374 85256 and a further patch around SZ 45184 85192. Both these locations are on or adjacent to the main track through Rowboroughdown Bottom. *M. tricincta* was present in good numbers on both these areas. Within compartment 9, Red Bartsia was restricted to a patch of a few plants around SZ 44871 84772. Again this was on or adjacent to a main track. Initially , this area was deemed probably too small to support a population of the bee, but patience was rewarded when in due course small numbers of *M. tricincta* were noted visiting the plants. Nationally, *M. tricincta* is restricted to southern England, although the host plant is widely distributed through lowland Britain. *M. tricincta* shows a preference for chalk grassland and open woodland on chalk, although Red Bartsia is not confined to calcareous soils. Falk (1991b) states that *M. tricincta* is in decline. Locally, the host plant is quite widely distributed and frequent, but the author has only recorded *M. tricincta* from one other site (Afton Down, 2003). Edwards (1998) gives one additional post 1970 record for the Isle of Wight.

The homeless bee *Nomada fucata* was recorded from three grassland and two woodland compartments, where it was frequently observed flying around nesting aggregations of it's host *Andrena flavipes*, on which it is cleptoparasitic. Nationally, *N.fucata* is, like it's host, confined to southern England, but it is considerably scarcer than the host and absent from some areas where *A. flavipes* is well established. Locally, *A. flavipes* forms huge nesting aggregations at many landslip or soft rock cliff sites and the *Nomada* remains a relatively frequent insect.Although Falk (1991b) listed this species as Nationally Scarce (Na) following a period of extreme scarcity in the 1970's, *N. fucata* populations recovered during the 1990's and Edwards & Telfer (2002) suggested that it's status should be downgraded. However, *N.fucata* is prone to considerable fluctuations in population size and seems to be recovering after a particularly poor season in 2002.

A single specimen of the rare (RDB3) homeless bee *Nomada fulvicornis* was found on 13th July from an area of regenerating chalk heath in compartment 5. This bee is cleptoparasitic on *Andrena tibialis*, *Andrena bimaculata* and *Andrena pilipes* s.l., all of which require bare, sandy soil on warm slopes in which to nest. From the recording date of the *N. fulvicornis*, it must have been utilising one of the last two species here, although unfortunately neither of these hosts was recorded on the current survey. Else (in prep.) states that *N. fulvicornis* is widely distributed but rare and decreasing in southern England. On the Isle of Wight *N. fulvicornis* would certainly appear to be a rare species; the author has only otherwise recorded this bee from a single specimen from Redcliff, Sandown Bay, in 2001.

In contrast, the rare (RDB3) homeless bee *Nomada lathburiana* was present in very large numbers. It was found to be common and widely distributed across compartments 3,4 and 5 of Idlecombe Down, and was also present in good numbers along the track margin in woodland compartment 11. The host of *N. lathburiana* is *Andrena cineraria*, which was also widely distributed and common on site.*A. cineraria*, formerly essentially northern in it's UK distribution, has expanded southwards over the last few decades. It is now well established on a number of Island sites. The cleptoparasite *N. lathburiana* is most common in northern England, but has also expanded it's range southwards with it's host. Although the author has only previously found *N. lathburiana* on Luccombe Down and St. Catherine's Down on the Isle of Wight, a recent record also exists for the St. Catherine's point area. However, the sheer numbers of this decidedly local bee on Idlecombe Down are noteworthy. The map in Edwards & Telfer (2002) demonstrates the recent range expansion, and they suggest that the status of *N. lathburiana* may require review.

COLEOPTERA.

The Soldier beetle *Malthinus balteatus* was recorded from woodland compartments 8 and 11, where it was captured by the use of a sweep net on foliage of Hazel. Larvae of this Nationally Scarce (Nb) species develop in dead twigs and small branches; the adults are believed to be predatory. *M. balteatus* is largely restricted to southern England and South Wales, and shows a preference for wooded habitats on soils where the water table is regularly high, although it also occurs on the wooded lower fringes to chalk downs - a situation which would apply here. On Rowborough Down *M. balteatus* was recorded on 8th June and 24th July. The author has not found this species elsewhere on the Island , neither are there any records for the Isle of Wight in Alexander (2003), thus these records may constitute the first Island records. Given the small size and delicate nature of *Malthinus* species, it is unlikely to be a recent colonist, but is more likely to have been overlooked in the past.

