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WIGHT STUDIES

**PROCEEDINGS
OF THE
ISLE OF WIGHT NATURAL HISTORY
AND ARCHAEOLOGICAL SOCIETY**

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ISLE OF WIGHT
NATURAL HISTORY AND ARCHAEOLOGICAL SOCIETY

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Officers for 2020

President	Dr. Paul Bingham (until AGM)
Treasurer	Miss Jackie Hart
General Secretary	Dr Colin Pope
Membership Secretary	Mrs Toni Goodley

The Society was founded in 1919. Its activities include the study and conservation of the flora, fauna, archaeology and geology of the Isle of Wight. General and section meetings, lectures and excursions are arranged throughout the year and advertised on the Society's website. Proceedings and a Bird Report are published annually; Bulletins and Programmes twice a year. A periodic electronic communication is available on request. All these publications are issued without further charge to members.

Subscriptions

Ordinary Membership	£20
Family Membership	£25
Full Time Student Membership	£10

(Application forms and other information are obtainable from the General Secretary or Society website)

Cover photographs

Wildlife seen during 'lockdown' - photographs taken by IWNHAS members while walking or cycling March – June 2020

Top left:
Grey Heron *Ardea cinerea* taking a carp at Priory Pond, Carisbrooke (Mike Cotterill)

Top right:
Female Broad-bodied Chaser *Libellula depressa* off Laundry Lane, Brading (Andy Butler)

Bottom left:
Scarlet Elf Cup *Sarcoscyphia coccinea* in Gatcombe Withybed (Keith Marston)

Bottom right:
Pyramidal Orchids *Anacamptis pyramidalis* on Afton Down with Freshwater cliffs in the background (Keith Marston)

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Notes regarding submissions are printed at the end of this volume.

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Contents

Editorial

These are strange and difficult times, but not entirely unprecedented. In 1918, the year before our Society was founded, the Isle of Wight was impacted by the worldwide pandemic of 'Spanish Flu' that caused disruption and death. We have appended below an excerpt from the Public Health Report for Newport for 1918, and totals of deaths on the Island for 1918 and 1919 attributed to 'influenza'.

It is our hope that there are no further waves of coronavirus in the coming months, and that our Society will be able to hold meetings again and catch up on some centenary celebrations that have been postponed. In the meantime, Tina Whitmore, our project officer for *iWatchWildlife*, has been busy encouraging us to observe and record wildlife in our gardens and immediate local area and we await the results of the 'Record Makers' initiative with interest. The archaeologists have been using digital means to discuss sites until they are able to resume field meetings.

We hope you like the new format of the Proceedings. It does not take any extra space but has been a challenge to achieve by remote working. As always, we are grateful to our contributors – and please keep the articles coming.

Special thanks to Iain Outlaw for both this year's article and all his previous articles on moths; Iain has retired this year as moth recorder. Thanks also to Robin McInnes and Chloe Stanford-Clark for their contribution. We did not have sufficient space to include the whole article, but it has been uploaded to the IWNHAS website - please do read it and see all the illustrations.

We very much hope to bring out a special extra edition of the Proceedings in early 2021 on the theme of *Monastic Isle of Wight*. The usual annual issue of the Proceedings will then follow in August 2021.

Paul Bingham and Anne Marston
Editors of the Proceedings

Excerpt from the Public Health Report for Newport 1918

'At Newport there was a slight epidemic in July, which lasted for a fortnight, one death occurring. The second and more serious epidemic began about the middle of October, continuing in a more or less virulent form until the end of November. The incubation period was about two days, the onset being sudden with chills, high temperature, severe pains in the head and back, with tenderness of muscles, especially those of the leg and back. There were very few secondary attacks. Leaflets, advising as to isolation, personal precautions, nursing, and general treatment were distributed to each house and large posters were affixed to conspicuous places. Notices calling attention to the seriousness of the disease and to the necessary precautions advisable were also published in the local newspapers. All day schools were closed for 22 days, and day and Sunday schools were disinfected. Children under 14 years were excluded from cinemas'

Deaths attributed to influenza: Isle of Wight 1918 and 1919

	Under 1	1-2	2-5	5-15	15-25	25-45	45-65	65+	Total
1918	5	7	12	15	17	74	34	17	181
1919	2	1	3	4	4	28	12	4	58
Total	7	8	15	19	21	102	46	21	239

A Survey of the Bryophytes of Sandown Bay, Isle of Wight

George R. L. Greiff

Abstract *The terrestrial hinterland adjacent to Sandown Bay contains a number of regionally and nationally significant bryophyte species. A thorough survey of the mosses, liverworts and hornworts growing in this landscape was conducted between 2017 and 2019 to fill in the gaps resulting from a previous lack of sustained recording efforts in the area. Important habitats and species in the study area are discussed, and a complete and up-to-date species list for Sandown Bay has been provided.*

Introduction

Sandown Bay (abbreviated below as SB) is a large, open bay covering much of the south east coastline of the Isle of Wight. The adjacent terrestrial hinterland contains a suite of regionally and nationally significant bryophytes, a grade of plants including the mosses, liverworts and hornworts. This landscape is highly fragmented, comprising a large urban area, extensive areas of open improved or semi-improved grassland, and several high-quality, largely unmodified habitats. The survey area chosen for this study spans the coast from Luccombe Chine to Culver Cliff (not including Whitecliff Bay), then extending eastwards along the Eastern River Yar to Alverstone. With Alverstone Shute as the north western boundary, the western boundary extends south, excluding Borthwood Copse, including America Wood and ending at the car park on Luccombe Down. The southern boundary begins at this point, crosses through Nansen Hill and connects with Luccombe Chine in a north-easterly diagonal (see Figure 1).

SB has long been an area of considerable bryological interest with its most prolific site, Shanklin Chine, being recognised by bryologists for its interesting flora from as early as 1909. Around eighty different bryophyte species have been recorded from Shanklin Chine since records began, including a handful of rare and interesting species such as three of the four UK hornworts and the seepage-loving moss *Philonotis marchica*. In the middle of the twentieth century, it was discovered that colonies of the moss *Philonotis rigida* recorded from the Chine were actually *Philonotis marchica*, an extremely rare species that currently grows nowhere else in the UK, other than along some cliffs in Sandown Bay (Smith, 2004; Pope *et al.,* 2003). In December 2018 a new site for two endangered ephemeral mosses, *Acaulon triquetrum* and *Pterygoneurum ovatum,* was discovered on Culver Cliff. The vast majority of the rare species present in the area are dependent on cliff seepages that ensure their hydration all year round. This is particularly important given that bryophytes in general require moisture for growth and reproduction (Watson, 1967), and that most of the special plants found in damp places in SB have life cycles that are not well-adapted to dry conditions (Smith, 2004). It is therefore important to maintain these seepages so that these special plants, and their habitats may be preserved.

This study mainly includes surveys of the terrestrial area adjacent to SB undertaken in 2017. A number of personal records were also made outside of the survey period, for instance in the winters of 2018 and 2019. Species richness (the total number of species recorded in a site) is useful for assessing the quality of habitats in terms of their bryophyte flora. Several factors may influence the species richness including the size, age and accessibility of each site. A brief analysis using species richness was undertaken to compare the quality of four sites. Although species richness is a useful measure of habitat quality, it is not without flaws. Some coastal sites, such as landslips and chines, appear to have a greater diversity of species than woodland sites per unit area, but could be regarded as poor in quality due to their low species richness values, despite the fact that these sites may contain particular species that do not grow elsewhere. An improved system would be to assign values to different species based on rarity, but such an analysis was not the object of this survey. A very important property of many of the habitats directly adjacent to the coast is dynamism (Pope et al., 2003). Natural disturbances such as landslides, erosion due to seepages and, in the case of the calcareous turf at culver cliff, un-buffered exposure to extreme seasonality, result in frequent changes in these habitats both in terms of species community composition and the properties of the abiotic environment (e.g. soil pH and light availability). The community composition at a given site may vary between time-points, with different species dominating in different conditions. This dynamism is critical to the continuity of special communities in several SB sites, particularly chines. The deterioration of good-quality bryophyte communities in chines along SB is often correlated with a decrease in habitat dynamism over time and an increase in large, late-stage succession plants, such as *Ulex europeaus* (European gorse), encroaching in these sites.

Habitats in the Sandown Bay Area

Woodland

SB has several ancient woodland sites that remain in good condition. Sites away from urban areas, or those which are relatively inaccessible, exhibit significantly higher species richness values than sites close to or surrounded by urban areas. America Wood (SZ 567 821), Cliff Copse (SZ 564 804) and an unnamed wood ("Ash Wood") in Cowleaze (SZ 572 797) are examples

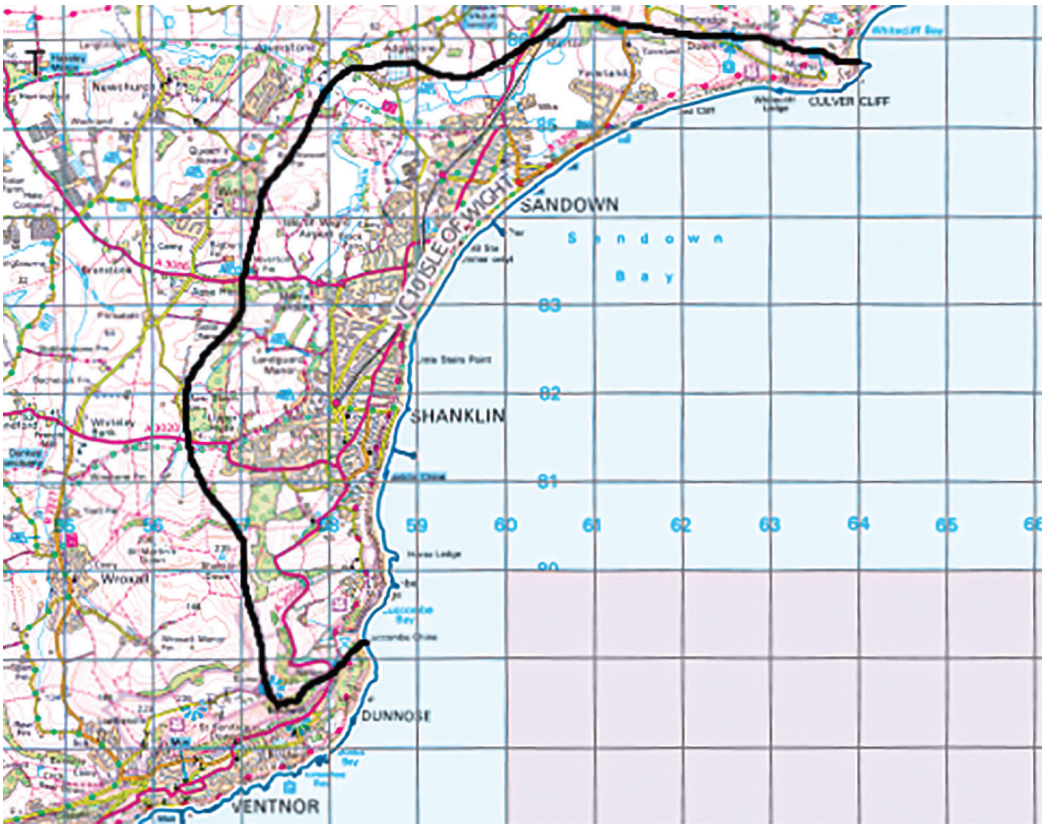

Figure 1: Map of the study area (outlined in black). Crown copyright Ordnance Survey. All rights reserved.

of rich wooded sites containing high numbers of species. Batts Copse (SZ 574 813) in the heart of Shanklin, however, appears to have deteriorated and has very few or no ancient woodland indicator bryophytes remaining. See Table 1 below.

Woodland site	Total number of bryophyte species recorded (1970-2018)
America Wood (SZ 567821)	74
Cliff Copse (SZ 564804)	63
Hungerberry Copse (SZ 573809)	24
Batts Copse (SZ 574 813)	10

Table 1: Species richness of four woodland sites near Shanklin in decreasing order.

America Wood alone contains about a third of the total number of species in the SB survey area, a clear indication of the quality and importance of species-rich ancient woodlands in this area and across the Island. Batts Copse, on the other hand, is a good example of a wood that has deteriorated significantly since it was surrounded by the town of Shanklin. Although there are no previous bryological records for this site, the presence of a stream and of many old trees suggests that it was a much richer habitat in the past. The causes of this decline are likely to be pollution and habitat reduction, as well as high amounts of public usage.

A rising threat to woodland diversity is the emergence of invasive tree diseases. *Fraxinus excelsior* (common ash) is an important component of several woodlands in the survey area, the bark of this species being particularly favourable for the colonisation and growth of epiphytes – mosses and liverworts that grow mostly or exclusively on living trees. The recent emergence of ash dieback in the UK and on the Isle of Wight, caused by the ascomycete fungal pathogen *Hymenoscyphus fraxineus*, is devastating ash trees across the country. Research indicates that around five percent of trees may be able to tolerate the disease (McKinney et al., 2011), however government initiatives to clear trees adjacent to public footpaths and roads may result in an even more significantly-reduced population of this important tree. Woodland communities are expected to change as a result of this disease, and it is likely that some of the more sensitive epiphytic bryophytes that mostly grow on ash, such as the rare moss *Plasteurhynchium striatulum*, will be threatened with local extinction.

Wetlands and Carr

The wet woods and swamps between Sandown and Alverstone along the Eastern River Yar comprise a very interesting and previously under-appreciated area – the general area is referred to as Lake Common below. Past records seem to indicate that this area was once much more open and contained many interesting species of wet meadows. It has changed in recent decades with encroachment by *Salix* (willow) and *Ulnus* (alder) trees in particular (Pope et al., 2003). Sandown Community Orchard opens into a seasonally flooded area of carr (SZ 586 850), and this site has provided several interesting records of species not recorded elsewhere in the study area including *Leskea polycarpa, Oxyrrhynchium speciosum, Sphagnum squarrosum* and *Calliergon cordifolium*. Sandown Meadows (SZ 607 852), one of

the few remaining areas of wet meadows, is generally species-poor but supports a population of the rare wet meadow moss *Hygroamblystegium humile*. Good quality habitats in this area are highly fragmented and often difficult to access, often flanked by grazed, semi-improved pasturelands. The epiphytic bryophyte flora, growing mostly on willow trees, is particularly rich. In some places, small and declining populations of rare marsh bryophytes, such as species of *Sphagnum*, *Aulacomnium palustre* and *Calliergon cordifolium*, are hanging on in isolated patches. The homogeneity of the nearby pastures, eutrophic freshwater, and a lack of grazing / controlled disturbance of the remaining good patches in this area are likely acting in combination to cause these local declines.

Landslips and Chines

The coastline of the Isle of Wight is incredibly dynamic, and this is clearly seen along Sandown Bay in areas such as Luccombe Chine where landslides regularly change the face of this habitat. The unstable coastline of the Island is perhaps one of its most prized habitat zones and includes locally scarce non-calcareous niches, many of which support specialist bryophytes. The Isle of Wight has very few non-wooded acidic areas in general. These coastal cliff habitats are vitally important as they house many species that are either very rare or not present elsewhere on the Island. One such species is the leafy liverwort *Solenostoma gracillimum*, an acid-loving plant that has not been seen inland for forty years but is locally abundant on landslips and in chines. In 2018, *S. gracillimum* was recorded from a variety of coastal locations, including along the catwalk at Sandown beach (SZ 5932 8369) and at Luccombe Chine (SZ 582 793). *S. gracillimum* has therefore become an indicator species for rich coastal habitats on the Island. This plant depends on environmental flux to prevent encroachment by late-stage succession plants such as *Ulex europeaus* (gorse). Shanklin Chine (SZ 584 810) is an incredibly rich site constituting a large percentage of the SB bryophyte flora along with Luccombe Chine. Red Cliff (SZ 618 853), despite having a relatively low species richness, contains species that are present in neither of the former two habitats and that are rare on the Island, including *Lophozia excisa* and *L. ventricosa*. Table 2 below compares the species-richness values of these sites.

Coastal Site	Total number of bryophyte species recorded (1970 – 2018)
Shanklin Chine	80
Luccombe Chine	63
Red Cliff	25

Table 2: Species-richness for three coastal sites in SB in decreasing order.

Chalk Grassland

There are only a few rather small pockets of chalk grassland in most of the SB survey area, such as a grazed hill behind Greatwood Copse where *Rhytidiadelphus triquetrus* grows with *Calliergonella cuspidata* and *Thamnobryum alopecurum*. A section of turf along Culver Cliff represents the most expansive area of good-quality chalk grassland adjacent to SB. A strong coastal influence, including salt spray, strong winds and summer parching, renders this habitat hostile towards the growth of late-stage succession species such as *Rubus* (bramble) and *Ulex europeaus* (gorse). This environment, however, is home to a suite of ephemeral bryophytes that complete their life cycles in the winter and therefore manage to avoid the hostile conditions of the summer. Indeed, these plants depend on these conditions for the maintenance of the bare ground they exclusively grow on during the winter. Recent surveys discovered colonies of the threatened mosses *Acaulon triquetrum* and *Pterygoneurum ovatum* (Preston & Hill, 2019), as well as a bryo-parasitic fungus not previously recorded in the UK, *Octospora itzerottii*, which specifically interacts with *Pterygoneurum* species. The interesting and unique patch of turf supporting these plants is small and therefore vulnerable, and should be monitored but ultimately left alone so that its special bryophyte community continues to flourish.

Urban Areas

Urban areas generally have low species-richness but often contain large numbers of a select handful of species that are able to withstand harsh conditions. Roofs of houses often support large populations of the mosses *Syntrichia ruralis* and *Grimmia pulvinata*. Pavements frequently support populations of the moss *Bryum argenteum*. *Didymodon nicholsonii, D. luridus* and *Syntrichia montana* can also be found on damper sections of pavement. *Syntrichia latifolia* appears to be spreading on damp tarmac on the Island and *Cirriphyllum crassinervium* and *Scleropodium cespitans* can be locally abundant on driveways and stonework in shade.

Didymodon australasiae var. *umbrosus* is an interesting and very rare moss on the Island only found on the sides of bridges along the former Wroxall – Shanklin railway track (SZ 5627 8139). Colonies grow on damp, shaded brickwork and are supported by seepages. It is likely that this species is out-competed on natural rocks and manages to contend better on man-made substrates. It is quite possible that this plant is overlooked on walls in towns and that urban development may be favouring its spread.

