MITE GALLS ON THE ISLE OF WIGHT

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Introduction

Many mite galls are common, widespread and easily recognised. However, difficulties with identification to species level and frequent changes in the nomenclature of the mites has militated against the preparation of a paper on this subject until now. With the publication of a catalogue of gall mites by Amrine and Stasny in 1994, and then in 2002 the publication of the new key to British plant galls by Redfern *et al*. the time seemed appropriate to give an account of the present state of knowledge of the mite galls of the Isle of Wight. This follows previous papers on Cynipid wasp galls and Dipteran galls (Biggs 1997, Biggs 1999, Biggs 2003(a), Biggs 2003(b).)

Mites together with ticks constitute the subclass Acari which together with scorpions, pseudoscorpions, spiders and harvestmen make up the class Arachnida. Arachnids, insects, crustaceans, centipedes and millipedes all belong in the phylum Arthropoda. Only two families of mites have gall-causing representatives. These are the Eriophyidae where the great majority of our gall mites belong and the Tarsonemidae which has just one species found locally so far. About 350 species of gall mites are known in central and northern Europe.

Gall-causing mites are essentially microscopic (0.08-0.28mm.) They are elongated creatures with only two pairs of legs except the tarsonemids which have four. Their body is formed of annular segments and their integument bears long setae or bristles. They feed by means of a rostrum which is a piercing and sucking organ. It is the act of feeding which induces gall formation. Males are rare and parthenogenesis frequent. Most gall mites overwinter in buds or in protected sites nearby. The forms of the gall induced are specific to the species of mite. All the young aboveground organs of a plant can be attacked, especially the buds and leaves. Mite galls are generally simple structures, not comparable in complexity to, for example, the galls caused by Cynipid wasps. Gall mites produce six main forms of gall:-

(1) Virescence or phyllanthy where the organs of a flower, pistil, stamens, petals and sepals are transformed into small green leaves.

(2) Small witches' brooms can result from bud proliferation and internode shortening.

(3) 'Big bud' formation where a bud is enlarged and fails to open or develop.

(4) Erinea - mats of epidermal hairs forming a felt-like patch on a leaf, where the hairs vary in form, species-specific to the mite not the host plant.

(5) Hollow structures on a leaf formed by hypertrophied growth around the area punctured by the mite in its feeding. These can take various forms - pocks, pustules, tubercles, nails, blisters and pouches.

(6) Leaf-edge roll galls where one surface of the leaf grows very much more than the other and the leaf blade curls over and covers the mites.

The effect of gall mites on buds can cause serious crop damage as in *Citrus* trees around the Mediterranean and the mites can also act as vectors for damaging virus diseases as in Black Currant. The present paper gives an account of the structure and distribution of mite galls recorded on the Isle of Wight during field-work undertaken between 1975 and 2006. It supplements the original work of Swanton published in the Proceedings for 1937.

Nomenclature of the galls follows Redfern, Shirley and Bloxham (2002) which itself is based on that of Amrine and Stasny. Plant names follow Stace (1997.) Houard (1908) and Buhr (1964) gave each described gall a number even when the causer could not be determined. Three of the galls in the following account have Buhr numbers and no name. One gall described by Swanton is not recorded in Buhr but is described and numbered by Houard.

Acalitus brevitarsus (Fockeu) on Alder, *Alnus glutinosa*
One of three common mite galls on Alder, this one is an erineum on the lower surface of the leaf. The hairs are white initially, becoming tawny brown later in the season. Slight convex bulges on the upper leaf surface correspond to the underlying erinea. Common now on the Island it is surprising that this gall was not recorded by Swanton.

Acalitus calycophthirus (Nalepa) on Birch, *Betula spp*.
The various 'Big Bud' deformities are caused by mites and the one on Birch was not recorded by Swanton. So far it has only been recorded once, from Northwood Cemetery 26.4.03. The bud is enlarged up to 10mm in diameter and the outer scale leaves are enlarged, markedly thickened and brown. Mike Cotterill found the one example of this gall during a Botanical Section Meeting.

Acalitus longisetosus (Nalepa) on Birch, *Betula spp*.
The gall of this mite is an erineum, usually on the upper side of the leaf with a corresponding bulge on the lower surface. The hairs of the erineum are bright carmine pink when young and form a felt-like patch between veins. Microscopy reveals the hairs to be short and mushroom-shaped. Swanton did not record this gall and I have only one record, from Afton Marsh in 1994.

Acalitus rudis (Canestrini) on Birch, *Betula spp.*
Although described in the new key to British plant galls as the commonest mite gall on Birch leaves, this was not described by Swanton and there are only seven recent records. This mite induces a beautiful dark reddish-brown erineum on the lower leaf surface which on microscopy is seen to consist of long epidermal hairs which have a club-shaped ending.

Acalitus stenaspis (Nalepa) on Beech, *Fagus sylvatica*
Here the gall is a marginal roll gall on the leaf. The entire length of the leaf margin can be affected by this tight and very narrow upward roll which is lined with hairs amongst which the mites live. Swanton did not record this gall but one can be expected to find it now wherever mature Beech trees are found and even occasionally in Beech hedges.

Aceria aceriscampestris (Nalepa) on Field Maple, *Acer campestre*
The 'Nail Galls' on Sycamore and Field Maple can sometimes be difficult to identify to species. However this mite causes the common multiple small bright red galls on the upper surface of leaves of Field Maple. The galls are 1-3mm in height and have a rounded apex and open on the under surface. This gall was known to Swanton as *Eriophyes macrorhynchus*. It is common across the north of the Island.

Aceria artemisiae (Canestrini) on Mugwort, *Artemisia vulgaris*
I have only two specimens of this gall which I suspect has been frequently overlooked. The galls are tiny reddish pustules or pimples on the upper surface of the leaf, each with an opening below surrounded by white hairs. The galls are only 1-2mm high, and hemispherical although apparently they can sometimes be stalked. Swanton had one record, from Borthwood.

Aceria brevipes (Nalepa) on Sea Purslane, *Atriplex portulacoides*
This mite causes tiny pustules 0.5-1.0mm across on the leaves. Roger Herbert first found this gall in September 2003 on Norton Spit. The gall was not described until 1953 having been first found in northern Spain. The first British record came from Essex in August 2003. I have since found this gall also at Newtown and on the Medina.

Aceria campanulae (Lindroth) on Bellflowers, *Campanula spp*.
In Swanton's 1937 paper a leaf-edge roll gall on Clustered Bellflower, *Campanula glomerata* was described as having been found on Brook Down by Barbara Waite. There have been no further records of this gall. The mite apparently can also produce erinea on the leaf blade and petiole.

Aceria centaureae (Nalepa) on Knapweeds, *Centaurea spp.*
This mite induces oval pocks or pustules c. 2mm across within the substance of the leaf, projecting slightly both above and below and with an opening on the upper surface. Initially pale yellowish-green the galls can become red or purple at maturity. Swanton had one record of this gall, made by Frank Morey in 1922 from Bowcombe Down. It is now found frequently, on Greater Knapweed, *Centaurea scabiosa* on our chalk grasslands. I have found similar galls on Saw-wort, *Serratula tinctoria* but whether these are caused by the same species of mite or some other is as yet unknown.

Aceria cephaloneus (Nalepa) on Sycamore, *Acer pseudoplatanus*
Swanton knew this gall as *Eriophyes macrorhynchus*, considering the multiple small red nail galls on Sycamore and Field Maple to be caused by the same mite. They are now believed to be two different species and this mite on Sycamore is found on the Island almost wherever the tree itself grows.

Aceria cladophthirus (Nalepa) on Bittersweet, *Solanum dulcamara*.
There have been only two records of this gall. Sue Blackwell and Bill Shepard found two plants galled on St Helen's Duver 17.8.02 and Colin Pope found the other example in Fairlee Cemetery 23.9.04. The gall consists of a group of neighbouring flowers covered in white hairs and with the floral parts transmuted into small green leaves, a phenomenon known as phyllanthy. The affected flowers are agglomerated together to form a spherical mass of leaves and terminal shoots effectively resulting, in the first example found, in a small witches' broom. A similar gall can be found on tomato, *Lycopersicon esculentum*.

Aceria crataegi (Canestrini) on Hawthorn, *Crataegus monogyna*
These galls are pocks on the leaf which open below, initially pale green then reddening at maturity and turning brown. They were not recorded by Swanton and are still local in distribution although common at some sites. As with many galls they can be found easily one year and then not found again for several.

Aceria erineus (Nalepa) on Walnut, *Juglans regia*
Wherever I have found Walnut on the Island I have found this gall to be present. It was not recorded by Swanton. A galled leaf demonstrates a convex yellowish bulge on the upper surface, up to 10mm in diameter and 3-5mm high. In the corresponding cavity on the lower leaf surface the mites live amongst fawn-coloured hairs.

Aceria eriobius (Nalepa) on Field Maple, *Acer campestre*
This is an erineum on the lower leaf surface, initially a shining creamy-white and developing later to a reddish-brown colour. The layer of hairs is quite thin and there is no sign of this gall from above. Although the similar gall on Sycamore was recorded in Swanton's list, this gall on Field Maple was not. It is now common wherever *Acer campestre* is found.

Aceria fagineus (Nalepa) on Beech, *Fagus sylvatica*
These galls are erinea formed on the underside of the leaf in oval patches between the veins. Initially white, the hairs turn pink then red then brown. Not recorded in Swanton's list, these galls are now widespread on the Island but not common.

Aceria filiformis (Nalepa) on Elm, *Ulmus spp.*
Brown pock or pustule galls 3mm across on the underside of the leaf with a thickened margin, their presence is made noticeable by a corresponding pale yellowish-green discolouration on the upper surface opposite them. Swanton did not record these galls and since 1975 there have only been seven reports and none since 1993.

Aceria fraxinicola (Nalepa) on Ash, *Fraxinus excelsior*
At Hurst Stake SZ5090 on 25.7.2005 I found one gall of this mite on a leaflet of Ash. The gall is a pointed very dark green pustule 1.5 mm. high and 2-3 mm. across, on the upper leaf surface and surrounded by a pale yellow patch 8 mm. in diameter, and growing from one of the side veins. This is the only record of this gall on the Island, which is reported to be rare nationally.

Aceria fraxinivorus (Nalepa) on Ash*, Fraxinus excelsior*
Best seen silhouetted against a winter sky when the leaves have fallen, this gall is unlike all other mite galls in England. The mite induces gall formation in the flowers resulting in their development into an irregular dark brown lignified mass. This very conspicuous gall was not recorded by Swanton and the first record was from Mottistone Mill and made by Dorothy Frazer in 1983. It has now been found in 54 tetrads.

Aceria galiobius (Canestrini) on Bedstraws*, Galium spp.*
There is one record of this gall, from Knighton Down where Colin Pope found two galled flowers on Lady's Bedstraw, *Galium verum* 6th July 1996. The gall consists of a black and thickened pedunculated oval chamber lined with hairs and filled with mites, opening at the top. It is formed from the flower and can reach 15mm by 8mm in size.

Aceria genistae (Nalepa) on Broom, *Cytisus scoparius*
This mite causes the formation of small witches' brooms up to 20mm across, grey and pubescent, at the nodes on the stem, from the leaves which remain stunted and are grossly wrinkled. Within the mass of malformed leaves live vast numbers of the mites. There were no records from Swanton's time and I have only three recent records, two from garden varieties and only one from native Broom, from St. George's Down where the galls were much smaller.