The Nationally Scarce (Na) beetle *Drilus flavescens* was recorded from compartments 5 and W11. Larvae, and probably adults of *D. flavescens* are specialist predators on molluscs. Although the adult males are fully

winged, females are apterous and have a larval appearance even in their adult form. *D. flavescens* is almost totally confined to calcareous soils, where it may be found in grassland or at wood edges. It has a very restricted range being largely confined to the South - east England from the Isle of Wight to Kent (Alexander, 2003). Locally, *D. flavescens* has been recently recorded from several calcareous grassland sites, and from a woodland edge in the centre of the Island.

In addition to the species discussed above, a number of the other species recorded are specifically associated with ancient or overmature deciduous trees. Stubbs (1982) selected species of hoverfly which he considered to be "primary woodland indicator " species, and placed them in 3 categories : H1 - strong, H2 - good and H3 - weak. Alexander (2002) produced a provisional annotated checklist of invertebrates of living and dead timber for the UK. **Appendix 2** lists those species recorded during the current survey which appear in either or both of these publications, and briefly notes their larval requirements.

DISCUSSION.

The survey produced records of 10 species listed in the Isle of Wight Biodiversity Action Plans; of these two were national BAP Priority species and another two were National BAP species of conservation concern. Seven Red Data Book species were recorded and a further 19 species were considered to be Nationally Scarce. These together represent almost 10% of the total of 279 species recorded. Many species were recorded in several compartments, resulting in over 800 compartmental records.There can be little doubt that Idlecombe and Rowborough Downs form an area of considerable entomological value, both locally and regionally, and that efforts to conserve this important and diverse fauna should be continued. The site is home to species dependent on chalk grassland and bare ground in addition to those associated with primary woodland, with both these habitat types supporting national rarities within the site.

The total of 67 species of hoverfly is a creditable one, representing almost 45% of the known Island total. Nearly 20% of these have strong associations with ancient woodland. Almost half the solitary wasps recorded are species which nest in dead wood.Several of the beetle species recorded were also dead wood dependent.

59 species of bee were found, with the bulk of these being ground nesting species with a requirement for warm bare ground on light soils.The presence of good numbers of cleptoparasitic bees of the genera Nomada and Sphecodes, which are reliant upon ground - nesting bees is indicative of a degree of long term stability on the site. This bee list represents a good species total, particularly for an inland site. Whilst one would expect a Hymenopteran list of at least this length from the soft rock cliff sites on the South coast of the Isle of Wight, the author has surveyed no other inland sites locally that have produced hymenopteran lists of these proportions. For example, a survey of Brook and Compton Downs by the author (Wright, 2003) produced a list of 48 species of Aculeate Hymenoptera, compared with 78 species on the current survey.

MANAGEMENT CONSIDERATIONS.

In order to retain, and enhance the existing entomological interest of Idlecombe and Rowborough Downs, consideration should be given to the future management requirements of the site. It is hoped that the following comments may prove useful when considering site management. Where helpful specific areas are shown on **Map 2** (appended).

With respect to the grassland areas of Idlecombe and Rowborough Downs, the reclamation of chalk grassland and chalk heath from scrub should remain a priority. To this end scrub clearance and control, by both mechanical means and by cattle grazing, should be continued. It is the author's opinion that the current level of cattle grazing could be increased to the benefit of the chalk grassland areas of the site. This would also benefit the populations of a number of coprophagous insects and their dependents, including the national BAP Priority species the Hornet Robber Fly.Furthermore, the light soil disturbance provided by the cattle encourages areas of bare ground which are beneficial to soil nesting Hymenoptera. Additionally, some plant species, for example Red Bartsia, which supports a population of a Nationally Scarce bee on site, benefit from light soil disturbance.

In an ideal situation the grassland areas of the site should, however, continue to contain some scrub elements, and a matrix of areas of short sward grassland, ranker grassland, low scrub and more mature scrub areas should be aimed for.This has been achieved to good effect on Brook Down, where periodic swiping in selected areas has been undertaken. Bare ground is also an important component, which is currently not particularly well represented. Consideration could be given to the provision of small artificial scrapes in sheltered, sunny areas. Some species will nest only in flat or gently sloping rather than vertical

soil, so different gradients will encourage different soil nesting species to flourish.Few species will nest in areas which are shaded out.

The current effectiveness of the reversion to downland varies considerably from one compartment to another. Specifically, the author considers the following issues worthy of attention :

Compartment 3.
Rosebay Willowherb , Ragwort and Wood Sage are rapidly becoming dominant here, preventing chalk grassland from developing. These are not species favoured by cattle, and consideration should be given to swiping parts of this compartment to reduce the quantities of these plants.