The Bryophyte Flora of Sandown Bay

Brief descriptions of the 221 species currently recorded from the Sandown Bay study area have been provided below. Round brackets enclosing a taxon name indicate that a record is doubtful, unconfirmed or incorrect. Square brackets indicate a species that is likely to be extinct *in the study area* based on a lack of records from the last fifty years (since 1967 in this case). The year of the most recent record of a species is included in parenthesis at the end of each description along with the initials of the recorder. Photographs of some of the species are shown in the eight plates and are linked to the appropriate species

comments by including the corresponding plate number in parenthesis after the species name (e.g. see *Acaulon triquetrum*). All photographs were taken by GRLG using a Samsung A5 mobile phone, with macro-photographs taken through a 15X hand lens or a DM6 stereo microscope. Identification of bryophytes was based mostly on material in the field with the aid of the British Bryological Society's field guide by Atherton et al. (2010). When required, small amounts of a colony were sustainably collected and examined using a compound microscope. Smith (2004) and Paton (1999) were consulted for moss and liverwort identifications respectively.

Recorders are represented by their initials and include the following:

AB: Rev. A. Bloxam
BBS: British Bryological Society
CCT: C. C. Townsend
CHB: Rev. C. H. Binstead
CP: Colin R. Pope
FR: Francis Rose
GRLG: George R. L. Greiff
HM: Howard Matcham
HML: Rev. H. M. Livens
JAN: John A. Norton
LS: Lorna Snow
PL: Percy Long
RP: Ron Porley
RS: Rod Stern
TLB: Tom L. Blockeel

Acaulon triquetrum (Plate 8F) A threatened moss on the British Red List. A new site for this species was discovered in December 2018 on Culver Cliff, where it is associated with the nationally scarce *Pterygoneurum ovatum*. *A. triquetrum* grows on calcareous soil on coastal cliffs, persisting for most of the year as spores in the soil. Plants are only visible for a couple of months from around early December (Culver Cliff. GRLG, 2018).

Alonia aloides A locally common species of calcareous soil, frequent at landslips and old chalk quarries but rare elsewhere. Present in quantity on Luccombe Chine ledge (Luccombe Chine. GRLG, 2018).

Amblystegium serpens* var. *serpens A common species of shady soil, rocks, and tree branches. Widepread (Luccombe Chine. GRLG, 2018).

Aneura pinguis A species characteristic of damp, base-rich areas. It is found mostly in chines along seepages and rivulets (Luccombe Chine. GRLG, 2018).

Anomodon viticulosus (Plate 2A) A fairly common species in calcareous areas. In SB, *A. viticulosus* grows luxuriantly on the margins of an ancient highway going up Shanklin Down from Cowleaze (SZ 5745 7976) and is also present in some of the other woods growing both epiphytically and on stonework (Shanklin Down. GRLG, 2018).

Anthoceros agrestis One of the Island's three hornworts. A colonist of bare, damp soil. Hornworts are rare on the Island, but all three species have been recorded from Shanklin Chine (Shanklin Chine. GRLG, 2018).

Anthoceros punctatus The second of three hornworts known to grow on the Island. A colonist of bare, damp soil. Mostly on dripping cliff faces (Shanklin Chine. GRLG, 2018).

Atrichum undulatum* var. *undulatum (Plate 1E) A very common moss of woods and shady areas on heathland. Common and widespread in SB (America Wood. GRLG, 2018)

Barbula convoluta (Plate 7A) a common but easily overlooked acrocarp of relatively damp soil. Occasional in SB (Shanklin. GRLG & JAN, 2017).

Barbula sardoa The rarest member of the genus on the Island, this plant prefers chalky soil. Rare but probably overlooked in SB (Greatwood Copse. GRLG, 2017).

Barbula unguiculata A frequent species of soil commonly found in gardens but also in woodland, landslips, and arable fields. Common in SB. Probably increasing due to human activity homogenising habitats (Luccombe Chine. GRLG, 2018).

Blasia pusilla A rare species of acidic soil. Rare in SB – found only in Shanklin Chine but not recorded for a number of years (Shanklin Chine. *BBS*, 2002).

Brachythecastrum velutinum A species that seems to have greatly declined. *B. velutinum* grows on trees and rarely on soil and is rare in SB. In 2018, this species was found growing on a fly-tipped boiler in one of the streams in America Wood (America Wood. GRLG, 2018).

Brachythecium albicans An occasional species of acidic soil. Rare in SB (Red Cliff. GRLG, 2018).

Brachythecium mildeanum A rare but probably overlooked species of calcareous tracksides and grassland. (On coastal path near Red Cliff. GRLG & JAN, 2019).

Brachythecium rivulare A species often associated with streams, and often in woodland. Occasional on the Island and occasional in SB (Shanklin Down. GRLG, 2018).

Brachythecium rutabulum A frequently-occurring species often found on garden lawns as a weed. It is equally comfortable in woodland on tree bases, on calcareous rocks and on the ground along paths (Sandown. GRLG, 2018).

Bryerythrophyllum recurvirostrum A rare and overlooked species on the Island found on calcareous substrates. It is rare in SB (Sandown. 1997, LS).

(*Bryum alpinum*) A very rare species on the Island though not uncommon in the rest of the UK, especially in mountainous areas. Vividly red *Bryum pallens*, a similar species, grows in the area where this species was recorded so this record is possibly erroneous (Littlestairs Point. LS, 1995).

Bryum argenteum (Plate 7D) A frequent species found commonly in arable fields and more so in the cracks between paving stones. Common in SB and increasing due to human impact. A favourite habitat is the pavement beside roads (Sandown. GRLG, 2018).

***Bryum capillare* (*Rosulabryum capillare*)** A frequent species found on a variety of substrates including tree branches and plastic gas boxes outside buildings. Common in SB. This species is also increasing due to human influence as it is able to colonise roofs and walls (Sandown. GRLG, 2018).

Bryum dichotomum A common species of soil and, more rarely, undisturbed, damp tarmac. Common and overlooked in SB (Littlestairs Point. GRLG, 2018).

Bryum donianum A locally rare species in the UK and on the Island. The Isle of Wight stronghold of *B. donianum* appears to be the south-east coast where the plant grows on soil in shady calcareous woodland or on damp banks (Cliff Copse. GRLG, 2018).

Bryum gemmiferum A rare species of damp, disturbed calcareous soil. It is rare on the Isle of Wight and in SB, but locally abundant on the cliffs between Shanklin and Sandown (Littlestairs Point. GRLG, 2019).

Bryum pallens An occasional soil species mostly found on heaths. Rare or overlooked in SB. (Littlestairs Point. GRLG, 2019).

Bryum radiculosum A rare and possibly overlooked moss of old walls and chalk quarries. Rare in SB (Hope Beach, Shanklin. LS, 1986).

Bryum rubens A common moss in Great Britain and the commonest "arable *Bryum*" on the Isle of Wight. *B. rubens* occurs on farmland and has also been seen in Luccombe Chine (Sandown, wood near Browns Golf Course. GRLG, 2018).

Bryum subapiculatum A rare but overlooked species on the Island that grows on rather acidic soil. There is only one record from SB (Upper Hyde Farm. LS, 1987).

Calliergon cordifolium A rare species on the Island recently recorded from The Wilderness and found in very small quantity in SB (Sandown Community Orchard. GRLG, 2018).

Calliergonella cuspidata (Plate 7B) A frequent species of damp calcareous ground including flushes and garden lawns. *C. cuspidata* is common in SB and may be increasing due to habitat homogenisation (Sandown. GRLG, 2018).

Calypogeia arguta A liverwort of acidic areas found most commonly in damp woodland rides on the Island. *C. arguta* is only known from America Wood and Shanklin Chine in SB (America Wood. GRLG, 2018).

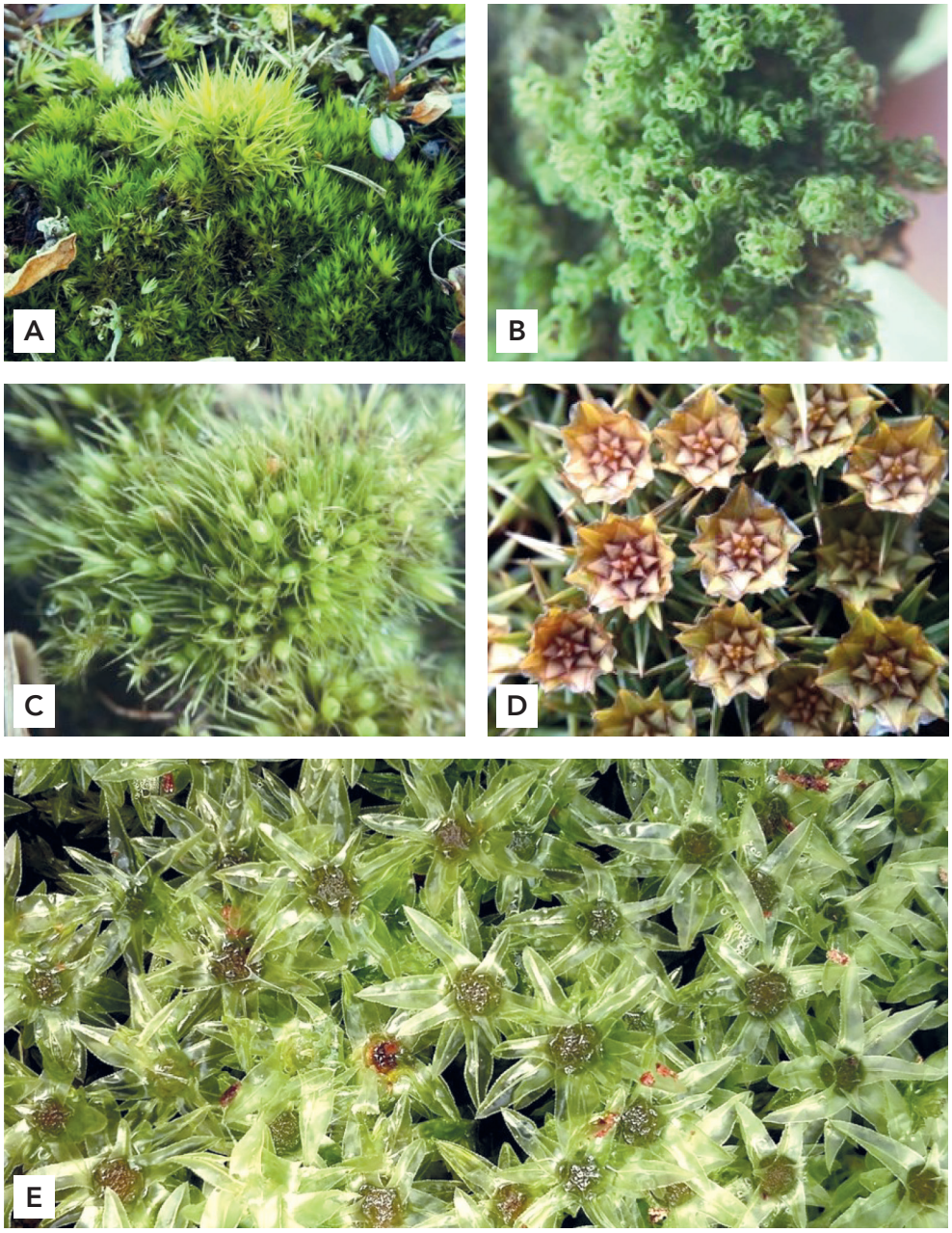

PLATE 1: BRYOPHYTES FROM LUCCOMBE DOWN **(A)** *Dicranum scoparium* growing on a bed of *Campylopus introflexus* **(B)** *Ulota phyllantha,* an epiphyte on Nansen Hill **(C)** *Pleuridium acuminatum* from the SBA boundary on Luccombe Down **(D)** Male plants of *Polytrichum juniperinum* **(E)** Male plants of *Atrichum undulatum*

Calypogeia fissa Another liverwort of acidic areas and the commonest and most widespread member of the genus. *C. fissa* is also found in chines and woodland (America Wood. GRLG, 2018).

Calypogeia muelleriana The rarest of the three *Calypogeia* species recorded on the Island. *C. muelleriana* appears to prefer more strongly acidic habitats than the other two (Shanklin Chine. 1990, RS).

Campylopus flexuosus A rather rare species on the Island occurring in heathland and sometimes on rotting wood. Rare in SB (Sibden Hill. LS, 1992).

Campylopus introflexus (Plate 1A) A common and increasing introduced species of acidic substrates. Common in SB (Luccombe Chine. GRLG, 2018).

Campylopus pyrifomis Rare but possibly overlooked in acidic woodland in SB (Luccombe Down. GRLG, 2018).

Cephalozia bicuspidata An occasional and easily overlooked liverwort in acid woodland and chines, often found threading through other bryophytes (Luccombe Chine. GRLG, 2018).

Cephalozia connivens A scarce and inconspicuous liverwort of *Sphagnum* bogs and rotting wood in wet woods. *C. connivens* has only been recorded once in SB (America Wood. LS, 1978).

Ceratodon purpureus A frequent moss of acidic substrates. It dominates stretches of heathland soil along with *Campylopus introflexus* and is best seen in the spring where masses of red sporophytes are distinctive from a distance. This plant also grows on some man-made substrates, more frequently in areas with acidic construction materials (Luccombe Down. GRLG, 2018).

Chiloscyphus polyanthos A rather scarce semi-aquatic liverwort, best known from the stream in Ventnor Park where it has grown for at least a century. *C. polyanthos* has been recorded from Shanklin Chine along with *C. pallescens*. The two are difficult to distinguish and it is highly likely that one or the other occurs in Shanklin Chine, rather than both, hence a single record here (Shanklin Chine. GRLG, 2018).

Cirriphyllum crassinervium A locally common moss that is increasing on pavements and driveways. This plant is especially common along the Undercliff. Few records from SB but likely overlooked (Shanklin. GRLG & JAN, 2017).

Cirriphyllum piliferum (Plate 2E) A moss characteristic of acid woodland in the UK. *C. piliferum* is scarce on the Island and is an indicator of ancient woodland (Shanklin Down Wood. GRLG, 2018).

Cololejeunea minutissima A frequent and increasing epiphyte in coastal areas, this tiny leafy liverwort is present in some quantity in just about every wood on the Island. This plant is not restricted to woodland areas, however, and may also be found in hedgerows and in churchyards (Sandown. GRLG, 2018).

Conocephalum conicum Known as the Great Scented Liverwort due to the distinctive aroma of the plant when crushed. This species is scarce on the Island, growing best on stream banks and along cliff seepages in calcareous areas. *C. conicum* grows on Victoria Street Bridge in Shanklin forming a specialist community, sustained by seepages through the bridge, along with *Leptobarbula berica, Didymodon australasiae* var. *umbrosus, Pohlia melanodon* and *Platyhypnidium riparium*. This bridge is periodically cleared of *C. conicum* for structural analysis and present methods of clearing do not appear to be threatening populations of the rare bryophytes that grow there (Shanklin. GRLG, 2018).

Cratoneuron filicinum A fairly common species of damp, calcareous soils, especially those near seepages and waterfalls. This plant is probably more frequent in SB than records indicate and often grows in small damp pockets beside paths and in car parks (Shanklin Chine. JAN, 2017).

Cryphaea heteromalla This common epiphytic moss has apparently recovered after past declines due to air pollution. *C. heteromalla* is common in SB (America Wood. GRLG, 2018).

Ctenidium molluscum A common species of chalk grassland only present in small quantity in SB due to a lack of this habitat in the zone (Nansen Hill. GRLG, 2017).

Dichrodonium pellucidum A scarce plant of damp gravelly paths and seepages only known from Shanklin Chine in SB with only four other recorded locations on the Island (Shanklin Chine. GRLG, 2018).

Dicranella cerviculata A very rare species on the Island on crumbling acidic soil, not recorded in a number of years. Recorded from Luccombe Chine Ledge in 1982 but periodic landslides change the face of the chine and it has not been seen since (Luccombe Chine. CP, 1982).

Dicranella heteromalla A frequent species in woodland and along shady lanes. It is often found on root plates and may dominate shady banks (America Wood. GRLG, 2018).

Dicranella staphylina An occasional species on the Island, generally found on arable land but likely overlooked elsewhere (Upper Hyde Farm. GRLG, 2018).

Dicranella varia A common species of calcareous soil, *D. varia* is often found with *Didymodon fallax* and *Barbula unguiculata*. Very common in chines and landslips in SB (Luccombe Chine. GRLG, 2018).

Dicranoweisia cirrata (Plate 3F) an occasional species of acidic substrates including roofs, fence posts and trees. Occasional in SB (Shanklin, Big Mead Pond. GRLG, 2018).

Dicranum scoparium (Plate 1A) A frequent species of heathland and woodland, generally growing on acidic soil but sometimes epiphytic (Lake Cemetery. GRLG, 2018).

Didymodon fallax A frequent species of calcareous soil often encountered *en masse* in chines and chalk pits (Red Cliff. GRLG, 2018).

Didymodon insulanus A common species of alkaline soil, often near the coast. *D. insulanus* also grows between paving stones in urban areas (Shanklin. GRLG, 2018).

Didymodon luridus An occasional species that is increasing on man-made substrates, especially concrete at ground level and rarely on walls (Sandown Community Orchard. GRLG, 2017).

Didymodon nicholsonii A previously overlooked species quite similar in appearance to *D. luridus* and *D. rigidulus*. This plant is increasing on damp tarmac. (Shanklin. JAN, 2017).

Didymodon rigidulus A species not frequently recorded on the Island. Plants grow on calcareous substrates such as paving stones and walls. Rare in SB (Cliff Copse. GRLG, 2017).

Didymodon sinuosus A fairly common species of shady rocks and soil. Widespread in SB most frequent from Bonchurch Landslip to Luccombe (Luccombe. GRLG, 2018).