Aceria heteronyx (Nalepa) on Field Maple, *Acer campestre*
Mike Cotterill discovered this nationally rare gall in Atkies Copse, Ningwood on 11.3.2006. Two bare trees of Field Maple showed small annular galls at the bases of first year twigs. The galls were pale brown, warty and irregular in appearance, and corky in consistency. Closer examination revealed the growths to be groupings of individual galls 1-2mm. in diameter in the form of a ring encircling the base of the twig. Microscopy revealed the mites.

Aceria ilicis (Canestrini) on Holm Oak, *Quercus ilex*
This is another mite gall, conspicuous and now widespread on the Island which has probably only arrived here relatively recently. It was not recorded by Swanton in his 1937 paper and the first record was from Fort Victoria in 1984. The mite induces a golden coloured erineum on the underside of the leaves. In the last few years so I have noticed that at some sites the upper leaf surface overlying the erinea is markedly deformed by a raised and thickened pouch-like outgrowth and

that occasionally the erineum is on the upper surface of the leaf. In southern Europe this mite also galls the catkins and the trees on Ventnor Down would be a likely site.

Aceria iteinus (Nalepa) on Sallows, *Salix spp.*
A nail gall 2-4mm high on the upper surface of the leaves of Goat Willow, *Salix caprea*, Grey Willow, *Salix cinerea* and their hybrids, with a corresponding projection below; slightly irregular in form, red in colour and only ever a few together on a leaf. This is the form taken by the gall induced by this mite. Similar but different mites cause other nail galls on Sallows, and on Osiers. This gall was not recorded by Swanton.

Aceria laticinctus (Nalepa) on Yellow Loosestrife, *Lysimachia vulgaris*
The only record of this gall on the Island was made by Colin Pope 25.7.04 when he found one plant grossly affected at Langbridge Marsh. This record appears to be the first since the discovery of the gall in the 1920s by Bagnall and Harrison. Some of the upper leaves and inflorescences were covered with a thick growth of white hairs. Elsewhere the hairs were purplish or brown. The leaves were stunted, thickened and folded upwards and some flowers were greened and converted into small leaves (phyllanthy). Microscopy showed the hairs to be very long and irregular in width, giving a beaded appearance.

Aceria macrochelus (Nalepa) on Field Maple, *Acer campestre*
One of the two nail gall mites on Field Maple, this one causes the production of the larger gall, up to 4mm in height and up to 4mm across, which usually develops in the angles between the midrib and the main veins on the upper leaf surface. The gall is yellowish-green at first, becoming bright red and later brown. It is never numerous on any one leaf. Known to Swanton as *Eriophyes macrochelus*, he had records from Newport and Brook.

Aceria macrorhynchus (Nalepa) on Sycamore, *Acer pseudoplatanus*
Unfortunately there has been a lot of confusion about the nomenclature of the mite-induced nail galls on Sycamore and Field Maple, *Acer pseudoplatanus* and *A. campestre*. This is a relatively large nail gall, up to 6mm in height and pointed at the apex, occurring only ever in small numbers on any one leaf and usually associated with the veins. I only have six records of this gall and I have not seen it since 1997.

Aceria marginemvolvens (Corti) on Mugwort, *Artemisia vulgaris*
This gall was not recorded by Swanton and indeed neither had I recorded it until I was re-examining some of my herbarium material whilst preparing this paper. One leaf collected in 1987 from Shide clearly shows on examination by a hand-lens very narrow tight downward rolls along the edges of several leaflets. Although this gall is described in the contemporary Swedish, French and German literature I can find no reference to it having been found again in England since it was first recorded in 1917.

Aceria nervisequus (Canestrini) on Beech, *Fagus sylvatica*
This mite induces a narrow elongated erineum alongside the side-veins on the upper surface of the leaf. The hairs of the erineum are white initially and fairly conspicuous. Later they turn brown and are then difficult to detect. This gall was not recorded in Swanton's list and neither has it been found very often in the recent past.

Aceria ononidis (Canestrini) on Restharrow, *Ononis repens*
Considering how much Restharrow we have on the Island it is surprising that there are only two records of this gall, one in Swanton's list of 1937 from near Niton, an observation made by Frank

Morey in 1922; and a record from Mersley Down 14.8.99 by Colin Pope. The gall is an example of the phenomenon of phyllanthy, where the floral parts, the stamens and pistil, petals and sepals are transformed into small leaves. In this gall they are also covered with a thick white mass of hairs amongst which the mites are found.

Aceria origani (Nalepa) on Marjoram, *Origanum vulgare*
Strangely, this gall was not recorded by Swanton. The first record was from Brighstone Down in July 1991. From a distance affected plants appear afflicted with grey spots. Closer examination reveals that the flowers and terminal leaves are joined together, thickened and covered with a thick coating of white hairs. Within the enclosed mass of plant tissue live hundreds of mites. A very similar gall is caused by a gall midge but this gall contains red larvae and no mites.

Aceria plicator (Nalepa) on Medicks, *Medicago spp.*
The gall caused by this mite has only been found once on the Island, at Rew Down 7.6.92 by Toni Goodley. The whole inflorescence of one plant of a Medick, probably *Medicago lupulina*, Black Medick was transformed into a mass of tiny, hairy leaflets - phyllanthy. Closer observation of more of our smaller plants would perhaps yield more records of this and other galls.

Aceria pseudoplatani (Corti) on Sycamore, *Acer pseudoplatanus*
This mite induces erinea in patches on the under surface of Sycamore leaves. In early summer the hairs are white or pale green, becoming golden-brown then finally reddish-brown by autumn. There is often, especially later in the season, a slight bulge on the upper leaf surface, paler green than the rest of the leaf and giving an indication of the underlying galls. Swanton knew this gall as *Eriophyes macrochelus var. erinea* and had one record, from Newport. Today it is extremely common.

Aceria sanguisorbae (Canestrini) on Salad Burnet, *Sanguisorba minor*
The gall caused by this mite was described by Swanton as being abundant along the downs between Newport and Freshwater. There are recent records from most of our downs but it could not be described as abundant now. The leaves of the plant are thickened and adjoining leaves closely approximated to each other and covered with an extremely dense growth of creamy-yellow hairs within which the mites live. A patch of affected plants is easily noticed.

Aceria schmardae (Nalepa) on Clustered Bellflower, *Campanula glomerata*
Anne Marston found the only Island example so far of this gall in a chalk pit on the north side of High Down 3.8.98. This is another example of a mite causing phyllanthy - the organs of the flowers developing abnormally into very small narrow leaflets instead of into pistil, stamens, petals and sepals. The leaflets are covered with white hairs. This is a very rare gall in England as a whole.
The general appearance of the affected plant is that of its bearing numerous tiny witches' brooms at the nodes.

Aceria squalidus (Nalepa) on Small Scabious, *Scabiosa columbaria*
This is another mite which induces phyllanthy and an abnormal dense hairiness on its host plant. As well as the flowers being affected, sometimes the terminal leaves are narrowed, rolled up and covered with white hairs. This was not recorded in Swanton's list and I have only two recent sites, the first being Rowborough Bottom where the gall was found by the late Kitty Page in September 1988.

Aceria tenuis (Nalepa) on Grasses, *Poaceae spp.*
Although reported in Redfern *et al*. to be common on many grasses, this gall was not recorded by

Swanton and there is only one recent record, from Littlestairs Point, Shanklin where Colin Pope found a plant of Cock's-Foot grass, *Dactylis glomerata* 9.9.95. The whole inflorescence was galled, the floral parts of the spikelets green, hypertrophied and taking on the appearance of thin narrow leaves. The mites live within the flowers.

Aceria thomasi (Nalepa) on Wild Thyme, *Thymus polytrichus*
The terminal leaves of the shoot are thickened by this mite and they develop a thick covering of very bright white hairs amongst which the mites live. Swanton considered this gall to be common on downland throughout the Island, giving specific records from St. George's Down and Brook. I have found it in most of our downland tetrads. From a distance an affected patch of plants seems to be covered with tiny balls of cotton wool.

Aceria trifolii (Nalepa) on White Clover, *Trifolium repens*
The only record of this mite gall was made by Swanton when he found an example near Tolt Down. The mite which induces the gall was known to him as *Eriophyes plicator var. trifolii*. The gall is another example of phyllanthy. Swanton adds that the calyx teeth are elongated and twisted or curled. This mite can also cause a leaf-edge roll gall.

Aceria ulmicola (Nalepa) on small-leaved Elms, *Ulmus spp.*
Very strangely this gall was not recorded by Swanton. It is now almost universal. The gall is a pimple or pustule visible on both sides of the leaf. On the upper surface it causes a tiny rounded swelling 1mm high whilst below there is a corresponding conical hairy projection 1-2mm long emerging from an indentation in the leaf. The galls are usually widely distributed across the leaf surface between the veins, yellowish-green at first, brownish at maturity.

Aceria varius (Nalepa) on Aspen, *Populus tremula*
Not recorded in Swanton's list of Isle of Wight galls, this gall is uncommon still, having been recorded at only three sites. It is reported to be uncommon throughout England as a whole. When present it is exceptionally obvious with the upper leaf surface exhibiting large reddish bulges and the lower surface showing corresponding hollows filled with chestnut-coloured hairs. Under the microscope each hair is seen to be quite short and to end in blunt branched tufts.

Aceria vitalbae (Canestrini) on Traveller's-Joy, *Clematis vitalba*
Another uncommon gall, not recorded by Swanton. This mite affects the terminal leaves of a shoot causing a crumpling effect with the leaf edge rolled upwards. Small discrete patches of very short brilliant white hairs appear on the upper leaf surface. I have only recorded this gall five times and not since 1992.

Aculops acericola (Nalepa) on Sycamore, *Acer pseudoplatanus*
Swanton described the gall caused by this mite as a felt of swollen hairs on the underside of the leaf at the junction of the nervures and had recorded it from Brook as *Phyllocoptes acericula*. Indeed, he had illustrated the gall in his textbook of 1912 where there was described the additional feature of a corresponding upper surface swelling over the nerve junction. I have found this gall only once, at Coombe Plantation, Chessell 19.6.90. Although this gall was listed in Stubbs (1986) it is not included in Redfern who states that the taxonomy of the mites which produce erinea on Acer species has yet to be fully sorted out.

Aculus fraxini (Nalepa) on Ash, *Fraxinus excelsior*
Another gall not recorded by Swanton and this gall is still uncommon and when found usually only single examples are seen at any one site. This mite induces a very narrow and tight leaf edge

roll gall which is barely thickened. As is usual with mite roll galls the interior of the roll is lined with hairs.

Aculus laevis (Nalepa) on Sallows, *Salix spp*.
The nomenclature of the mite causers of pimple-, pustule-, nail- or pouch-galls on *Salix* species is difficult and has undergone several changes. There are three distinct mite species involved. One produces irregular club-shaped pouch galls 2-4mm. high on Sallows *Salix caprea, S. cinerea* and *S. aurita*. One produces smaller rounded more regular pustule- or pimple-galls on Osiers *Salix alba, fragilis* and *viminalis*; and the present species under consideration here *Aculus laevis* which produces a similar small pustule 1-2mm. high on Sallows. Not one of these mite galls was recorded by Swanton. This gall is now fairly common.

Aculus leionotus (Nalepa) on Silver Birch, *Betula pendula*
This is one of the several mite species which produce erinea on Birch leaves. Microscopy is required to distinguish them. In this species the erineum is on the lower leaf surface and consists of small patches of long chestnut-brown hairs in the angles between the midrib and the main veins. Microscopy reveals them to be blunt-ended. On the upper leaf surface there are corresponding elongated bulges sparsely covered with short silvery hairs. This is another gall which was not recorded by Swanton.