Compartment 4.
Rosebay Willowherb, Foxglove and Wood Sage are the dominant plants here, and again consideration should be given to their reduction in numbers, particularly where they are encroaching on the pockets of calcicolous plants which occur within the compartment. There is a disused chalk pit at SZ45549 85503, which is currently heavily scrubbed up. It would be beneficial to undertake clearance within this, since it would provide considerable amounts of different angled bare ground slopes attractive to ground nesting Hymenoptera. Immediately to the West of this chalk pit is an area of sparsely vegetated rather sandy ground which is currently heavily utilised by ground nesting Hymenoptera. This should not be allowed to scrub over or become densely vegetated.

Compartment 5.
There are several good areas of chalk heath dominated by Bell Heather developing here, and they need to be retained. Species such as Common Rock Rose, Viper's Bugloss and Nettle - leaved Bellflower are also present in some quantity. Unfortunately Rosebay Willowherb and Wood Sage are also present in quantity; they should be prevented from encroaching onto the areas of chalk heath. From an invertebrate viewpoint, mature heather is far more attractive than the young growth currently present here, which is perhaps why this chalk heath supported relatively few species in the current survey. However, "leggy" overmature heather is also less attractive to insects, and it is likely that some form of heather management will need to be instituted in the future, albeit not for another 20 years or more. Flailing or controlled burning are currently the most favoured options.Obviously this should be done on a rotational basis. The lower boundary track through this compartment has a somewhat sandy near vertical slope in places which should be prevented from becoming over - vegetated or shaded out.

Compartment 7.
The small area of developing chalk heath around SZ 45057 84951 should be monitored and if possible, encouraged. There is considerable Bracken present in some areas; this should not be allowed to spread out of control. This compartment contains some diverse scrubby sections towards it's eastern end which are worthy of retention.

Compartment 9.
This area is still quite densely scrubbed, particularly with low scrub, which is receiving active attention from the Highland cattle. Hopefully this will allow a more characteristic chalk grassland to develop.

Compartment 11.
The recent disturbance to this area caused by mechanical scrub clearance has resulted in an abundance of Musk Thistle, which supports a population of the rare Picture - winged Fly *Urophora solstitialis*. Many species of Picture - winged Fly have obligate associations with a single plant species or group of closely related species, and often spend large parts of their life cycle actually within the host plant. This means that their presence is a useful gauge of long term stability on a site, since actions which cause temporary extinctions of the host plant on site are likely to lead to local extinctions of the fly species. As mentioned in the species account, *U. solstitialis* spends some 10 months of the year physically attached to the host plant. It was therefore disheartening to find that the whole of compartment 11 , together with the adjacent compartment 10, which also contained the host plant, had been swiped in late August. This action is bound to have a deleterious effect on the populations of *U. solstitialis*, and the author advocates that in future years when this compartment is cut it should be split into two or three blocks which are swiped in different years.

The quality of the woodland compartments varies considerably between compartments, from almost pure coniferous plantation to compartments with significant deciduous woodland elements. The bulk of the coniferous planting within the woodland is young, having been planted about 50 years ago. Insects strictly dependent on coniferous trees were poorly represented and the entomological interest of the woodland

compartments was centred around the deciduous components, together with the woodland and track edges and areas of grassland within the woods.

Ideally it would be beneficial to replace most of the coniferous plantation with native deciduous trees of species such as Beech and Ash which are already well represented. However, this would be an extremely costly and time consuming exercise and is not considered a realistic option. It may be possible to open up areas of the coniferous compartments, particularly around deciduous trees within them. The formation of small glades or open areas in this way would allow a ground flora to develop and enhance the entomological interest of these currently poor areas.

It is widely recognised that the areas of main botanical diversity within a woodland system are in rides and clearings. By scalloping ride edges, or the corners at ride junctions it is easy and inexpensive to produce floristically species - rich areas which have the additional benefit of gaining extra light. Such areas are greatly favoured by many invertebrates.

The presence of a considerable dead wood dependent fauna has been amply demonstrated. In order to retain this, a continual supply of dead wood, both standing and fallen, is required. To this end removal of dead or diseased trees should be avoided if possible. Rot holes and sap runs on damaged trees are important features entomologically, and should be left in situ for as long as is possible.

Compartment W1.
This is a potential candidate for some clearance around deciduous trees present (particularly Ash) to allow more light into the compartment.

Compartment W2.
There are some good Blackthorn bushes along the northern margin of this compartment which provide a valuable Spring pollen and nectar source.These should be retained.