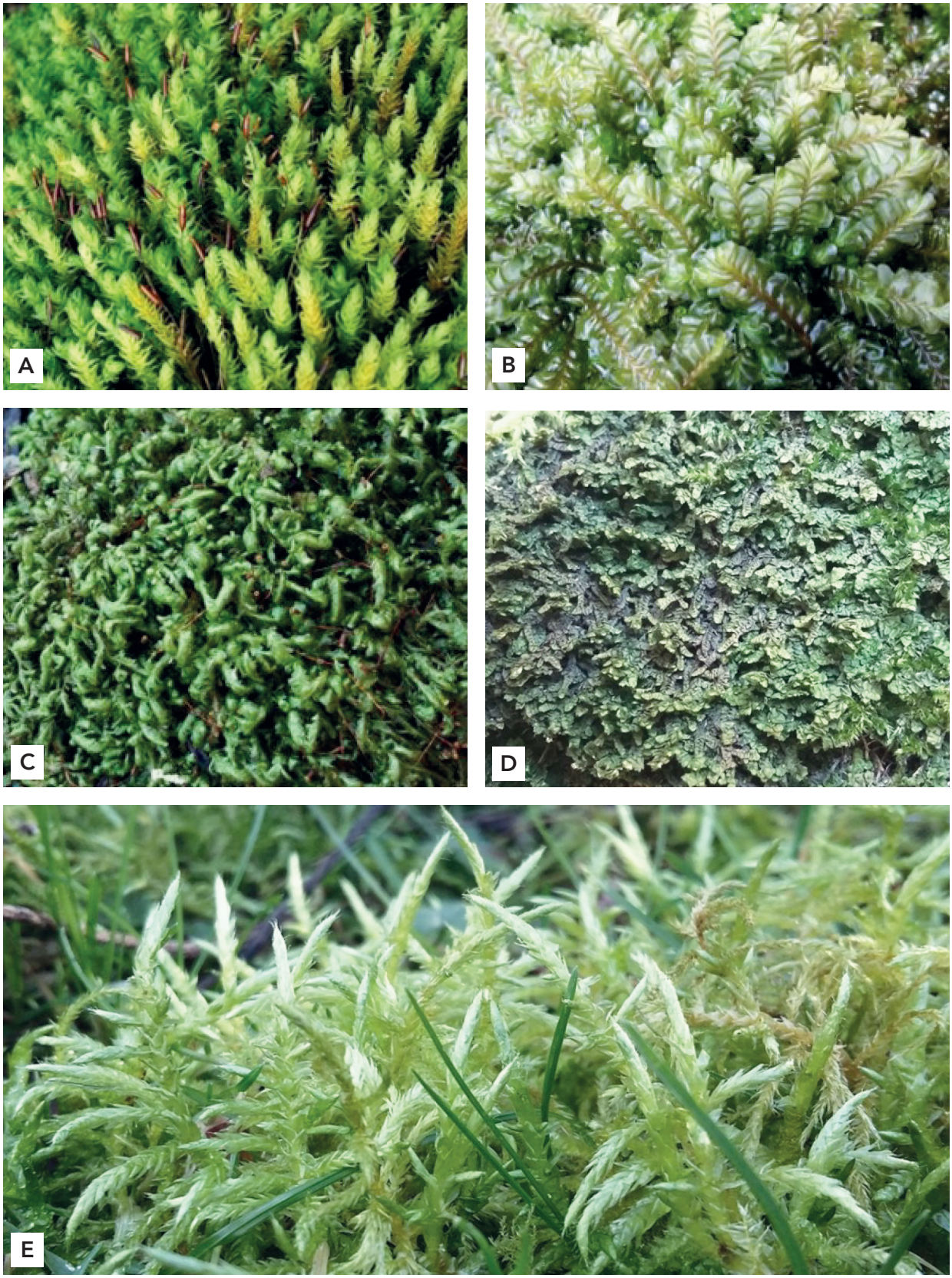

PLATE 2: BRYOPHYTES OF SHANKLIN DOWN WOOD **(A)** *Anomodon viticulosus* in fruit along an ancient highway **(B)** *Plagiochila asplenoides* on acid soil **(C)** *Homalia trichomanoides* on the roots of a field maple **(D)** *Porella platyphylla* on ash **(E)** *Cirriphyllum piliferum* among grasses on the damp woodland floor

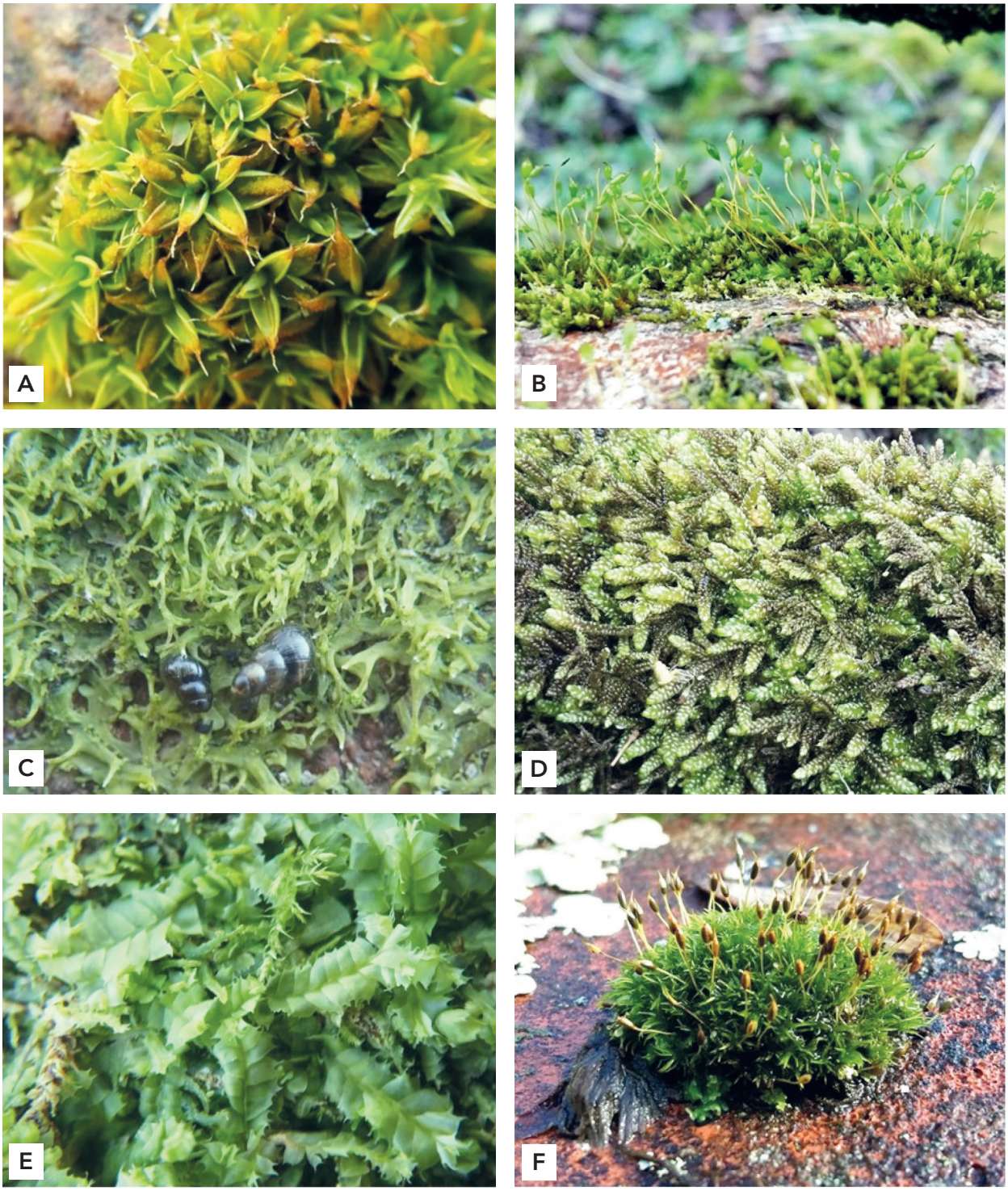

PLATE 3: EPIPHYTIC WOODLAND BRYOPHYTES FROM VARIOUS SITES **(A)** *Syntrichia papillosa* from Sandown **(B)** *Zygodon conoideus* from Shanklin Down Wood **(C)** *Metzgeria violacea* with populations of tiny snails *Clausiliidae* feeding on it **(D)** the very common *Hypnum cupressiforme var. cupressiforme* **(E)** *Lophocolea bidentata* on a mossy branch **(F)** *Dicranoweisia cirrata* on a low roof on St Blasius Church in Shanklin. It also grows on acidic trees and fence posts

Didymodon tophaceus An occasional species of damp stonework and seepages, most commonly encountered on mud at the base of cliffs and along rivulets (Shanklin Chine. JAN, 2017).

Didymodon* (*austriasiae* var.) *umbrosus A very rare species on the Island only known from the old arch bridge at Victoria Street in Shanklin where the plant grows with a specialist community on damp brickwork sustained by seepages (Shanklin. GRLG, 2018).

Didymodon vinealis An occasional species of dry, hard calcareous substrates such as walls and rocks. *D. vinealis* has not been recorded in recent years but is probably overlooked (Shanklin Chine. *BBS*, 2002).

Diplophyllum albicans A species occasionally found on the soil over the roots of fallen trees in wet woodland, and sometimes over damp soil on stream banks. Rare in SB (Luccombe Chine. GRLG, 2018).

Encalypta streptocarpa A rather rare species of calcareous grassland and old walls found mainly on slopes in old chalk quarries on the Island. There is one record from SB (Sandown, St John's Rd. LS, 1977).

Epipterygium tozeri A rather rare species that grows

on bare soil on stream banks and the walls of Shanklin Chine, where the plant has been recorded for many years. Three new sites were discovered in 2018, two of which were stream banks in SB (America Wood. GRLG, 2018).

Eucladium verticillatum A species specific to calcareous seepages along the Undercliff and some chalk pits with seepages. The recorded range of this plant does not extend very far into SB (Cliff Copse. GRLG, 2017).

Eurhynchium striatum A common species of woodland and shady scrub in chalk grassland. Most sites are in the north of the Island (Shanklin Down Wood. GRLG, 2018).

Fissidens adianthoides A rather uncommon species of damp calcareous soil that is most prolific in Shide Chalk Pit near Newport. *F. adianthoides* has only been recorded once from SB, in a wood that is prone to fluctuating water levels (Sandown Community Orchard. GRLG, 2017).

Fissidens bryoides* var. *bryoides A common species of damp, shady soil, especially banks. Common in SB (Shanklin Down Wood. GRLG, 2018).

[*Fissidens crassipes*] a rare species previously recorded from the stream in Luccombe Chine with no other Island records except for one in Ventnor in the same year. *F. crassipes* may have been lost in a landslide at Luccombe Chine and by built development in Ventnor (Luccombe Chine. BBS, 1964).

Fissidens dubius A species of chalk grassland. Not common in SB due to a lack of this habitat (Shanklin Down. RDP, 1987).

Fissidens exilis (Plate 5E) An ephemeral species of shady acidic soil in woodland, *F. exilis* can be found on bare stream banks and on root plates. This plant is rarely recorded on the Island and in SB (America Wood. GRLG, 2018).

Fissidens gracilifolius A species specific to growing on shady rocks. *F. gracilifolius* can be difficult to separate from *F. pusillus* and is probably under-recorded. There is some doubt as to the validity of the taxon (Greatwood Copse. GRLG, 2017).

Fissidens incurvus A fairly common and distinctive species of calcareous soil found most commonly in chines in SB (Luccombe Chine. GRLG, 2018).

Fissidens pusillus Not commonly recorded, but probably occasional on damp rocks and stones. Rare in SB (Cliff Copse. GRLG, 2017).

Fissidens taxifolius* var. *taxifolius A frequent species and the commonest member of the genus. *F. taxifolius* can be found on soil beside paths, in woods, beside streams and in gardens. Common in SB (Sandown, Browns Golf Course Wood. GRLG, 2018).

Fissidens viridulus An overlooked and ignored species that is quite common on the Island in similar habitats to the previous species but prefers damper conditions. Probably widespread in SB (America Wood. GRLG, 2018).

Fossombronia incurva (Plate 4C) A rare liverwort found on bare mud discovered new to the Island from Luccombe Chine in 2017 and then in Martin's Wood Nature Reserve in 2018 (Luccombe Chine. GRLG, 2018).

[*Fossombronia wondraczekii*] A rare liverwort on the Island that grows on bare mud. Recently rediscovered in Parkhurst Forest, not seen since 1908. Extinct in SB (Sandown. 1908, KHH).

Frullania dilatata a frequent epiphyte often forming blackish-red patches on trees. It also sometimes grows on rock outcrops. Frequent in SB (Sandown, Browns Golf Course. GRLG, 2018).

Frullania tamarisci Not rare nationally but rare on the Island, this species is usually confined to ancient woodland and damp rock outcrops (Sandown, Browns Golf Course Wood. GRLG, 2018).

Funaria hygrometrica (Plate 7A) A frequent species, especially on soil in garden pots. Common in SB and increasing as plants are often cultivated unintentionally in pots in horticulture (Sandown, Browns Golf Course Wood. GRLG, 2018).

Grimmia pulvinata A very common species of dry walls, gravestones, and other hard calcareous substrates. It is another species that is increasing on artificial substrates, especially roofs (Sandown. GRLG, 2018).

(*Gymnostomum calcareum*) Possibly erroneous, this species was recorded once from Shanklin Chine in 1980 and has not been seen elsewhere on the Island. According to BBS records up to 2010, this plant has not been recorded on or near the Island (Shanklin Chine. LS, 1980).

Gyroweisia tenuis A rare species of damp rocks and seepages. Most frequently recorded from the southern parts of SB but there are scattered records from elsewhere on the Island (Luccombe Chine. GRLG & JAN, 2017).

Hennediella macrophylla A rare species on the Island that grows on damp, shady soil. *H. macrophylla* was found new to the Island in Shanklin in 2001 by a visiting bryologist. The related coastal *H. heimii* has not been observed in SB (Shanklin, Tower Gardens. TLB, 2001).

Homalia trichomanoides (Plate 2C) An uncommon plant of tree bases in wet acidic woodland. Before 2018, *H. trichomanoides* was only known from the north of the Island but was recently seen near Shanklin (Shanklin Down Wood. GRLG, 2018).

Homalothecium lutescens A common moss of calcareous grassland often found in cemeteries (Lake Cemetery. GRLG, 2018).

Homalothecium sericeum A common moss of walls and rocks, and rarely on base-rich bark. Frequent in cemeteries and churchyards (Lake Cemetery. GRLG, 2018).

Hookeria lucens A rather rare plant of stream banks and mud in woodland. Only known from one location in SB (Luccombe Chine. *BBS*, 2002).

Hygroamblystegium humile A species of wet meadows discovered new to the Island in 2018 during a local BioBlitz (Sandown Meadows. GRLG, 2018).

Hygroamblystegium varium (Plate 8D) A very rare but possibly overlooked plant on the Island. *H. varium* grows on soil and over fallen branches in wet woodland and was only recently rediscovered after a 100-year recording gap (Sandown Community Orchard. GRLG, 2018).

Hypnum andoi A common epiphyte on acidic bark

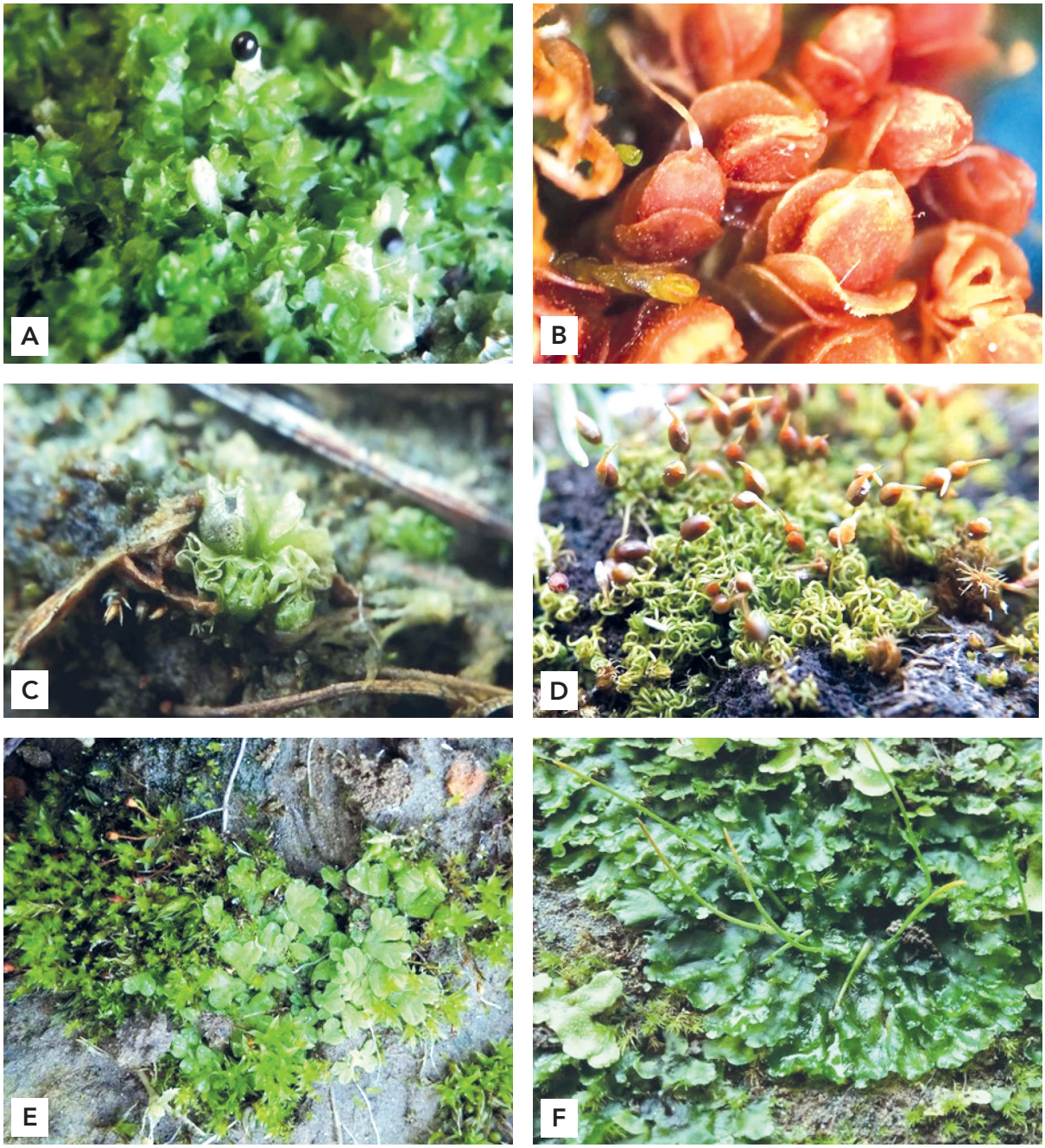

PLATE 4: BRYOPHYTES OF CHINES AND BARE SOIL **(A)** *Lophozia ventricosa* from Red Cliff in Sandown, new to the area in 2018 **(B)** *Solenostoma gracillimum* at Luccombe Chine **(C)** *Fossombronia incurva* new to Luccombe Chine and VC10 in 2017 **(D)** *Weissia brachycarpa var. brachycarpa* at Red Cliff in Sandown **(E)** *Riccia sorocarpa* from Upper Hyde Farm, Shanklin **(F)** *Phaeoceros laevis*, a hornwort from ledges at Shanklin Chine

across the Island (America Wood. GRLG, 2018).

Hypnum cupressiforme* var. *cupressiforme (Plate 3D) A frequent moss on trees and on acid soil in heathland (Sandown. GRLG, 2018).

Hypnum cupressiforme* var. *lacunosum A fairly common moss on gravel tracks and in chalk grassland. There are not many records in SB probably due to under-recording (Luccombe Chine. GRLG & JAN, 2017).

Hypnum cupressiforme* var. *resupinatum A common epiphyte across the Island (America Wood. GRLG, 2018).

Hypnum jutlandicum An occasional species of acidic soils in woodland and on heathland. Rare in SB (Luccombe Down. GRLG, 2018).

Isothecium alopecuroides The rarer of the two *Isothecium* species, this epiphyte is an indicator of good-quality woodland. Rare in SB (Cliff Copse. GRLG, 2017).