Aculus magnirostris (Nalepa) on Willows, *Salix spp.*
This mite usually causes a tight, extremely narrow (0.5-1.0mm.) upward roll gall on the edge of the leaf, extending to 3-4mm. long. Sometimes however the roll is so short and thick that it resembles a pustule on the edge of the leaf and in these circumstances it turns bright red. The roll or pustule is lined internally with white hairs. This gall is only found on the smooth- and long-leaved Willows rather than on the more rounded- and rough-leaved Sallows. This was not recorded by Swanton. I have records from *Salix fragilis* and *Salix viminalis.*

Aculus tetanothrix (Nalepa) on Willows, *Salix spp.*
Small pustules or tubercles arising from the upper surface of the leaf, just 1-2mm. high, often present in considerable numbers and opening below through an aperture fringed with long white hairs are the galls caused by this mite. It was not recorded in Swanton's list and I have only three records, all on White Willow, *Salix alba.*

Cecidophyes galii (Karpelles) on Bedstraws, *Galium spp.*
This gall will have been seen by everybody but perhaps not recognised as a gall. In high summer any large patch of Cleavers, *Galium aparine* will be seen to have some plants where the leaves are noticeably a paler green, thickened, much narrowed and inrolled and twisted. The roll is hairy inside and the mites live amongst the hairs. The vast majority of records are from *Galium aparine* but there are a few from Hedge Bedstraw, *Galium mollugo*. Swanton who knew this species of mite as *Eriophyes galii* also had records from *Galium verum* and *saxatile* but I have not been able to confirm these hosts recently.

Cecidophyopsis betulae (Nalepa) on Birch, *Betula spp.*
There is only one record of this gall, from Osborne in April 2002. It was not recorded by Swanton. It is extremely inconspicuous and I suspect it has been much overlooked. The gall is a hemispherical swelling 0.5mm. in diameter on the upper surface of the leaf, golden-brown and surmounted by long white hairs. Beneath is a concavity containing the mites.

Cecidophyopsis psilaspis (Nalepa) on Yew, *Taxus baccata*
The more common bud gall on Yew is the 'Artichoke gall' of the gall midge *Taxomyia taxi.* However, this mite causes a more typical 'Big Bud' effect but is much less common, having been found in only three sites and not recorded in Swanton's list. The bud is spherical and enlarged up to 10mm. in diameter, is pale green in colour and consists of thickened succulent embryonic leaves amongst which live many thousands of the mites.

Cecidophyopsis ribis (Westwood) on Black Currant, *Ribes nigrum*
This mite is probably a widespread pest and I am sure the distribution map grossly underestimates its extent on the Island. Strangely, it was not recorded by Swanton and the two recent records are from wild plants. Both terminal and lateral buds can be affected, resulting in a spherical 10mm. diameter swelling which contains the mites, fails to open and eventually turns brown and shrinks.

Epitrimerus trilobus (Nalepa) on Elder, *Sambucus nigra*
This is another leaf edge roll gall, barely thickened and recognisable only with difficulty because the amount of leaf tissue rolled over is often only about 0.5mm. in width and often only extends for about 2mm. along the edge of the leaf. In early summer however it is distinctly paler than the rest of the leaf. Sometimes the leaf-blade is wrinkled. This gall was not recognised by Swanton.

Eriophyes arianus (Canestrini) on Whitebeam, *Sorbus aria*
Swanton recorded this gall as *Eriophyes piri* from near Tolt Down. I have only two recent records. The gall when found occurs in large groups. Each gall is a brown pock 1mm. across, found on the underside of the leaf, in groups between the veins. On the upper leaf surface is a corresponding bright yellow spot in the middle of which is a tiny aperture around which can develop a bright purple colouration.

Eriophyes canestrinii (Nalepa) on Box, *Buxus sempervirens*
There is so far only one record of this gall which causes phylllanthy of the flowers of Box. A bush in a hedgerow at Langbridge, Newchurch was noticed on 9.11.2005 to have three deformed fruits containing thick fleshy stamens and stigmas which themselves had cavities in which the mites were still present.

Eriophyes convolvens (Nalepa) on Spindle, *Euonymus europaeus*
This is a leaf-edge roll gall which is easily recognised. The edge is rolled upwards, narrowly and tightly, and often affecting much of the leaf margin. It is distinctly different in colour to the rest of the leaf, usually a distinctive pale lime-green but occasionally a carmine red. Swanton had one record, from Cheverton Farm, Shorwell but now this gall is widespread and common.

Eriophyes diversipunctatus (Nalepa) on Aspen, *Populus tremula*
This mite and its gall are described as rare by Redfern *et al*. I have never seen it. It is not recorded in Swanton's published list. John Robbins, the recording officer of the British Plant Gall Society unearthed an unpublished manuscript note by Swanton to the effect that Frank Morey had found this gall at King's Quay. It is described as an irregular, rounded and reddened swelling at the base of the leaf, 1-4mm. across, on the upperside and without an obvious opening below, usually one being present on each side of the midrib.

Eriophyes exilis (Nalepa) on Lime, *Tilia spp*.
The first Island record of this gall was made by Dr. Brian Spooner, of Kew, at Ryde 31.10.84. It was not recorded by Swanton. The gall consists of a hairy hemispherical swelling 2mm. in diameter on the upper leaf surface in the axils of the veins whilst below there are corresponding swell-

ings pinkish-brown in colour, covered with long white hairs which surround an opening or ostiole. I have recorded this gall from *Tilia platyphyllos* and *Tilia x europaea*.

Eriophyes inangulis (Nalepa) on Alder*, Alnus glutinosa*
Swanton described this gall as common and recorded it from King's Quay, Brook etc. In his day it was known as *Eriophyes axillare*. The gall is a pustule or tubercle 5mm. x 2mm. which arises on the upper surface of the leaf in the angles between the midrib and the main veins, occurring either alternately or in pairs on either side of the midrib. Initially yellow the galls later turn orange, then purple then brown. In corresponding positions on the lower leaf surface are patches of long yellow hairs which project from within the hollow of the tubercle.

Eriophyes laevis (Nalepa) on Alder, *Alnus glutinosa*
This is a hemispherical or club-shaped pouch gall, 1-3mm. high appearing on the upper surface of the leaf. When present it is usually found in large numbers randomly distributed across the leaf-blade, initially yellowish then green and finally brown. It projects below the lamina of the leaf where there develops a rather pouting opening. Swanton had records from Brook and Shorwell.

Eriophyes leiosoma (Nalepa) on Lime, *Tilia x europaea*
Common and widespread now on the Island whereas not recorded by Swanton, this mite induces very noticeable erinea on the under surface of the leaf between the veins, in roughly circular patches 5-10mm. in diameter and creamy-white in appearance. Although there is no corresponding bulge visible on the upper leaf surface there is present a slightly discoloured patch. Microscopy reveals the hairs of the erineum to be spirally coiled and blunt-ended.

Eriophyes lissonotus (Nalepa) on Silver Birch, *Betula pendula*
Of the several mites which induce erinea on Birch leaves this one causes the leaf to produce patches of long unicellular epidermal hairs in the angle of the veins on the lower leaf surface and a corresponding bulge on the upper surface which is itself much more sparsely hairy. The hairs themselves are long, straight, white and pointed. This gall was not recorded by Swanton but Redfern *et al*. make the point that Birch mite taxonomy is complex and not fully sorted out. I have only five records of this gall.

Eriophyes nervalis (Nalepa) on Lime, *Tilia spp.*
Swanton had one record of this gall, from Brook on *Tilia x europaea.* He knew the mite as *Eriophyes tiliae var. liosoma* and described it as a felt of hairs bordering the veins on the under surface of the leaf. The veins are slightly thickened. The hairs are short and thick, white at first then red or brown. I have not seen this gall.

Eriophyes obiones (Molliard) on Sea Purslane, *Atriplex portulacoides.*
Although the galls caused by this mite are very small (4mm. x 1mm.) they are quite noticeable when present because of their attractive purplish-grey colour. They occur as fusiform swellings on the floral axes of this salt-marsh plant. On sectioning and viewing through the microscope the galls are seen to contain thousands of the mites. This gall was unknown to Swanton and indeed is not described in the new keys. So far it has only been recorded from six sites on the Island, Anne Marston finding the first example at King's Quay in 2003.

Eriophyes padi (Nalepa) on Blackthorn, *Prunus spinosa.*
There are two different mite-induced pustule galls on Blackthorn. Although both are common and quite noticeable they have distinct differences. This species of mite results in the formation of up-

per-surface leaf pustules which open below and which are most often found clustered along the midrib. Initially pale yellowish-green the galls sometimes become deep red. Swanton recorded this gall from Brook.

Eriophyes prunispinosae Nalepa on Blackthorn, *Prunus spinosa.*
The pustules of this mite are found gathered along the leaf margin, extending both above and below the leaf surface and with the opening above. In Swanton's list this mite was called *Eriophyes similis* and he recorded it from Nodgham Lane, Carisbrooke. It is now common and widespread.

Eriophyes pyri (Pagenstecher) on Pear, *Pyrus communis.*
Although this mite and its gall were not recorded in Swanton's published list of 1937 I found a specimen in Haselemere Museum on a visit there in May 2003. It had been found by Frank Morey at Whippingham in 1924. There are only two recent records but I suspect that it is present in many gardens but unrecognised. Each gall is a biconvex swelling l-2mm. across in the substance of the leaf and usually present in great numbers. Initially the pock-like galls are yellow, becoming later pink, purple then black. This mite is known to horticulturalists as the pear leaf blister mite.

Eriophyes rubiae (Canestrini) on Wild Madder, *Rubia peregrina.*
Houard (1909) describes this gall as being a downwards roll gall on the leaf margin. It looks very similar to the corresponding gall on *Galium* species. Indeed when first I found examples on Wild Madder at Bouldnor in 1989 I misattributed them to *Cecidophyes galii* partly because the literature since Houard did not describe this gall. It was not recorded by Swanton and there are only three recent records.

Eriophyes similis (Nalepa) on Plum, *Prunus domestica.*
This gall is similar to *E. prunispinosae* which occurs on Blackthorn. It is a leaf-edge pustule which extends both above and below the leaf surface. In Swanton's time the two species were not differentiated. I have records now from Plum, Bullace and Greengage.

Eriophyes sorbi (Canestrini) on Rowan, *Sorbus aucuparia*.
The pock galls caused by this mite appear very similar to those of *E. pyri* on Pear. They are biconvex pustules arising from within the substance of the leaf and visible and palpable on both surfaces. They are l-2mm. across, yellow initially or pale green, later reddening then turning purple or brown. Similar galls are found on other *Sorbus* species. This gall was not recorded by Swanton.

Eriophyes tiliae (Pagenstecher) on Limes, *Tilia spp.*
This mite causes 'Nail' galls which can be very numerous on the upper surface of the leaves of Lime, *Tilia x europaea* and large-leaved Lime, *Tilia platyphyllos.* Each gall can be 10-15mm. high, is conical and tapers to a pointed tip. It can be erect, oblique or curved, is smooth on the outside and is hairy within where the mites live. The gall is initially yellowish-green and when mature, in July - August it turns dark red. Swanton had records from Newport and Brook.

Eriophyes torminalis Nalepa on Wild Service-tree, *Sorbus torminalis.*
This mite induces the formation of multiple small pocks on the leaves, often grouped together in concave depressions on the upper leaf surface and resulting in an obvious bulge on the corresponding lower surface, the bulges being about 12mm. across. Each individual pock is about 1.5mm. across, developing in the leaf substance and usually opening downwards, and is golden yellow in colour. Swanton had records form King's Quay and from Whippingham.

Eriophyes viburni (Nalepa) on Wayfaring-tree, *Viburnum lantana.*
Here the galls are larger, up to 3mm. across and 3mm. high, effectively pustules or small pouches usually on the upper surface, dark red and thinly covered with white hairs, opening below. This opening may itself be surrounded by an obvious bulge and is thickly surrounded by long white hairs. Swanton did not record this gall but today it is fairly common.