Compartment W3.
Although primarily coniferous, there are some fair - sized Beech. It may be possible to open up areas around these.
Compartment W5.
Parts of the southern boundary adjacent to the track were reasonably open with a large, flower rich woodland edge. It would be desirable to retain this, and if possible expand it further by removing some trees from the woodland edge. It would be preferable to cut different halves of this verge on alternate years, rather than cut it all in one operation, as is currently done.

Compartment W8.
Although this compartment is largely conifer plantation, the track forming the southern boundary of the compartment contains fair quantities of Primrose. If possible, widening of this track by scalloping as suggested above would be beneficial.Additionally, it would be desirable to further open up the corner where the southern boundary track meets the track leading down to Rowboroughdown Bottom.

Compartment W10.
The northern boundary of this compartment contains Wild Cherry, the blossom of which is highly favoured by Diptera and Hymenoptera. These trees should be retained if possible.

Compartment W11.
The largest and most diverse of the woodland compartments, W11 contains the majority of the mature and veteran Beech present on the site. Some recent clearing has been undertaken at the South - western end of this compartment, which has opened up an area containing several large Beech. Dead wood, both fallen and standing remains, and as this area develops it will doubtless prove to be entomologically significant.
To the East of this area, there is a track which runs through to compartment W8. The northern boundary of this track is another area which would benefit from scalloping to produce some larger, floristically - rich areas.

The main track which runs from East to West through Rowboroughdown Bottom is one of the most important areas of the entire site. It contains a rich and varied flora and receives sunlight for long periods.Many rare and scarce insect species were recorded visiting plants here. It is important that this track is maintained in it's current open state, and that it does not become too shaded. There are some good Hawthorn present within the track and it's margins; these should be retained. The gradation from short grass through ranker vegetation to scrub and then woodland is a desirable feature. The current mowing regime for

this ride should be reviewed. The first cut, which was in mid June, cut only half the ride at the western end, but removed all the flowering Hogweed and White Bryony at the eastern end of the track. The entire ride was then cut again in late August. Whilst the timing of the second cut was better, it was unfortunate that the entire ride was cut simultaneously. In future, the author would suggest that the ride is cut by mowing alternate halves on a biennial cycle in late August, and that the early Summer mowing be discontinued. Several large Wild Cherry trees are present at the western end of this track; these should be retained.

The northern section of the compartment, i.e. north of the track through Rowboroughdown Bottom contains some good veteran Beech. A clearing has recently been made within this woodland section, which will develop into a rich area entomologically within the near future. The Hawthorn and Blackthorn around the edges of this new clearing should be retained.

It is unfortunate that two large areas within this compartment have been given over to pheasant rearing, particularly since one of them is an area with a significant number of fair sized Beech trees. If it was possible to transfer these away from the deciduous areas of the site and into conifer woodland, this would be preferable.

Compartment W12.
The western end of this compartment is reasonably open, and contains some good Blackthorn and Hawthorn which provide a Spring feeding station for insects. The South - western corner of this compartment, adjacent to the track, forms a sloping sunny bank of short sward grassland with considerable areas of bare ground supporting nesting aggregations of mining bees. Bird's - foot Trefoil is well represented here, and was the only area on the entire site where Six - belted clearwing was recorded. The area appears to be quite heavily rabbit - grazed at present, and this has produced the resultant short sward. If possible, this area should be kept in it's current state.
To the East of the entrance gate to compartment W11 a ride leads off eastwards into compartment W12, but this peters out fairly quickly. This area is relatively open and sunny, and contains some Hawthorns towards the end of the ride. This is another area which would benefit from the creation of a small clearing. It would be advisable to retain the Hawthorn within this.

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Appendix 1.
List of insect species recorded from Idlecombe Down & Rowborough Down, 2004.

Species	Compartment(s) present	Status	BAP listing
ORTHOPTERA	(Grasshoppers & Crickets)		
Chorthippus brunneus	3,5		
Chorthippus parallelus	3,5		
Leptophyes punctatissima	9,W11		
Meconema thalassina	W11		
Myrmeleotettix maculatus	4,5,8		
Omocestes viridulus	3,4,5,7,8,10		
Pholidoptera griseoaptera	W5,W11		
Tetrix subulata	W11		
Tettigonia viridissima	W11		
DERMAPTERA	(Earwigs)		
Forficula auricularia	4,11,W11		
HEMIPTERA	(True Bugs)		
ACANTHOSOMIDAE	(Shield bugs)		
Acanthosoma haemorhoidale	4,W11		
Elasmostethus intercinctus	W11		
COREIDAE	(Squash bugs)		
Coreus marginatus	3,7,W5,W11		
Coriomeris denticulatus	5		
CYDNIDAE	(Shield bugs)		
Sehirus bicolor	W5		
MIRIDAE	(Capsid bugs)		
Deraeocoris ruber	W5		
PENTATOMIDAE	(Shield bugs)		
Aelia acuminata	11,W12		
Dolycoris baccarum	5,9,11,W11,W12		
RHOPALIDAE	(Squash bugs)		
Coryzus hyoscyami	W11		
NEUROPTERA	(Lacewings)		
Chrysopa perla	W11		
Hemerobius humulinus	W11		
Hemerobius nitidulus	W12		
Micromus paganus	W11		
Micromus variegatus	W11		