Isothecium myosuroides* var. *myosuroides A fairly common epiphytic moss in woodland (Cliff Copse. GRLG, 2017).

Kindbergia praelonga (Plate 7F) A frequent species that can be found growing on trees and shady soil. Frequent in gardens and waste places (Sandown. GRLG, 2018).

Leiocolea turbinata A common species in chalk quarries and rarely on damp, shady calcareous paths. Rather rare in SB (Shanklin Cliffs. GRLG & JAN, 2018).

Lejeunea lamacerina A rare species on the Island

that grows on tree bases and on rocks in damp, shady calcareous areas. It is occasional in Bonchurch Landslip and there is an old record from Luccombe Chine in SB (Luccombe Chine. FR, 1971).

Leptobarbula berica A rare species that grows on damp rocks and stonework. *L. berica* has been recorded from Bonchurch Landslip and Shanklin Chine. A doubtful taxon (Shanklin. GRLG, 2018).

Leptobryum pyriforme (Plate 6C) An occasional species that grows as a pest in flowerpots and rarely on cliff seepages in the natural environment (Shanklin Chine. GRLG, 2018).

Leptodictyum riparium A species most commonly found in willow and alder carr, especially on tree roots and logs prone to being submerged in the winter (Sandown Community Orchard. GRLG, 2019).

Leptodon smithii (Plate 8B) A rare and decreasing southern species that can be found on elder trees and rarely on old stonework. Recently recorded on a gravestone at St Blasius Church in Shanklin. Many populations appear to have been lost on *Sambucus nigra* (St Blasius Church, Shanklin. GRLG, 2018).

Leskea polycarpa A species found in silt around tree roots in the flood zones of rivers and streams. Largely confined to willow and alder carr (Sandown Community Orchard. GRLG, 2019).

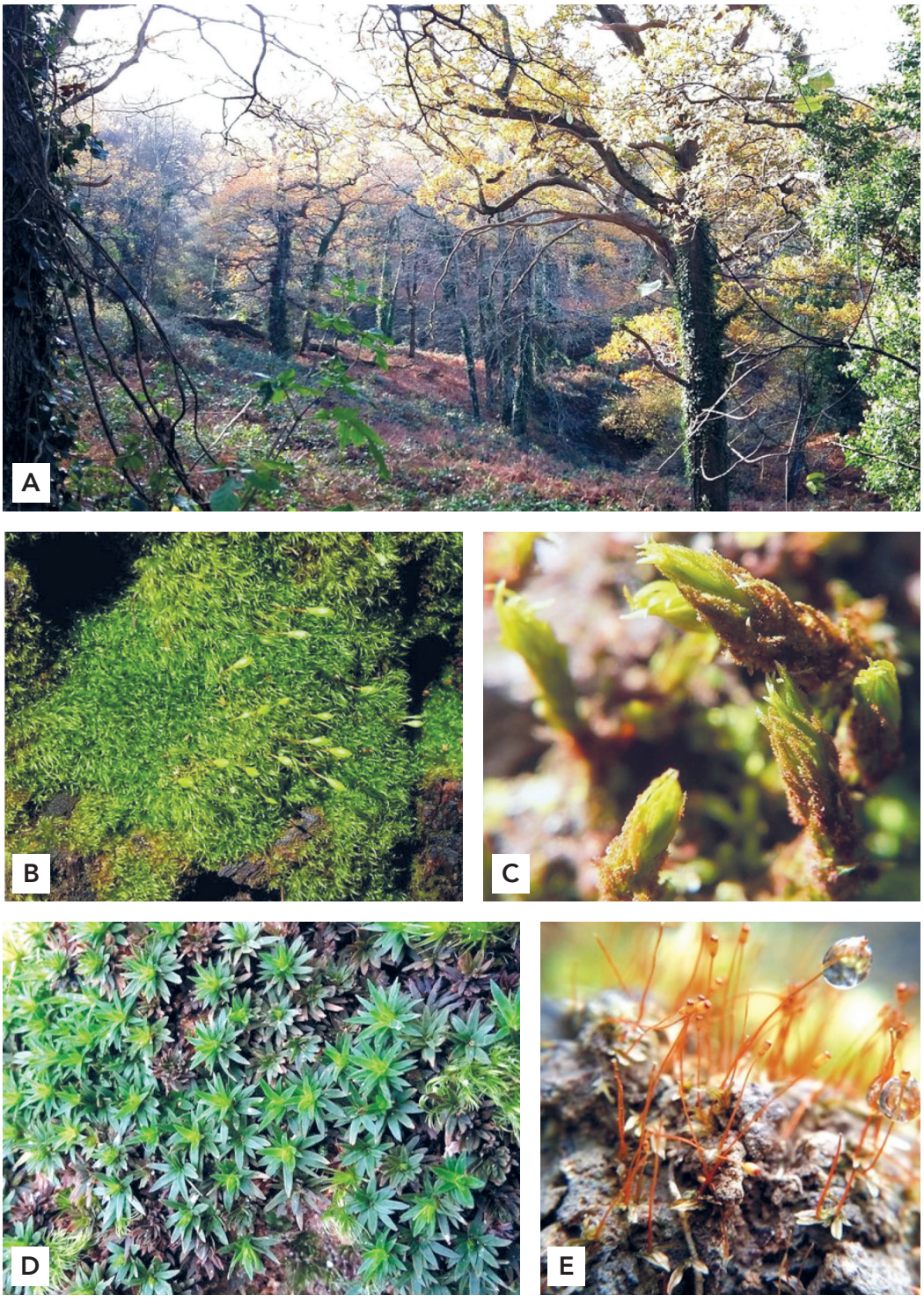

PLATE 5: BRYOPHYTES FROM AMERICA WOOD **(A)** America Wood in November 2017 **(B)** *Orthodontium lineare*, a rather scarce moss of rotting wood **(C)** *Orthotrichum lyellii*, an epiphyte **(D)** *Pogonatum aloides* found new to the site in 2017 **(E)** *Fissidens exilis* found new to the site in 2018a

(*Leucobryum glaucum*) A record of this wet acid woodland and bog species was made in 2006 on the top of Bonchurch Down. This is almost certainly erroneous with the correct identification likely to be *Dicranum scoparium* (Bonchurch Down. National Trust, 2006).

[*Leucodon sciuroides*] A very rare species not seen on the Island since 1982. *L. sciuroides* was recorded during the interwar period but appears to have declined significantly since then (Shanklin Down. HML, 1909).

Lophocolea bidentata (Plate 3E) A very common leafy liverwort found on damp rotting wood and among mosses on shady branches (America Wood. GRLG, 2018).

Lophocolea heterophylla Similar in habit and habitat to the above species. Common (America Wood. GRLG, 2018).

Lophocolea fragrans Grows on damp rocks in humid, shady woodland near the coast. A rare species on the Island only known from damp, shaded boulders in Cliff Copse. (GRLG, 2018).

Lophozia ventricosa (Plate 4A) A rare species on the Island despite being rather common in Britain. *L. ventricosa* grows on disturbed acid soil in landslips on the Island and has only been recorded in three other sites. This plant was found new to SB in 2018 (Red Cliff Landslip. GRLG, 2018).

Lunularia cruciata A common liverwort that grows on soil in woods and gardens. Common and overlooked in SB (Shanklin. JAN, 2017).

Marchantia polymorpha* subsp. *ruderalis A very common weedy species which often grows in pots in greenhouses. *M. polymorpha* was unknown on the Island before 1964 and the present abundance of the plant is attributed to the fact that this plant is a notorious horticultural weed (Shanklin Cliffs. JAN & GRLG, 2017).

Metzgeria consanguinea The rarest member of the three species of *Metzgeria* recorded on the Island. *M. consanguinea* may be mis-identified as the frequent M. violacea unless plants are closely inspected (America Wood. LS, 1986).

Metzgeria furcata A frequent epiphyte. Very common in SB (Sandown. GRLG, 2018).

Metzgeria violacea (Plate 3C) A frequent epiphyte, especially on smooth-barked trees in damp woodland. (America Wood. GRLG, 2018).

Microbryum davallianum A tiny moss that may occasionally be found in chalk grassland and on disturbed soil, ledges, etc. Two SB records but possibly under-recorded (Shanklin Down. CCT, 1979).

Microbryum floerkeanum A rare ephemeral species of chalky soil. Plants only persist for a couple of months in early winter before spending most of the year as spores in the soil. Not recently found in SB (Shanklin Down. CCT, 1979).

Microlejeunea ulicina An occasional epiphyte in larger woods sheltered from the coast. May be overlooked in favour of a similar and abundant relative, *Cololejeunea minutissima*. Rare in SB (America Wood. GRLG, 2017).

Mnium hornum A frequent moss of shady soil, especially beneath trees in parks and woods. Common and widespread in SB (America Wood. GRLG, 2018).

Mnium stellare A rare moss on the Island largely confined to Bonchurch Landslip where it grows on large calcareous boulders. There is only one record from SB (Luccombe, Loafers Glory. LS, 1981).

Nardia scalaris A very rare liverwort on the Island. *N. scalaris* grows on disturbed acid soil and has not been recorded in recent years (Cliff Copse. LS, 1981).

Neckera complanata a calcicole occasionally found growing on trees and rocks (Greatwood Copse. GRLG, 2017).

Neckera crispa A rather rare moss of chalk grassland. Much more rarely, it will grow on trees (Greatwood Copse. LS, 1994).

Neckera pumila A scarce epiphyte on the Island that grows mainly in woods north of the chalk ridge. Very rare in SB (Greatwood Copse. LS, 1994).

Orthodonium lineare (Plate 5B) An invasive moss of acidic soil and rotting wood in woodland. Under-recorded but probably common (America Wood. GRLG, 2018).

Orthotrichum affine A frequent epiphyte that is able to tolerate a wide range of conditions. Common in SB (Sandown. GRLG, 2018).

Orthotrichum diaphanum A common species on calcareous substrates, especially elder trees. Also recorded on man-made structures, e.g. cement posts (Sandown, Browns Golf Course Wood. GRLG, 2018).

Orthotrichum lyellii (Plate 5C) An occasional species found growing on trees in woodland. The curving shoots of well-developed plants, covered in brownish gemmae, are very distinctive. Occasional in SB (America Wood. GRLG, 2018).

Orthotrichum pulchellum An uncommon epiphyte that is only reliably identifiable when fruiting. Only known from one site in SB (Sandown, Browns Golf Course Wood. GRLG, 2018).

Orthotrichum tenellum A rather rare species that grows on more exposed, nutrient-enriched trees. Rare in SB but possibly under-recorded (Luccombe Chine. *BBS*, 2002).

Oxyrrhynchium hians A common weedy species that often grows beside paths and in gardens. Robust forms may be found in chalk grassland (Sandown. GRLG, 2018).

Oxyrrhynchium pumilum An overlooked moss of damp soil and rocks in woodland. Occasional on the Island and in SB (Shanklin. JAN & GRLG, 2017).

Oxyrrhynchium speciosum An easily overlooked species that mainly grows on damp, rotting vegetation and soil in carr on the Island. Rarely recorded (Sandown Community Orchard. GRLG, 2019).

Pellia endiviifolia (Plate 6D) A liverwort of damp soil, rocks and stream banks. *P. endiviifolia* also grows in chines and landslips. Occasional in SB (Shanklin Chine. GRLG, 2017).

Pellia epiphylla Another liverwort similar to the above species. Common, especially on stream banks in woodland (America Wood. GRLG, 2018).

Phaeoceros laevis (Plate 4F) A hornwort, growing on the disturbed soil on the ledges of Shanklin Chine and rare elsewhere (Littlestairs Point. GRLG, 2019).

Phascum cuspidatum An uncommon moss that grows

on damp, compacted soil in open areas such as fields and path margins. Rare in SB (Upper Hyde Farm. GRLG, 2017).

Philonotis marchica (Plate 8C) A nationally scarce moss only known from two Isle of Wight cliff seepages and nowhere else in Britain. This plant is faced with extinction in the UK if the habitats deteriorate (Littlestairs Point. GRLG, 2018).

Physcomitrium pyriforme An occasional moss of bare mud beside streams, ponds, and arable fields. (Littlestairs Point. GRLG, 2019).

Plagiochila asplenioides (Plate 2B) An occasional woodland plant confined to a handful of sites in SB (Shanklin Down. GRLG, 2018).

Plagiochila porelloides Much rarer than the above species and generally found growing on rocks (Shanklin Chine. RDP, 1995).

Plagiomnium rostratum A moss that grows on shady calcareous soil. Rare in SB and confined to calcareous woodland (Cliff Copse. GRLG, 2017).

Plagiomnium undulatum A woodland moss common across the Island and in SB (Alverstone Mead Nature Reserve. GRLG, 2018).

Plagiothecium curvifolium A rare moss of acidic

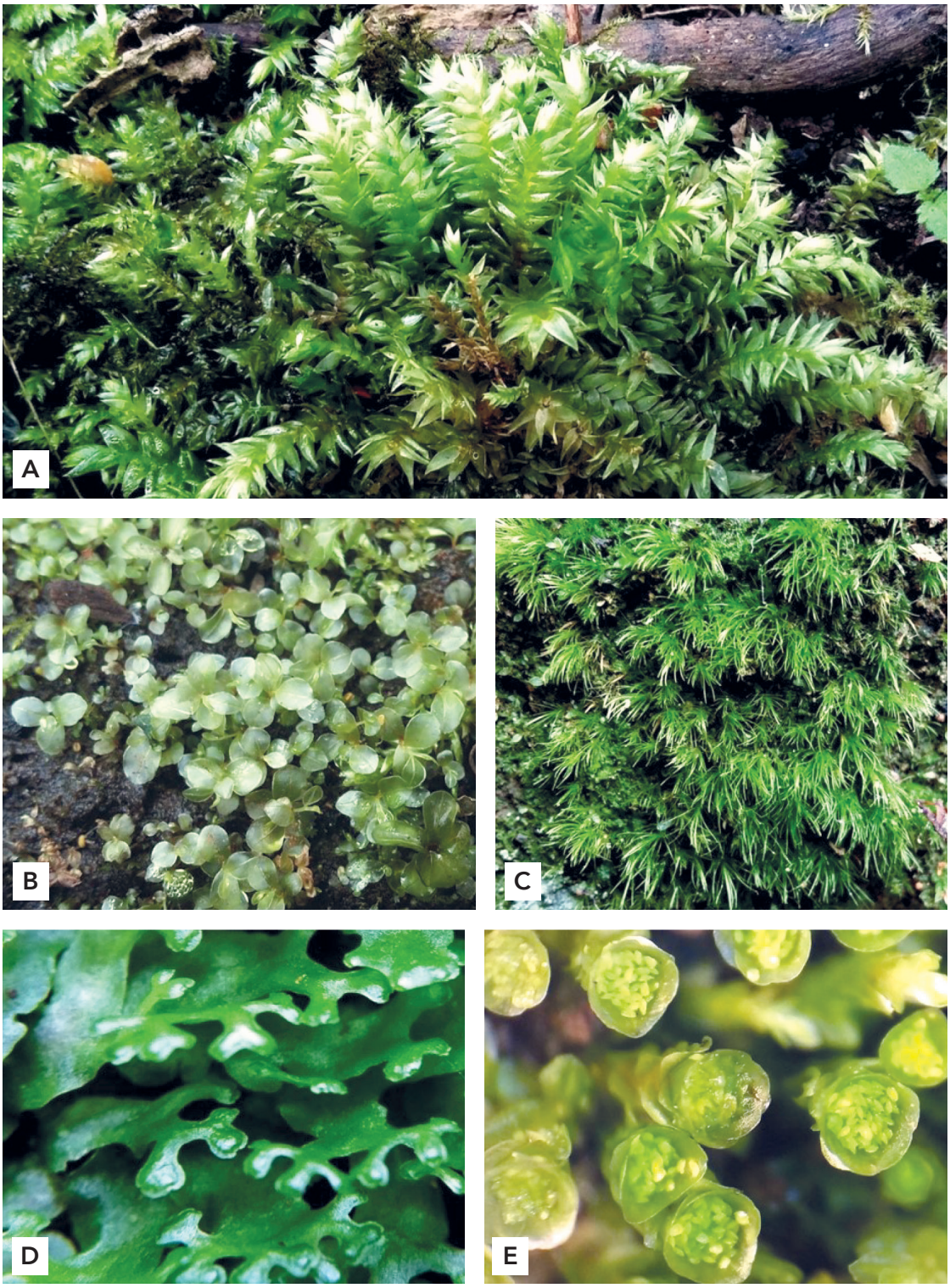

PLATE 6: BRYOPHYTES OF WET WOODLAND **(A)** *Plagiothecium nemorale* from Sandown Community Orchard **(B)** *Rhizomnium punctatum* from Sandown Communty Orchard **(C)** *Leptobryum pyriforme* from ledges at Cliff Copse **(D)** *Pellia endiviifolia* from Shanklin Chine **(E)** *Tetraphis pellucida* – photograph from Parkhurst Forest

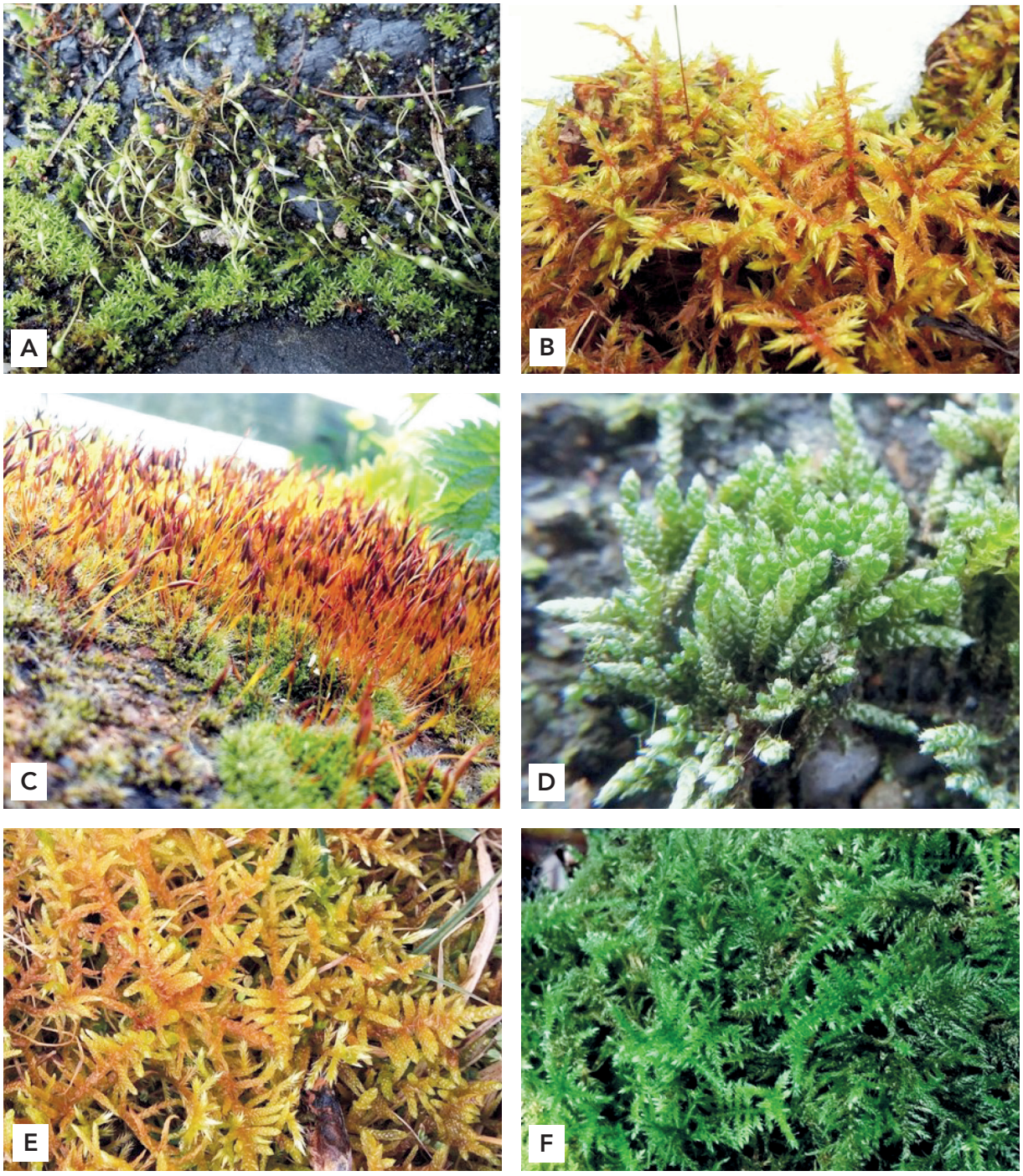

PLATE 7: COMMON MOSSES IN URBAN SITUATIONS AND IN GARDENS **(A)** *Funaria hygrometrica,* often in flower pots, seen here with Barbula convoluta **(B)** *Calliergonella cuspidata,* a pest on lawns **(C)** *Tortula muralis,* a frequent moss of walls and concrete **(D)** *Bryum argenteum* found on pavement **(E)** *Pseudoscleropodium purum* in grassland **(F)** *Kindbergia praelonga* often grows as a weed in shady garden corners and on tree bases

woodland, generally growing on soil or rotting wood. Only recorded once in SB (America Wood. LS, 1979).