Phyllocoptes coryli Liro on Hazel, *Corylus avellana.*
There has been considerable confusion over the identification and recording of this gall. Swanton did not record it. In Darlington (1968) it was not differentiated from *Phytoptus avellanae.* Stubbs (1986) did not mention it. The mite causes a deformity in the male catkin. The whole catkin is enlarged and noticeably thicker than usual. The scales are of varying sizes, many grossly enlarged. There is another catkin gall on Hazel caused by a gall-midge *Contarinia coryli* and accurate identification of the two gall causers requires microscopical examination. As a result of these difficulties there are only two certain records of this gall, the first being made by Anthony Mitchell in 1987 from Newchurch.

Phyllocoptes gibbosus (Nalepa) on Bramble, *Rubus fruticosus*
This mite induces an erineum on the upper surface of the leaf. There is only one record of this gall, from Firestone Copse on 13.3.2005. The erinea may also occur on the stems, flower stalks, flowers or fruit.

Phyllocoptes goniothorax (Nalepa) on Hawthorn, *Crataegus monogyna.*
Extremely common and widespread yet somewhat difficult to notice, this gall is a short marginal leaf roll. The edge of the leaf is thickened and folded downwards over a length of about 5-10mm. It is pale yellowish-green in colour, sometimes reddening later in the season. The interior of the roll is filled with white hairs and contains the mites. Swanton described this gall which he knew as *Eriophyes goniothorax* as very common and the same could well have been said for the years 1975 - 1992. However, unexpectedly and without explanation this gall has been only rarely found in the last two years.

Phyllocoptes mali (Nalepa) on Apple, *Malus domestica.*
Surprisingly, there are only two records of this gall. Swanton did not record it. Maureen Whittaker first noticed it on a tree in Seaview in June 2004. The leaves were covered with raised pustules especially along the leaf edge. Each pustule was green and 2mm. high, extending both above and below the leaf surface. The opening was more often below than above and was a wavy elongated slit surrounded by carmine hairs.

Phyllocoptes malinus (Nalepa) on Crab Apple, *Malus sylvestris.*
This extremely attractive gall has only been found so far in four tetrads. It was not recorded by Swanton. Bright carmine patches of hairs on the lower surfaces of the leaves are startling in their appearance and shelter the mites. Eventually the hairs turn a rich golden-brown.

Phyllocoptes populi Nalepa on Aspen, *Populus tremula.*
Causing obvious yellow pouch galls on the upper leaf surface up to 5mm. across and 3mm. high, each with a very deep concavity beneath and lined with chestnut-brown hairs, this mite was not recorded by Swanton and there are only three recent records.

Phyllocoptes sorbeus (Nalepa) on Rowan, *Sorbus aucuparia.*
With only one recent record, from Kingston, East Cowes and no record from Swanton's time it is interesting to understand from the literature that this gall is reputed to be rare in the south of the

British Isles but widespread and common in Northern England and Scotland. The gall is an erinueum of dense hairs on either the upper or lower leaf surface, the hairs changing in colour with time from white to pink.

Phytoptus avellanae Nalepa on Hazel, *Corylus avellana.*
This mite causes a typical "Big Bud" gall. The more or less spherical gall can reach 10mm. in diameter, has thickened and somewhat warty bud-scales, fails to open and contains hundreds of mites. Swanton recorded this gall from Newport and Brook and it is now fairly widely distributed. He knew it as *Eriophyes avellanae* and until recently this mite was considered to be the causer also of the deformed catkins now known to be caused by *Phyllocoptes coryli.*

Phytoptus tetratrichus (Nalepa) on Lime, *Tilia spp.*
First found on the Island on 18.10.05 in Freshwater, there has been only one subsequent record, from Big Mead at Shanklin. The gall is a leaf pustule situated on the upper surface, 3 mm. across and 1.5 mm. high, with a concavity on the lower surface filled with long beige hairs.

Steneotarsonemus phragmitidis (Schlechtendal) on Common Reed, *Phragmites australis.*
An internode is transformed into an elongated and twisted, wrinkled and longitudinally grooved gall with the epidermis flaking off to reveal a dark brown centre. Microscopy reveals many hundreds of mites not of the family Eriophyidae with only two pairs of legs but of the Tarsonemidae with four pairs. This gall was not recorded by Swanton.

Vasates quadripedes Shimer on Silver Maple, *Acer saccharinum.*
This gall was new to Britain when first found in Essex in 2000. Each gall is a relatively large and obvious pustule or small pouch on the upper leaf surface, usually on a vein, 2-5mm. in height, irregular in shape with a wrinkled surface and pink to reddish-purple in colour. Known in the U.S.A. as the Maple Bladder Gall it is apparently common and familiar there. I found this gall at the Medina Arboretum at Fairlee 29.9.03 and this proved to be only the fourth British record.

Unnamed gall mite Buhr No. 56 on Sycamore, *Acer pseudoplatanus.*
The erinea of *Acer pseudoplatani* on Sycamore are common and widespread. They are large patches of white hairs distributed randomly over the lower surface of the leaf and noticeable because they are associated with a distinct yellowish bulge on the upper surface corresponding to each erineum below. Buhr's gall No.56 is similarly an erineum but found initially in the angles between the veins and the midrib then extending outwards across the lower leaf surface, at first white then red then brown, with no evidence of a bulge on the upper surface. The hairs on microscopy are toadstool-shaped. This gall was first found at Toll Bar Plantation, Hulverstone 18.8.04 by Jim Chiverton, Bill Shepard and myself. It was not recorded by Swanton and is not described in Redfern *et al*.

Unnamed Gall Mite Buhr No. 6281 on Wild Basil, *Clinopodium vulgare.*
Margaret Burnhill and Jackie Hart came across this gall on Brighstone Down 17.8.01. The gall consists of small discrete creamy-white erinea on the undersides of the leaves, especially associated with the veins. The hairs are short, broad and rather flattened against the leaf surface. This gall is described in the German, French and Dutch literature but is not mentioned by Redfern *et al.* It was not recorded by Swanton. An *Eriophyes* species was recorded by Burkill as galling this host in a list of British gall mites published in the London Naturalist in 1930 but with no description of the gall.

Unnamed Gall Mite Buhr No. 7327 on Elm, *Ulmus sp.*
A rather strange Elm which appeared to be a hybrid between Wych Elm *Ulmus glabra* and English Elm, *Ulmus procera* in Parkhurst Forest showed curious white erinea along the midrib and main veins on the underside of the leaves. On microscopy the hairs were seen to be somewhat sparse but immensely long and narrow-tipped. Many eriophyid mites were seen amongst the hairs. Redfern *et al.* do not describe this gall but Buhr records it from *"Ulmus carpinifolia, laevis* and *scabra."*

Unnamed Gall Mite on Daisy, *Bellis perennis.*
Swanton in his 1937 paper described a flower head of Daisy "transformed into a swollen compact rounded mass with deformation of the organs" caused by mites and found by Miss M. Read in 1923 at Carisbrooke. Houard (1909) described a similar gall but attributed it only to an unnamed eriophyid. Dauphin and Aniotsbehere (1993) describe "Capitules Déformés" from France and ascribe the deformity similarly to an eryophyid mite. I can find no reference to such a gall elsewhere in the literature; particularly it is not described by Bagnall and Harrison in their several papers on mite galls. There have been no further records of this gall.

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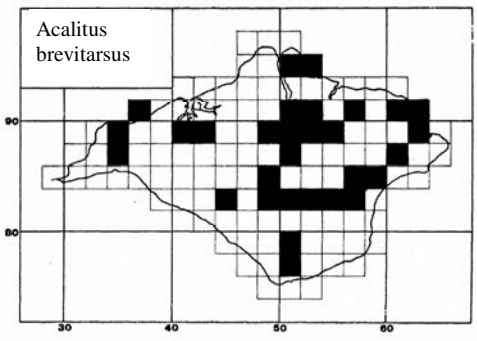
Distribution Maps

The distribution maps show the occurrence of gall-causing mites based on field-work carried out between 1975 and 2006.