LEPIDOPTERA (Butterflies & moths)

BUTTERFLIES

Aglais urticae	Small tortoiseshell	3,5,7,11,W11		
Aphantopus hyperantus	Ringlet	W5		
Anthocharis cardamines	Orange Tip	W11		
Argynnis aglaja	Dark Green Fritillary	3,5,7,11,W11	Nationally scarce (N)	IOW BAP
Callophrys rubi	Green Hairstreak	5,7,W11		
Celastrina argiolUs	Holly Blue	W11		
Coenonympha pamphilus	Small heath	3,4,5,7,8,W5,W11		
Erynnis tages	Dingy skipper	4,5,W12		
Gonepteryx rhamni	Brimstone	11,W5,W7,W8,W11,W12		
Inachis io	Peacock	3,5,7,9,W5,W7,W11,W12		
Lycaena phlaeas	Small Copper	5,7,11,W11		
Maniola jurtina	Meadow Brown	3,5,7,8,9,10,11,W5,W11,W12		
Melanargia galathea	Marbled White	3,5,7,11		
Melitea cinxia	Glanville Fritillary	W11	Rare (RDB3)	National BAP SOCC
Ochlodes venata	Large skipper	11,W11		
Pararge aegeria	Speckled Wood	W5,W11		
Pieris brassicae	Large White	3,5,11,W5,W8,W10,W11		
Pieris napi	Green veined white	W11		
Pieris rapae	Small White	10,11,W5,W10,W11,		
Polygonia c - album	Comma	5,7,9,11,W5,W8,W10,W11,		
Polyommatus icarus	Common Blue	3,5,W7,W12		
Pyrgus malvae	Grizzled Skipper	5,W11,W12		
Pyronia tithonus	Gatekeeper	3,9,10,W11		
Thymelicus lineolus	Essex Skipper	W11		
Thymelicus sylvestris	Small skipper	3,7,9,W11		
Vanessa atalanta	Red Admiral	5,7,11,W5,W11		
Vanessa cardui	Painted lady	4,5,W5		

MOTHS.

Atolmis ruficollis	Red - necked footman	W11,W12		IOW BAP
Bembecia scopigera	Six belted clearwing	W12	Nationally scarce (Na)	IOW BAP
Macroglossum stellatarum	Humming bird Hawkmoth	3,5,11		

DIPTERA (True Flies)

STRATIOMYIDAE (Soldierflies)

Beris chalybata	W5,W11,W12	
Beris fuscipes	W11	Nationally scarce (N)
Chloromyia formosa	3,8,11,W5,W11,W12	
Chorisops tibialis	3	
Pachygaster atra	W11	
Pachygaster leachii	11,W11	
Sargus flavipes	W11	

RHAGIONIDAE (Snipeflies)

Chrysopilus asiliformis	W11
Chrysopilus cristatus	W11

TABANIDAE (Horseflies)