Plagiothecium denticulatum A locally-distributed moss of rotting vegetation and damp, acidic soil in woodland (Sandown Community Orchard. LS, 1991).

Plagiothecium latebricola A rare species of shady acidic soil sometimes found in animal burrows and at the bases of fern or *Molinia* hummocks in carr. Rare in SB (America Wood. LS, 1990).

Plagiothecium nemorale (Plate 6A) A fairly common species in woodland on soil banks and on rotting vegetation (America Wood. GRLG, 2018).

Plagiothecium succulentum Resembles the above species but appears to be rarer on the Island. This species grows in similar situations to *P. nemorale*, seeming to favour rotting wood (Cliff Copse. GRLG, 2017).

Plasteurhynchium striatulum (Plate 8A) A very rare moss of calcareous rocks and tree bases. Recently recorded from Cliff Copse, a new site for this southern rarity. Unfortunately, epiphytic colonies of *P. striatulum* are threatened with local extinction as a result of ash dieback (Cliff Copse. GRLG, 2017).

Platyhypnidium riparioides A semi-aquatic moss of stream banks, seepages, and rivulets. *P. riparioides* is restricted to a rather small number of suitable habitats in SB (Shanklin. GRLG, 2018).

Pleuridium acuminatum (Plate 1C) A rare species

on the Island found on acid soil in woodland and heathland. Very rare in SB (Luccombe Chine. RH, 2005).

Pleuridium subulatum Rarer than the above species and grows in similar conditions. *P. subulatum* is only known from a hotel garden in Shanklin (Shanklin. LS, 1983).

Pogonatum aloides (Plate 5D) a scarce species on the Island and in SB. *P. aloides* grows on acidic soil in Luccombe Chine and occasionally colonises the root plates of fallen trees (Luccombe Chine. GRLG, 2018).

Pohlia annotina A very rare species on the Island that grows on acidic soil in damp conditions and lacks recent records (Shanklin Chine RP, 1995).

Pohlia melanodon An occasional species on damp, base-rich rocks and soil. *P. melanodon* grows with the specialist community supported by seepages on a bridge beneath Victoria Street in Shanklin (Shanklin. GRLG, 2018).

Pohlia nutans A rare acidophilic species on the Island, only easily noticeable when fruiting in the spring. This species has not been refound in SB in recent years (America Wood. LS, 1986).

Pohlia wahlenbergii An unpredictable species of damp soil that is rare on the Isle of Wight and in SB (Shanklin, Littlestairs Point. GRLG, 2018).

Polytrichastrum formosum A frequent species of woodland and heaths across the Isle of Wight and SB (America Wood. GRLG, 2018).

[*Polytrichum commune*] An acidophilic species of boggy areas, probably extinct on the Isle of Wight due to habitat deterioration (Sandown Golf Course. PL, 1943).

Polytrichum juniperinum (Plate 1D) a species of open, well-drained acidic soil that is rare in SB due to a lack of suitable habitat (Luccombe Down. GRLG, 2018).

Polytrichum piliferum Similar in appearance to *P. juniperinum* but with stricter habitat preferences. Rare on the Island (Shanklin, Cliff Farm. LS, 1981).

[*Porella aboris-vitae*] Recently refound on the Isle of Wight after the species was thought to be locally extinct. *P. aboris-vitae* has been recorded in the past on ledges at Luccombe Chine and Bonchuch Landslip (Luccombe Chine. AB, 1864).

Porella platyphylla (Plate 2D) Locally common in only a handful of sites across the Isle of Wight, this calcicole is very rare in SB (Shanklin Down Wood. GRLG, 2018).

Pseudephemerum nitidum A tiny ephemeral moss of bare acidic soil in heaths and woods. Occasional in SB woodland (America Wood. GRLG, 2018).

Pseudoscleropodium purum (Plate 7E) A frequent grassland and garden species across the Isle of Wight (Sandown Cliffs. GRLG, 2018).

Pseudotaxiphyllum elegans A moss of sheltered acidic soil and root plates in woodland. Rare in SB (America Wood. GRLG, 2018).

Pterygoneurum ovatum (Plate 8E) A very rare moss that grows on highly disturbed, calcareous soil. This species was previously common on mud-capped walls before the 20th century. *P. ovatum* was found on Culver Cliff in 2018 after a 100-year recording gap (Culver Cliff. GRLG, 2018).

Radula complanata A very common and increasing woodland epiphyte with new records from almost every surveyed wood (Luccombe. GRLG, 2018).

Reboulia hemisphaerica A very rare liverwort of calcareous soil in shady, damp places. This plant may be locally extinct but requires a targeted survey of its known site in Shanklin Chine (Shanklin Chine. LS, 1979).

Rhizomnium punctatum (Plate 6B) A moss of wet woodland that grows on rotting wood and damp soil (America Wood. GRLG, 2017).

Rhynchostegiella curviseta Grows on compact soil, or rock, splashed by waterfalls. A rare moss on the Island known from a small number of sites. One site in SB (Shanklin Chine. LS, 1990).

Rhynchostegiella tenella A fairly common moss that grows on base-rich rocks and walls in shade (Greatwood Copse. GRLG, 2017).

Rhynchostegium confertum A frequent moss found on shady soil, rocks, and as an epiphyte. Common in SB (Sandown. GRLG, 2018).

Rhynchostegium megapolitanum A rare moss that grows on calcareous soil, often on cliffs. *R. megapolitanum* is similar to *Brachythecium rutabulum* and is probably overlooked (Culver Cliff. GRLG, 2019).

Rhynchostegium murale A scarce moss of damp stone walls and rocks. Very rare in SB but possibly overlooked. (Shanklin. JAN, 2017)

Rhytidiadelphus squarrosus A frequent moss in grassy turf, often growing with *Pseudoscleropodium purum*. Very common in SB, especially in churchyards and gardens (Sandown. GRLG, 2018).

Rhytidiadelphus triquetrus A locally-distributed moss on the Isle of Wight found in chalk grassland. Rare in SB (Nansen Hill. GRLG, 2017).

Riccardia chamedryfolia A liverwort characteristic of the Island's chines and landslips that grows on damp ground and over rocks associated with seepages. Rare in SB (Luccombe Chine. GRLG, 2018).

Riccia fluitans A rare aquatic moss that grows in ponds and in slow-flowing streams. *R. fluitans* was unexpectedly fished-up by children at Sandown Community Orchard during a pond-dipping activity day. The only other SB site is America Wood, where the plant was last seen in 1986 (Sandown Community Orchard. GRLG, 2017).

Riccia glauca An occasional species of arable land and compact acid soil. Not common on the Island or in SB (Upper Hyde Farm. GRLG, 2019).

Riccia sorocarpa (Plate 4E) occurs in the same habitats as the above species (Upper Hyde Farm. LS, 1998).

Scleropodium cespitans A coastal species similar in appearance to *Cirriphyllum crassinervium* and growing in similar conditions. Spreading on damp pavements (Shanklin. JAN, 2017).

Scorpiurium circinatum A fairly common moss on the Island. *S. circinatum* may be found on calcareous rocks, walls and tree roots in SB, as well as on some pavements (Shanklin, Rylstone Gardens. GRLG, 2017).

Seligeria calycina A locally scarce species of damp, hard calcareous rocks in chalk pits. Very rare in SB with one old record at the coast. Possibly overlooked (Culver Cliff. *BBS*, 1964).

Solenostoma gracillimum (Plate 4B) A rare acidophilic

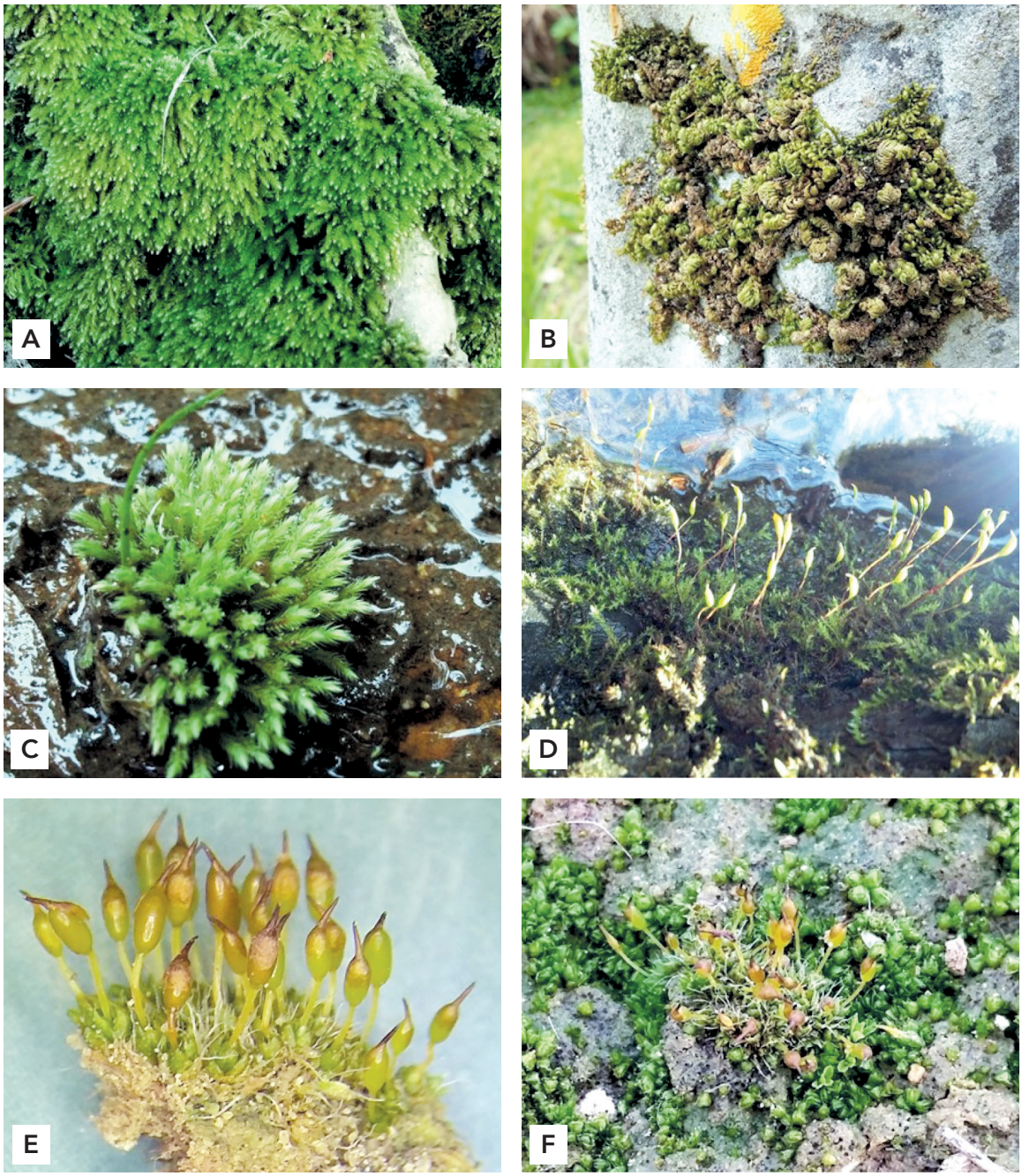

PLATE 8: RARE BRYOPHYTES PRESENT IN THE SANDOWN BAY SURVEY AREA **(A)** *Plasteurhynchium striatulum* growing on old roots Cliff Copse **(B)** *Leptodon smithii*, a declining species on a gravestone at St Blasius Church in Shanklin **(C)** *Philonotis marchica*, a moss only known from cliffs between Shanklin and Lake and nowhere else in the UK **(D)** *Hygroamblystegium varium* found in Sandown Community Orchard, new to the Island in 2017 **(E)** *Pterygoneurum ovatum*, found on Culver Cliff after a 100 year gap **(F)** *P. ovatum* with the threatened *Acaulon triquetrum* behind it; on Culver Cliff

liverwort on the Island and in SB, most characteristic of chines and landslips (Luccombe Chine. GRLG, 2018).

[*Sphagnum denticulatum*] Last seen in a declining wood in Lake Common. Rare on the Island and presumed to be extinct in SB (Sandown Community Orchard. LS, 1991).

[*Sphagnum fallax*] Presumed to be extinct in SB (Sandown Golf Course. PL, 1943).

Sphagnum fimbriatum Local and indicative of acidic conditions, usually in boggy woodland. Plants were encountered in 1984 on the cliffs between Sandown and Shanklin and may still be present there, but the site is difficult to access and has not been recorded from since (Lake Cliffs. CP, 1984).

[*Sphagnum palustre*] Extinct in SB, a former Lake Common species recently discovered in willow carr near Alverstone just outside of the survey area (Sandown Golf Course. PL, 1943).

[*Sphagnum papillosum*] Extinct in SB and very rare on the Island (Lake Common. PL, 1942).

Sphagnum squarrosum Rare on the Island with only one site in SB, where it appears to be the last surviving *Sphagnum* in Lake Common (Sandown Community Orchard. GRLG, 2018).

[*Sphagnum subnitens* var. *subnitens*] Possibly extinct in SB; previously occurring in Lake Common (Lake Common. PL, 1942).

[*Straminiergon stramineum*] A very rare marshland species, possibly extinct on the Island today due to the deterioration of Island bogs (Sandown Golf Course. PL, 1943).

Syntrichia laevipila A rather scarce epiphyte on base-

rich bark, mainly elder, found scattered across the Island (Sandown, Browns Golf Course Wood. GRLG, 2018).

Syntrichia latifolia An occasional species that grows on damp, calcareous substrates and is increasing on tarmac. Probably occasional in built-up areas but currently only recorded once from SB (Shanklin. 2017, GRLG & JAN).

Syntrichia montana A frequent species on the Island on a variety of calcareous substrates including roofs, dry stone walls and cracks between paving stones. Common in SB (Sandown, Browns Golf Course. GRLG, 2018).

Syntrichia papillosa (Plate 3A) A rather rare but easily overlooked species that mainly grows on trees but can also grow on damp stonework. *S. papillosa* is often found on nutrient-enriched trees, particularly in urban areas, but has not been recorded much in SB due to a lack of recoding in urban areas (Sandown. GRLG, 2018).

Syntrichia ruralis A species that often grows on roofs and rocks in exposed areas. Common in SB (Sandown. GRLG, 2018).

Syntrichia ruraliformis Occasional on sandy soil, often in coastal situations. Not common on the Island and not recorded in SB for over a century but this plant is probably overlooked in favour of *S. ruralis* (Sandown. HML, 1907).

Taxiphyllum wissgrillii A very rare species on the Island that grows on heavily shaded calcareous rock (Cliff Copse. HM, 1987).

Tetraphis pellucida (Plate 6E) A rare species on the Isle of Wight that grows on acidic soil and rotting wood in woodlands. Very rare in SB (Alverstone Mead Nature Reserve. GRLG, 2018).

Thamnobryum alopecurum A fairly common calcicole on the Isle of Wight. This species is occasional in SB, mostly in woodland (Shanklin Down Wood. GRLG, 2018).

Thuidium tamariscinum A common moss in acidic woodland patches. As this habitat is scarce in SB, there are no recent records of this species in the survey area (Shanklin Chine. RS, 1990).

Tortula marginata A rather rare but possibly overlooked moss of shady rocks and walls in damp places. Robust plants grow on ledges in Cliff Copse (Cliff Copse. GRLG, 2017).

Tortula muralis (Plate 7C) A frequent plant on man-made substrates such as walls and roofs, "Wall Screw-Moss" is a familiar sight in urban environments and gardens. *T. muralis* may also be present on boulders in natural habitats. Abundant in SB (Sandown. GRLG, 2018).

Tortula subulata A very rare moss of well-drained calcareous soil that appears to have undergone a silent decline on the Isle of Wight. There are no modern records (Greatwood Copse. LS, 1990).

Tortula truncata A fairly common ephemeral moss of disturbed soil, sometimes in the corners of flower beds and on arable land. Locally common in SB (Upper Hyde Farm. GRLG, 2018).

Tortula viridifolia A locally rare ephemeral of disturbed soil on coastal cliffs. Found new to SB in December 2018 (Culver Cliff. GRLG – Det. TLB, 2018).

Trichostomum brachydontium A calcicole encountered mostly in chalk grassland. Probably under-recorded in SB (Shanklin Chine. JAN, 2017).

Ulota bruchii A fairly common epiphyte on a variety of trees. Probably common in SB (Shanklin Down. GRLG, 2018).