Key :- ■ Swanton (1937) records where not recently confirmed.
● Recent records.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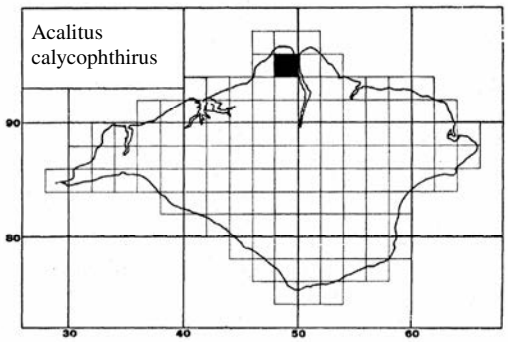
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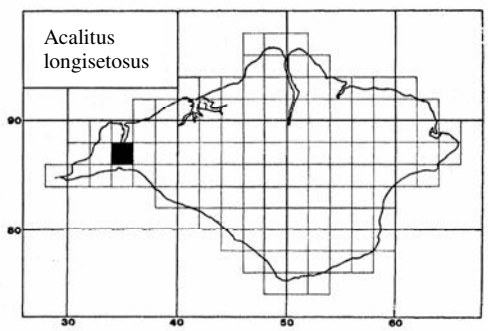
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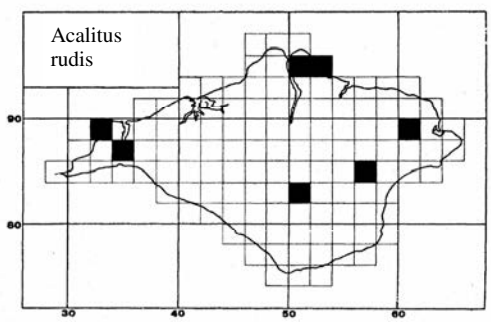
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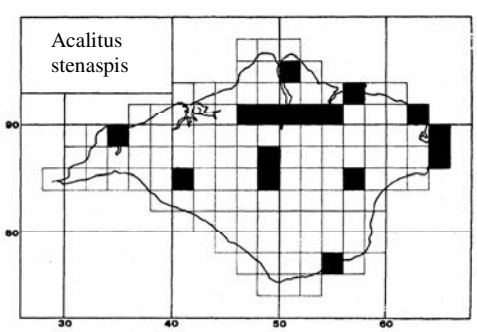
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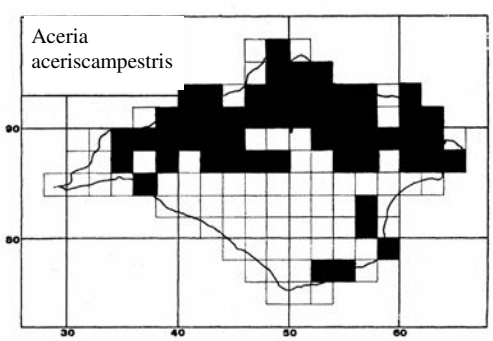
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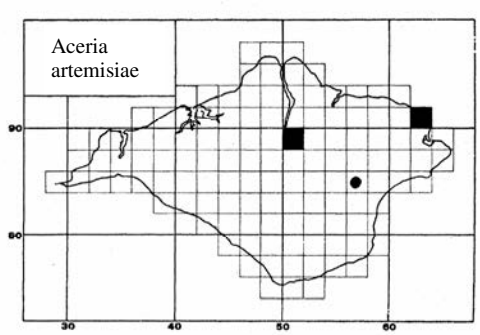
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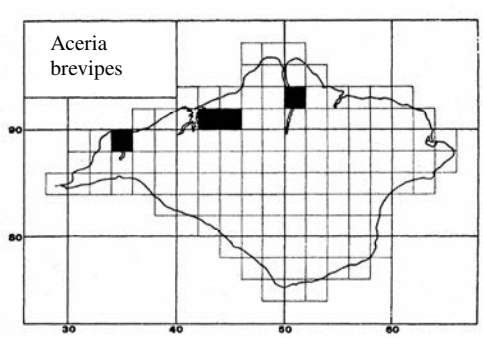
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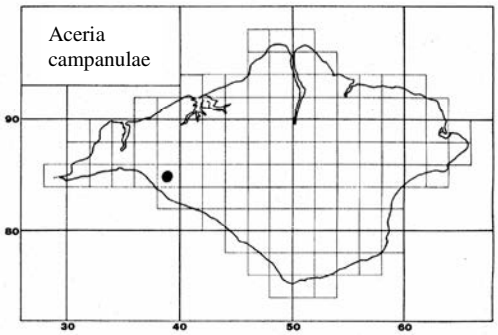
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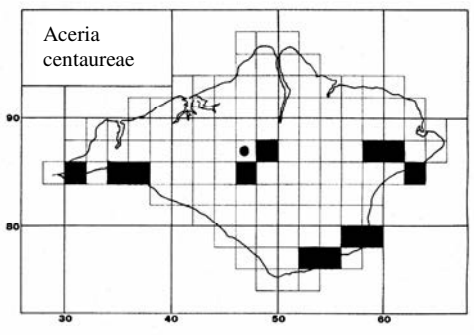
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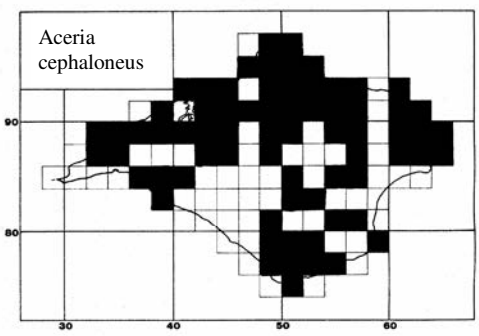
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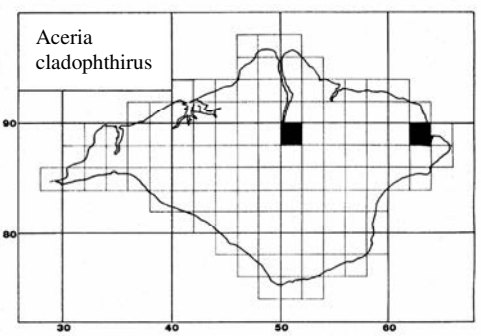
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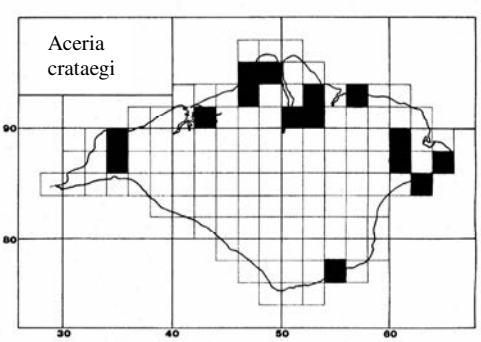
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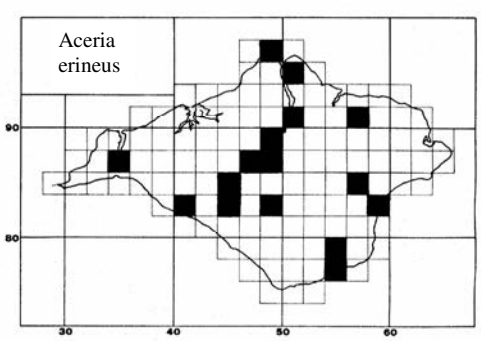
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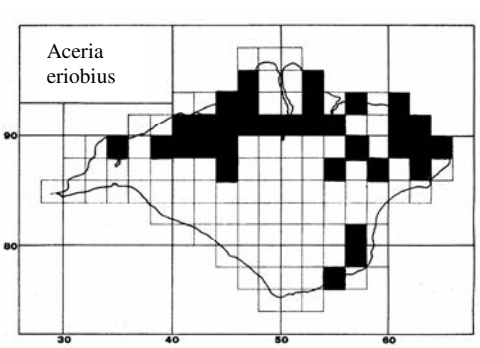
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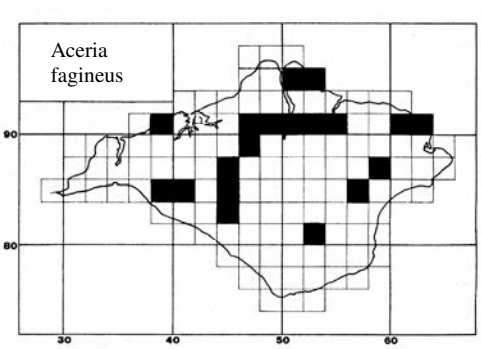
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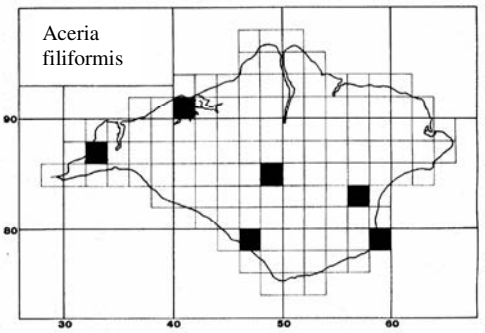
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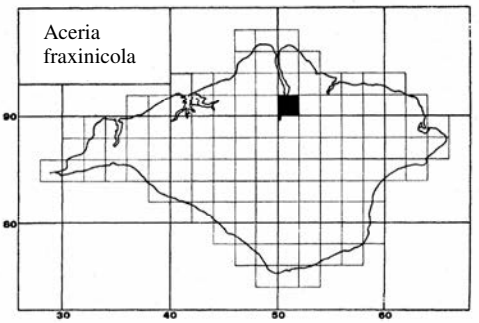
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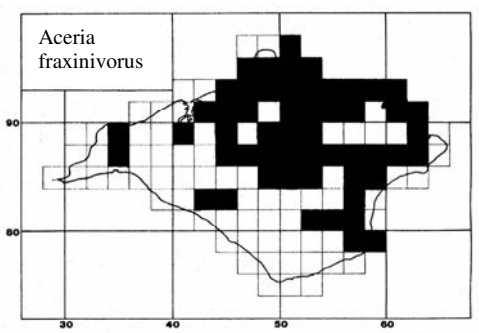
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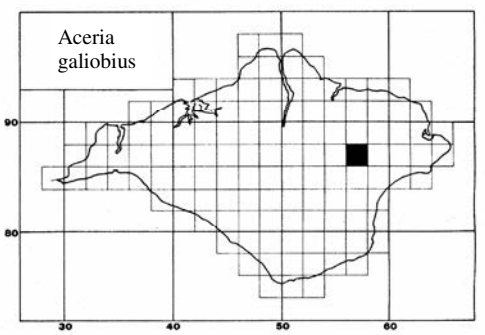
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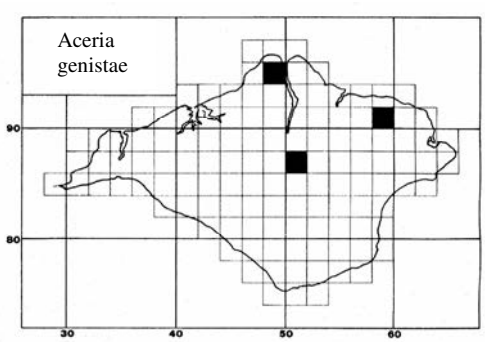
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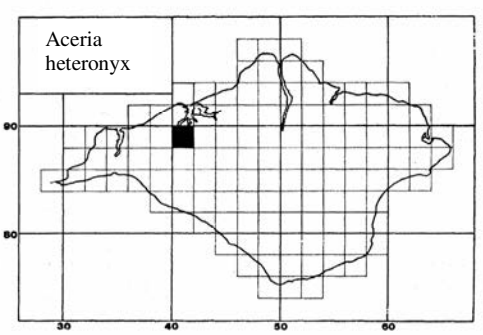