Haematopota pluvialis	9,W11
Hybomitra bimaculata	W11
Tabanus bromius	W5

ASILIDAE	**(Robberflies)**		
Asilus crabroniformis	3,5,7	Nationally scarce (N)	UK BAP Priority species
Leptogaster cylindrica	3		
Machimus atricapillus	W11		
THEREVIDAE	**(Stilletto flies)**		
Thereva nobilitata	5		
BOMBYLIIDAE	**(Beeflies)**		
Bombylius discolor	3,4,5,7,9,W5,W7,W11,W12	Nationally scarce (N)	UK BAP Priority species
Bombylius major	5,7,9,10,W7,W10,W11,W12		
SYRPHIDAE	**(Hoverflies)**		
Baccha elongata	W8,W9,W10,W11,W12		
Brachyopa scutellaris	W8,W11		
Callicera aurata	W5	Rare (RDB3)	IOW BAP
Cheilosia albitarsis	W11		
Cheilosia bergenstammi	W5,W11		
Cheilosia fraterna	W11		
Cheilosia illustrata	W5,W11		
Cheilosia lasiopa	W11		
Cheilosia pagana	W11		
Cheilosia proxima	5,11,W5,W7,W8,W10,W11		
Cheilosia variabilis	W7,W11,W12		
Cheilosia vernalis	W11		
Chrysogaster chalybeata	W11		
Chrysogaster solstitialis	W5,W11		
Chrysotoxum bicinctum	3,W11		
Criorhina berberina	W11		
Criorhina floccosa	W8,W11		
Dasysyrphus albostriatus	5,10,W5,W7,W11,W12		
Dasysyrphus tricinctus	W11		
Dasysyrphus venustus	W11		
Epistrophe diaphana	W11	Nationally scarce (N)	IOW BAP
Epistrophe eligans	W5,W7,W8,W9,W11,W12		
Epistrophe grossulariae	W11		
Episyrphus balteatus	3,4,5,7,9,11,W5,W8,W11		
Eristalis arbustorum	5,W11		
Eristalis intricarius	W11		
Eristalis nemorum	3,5,10,W5,W8,W11		
Eristalis pertinax	3,9,W5,W11		
Eristalis tenax	3,4,5,7,9,10,11,W2,W5,W7,W8,W9,W10,W11,W12		
Eumerus ornatus	W11	Nationally scarce (N)	National BAP SOCC
Eupeodes corollae	3,5,7,10,11,W5,W11		
Eupeodes latifasciatus	W11		
Eupeodes luniger	W5,W11		
Ferdinandea cuprea	W11		
Helophilus pendulus	W11		
Leucozona laternaria	W5,W11		
Leucozona lucorum	W5,W8,W9,W10,W11		
Melangyna lasiopthalma	W11,		
Meligramma cincta	W11		
Meligramma cinctella	W11		
Meliscaeva auricollis	W7,W8,W11		
Melanostoma mellinum	W7,W9,W11,W12		
Melanostoma scalare	W5,W7,W8,W9,W10,W11,		
Merodon equestris	W11		
Myathropa florea	W5,W11,W12		
Paragus haemorrhous	5		
Parasyrphus punctulatus	W11		

Pipiza luteitarsis	W11		
Pipiza noctiluca	W5,W11		
Platycheirus albimanus	7,W5,W7,W8,W9,W10,W11,		
Platycheirus ambiguus	W12		
Platycheirus clypeatus	5,W5		
Platycheirus manicatus	W5,W8,W11		
Platycheirus peltatus	9,W11		
Platycheirus scutatus	W11		
Portevinia maculata	W10,W11		
Rhingia campestris	5,W11		
Scaeva pyrastri	3,5,9,11,W11		
Sphaerophoria scripta	3,5,7,8,9,11,W5,W11		
Syritta pipiens	W5,W11		
Syrphus ribesii	7,11,W5,W11,W12		
Syrphus torvus	W7,W8,W11		
Syrphus vitripennis	3,4,7,8,10,11,W4,W5,W7,W8,W9,W10,W11,W12		
Volucella bombylans	11,W11		
Volucella inflata	W8,W11	Nationally scarce (N)	IOW BAP
Volucella pelluscens	W5,W7,W8,W11,W12		
Xylota sylvarum	W11		

CONOPIDAE (Thick - headed flies)

Myopa extricata	W11	Rare (RDB3)
Physocephala rufipes	W11	
Sicus ferrugineus	3,4,5,7,8,W5,W7,W11	
Thecophora atra	11,W11	

TEPHRITIDAE (Picture - winged flies)

Cerajocera tussilaginis	9,11,W5,W11	
Tephritis bardanae	4,11,W5,W11	
Tephritis formosa	3,W12,	
Terrellia ruficauda	3,11	
Terrellia serratulae	3,11	
Urophora cardui	W11	
Urophora solstitialis	5,11,W11	Rare (RDB3)
Urophora stylata	11	

BIBIONIDAE (Fever flies)

Bibio marci	W11
Dilophus febrilis	3,7,W5,W11

TACHINIDAE (Tachinid flies)

Eriothrix rufomaculata	5	
Lophosia fasciata	W11	Nationally scarce (N)
Nowickia ferox	5	
Phasia hemiptera	W11	
Tachina fera	W7	

HYMENOPTERA (Bees, Wasps & Allies)

SYMPHYTA (Sawflies)

Aglaostigma aucupariae	W5,W11	
Arge cyanocrocea	5,W7,W11	
Arge pagana	W11	
Arge ustulata	W11	
Eutomostethus ephippium	W11	
Macrophya annulata	5,W11	
Pachyprotasis rapae	W11	
Rhogogaster viridis	W11	
Tenthredo mesomelas	W11	
Tenthredo temula	W8,W11	
Tenthredo livida	W11	