Ulota crispa An epiphyte recently split into three similar species, all of which have been identified and confirmed on the Island. *U. intermedia* is more of an upland species but may occur in some of the boggy woods in SB on willow. Confirmed *U. intermedia* is known from a site adjacent to the study area: on some willows in Alverstone. (America Wood. GRLG, 2018).

Ulota crispula Recently separated from the above. An epiphyte that requires microscopy for accurate identification (Cliff Copse. GRLG, 2018).

Ulota phyllantha (Plate1 B) A common epiphyte that may be found on a variety of trees. Willow often supports large, dense colonies. Occasional in SB (Cliff Copse. GRLG, 2017).

Weissia brachycarpa* var. *brachycarpa (Plate 4D) A species mostly encountered on damp soil ledges. Only known from Red Cliff in SB (Red Cliff. GRLG, 2018).

Weissia angustifolia May be locally common in suitable habitats such as dry chalk grassland where plants may be found growing in shaded crevices. Rare in SB and only currently known from Culver Cliff (Culver Cliff. GRLG, 2019).

Zygodon conoideus (Plate 3B) A common epiphyte in woodland (Luccombe Chine. GRLG, 2018).

Zygodon rupestris A rare epiphyte of ancient woodland known mainly from Briddlesford Copse with one record in SB (Shanklin, Upper Hyde Lane. LS, 1998).

Zygodon viridissimus A common epiphyte that also grows on stonework (Greatwood Copse. GRLG, 2017).

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References

Atherton, I. D. M., Bosanquet, S. D. S. & Llawley, M,. 2010. *Mosses and Liverworts of Britain and Ireland – a field guide*. British Bryological Society. **Frequently consulted as a guide to the identification of many species in the field.**

Caparrós, Rut, Lara, Francisco, Draper, Isabel, Mazimpaka, Vicente, & Garilleti, Ricardo. 2016. Integrative taxonomy sheds light on an old problem: The Ulota crispa complex (Orthotrichaceae, Musci). *Botanical Journal of The Linnean Society* **180**(4):427-451. **This paper outlines the morphological features of the *Ulota crispa* complex, which contains three species split from an initially cryptic taxon.**

McKinney, L. V, Nielsen, L. R., Hansen, J. K., Kjær E. D. 2011. Presence of natural genetic resistance in

Fraxinus excelsior (Oleraceae) to Chalara fraxinea (Ascomycota): an emerging infectious disease Heredity **106**(5):788-97. **One of the earliest papers that demonstrated the genetic basis of natural resistance in ash trees – but based on Danish populations.**

Paton, J. A. 1999. *The Liverwort Flora of the British Isles*. Colchester: Harley Books (B.H. & A. Harley Ltd). **The standard text for liverwort identification in the British Isles.**

Pope C. R., Snow, L. & Allen, D. 2003. *The Isle of Wight Flora*. Wimborne: Dovecote Press. **An invaluable guide to the flora and landscape of the Isle of Wight.**

Porley, R. 2008. *Arable Bryophytes, A field guide to the mosses, liverworts and hornworts of cultivated land in Britain and Ireland*. Old Basing: WILDGuides. **A useful identification guide to some tricky bryophyte groups.**

Preston, C. D. & Hill, M. O. 2019. *Cambridgeshire's Mosses and Liverworts – A Dynamic Flora*. Berkshire: Pisces Publications. **A new and very detailed bryophyte flora of Cambridgeshire that outlines interesting patterns in bryophyte distributions.**

Smith, A. J. E. 2004. *The Moss Flora of Britain and Ireland, second edition*. Cambridge: Cambridge University Press. **The standard text for moss identification in the British Isles.**

Smith, G. M. 1938. *Cryptogamic Botany, Vol II: Bryophytes and Pteridophytes*. New York and London: Graw-Hill Book Company, Inc. **This dated book covers interesting and relevant aspects of bryophyte life cycles.**

Watson, E. V. 1955. *British Mosses and Liverworts*. Cambridge: Cambridge University Press. **The standard, but now very dated, introduction to bryophyte identification in the UK.**

Watson, E. V. 1967. *The Structure and Life of Bryophytes, Second Edition*. London: Hutchinson and Co Publishers Ltd. **An in-depth morphological analysis of bryophyte biology. Dated but useful.**

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Field Cow-Wheat at St. Lawrence Bank, Isle of Wight

Tony Stoneley

Abstract *The fortunes of Field Cow-wheat (Melampyrum arvense* L.*) at St Lawrence Bank have been monitored in some detail over a number of years. Plants and seeded spikes were counted at regular intervals throughout the season in a mapped grid of metre squares. The progress of this population is summarised, and other observations included, together with some discussion of current status and conservation strategies.*

Introduction

Field Cow-wheat (*Melampyrum arvense* L.*) is* an attractive, striking, and unmistakeable plant (Plate 1). It is nationally very rare, and the Isle of Wight has the good fortune to be the home of about half (three to be precise) of the known populations. One such is close by St Lawrence Shute, on a site known as St Lawrence Bank, which is owned and managed by the Hampshire and Isle of Wight Wildlife Trust (HIWWT). The other two Island populations are at High Hat and a garden on the western side of Ventnor; elsewhere it is found at Brogborough Lake, Bedfordshire, a private garden in Wootton Bassett, Wiltshire and has been introduced at sites in south Hampshire, Buckinghamshire and North Yorkshire. The St Lawrence population is now doing well and has an assured future, but it was not always so. Field cow-wheat was rescued from extinction at this site by the Isle of Wight Natural History & Archaeological Society (IWNHAS) with help from others after 1978, when only three plants were found there (Colin Pope pers. comm.). Prior to that, the only conservation measure had been a small protective enclosure, erected by IWNHAS in 1964 with the land owner's consent on what was then grazed farmland, and the site had subsequently become overwhelmed by scrub. It should be understood that at that time the sort of site management that is now commonplace was only just becoming accepted as necessary, a complete reversal of older dogma that sites of rarities should be left severely alone. However, drastic scrub clearance at this last possible moment, 1978, together with ongoing work to keep the site clear, did prove sufficient to allow recovery of the cow-wheat. Eventually IWNHAS fell victim to its own success, the ongoing effort becoming too great to sustain, and HIWWT took over the maintenance around 2010, which fitted well with the Trust's acquisition of the adjoining field at around that time.

PLATE 1: Field cow-wheat – a medium sized example

Monitoring of the population has been carried out with growing seriousness over some 11 years, up to the end of 2019. Initially this was simply an overall count, but this bred interesting questions and the project developed over time in the search for answers. In recent years, the population was mapped in metre squares monthly during the season. There is thus both quantitative data and also qualitative experience to report.

The present-day rarity of the plant is extraordinary, it is having been a major agricultural problem in the 19th century. The history of its decline from pest to rarity on the Island is recorded in some detail by Colin Pope in the Isle of Wight Flora (Pope *et al* 2003). The decline cries out for explanation, but while many have been advanced, none is entirely convincing on its own. The limited successes of diverse plausible conservation strategies are themselves an indication that the problem is not fully understood, though some things are becoming clearer. A major objective of the present study was to shed some light on this issue. The study, be it understood, was purely observational, no experimentation being undertaken specifically for it, though observation of response to management activities is obviously inherent. The very rarity of the plant is in any case an impediment to experiment. On the one hand statutory protection means that very little can be done without statutory licence, let alone landowner consent, while on the other hand any change of management practice carries risk of failure and loss of what we do still have. Passive observation does at least avoid those difficulties.

The bank itself is curious, the topography being suspiciously out of line with the surrounds and geologically rather unlikely. It is a long finger of raised ground with a lengthwise horizontal top, running parallel to the adjacent deep cleft forming the Shute, but separated from the Shute by a strip of level ground taken up by a path some 2m wide (Plate 2 and Figures 1 and 2). Furthermore, when marker pegs are being driven into it, it seems to show the character of rubble rather than either soil or bedrock. One could reasonably speculate that the bank is in fact the spoil heap from the widening and deepening of the Shute in 1845

PLATE 2: The whole site seen from the cliff-top

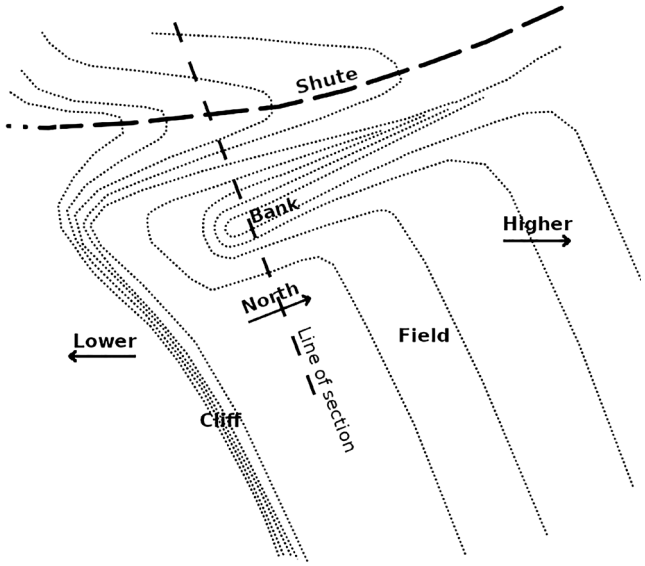

FIGURE 1: Indicative contours

FIGURE 2: Cross section through St. Lawrence Shute and the Bank

(Minutes of Isle of Wight Highways Commission, 1845) to ease the passage of carts and carriages. The volume is commensurate, and the shape would naturally arise from repeatedly dumping the many cart loads of spoil, building back from the cliff edge and minimising loss of field area whilst keeping the cliff-top footpath open.

The survival of the plant on the bank alone is perhaps partly explained by the impossibility of cultivating the approximately 45° slope and partly by the common practice in the 19th century of extracting the "purple weed" manually from the field and dumping it at the edges. There is no relic survival in the field itself, which was subject to modern cultivation for many years in the late 20th century, though there are current attempts to re-establish it there as discussed below.

The east face of the bank itself, together with a narrow strip along the floor, is marked off by a wire fence and is a designated Site of Special Scientific Interest (SSSI). The adjoining field, though now owned and managed with a view to conservation and enhancement of the population, is not thus designated, though of course any field cow-wheat in it is *per se* protected. The west side of the bank, down to the Shute is wooded, as is the whole bank beyond the SSSI boundary to the north. There are also trees and shrubs on the south side of the path along the cliff edge. To the east there is just the open field, separated off only by the wire fence, allowing good morning sunshine on the bank. Conversely, the evening sunshine is somewhat limited by the trees to the west and the slope of the bank itself.

Mapping the population

It is worth noting here that counts of plant numbers have been made previously. Wilson (1993 and 1996) quotes estimates of 1900 in 1993 and 4000 in 1996. These are startlingly at odds with the low of 67 in 2009 when first recorded by this author, and the disparity currently lacks any explanation beyond speculation.

On the bank the population density was mapped in metre squares from 2014 to 2019. The project, be it understood, has evolved over this period and in any case grew out of simple counting of the total population over the previous 5 years. The investigator has therefore accumulated some 10 years of

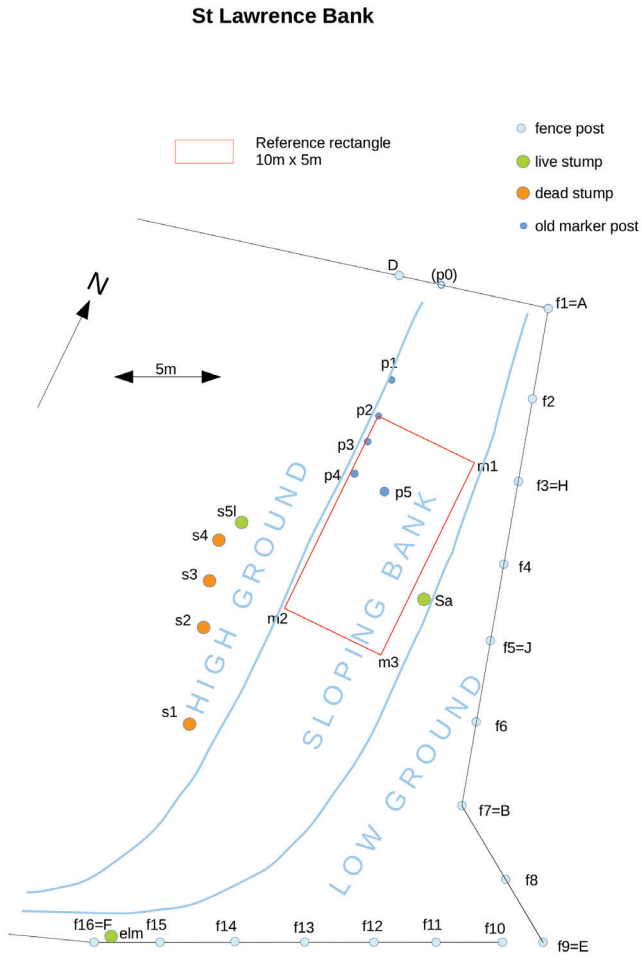

FIGURE 3: Map of the site

qualitative knowledge of the site, which is also taken into account in interpreting the quantitative mapping results.

The mapping is founded on a survey of the site made with a 50m tape (Figure 3), and a reference rectangle marked on the bank with four permanent wooden pegs, two of which happened to be suitably placed already and are relics of the 1964 enclosure. The reference rectangle stretches 10m along the east side of the bank and 5m up and down the slope, these dimensions being as measured on the ground surface rather than plan view, an arguably significant difference on a 45° slope but not really mattering so long as the mapping is consistent. The rectangle covers the major portion of the population as it stood at the start of the project, though there has been significant spread since then. In any case, the mapping grid extends as far as necessary beyond the bounds of the reference rectangle, and nowadays extends 3m above it, across the top of the bank, and 4m below, along the floor and under the wire fence. It also extends 5m beyond the north end, essentially up to the boundary fence. Along the bank to the south the grid extends as far as necessary, but in fact the population peters out after about 2 metres. Plants outside this grid are simply aggregated into the site's grand totals.

The labelling of the squares is perhaps not ideal but became well established and not warranting the upheaval of revision. The north-west corner of the reference rectangle is taken as the origin, and cartesian style coordinates run south and east from there. Thus, for example, (0,0) is the square in the extreme north-west of the reference rectangle, and (9,4) the square in the extreme south-east corner.

During counting the metre squares were marked temporarily with the help of four cords knotted at metre intervals. Two of these were pegged along the top and bottom of the reference rectangle with knots aligned on the permanent pegs and extending as far as required either way beyond. The other two cords were pegged adjacent to each other one metre apart running up and down the slope with knots aligned with those on the longitudinal cords. The one metre wide strip thus marked up and down the bank was then counted, using the knots on either side to identify the tops and bottoms of the squares. When the strip was completely counted, one cord was taken in leapfrog over the other to mark the next strip. Plants, spikes, and seed heads were counted in each square at the same time, saving multiple movements of the cords and damage from multiple passes up the strip. The presence and density of obviously competing species in each square was assessed visually. A reasonably