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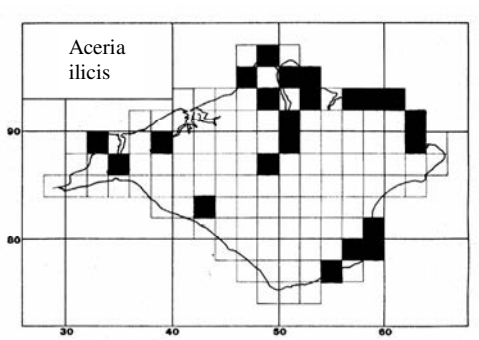
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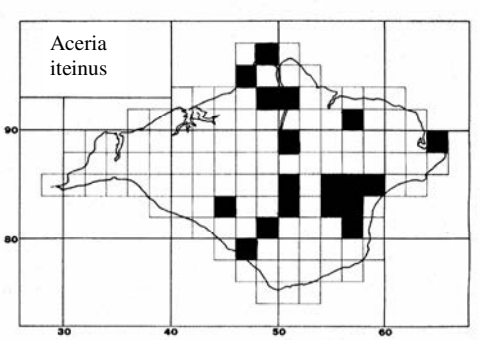
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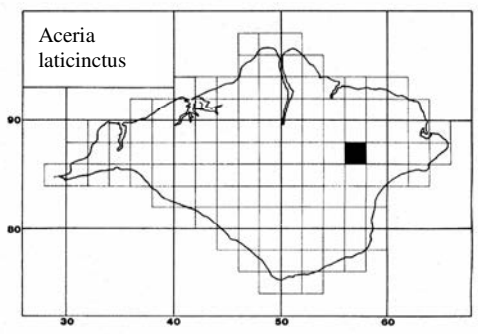
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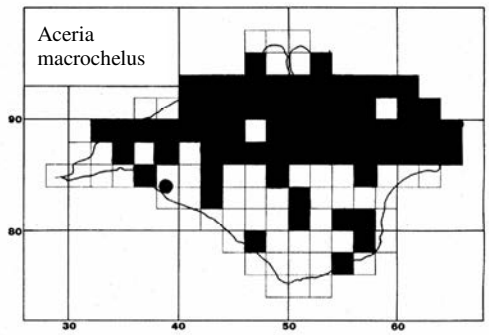
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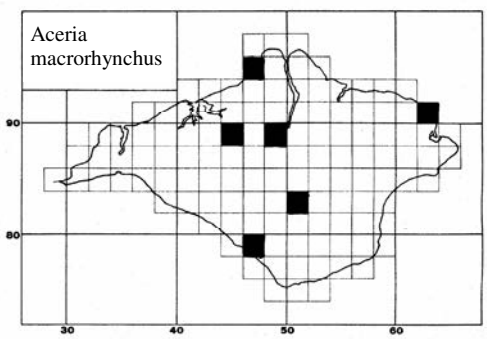
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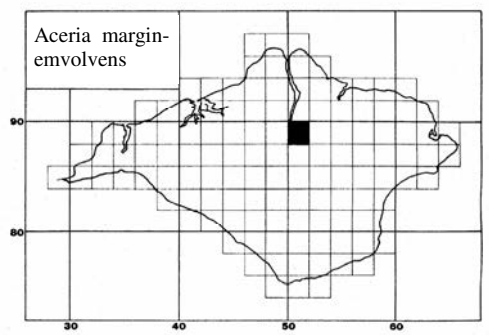
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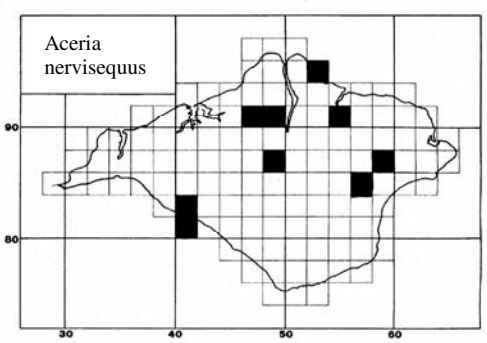
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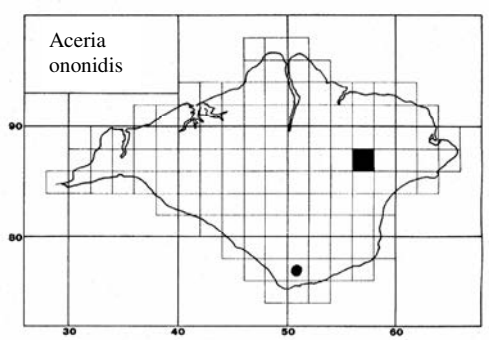
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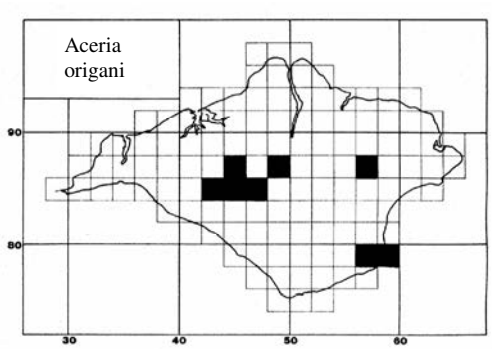
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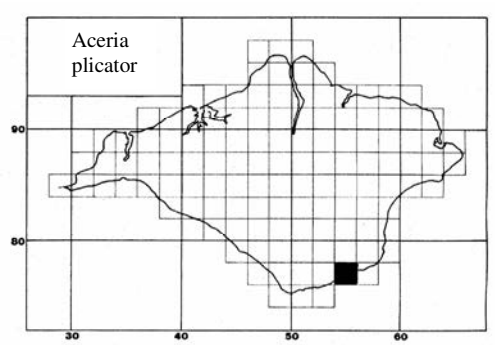
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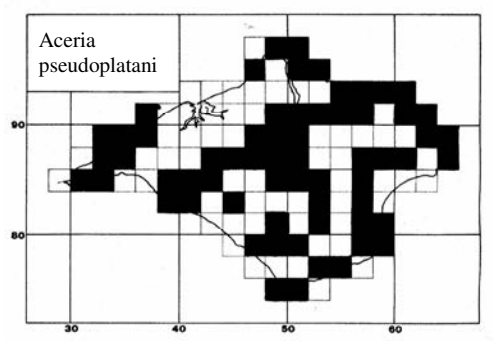
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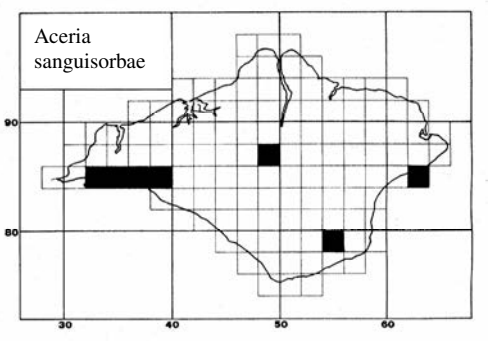
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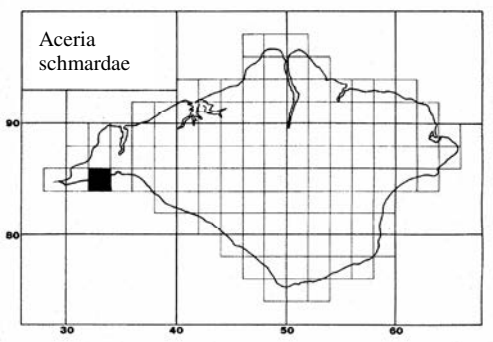
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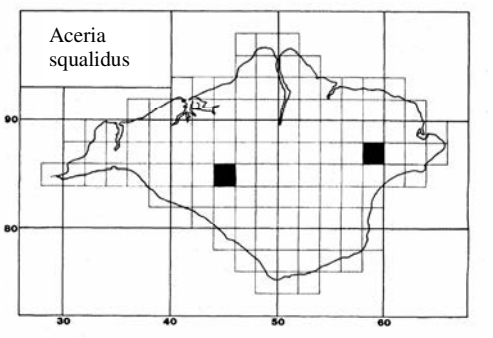
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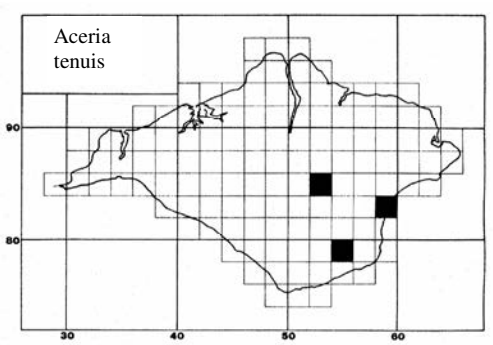
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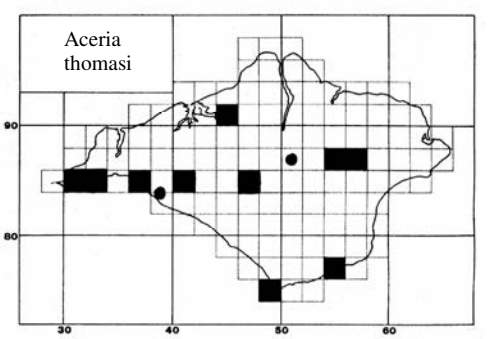
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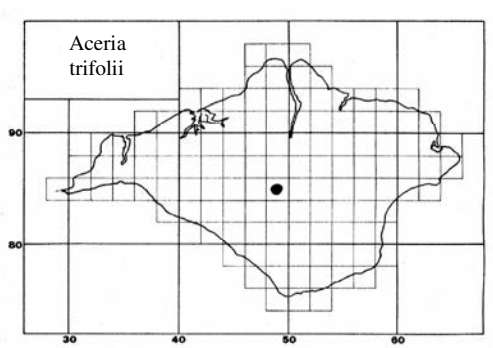
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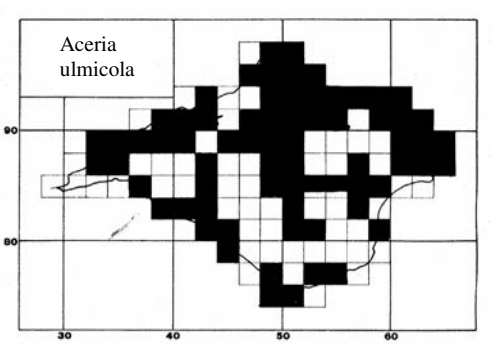
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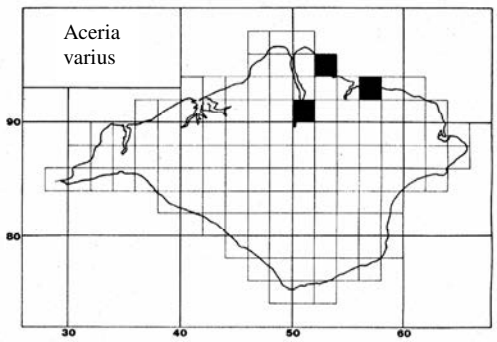
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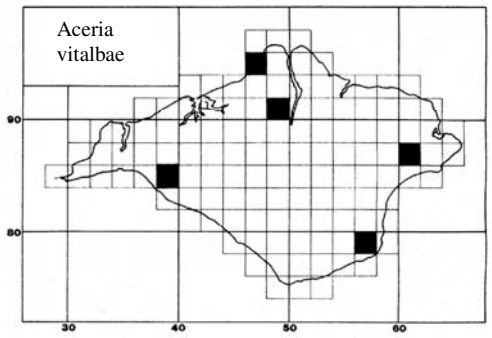
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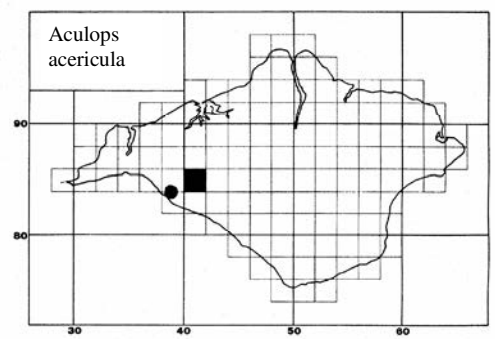
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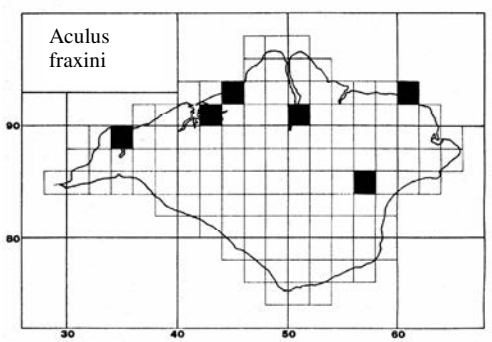