FORMICIDAE (Ants)

Myrmica ruginodis	W11	

POMPILIDAE (Spider hunting wasps)

Priocnemis susterai	5	

EUMENIDAE (Potter & Mason wasps)

Symmorphus gracilis	W11	

VESPIDAE (Social wasps)

Dolichovespula media	W10	Nationally scarce (Na)
Vespula rufa	W11	
Vespula vulgaris	5,11,W5,W11	

SPHECIDAE (Solitary wasps)

Ammophila sabulonum	3,4,5,7	
Astata boops	3,4,5	
Cerceris rybyensis	3,4,5	
Crabro cribrarius	W11	
Crossocerus annulipes	W11	
Crossocerus binotatus	W11	Nationally scarce (Nb)
Crossocerus cetratus	W11	
Crossocerus megacephalus	W5,W11	
Crossocerus nigritus	W11	
Ectemnius continuus	11	
Ectemnius lituratus	W5,W11	
Entomognathus brevis	4,W11	
Trypoxylon figulus	4	

COLLETIDAE (Mining & Yellow - faced bees)

Colletes fodiens	3	
Hylaeus annularis	3	
Hylaeus confusus	5	

ANDRENIDAE (Mining bees)

Andrena bicolor	W5,W11,	
Andrena cineraria	4,5,7,10,W11	
Andrena denticulata	3	
Andrena dorsata	3,5,7,8,10,11,W5,W11,	
Andrena flavipes	3,4,5,10,11,W5,W7,W11,W12,	
Andrena haemorrhoa	3,4,5,7,W11	
Andrena minutula	3,4,5,8,10,11,W11,	
Andrena minutuloides	W11	Nationally scarce (Na)
Andrena nigroaenea	3,5,W11,W12,	

Andrena ovatula	3,4,5,7,W12	
Andrena pubescens	4,5,W5,W11	
Andrena scotica	5,W8,W11	
Andrena semilaevis	W11	
Andrena trimmerana	W11,W12	Nationally scarce (Nb)
Panurgus banksianus	5	

HALICTIDAE (Mining & Cuckoo bees)

Halictus rubicundus	5,W11	
Halictus tumulorum	4,11,W5	
Lasioglossum albipes	11	
Lasioglossum calceatum	3,7,11,W5,W11	
Lasioglossum fulvicorne	W11	
Lasioglossum lativentre	4,5	
Lasioglossum leucozonium	3,5,11	
Lasioglossum minutissimum	5	
Lasioglossum morio	3,5,7,11,W7,W11,	
Lasioglossum pauxillum	W11,	Nationally scarce (Na)
Lasioglossum punctatissimum	5	
Sphecodes crassus	W12	Nationally scarce (Nb)
Sphecodes ephippius	5,W11	
Sphecodes monilicornis	4,5,W11	
Specodes niger	5	Rare (RDB3)

MELITTIDAE (Mining bees)

Chelostoma campanularum	5,W5,W11	
Melitta haemorrhoidalis	5,W5,W11	
Melitta tricincta	9,W11	Nationally scarce (Nb)

MEGACHILIDAE (Solitary bees)

Coelioxys rufescens	7	
Hoplitis claviventris	3	
Megachile versicolor	5,11	
Osmia aurulenta	8	
Osmia rufa	5	

ANTHOPHORIDAE (Flower & Nomad bees)

Anthophora bimaculata	W11	
Nomada fabriciana	W7,W11,W12	
Nomada flava	W11	
Nomada flava / panzeri	4,W8,W11	
Nomada flavoguttata	5,7,W11,	
Nomada fucata	4,5,11,W7,W12	Nationally scarce (Na)
Nomada fulvicornis	5	Rare (RDB3)
Nomada lathburiana	3,4,5,W11,	Rare (RDB3)
Nomada marshamella	3,4,5,W7,W11	
Nomada rufipes	5	

APIDAE (Social & Cuckoo bees)

Apis mellifera	3,4,5,7,8,9,10,W10,W11
Bombus hortorum	5,7,10,11,W11
Bombus lapidarius	3,4,5,7,9,10,W5,W10,W11,W12,
Bombus lucorum	3,4,5,7,8,9,10,11,W5,W8,W10,W11,
Bombus pascuorum	3,4,5,7,8,9,10,11,W4,W5,W7,W8,W9,W10,W11,W12
Bombus pratorum	3,W5,W7,W11
Bombus terrestris	3,5,7,9,W5,W7,W8,W10,W11
Psythirus vestalis	5,9,11,W11