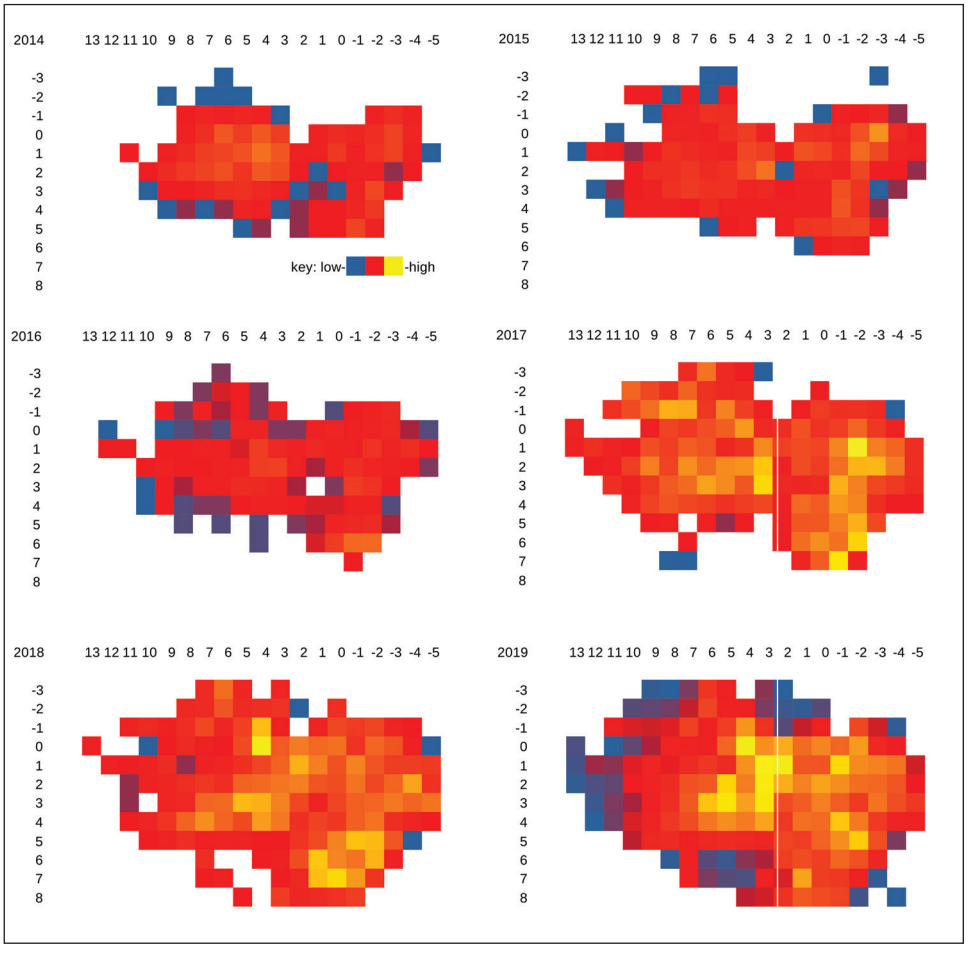

FIGURE 4: Maps to show peak counts of plots 2014 - 2019

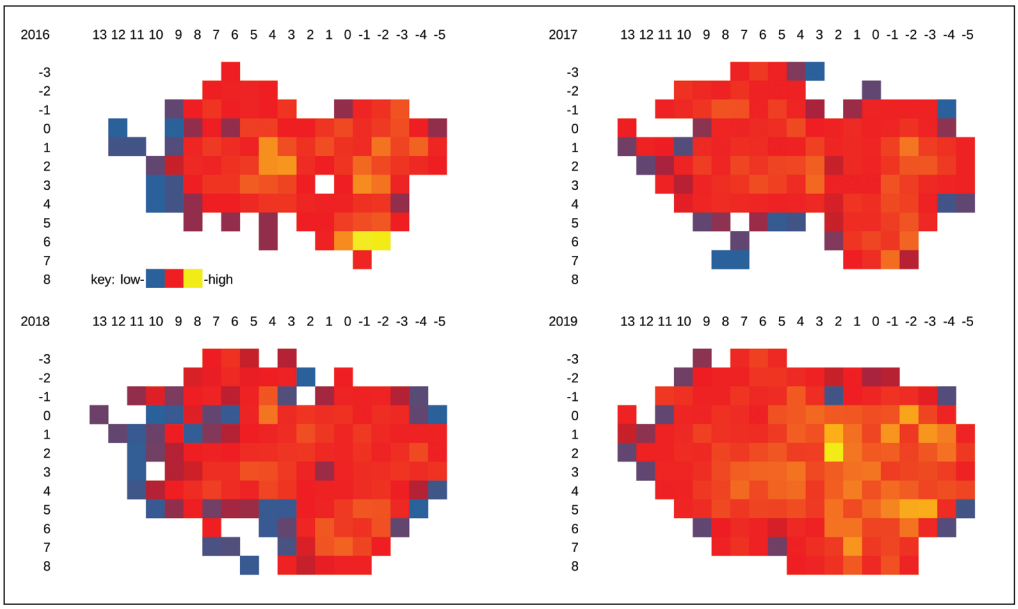

FIGURE 5: Maps to show peak counts of seed heads 2016 - 2019

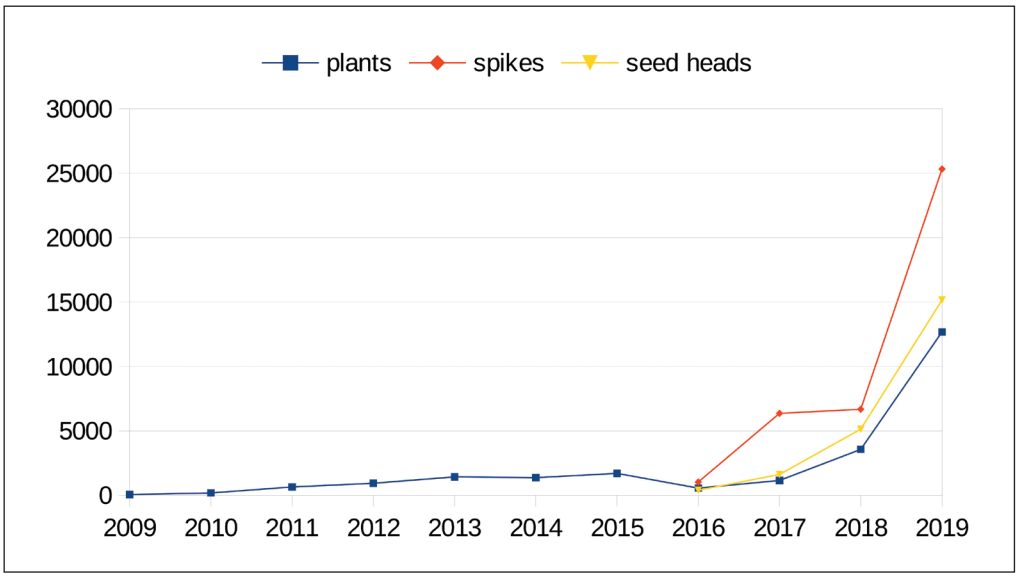

FIGURE 6: Annual maximum counts of plants, spikes and seed heads

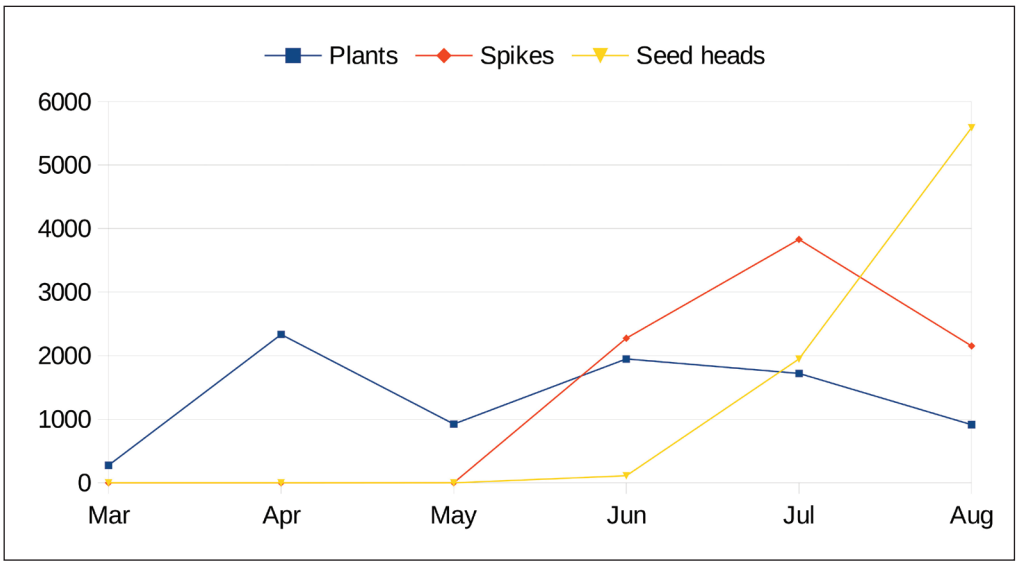

FIGURE 7: Monthly average counts of plants, flower spikes and seed heads

consistent mapping over the months and years was thus made.

Plants, purple spikes, and seed heads were counted in each metre square regularly through the season. In earlier years only plants were counted, but it was then realised that the success of one year really had to be reckoned in terms of its seed yield, for which a count of plants is a very poor measure: firstly remarkably few plants survive to produce seed and secondly the yield from one plant may range from as little as one seed head (if any) to more than fifty. Ideally one would count seeds, but that would be wildly impractical, whereas a count of heads actually bearing seed is both practical and a reasonable measure of the seed yield. For good measure, numbers of purple spikes were also counted, offering an interim indication of prospects as the season wore on. Counting of seed heads and spikes began in 2016, so estimates of yield in 2014 and 2015 are not available, only the counts of plants.

The counting of individual plants becomes difficult and lengthy as the season wears on, the problem being that the plant branches into many spikes. Resolving the connectivity in the tangle of branches, often interlaced with young rose, bramble or clematis shoots is not easy. Chasing spikes down to their root points is normally a two-handed touch-and-feel business. Early in the season there is no such problem, the plants still being single spikes, usually of a distinctive bronze colour, and the competing vegetation still being very short, so that counting can be a purely visual process.

Initially, the target interval between counts was around three weeks throughout the season when anything was visible, though always at the convenience of the observer and moderated by weather. Latterly, on the one hand the time taken by such frequent surveys became unsustainable, while on the other hand there was an increasing realisation that any one survey inevitably causes some damage, however much care is taken, and that overly frequent surveying was thus counter to the interest of conservation. In the final couple of years, the target period has been one per calendar month, starting one month after first sighting in spring and ending soon after peak count of seed heads in late summer.

In fact, the detailed mapping had to be abandoned mid-way through 2019, the last year of the study, on account of the sudden overwhelming success of the plant, the numbers abruptly becoming too great to count realistically. The maxima of plants in the mapping for this year are taken to be the actual values in the last full count, which are probably the actual maxima, given the time of year. The maxima of seed heads are taken as the result of a single survey of seed heads alone in August. The maxima of spikes were merely estimated by extrapolation, leading to a site total of 25,317.

Finally, it should be noted that spikes and seed heads are ascribed to the squares in which they lie, not the squares in which the plants are rooted, which is a very significant difference in a plant with 30+ heads sprawled over the edge of a square. The plants themselves, however, are ascribed to the squares where they are rooted. It is thus perfectly possible to record one square with 30 seed heads and no plants adjacent to a square with several plants and no seed heads.

The sheer number of numbers thus recorded precludes raw tabulation here, which in any case would surely be unhelpful in this digital era, so the main presentation herein is graphical, densities being portrayed by colouring and aggregated in various ways. The maps are bordered by the coordinates described above, and the orientation should anyway be reasonably obvious.

Figures 4 and 5 show maps portraying the annual maxima of counts in the squares of the grid: numbers of plants and numbers of seed heads. Figure 6 graphs the annual maximum counts overall of plants, going back before the per square metre mappings to the first simple whole-site counts. The spike and seed head counts since their counting began in 2016 are also graphed in the same figure. Figure 7 graphs the total counts by month averaged over the years of the per square metre study, 2014-2019.

Some attempt was also made to map the dominant competing species on the bank. In each square where there was any obvious rival a visual assessment of its dominance on a scale of 1-9 was made and recorded. It proved difficult to summarise these records visually and sufficiently compactly, so they are not detailed here, but they are discussed below and remain available.

In addition to the counts on the bank itself, the headland in the adjacent field has also been monitored throughout, together with a pair of 2 metre square seed plots out in the field into which were scattered the surplus of some seed taken (with appropriate licences and permissions) from the bank for the Millennium Seed Bank in 2017. Table 1 summarises the counts in the seed plots. All these results are discussed below.

Some caution is needed in interpreting plant counts. All identifiable field cow-wheat plants that were found were counted, irrespective of stage of development. Early in the season it is easy to see very small seedlings, but once the overgrowth of other species gets going it is much harder and some are surely overlooked. The overgrowth of course does suppress new seedlings, but they are easily missed even if they are there and it is wildly impractical to move all overgrowth aside to peer underneath. Certainly, most seedlings do succumb to competition, but equally the competition blights the counting of seedlings appearing later in the season, as some do. Finally, it should not be overlooked that the study has been going on quite a few years and the skill of the observer has undoubtedly improved during that time, particularly in respect of very young seedlings, so there will likely be some purely observational bias towards higher counts in later years.

Discussion

It is readily apparent that the field cow-wheat on the bank is thriving under the current management plan, but there are discernible features that provoke comment or lack explanation, perhaps the first of these being the marked reluctance of the plant to spread southwards along the bank, when the spread in other directions has been relatively good. It is not obvious why this should be, but the southern boundary of the field cow-wheat does coincide with a change in the main competing species. For example, to the south ivy *(Hedera helix)* becomes pervasive whereas it is rather uncommon to the north. Likewise, dogwood *(Cornus sanguinea)* becomes much more common to the south, and similarly with invasive and tenacious species such as bramble *(Rubus fruticosus)* and traveller's joy *(Clematis vitalba).* Along the top of the bank at the south edge of the field cow-wheat zone a patch of hemp agrimony *(Eupatorium cannabinum)* completely excludes all other plants, although some judicious pulling of it has saved a good few field cow-wheat plants that would otherwise have been engulfed and the patch is now somewhat reduced in extent. Whether the change in competition at the edge of the cow-wheat zone is a cause or simply shares a reason is not obvious. Nor is the reason for that rather stable boundary clear. There is nowadays no obvious change of soil nor of surrounding trees. Unfortunately, historical detail is lacking, but the history of (non-) management in past years may be relevant. It is known that in 1964 the plant was largely confined to the 5x10 metre area fenced off to protect it near the present north end of the site, and at the nadir in 1978 the extant three plants were in the southern 5x5m half thereof. It may therefore be that the spread southward is just very slow, especially compared with the spread in other directions, but even so an explanation is lacking. Conceivably the raking off of the arisings from the autumnal shave is a factor, starting with raking down the bank rather than along, and perhaps thus dispersing seed that way, although this does little to explain the spread the other way across the top.

	2018		2019	
	Plants	Seed heads	Plants	Seed heads
Plot A	20	16	9	28
Plot B	3	4	4	50
Total	23	20	13	78

TABLE 1: Counts of plants and seed heads in the experimental plots

Whatever the reasons, the spread across the floor of the SSSI and under the fence into the field headland is gratifying, and a great contrast to the slow southward spread. The present broad headland, previously absent during the years of intensive agriculture, is the recent product of management policy since HIWWT acquired the field. The spread offers strong evidence that sward is good habitat for field cow-wheat.

It is clear whatever that the major limitation on abundance of field cow-wheat over much of the bank has been the competing species, which in varying degrees and varying with the year eventually overwhelm most of the field cow-wheat plants, the majority invariably failing to survive to maturity. This is perhaps seen best from the monthly average abundance graphs (Figure 7). The propagation of the plant clearly depends on the huge seed yield from the relatively few plants that develop a plethora of mature seed heads, perhaps over thirty on a single plant and each of course bearing a dozen or more seeds. The premature snuffing out of plants is seen at its starkest in years when the competition thrives, notably years of warm wet springs, when large clumps of greater and black knapweed *(Centaurea scabiosa and C. nigra)* grow waist high and then flop to smother several square meters each. Even in good years, however, it is evident that only a minority of seedlings survive to maturity. Fortunately, it is also evident that not much seed is actually needed, and that a season disastrous for seed production can be followed by a year of quite good plant counts, as with 2016-2017. In the end, of course, a sustained poor yield would not be good, but the occasional one is no problem. What would, however, be disastrous for conservation would be the omission of the autumn clearance of the bank. If the season starts with an overgrowth of scrub the light will be blocked far too early and too thoroughly. A single year's omission would undo many years of progress.

The dominant competing species within a single season include greater and black knapweed, travellers' joy, bramble, sycamore *(Acer pseudoplatanus)* and, startlingly, primrose *(Primula vulgaris)*. Primrose is not normally thought of as undesirable, and probably no-one would wish to attack it, but it is a fact that the prolific leaves grow big and mulch the ground just at the time when field cow-wheat seedlings are struggling in search of light. The other items mentioned are perennial regrowths that could only be eliminated by determined attack on the root systems, which would perhaps do more net harm than good. The traveller's joy is the dominant issue at the north and south ends of the population at the top of the slope. The knapweed is the dominant problem lower down and nearer the (-2,3) region. Bramble dominates at the lower south end of the population. There are not many sycamore stumps, but they persist and if untrimmed during the season each comes to smother a significant patch. Towards the end of the season other species become obvious and would undoubtedly suppress cow-wheat in the next season if not shaved off. These include dogwood and ash *(Fraxinus excelsior)*. As mentioned above, hemp agrimony suppresses everything wherever it gets a hold, but fortunately it can be controlled by pulling individual stalks carefully, which brings chunks of root with them. This is one species where shaving alone is ineffective, and even somewhat counter-productive,

the remaining dense stubble simply shielding the rootstock and not stopping full early regrowth.

With all of these competitors some limited timely control can be exerted during the season in the course of surveys at little cost and with no extra collateral damage. While passing it is a simple matter to snip the most rampant growth (or pull, in the case of hemp agrimony) where it is actually a major problem at that moment. Anecdotally, this does appear to help considerably.

The significance of larger trees in the surrounding area should not be overlooked either. It is clear that field cow-wheat does not like shade and will shun areas where trees block the sunshine. Even the shade of an intruding thorn hedge at the north-east end of the site caused the plant to recoil noticeably. Fortunately, and as mentioned above, the site is largely free from morning and noonday shading.

There is commonly evidence of damage early in the season by unidentified small animals, seedlings being found nibbled off a few centimetres above ground. This does not necessarily constitute a disaster, however, since many such victims sprout multiple branches from the tips of the remaining stalks, much as when a tree is pollarded.

It is common to find two plants, occasionally three, growing jammed close together, so close as to raise doubt as to whether they are in fact distinct rather than joined underground. It is possible that they simply got buried together as seeds, say by some industrious ant, but bifurcation below ground cannot be ruled out. There is no obvious non-destructive way of distinguishing, so these were pragmatically counted as distinct plants if fully distinct above ground.

A further curiosity of the growth cycle within the year is the commonly observed dip in the plant count around June, a sufficiently normal feature to show in the average monthly graph (Figure 7). This lacks good explanation.

The generally sustained growth and spread of the population is presumably an indication that the site management is good, which is of interest since there is remarkably little consensus as to what constitutes good management, not least because the plant is rare and experimentation thus risky. The present management on the bank consists of annual shaving with scrub cutters in the autumn after the seed has dropped. It is obviously important to delay the shaving until after most of the seed is dropped but also important to complete it before there is any chance of damaging germinating cow-wheat. The staging of germination is not well documented, but there are anecdotal reports of early small sprouting of the radicle soon after seed drop, followed by complete dormancy over winter until full sprouting in spring. The really safe window for shaving is thus quite narrow, though any time over winter would probably do little damage. At all events, shaving in spring or summer has to be avoided. After the shaving, the arisings are raked off and removed for disposal in some insensitive nearby location. It may well be that the raking off is helping the seed dispersal, but the main objectives are to avoid leaving nutrients and to avoid leaving dead climbing frames for next year's inevitable regrowth. The headland is also shaved at the same time, a very necessary action in the face of the bramble regrowing there every year.

The year 2019 deserves special mention, having seen a spectacular boom in field cow-wheat at this site. As noted elsewhere the population ballooned to the extent that full counting became impractical. At the last full count, which being in early June may well have been the peak, the plant count reached about four times the previous year's, which in turn had itself been particularly good. We have to ask why this boom occurred and whether it is likely to be sustained. The main reason was probably the weather, the dry cool sunny spring discouraging the competing species while still being good for the field cow-wheat. To the eye the site was markedly less overwhelmed by tall herbs than in recent years. You could also argue that mid-season trimming of competition *en passant* was a little less diffident than in previous years.

As to sustainability, we can do little about the weather, but some continued cautious experienced mid-season site management may help. The more important mid-season activity, however, is to continue to monitor the site by some means. If individual counting is impractical then at least mapping the boundaries of the population and perhaps estimating totals somehow would be well worthwhile. Counting the plants once a year in sample squares would be relatively easy before they have branched and before the competition is high and would be a good measure of the peak population. Likewise, a single sampling survey of seed heads alone in mid to late August would be tractable and again a good estimate of the overall peak thereof. Of course, if the population ever spreads far into the field then even that will be impractical, but perhaps a bit pointless too.

The field beyond the headland, following acquisition by HIWWT, was sown for several years with whatever seed was cheapest, even bird seed in one year, to try to impoverish the soil and revert to something like 19th century conditions of no synthetic fertiliser or herbicide. The hope, of course, was that field cow-wheat would naturally spread into the field of its own accord, but sadly it did not spread at all rapidly, and in fact not yet beyond the headland. The current plan is understood to be a slow reversion to grassland mosaic, with mowing in autumn to prevent establishment of scrub but otherwise doing very little. Maybe patience is needed, possibly some grass seed, and perhaps a few seed heads from the bank, and of course the two seed plots already out in the field are nuclei for developing populations. This plan is at least affordable in the long term, an overriding requirement. It is widely asserted that a cereal crop host is essential for the semi-parasitic field cow-wheat, but local evidence rather counters this. Of the three extant sites on the Island, none has or has ever had a cereal crop. The bank has never held a crop, being far too steep for such cultivation; the

High Hat site is an inaccessible grassy ledge halfway down a cliff; and the third site is a private garden recently carved out of an adjoining grassy down that has never been cultivated. If *Gramineae* hosts are essential, then clearly naturally occurring grasses are quite sufficient. Moreover, field cow-wheat obviously evolved (somewhere) and survived prior to the advent of farming.