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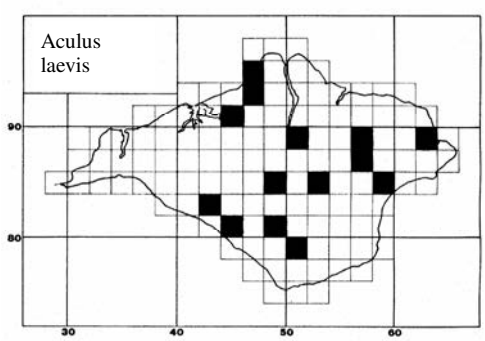
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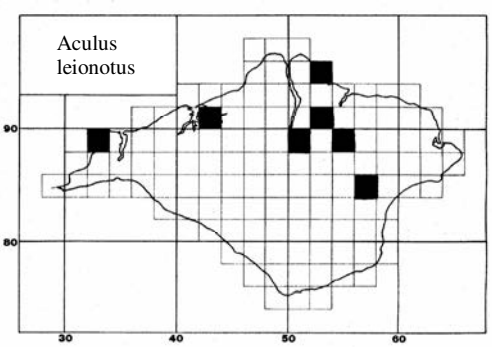
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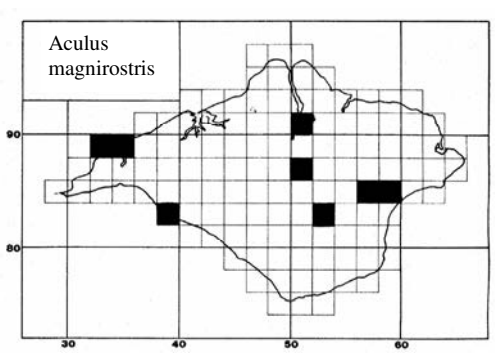
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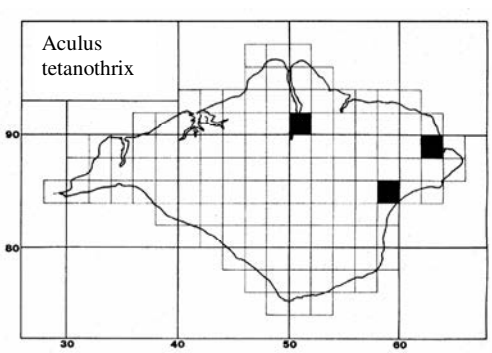
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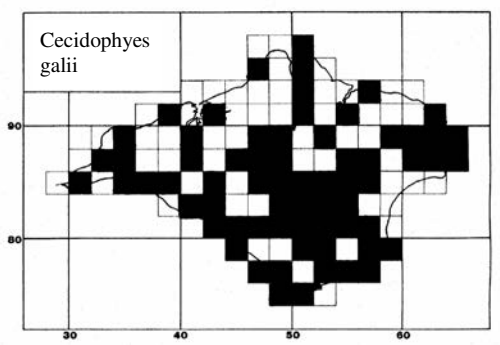
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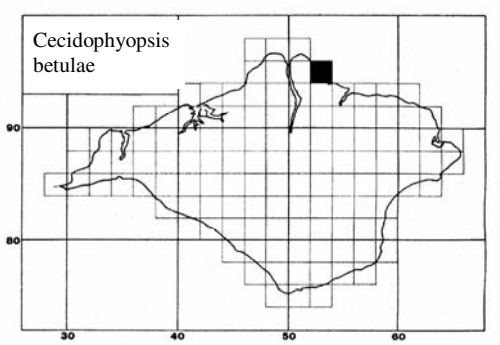
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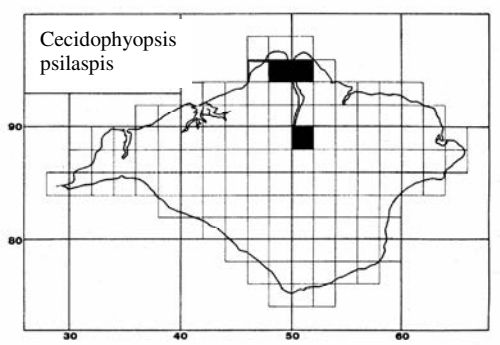
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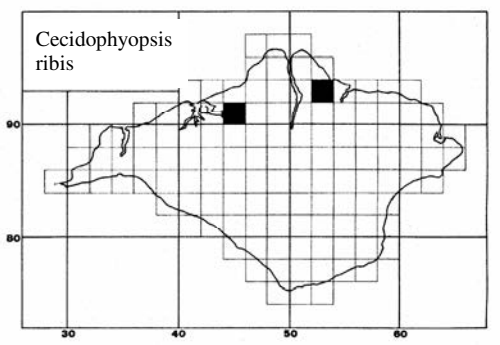
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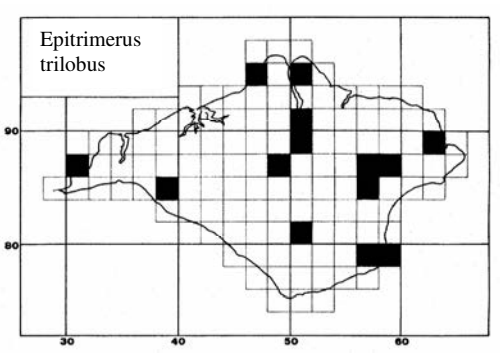
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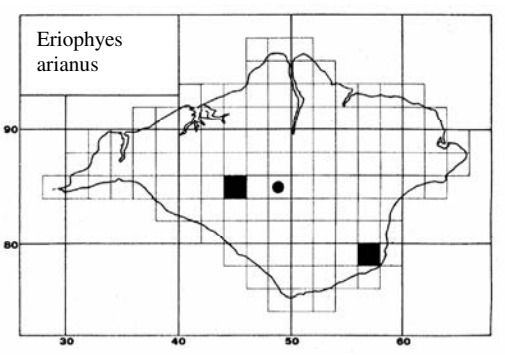
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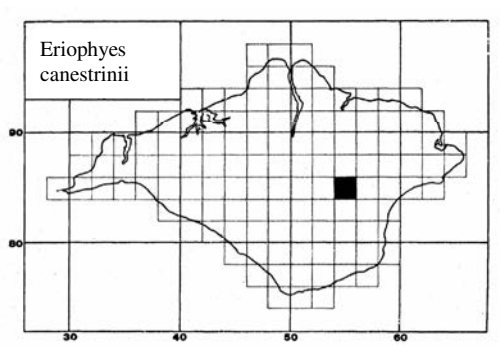
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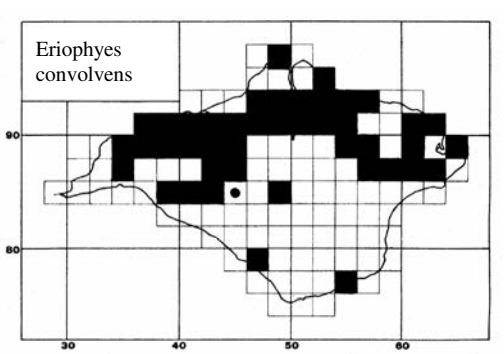
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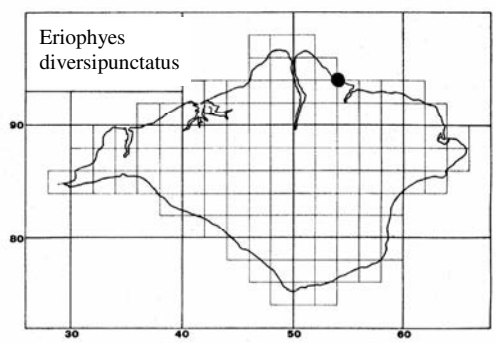
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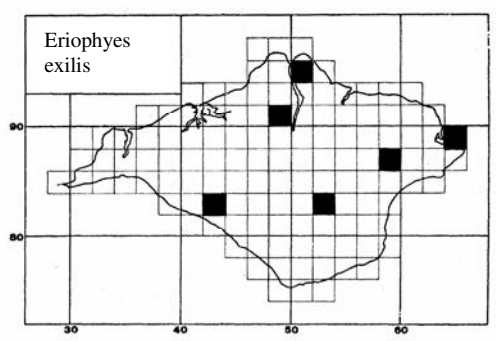
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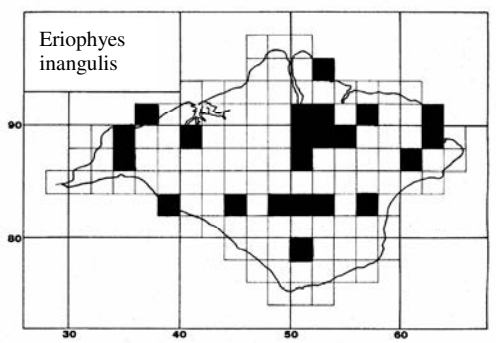
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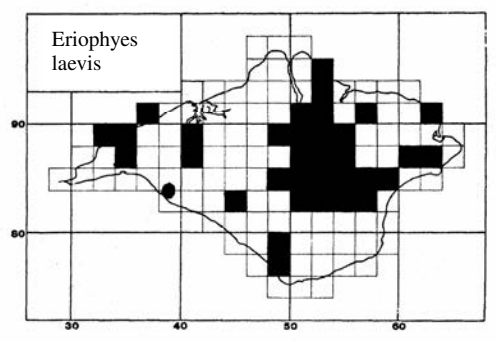
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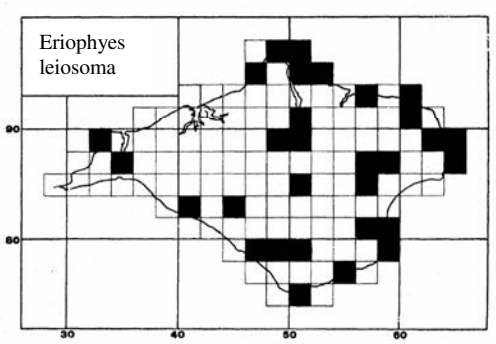
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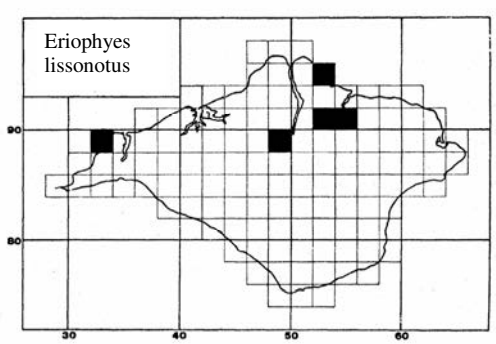
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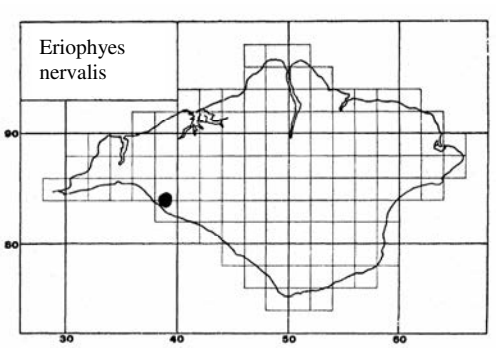
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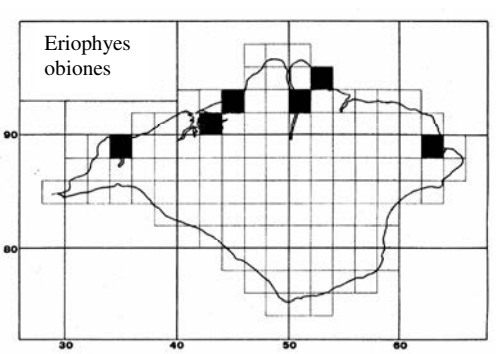
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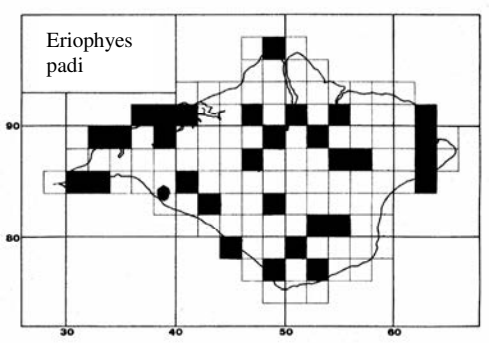
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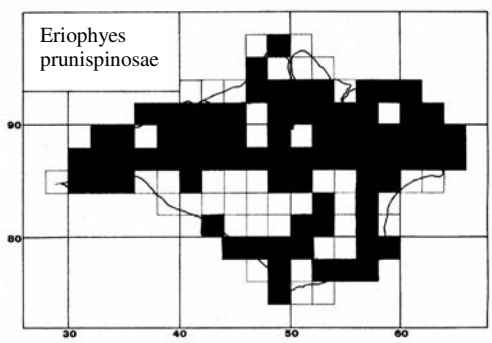