COLEOPTERA (Beetles)

CANTHARIDAE	**(Soldier beetles)**	
Cantharis decipiens	W11	
Malthinus balteatus	W11	Nationally scarce (Nb)
Malthinus sereipunctatus	W11	
Malthodes marginatus	W11	
Rhagonycha fulva	3,5,10,11,W5,W11	
Rhagonycha lignosa	W11	
CARABIDAE	**(Ground & Tiger beetles)**	
Cicindela campestris	3,4,5,W11	
Demetrias atricapillus	W5	
Notiophilus biguttatus	W11	
CERAMBYCIDAE	**(Longhorn beetles)**	
Clytus arietis	W11	
Grammoptera ruficornis	5,7,W11	
Strangalia maculata	3,5,7,W5,W7,W11,W12	
Strangalia melanura	5,W11,W12	
COCCINELLIDAE	**(Ladybirds)**	
Adalia bipunctata	W12	
Adalia 10 - punctata	W11	
Calvia 14 - guttata	W5,W11	
Coccinella 7 - punctata	3,4,5,7,8,9,10,11,W4,W5,W7,W8,W10,W11,W12,	
Exochomus 4 - pustulatus	W11	
Halyzia 16 - guttata	W8,W9,W11,W12	
Propylea 14 - punctata	3,4,5,11,W5,W7,W8,W11,W12	
DRILIDAE	**(Snail - eating beetles)**	
Drilus flavescens	5,W11	Nationally scarce (Na)
ELATERIDAE	**(Click beetles)**	
Agriotes pallidulus	4,W11	
Agrypnus murinus	W12	
Athous bicolor	W11	
Athous haemorrhoidalis	4,5,W5,W11,W12	
MORDELLIDAE	**(Flower beetles)**	
Mordellochroa abdominalis	7	
PYROCHROIDAE	**(Cardinal beetles)**	
Pyrochroa serraticornis	W11	
SCARABAEIDAE	**(Dung beetles and Chafers)**	
Aphodius luridus	11	
Melolontha melolontha	W11	
Onthophagus coenobita	W11	
Onthophagus joannae	5,W12	

APPENDIX 2.

PRIMARY WOODLAND INDICATOR AND DEAD WOOD DEPENDENT SPECIES RECORDED ON THE SURVEY.

SPECIES	STATUS IN STUBBS	DEVELOPMENTAL REQUIREMENTS.
Brachyopa scutellaris	H2	Sap runs in overmature trees.
Callicera aurata	H3	Water filled rot holes in Beech.
Cheilosia lasiopa	H2	Larval habits unknown.
Criorhina berberina	H2	Decaying heart rot or rot holes.
Criorhina floccosa	H3	Decaying wood.
Epistrophe grossulariae	H3	Aphids on broad - leaved trees.
Eumerus ornatus	H1	Larval habits unknown, probably root or bulb feeder
Ferdinandea cuprea	H2	Sap runs in overmature trees.
Myathropa florea	_	Wet decaying wood and rot holes.
Pipiza luteitarsis	H3	Larvae feed on Aphids in woodland.
Portevinia maculata	H2	Larvae tunnel in Ramsons bulbs.
Volucella inflata	H1	Sap runs in overmature trees.
Xylota sylvarum	H3	Decaying roots of broadleaved trees.
Chorisops tibialis	_	Larvae in shallow rot holes.
Symmorphus gracilis	_	Nests in holes in wood.
Crossocerus annulipes	_	Nests in rotten wood.
Crossocerus binotatus	_	Nests in hard dead wood.
Crossocerus cetratus	_	Nests in dead wood.
Crossocerus megacephalus	_	Nests in rotten wood.
Ectemnius continuus	_	Nests in burrows within rotten wood.
Ectemnius lituratus	_	In beetle burrows in dead wood.
Megachile versicolor	_	Nests in dead wood.
Chelostoma campanularum	_	Nests in wood.
Apis mellifera	_	Nests in standing hollow trees.
Malthinus balteatus	_	Decaying branchwood or hardwood
Malthinus sereipunctatus	_	Decaying branchwood or hardwood.
Malthodes marginatus	_	Decaying wood or under bark on dead ti mber.
Clytus arietis	_	Dead deciduous trees.
Grammoptera ruficornis	_	Dead twigs or small branches of broadleaved trees.
Strangalia maculata	_	Moist rotten wood and stumps.
Strangalia melanura	_	Larvae in thin decayed branches.
Pyrochroa serraticornis	_	Under bark of dead broadleaved trees.
Mordellochroa abdominalis	_	Dry sapwood of dead broadleaved trees.