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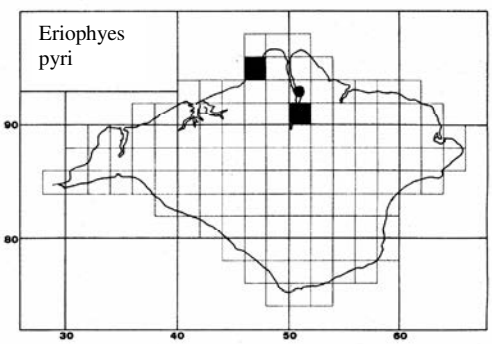
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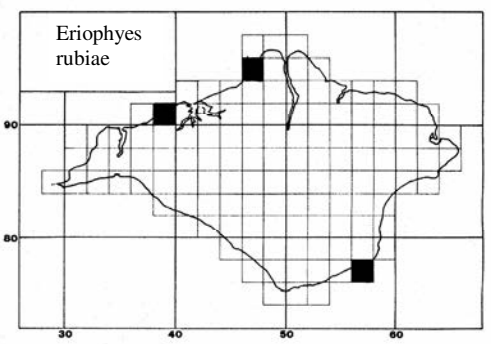
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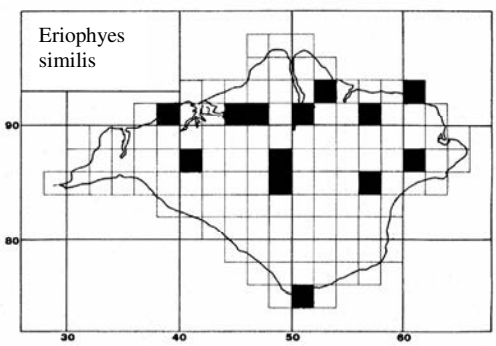
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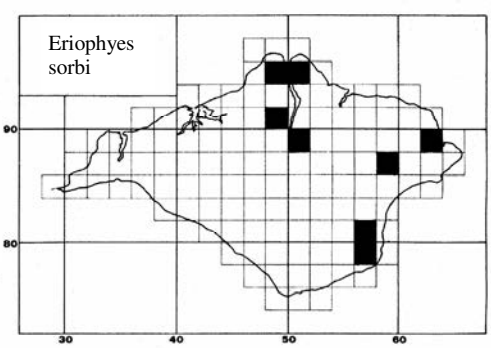
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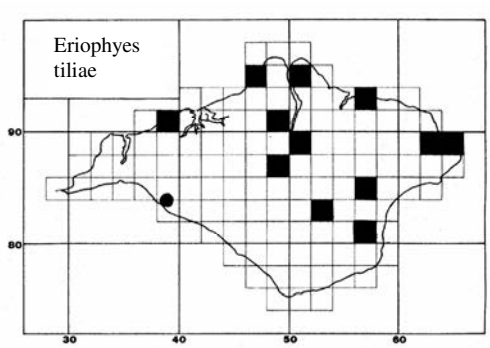
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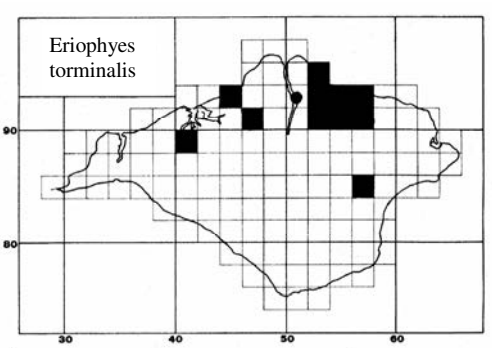
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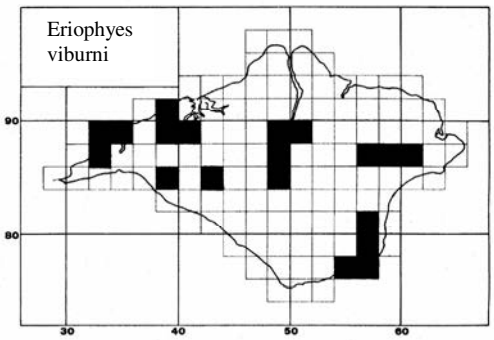
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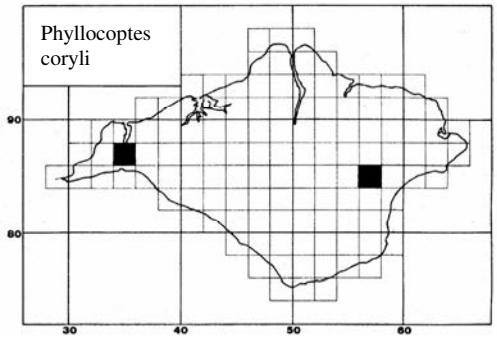
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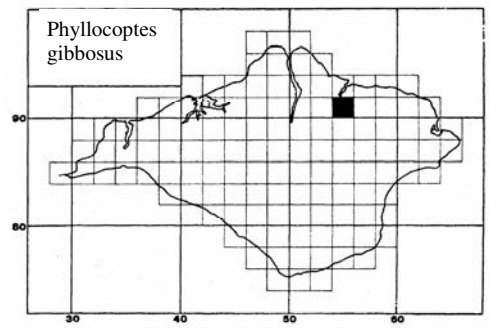
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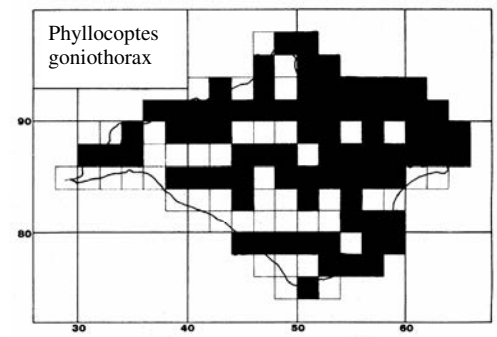
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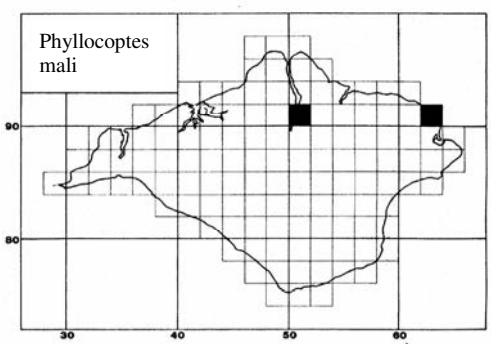
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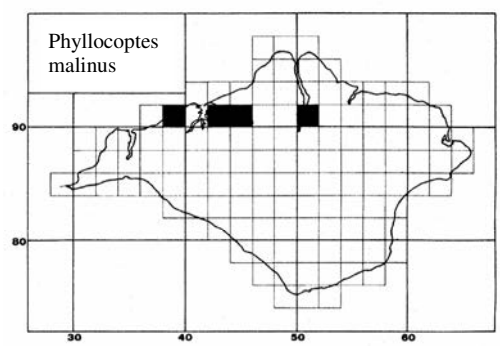
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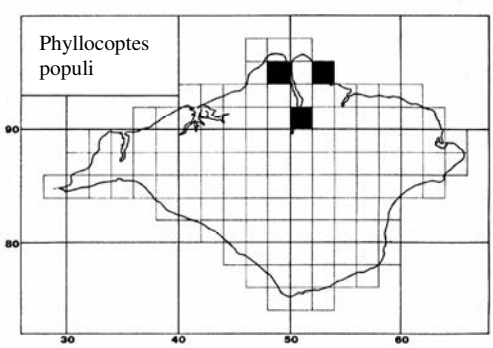
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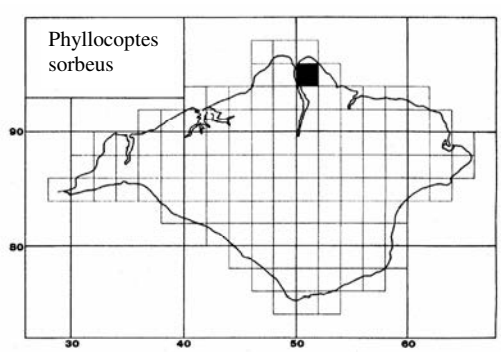
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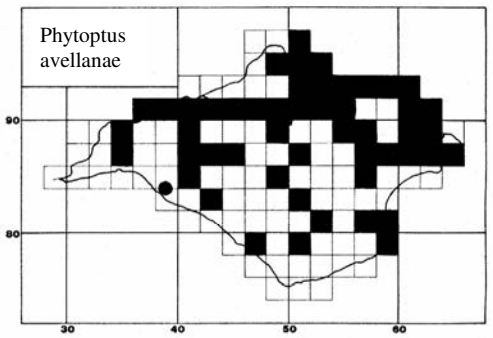
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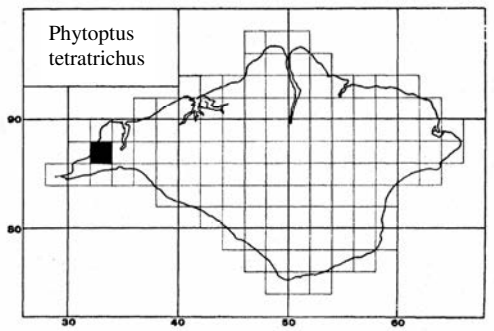
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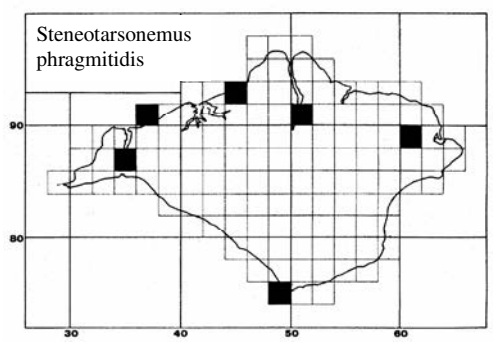
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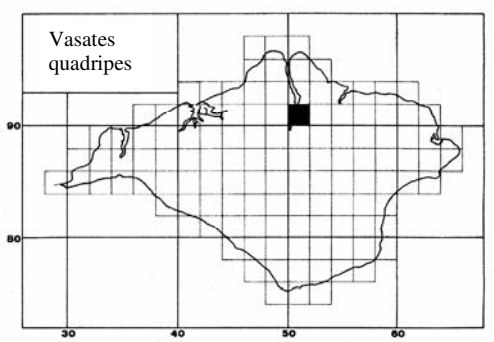
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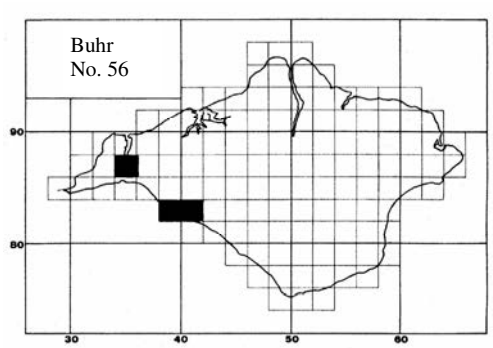
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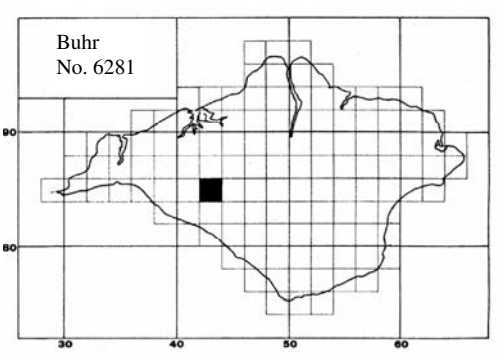
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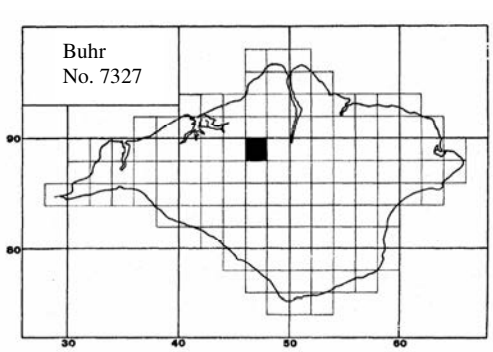
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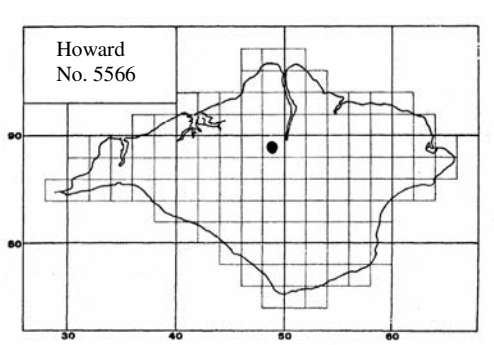
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