The difficulty the 19th century farmers had in controlling the "weed" is a puzzling contrast to the difficulty of conserving it nowadays. Presumably, something about agricultural procedures particularly favoured regeneration. The decline was well under way before the era of herbicides and pesticides, which therefore cannot be the major factor. The gradual shift from manual reaping to mechanical methods is a better match in time. Perhaps it was impossible to reap, stook, and then cart off without allowing ripening seed to fall in the process. This would probably go unnoticed, since a head of field cow-wheat looks remarkably like a head of wheat, and similarly the individual grains. If the wish is now to spread the population, then a reasonable ploy could well be to harvest a few seed heads from the bank and scatter them in the field, leaving the seed to ripen and drop unaided. Another suggestion to explain the 20th century decline is the advent of deep ploughing, requiring all the horsepower of steam traction engines and diesel tractors. Deep burial may well defeat seed that evolved primarily just to be dropped, and of course weed suppression is one of the major reasons for deep ploughing.

As noted above, a pair of two metre squares were seeded with cow-wheat in autumn of 2017, that part of the field also being sown with triticale, which is somewhat like 19th century long-stalk wheat. Though not a failure, the result (Table 1) was not the resounding success hoped for. Germination was poor, and development nowhere near as good as seen on the bank. This is possibly consistent with Gislen's conclusions (Gislen 1949) both in that desiccation of the seed represses germination and that overly tall and dense cereals shade the cow-wheat too much. He also notes that periods of fallow seem essential. Unfortunately, his paper was not discovered prior to the exercise. There were rather few germinations in the following year, the last year of this study, but such as there were thrived well, after some rather essential rescue from coarse weeds. Any propagation is surely better than none in any case, and the remarkable recovery of the bank from its nadir in 1978 is good reason for hope in the field, especially if suitable management can be agreed and arranged. Following that example, perhaps the best course of action would be simply to keep cutting down competitor species, both scrub and herbaceous.

Conclusion

Field cow-wheat at this site is doing well and is well-managed. We should not however expect quick miracles. Any cessation of positive management would be disastrous. Any proposal needs the backing of experience.

References

Gislen, T., 1949. 'Problems Concerning the Occurrence of *Melampyrum arvense* in Sweden', *Oikos Vol. 1, Fasc. 2 (1949), p208-234.*

Minutes of Isle of Wight Highways Commission, Jan. 1845 p323, held in Isle of Wight County Record Office.

Pope, C., Snow, L., Allen, D., 2003. *The Isle of Wight Flora*. Dovecote Press, p150.

St Lawrence Bank SSSI citation Accessed 19/05/2020 https://designatedsites.naturalengland.org.uk/PDFsForWeb/ Citation/1000701.pdf

Various authors: a collection of notes and correspondence supplied privately by Colin Pope.

Wilson, P.J. 1993. 'The Ecology and Conservation of Field Cow-wheat (*Melampyrum arvense*)', Eastleigh, Hampshire and Isle of Wight Wildlife Trust.

Wilson, P.J.1996. The status of *Melampyrum arvense* L. Field Cow-wheat on the Isle of Wight in 1996. Eastleigh, Hampshire and Isle of Wight Wildlife Trust.

Data Availability

Should any reader want to carry out further analysis, the raw data remain available on request to the author, in negotiable format.

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Wood Calamint: Further Studies 2006 - 2019

Anne Marston

Abstract *Wood calamint (Clinopodium menthifolium (Host) Stace) occurs in the Rowridge valley on the Isle of Wight, its only known British location, on the northern edge of its European range. Since its initial discovery and naming from this site, its population has declined considerably. A project to monitor and reinforce the population has been undertaken by the Isle of Wight Natural History and Archaeological Society (IWNHAS) in partnership with the landowner, tenant, and nature conservation organisations. Wood calamint's demise between the 1840s and late 1950s, and subsequent partial recovery, is a consequence of changes in habitat and land management. Its future existence as a self-sustaining population will depend on a management scheme which favours its survival.*

The conservation status of wood calamint

Wood calamint is listed on Schedule 8 of the Wildlife and Countryside Act (1981) and is a national priority species in Section 41 of the Natural Environment and Rural Communities Act (2006). On the Great Britain Red Data Book (RDB) list of 2006, wood calamint was categorised as CR: critically endangered. In 2014, the England RDB list for Vascular Plants was published, which presented the current state of England's flora measured against standardised International Union for Conservation of Nature criteria (IUCN 2003). The English RDB reassessment revised the status to VU: vulnerable (See Appendix 1).

The change in status of wood calamint is a consequence of positive long-term conservation action, the plant having gone from the brink of extinction in 1959 with a low point of just 'five clumps', to an estimated 3000 flowering shoots in the roadside lay-bys and 42 clumps at seven other sites through the woods by 2019. The long-term involvement of IWNHAS in the conservation of wood calamint has been documented (Marston 2007) and the account which follows summarises more recent actions.

The lay-bys and roadside verge

The plant occurs principally on the west side of Rowridge Lane, on the banks behind the 5th and 6th lay-bys counting from the junction with the B3401. In February 2001, as previously described, a 7m extension to the south of lay-by 5 was created by clearing and reprofiling the roadside bank. Hampshire and Isle of Wight Wildlife Trust (HIWWT) provided the funds for this operation. Late winter clearance of these lay-bys to remove dead rank vegetation and brambles from the road verge has been carried out annually by IWNHAS volunteers, on a weekend morning in early February.

The population was monitored annually in late summer by the same group of volunteers using the method developed to assess spike abundance documented previously (Marston 2007). However, it was becoming increasingly difficult, especially on lay-by 6, as rank vegetation was approaching 2m tall and very dense, obscuring the flowering of wood calamint. With permission from Natural England, and the trustees of the Nunn Harvey Clarke estate, some work was undertaken on 31st May 2006 to remove this vegetation, principally hemp agrimony (*Eupatorium cannibinum* L.), from lay-bys. Under the supervision of the species licence holder, Isle of Wight Council countryside rangers used powered hedge trimmers to 'top' the plants and volunteers pulled and dug plants from the lay-by surfaces. A large volume of plant material was generated by this removal, and it was taken off-site for disposal. There was some regrowth of plants where the root ball was not completely removed and the 'topped' plants continued to grow, producing flowers, albeit in reduced quantities. This summer clearance was repeated up to and including 2013. It was much easier to see the plants and monitoring of wood calamint showed increases in flowering.

Transmitter work

A television transmitter was first proposed in the vicinity of Rowridge Top Barn in 1951, and there have been numerous applications in succeeding years for additions and replacements to the equipment. Prior to the switchover to digital television proposed for 2012, a planning application for a replacement mast was approved in November 2009. A condition was attached, requiring the wood calamint to be fenced off prior to the commencement of works, in order to protect the plants from wear caused by heavy construction traffic. Orange mesh plastic fencing supported by metal stakes was installed in the autumn of 2009 and remained in place for two years.

Observations on the results

The monitoring results for selected years are shown in Figures 1, 2 and 3. The shape of the lay-bys has changed over time. This occurred after the lay-bys were fenced between 2010 and 2012, presumably as wear from vehicle tyres had reduced. On the lay-by 5 extension, the flat verge at the base of slope was initially colonised by wood calamint, but over time, it has been outcompeted by grasses and coarse vegetation. However, wood calamint has been able to colonise the slope created at the back of the extension to lay-by 5; the soil here is largely chalk rubble and the plant competes successfully. Lay-by 6 has shown increased colonisation and a steady increase in flowering at the northern end. It may have received

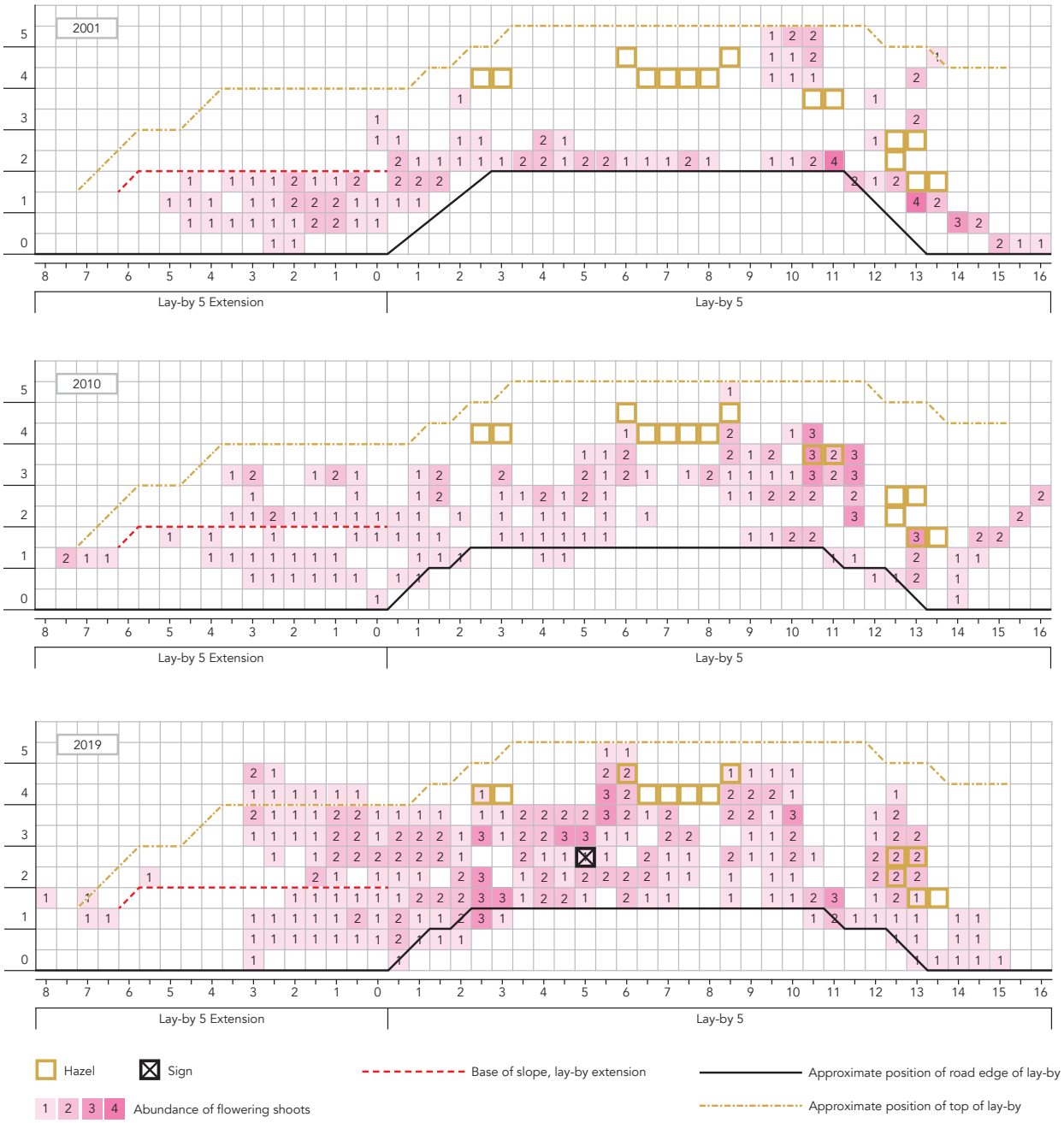

FIGURE 1: Wood calamint distribution and abundance behind lay-by 5 and the extension in selected years (2001, 2010, 2019)

seed from the translocation plot between the lay-bys as the progress of the plant on this site was in a southerly direction (Figure 4). Behind both lay-bys and the extension to lay-by 5, hemp agrimony continues to present a problem. It has not yet reached the extent seen in 2005, but its prolific growth makes spread of wood calamint to the area immediately above each lay-by unlikely. The outlier populations along the verge are now heavily shaded, and flowering is sporadic.

In August 2008, at the height of the flowering season, the length of the verge along Rowridge Lane, including the lay-bys, was cut by a tractor-mounted tool. The incident was reported to Natural England and investigated. However, it does not seem to have caused long-term damage to the population (see Figures 1, 2 and 3).

The option for damage limitation from accidental mowing using 'dragon's teeth' posts on the edge of the verge was considered but rejected, as it had maintenance implications, as well as the likelihood of causing damage to vehicles using the lay-bys as passing places along this single-track road. Installation of signs was agreed, and they were made by local contactor Marcus Matthews. A 15cm square hardwood post having a top plate with CONSERVATION VERGE engraved and painted in black lettering was installed in each lay-by in 2012. A third post was installed adjacent to the small outlier population to the south. The sign in lay-by 6 needed replacement in 2018, the top plate having disappeared.

The translocation projects

It had been a long-standing recommendation that an attempt should be made to connect the lay-bys (Winship, 1995). In 2007, Natural England granted a protected species licence to the author which allowed the collection of seed and the digging up of

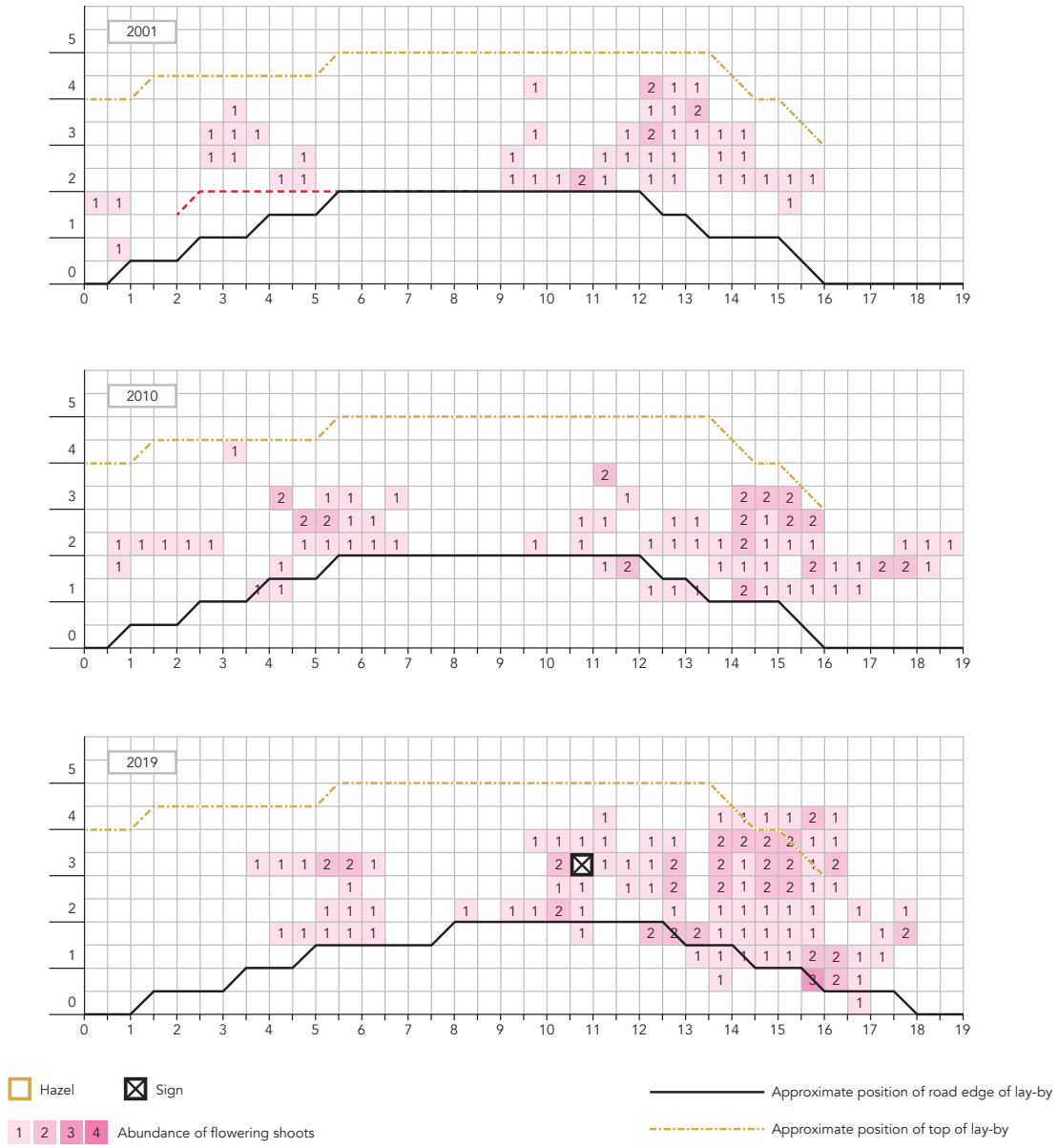

FIGURE 2: Wood calamint distribution and abundance behind lay-by 6 in selected years (2001, 2010, 2019)

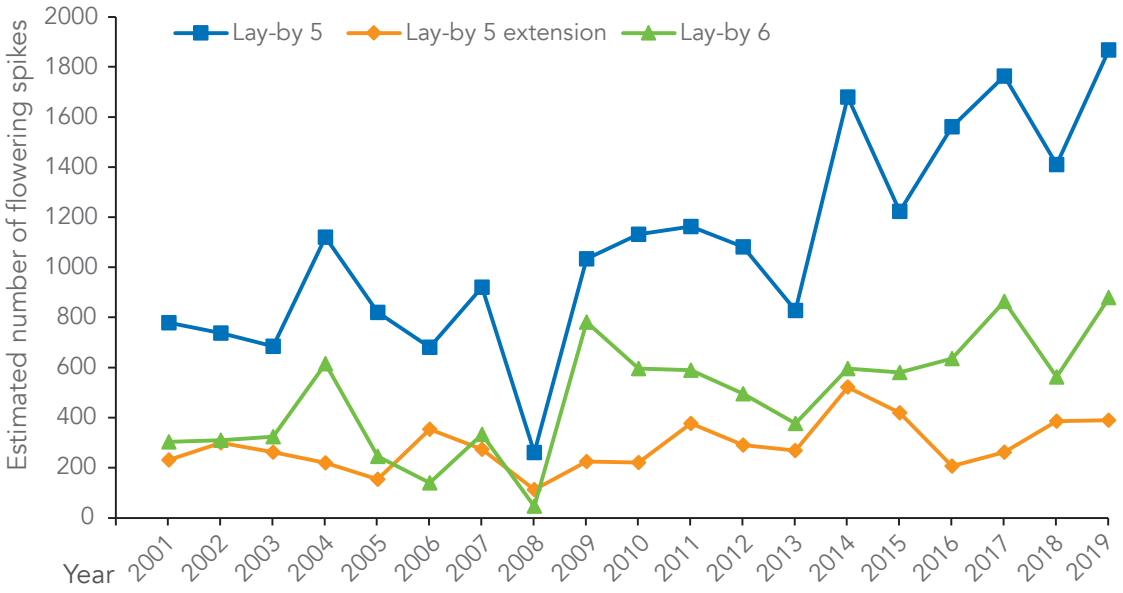

FIGURE 3: Changes in abundance in number of flowering spikes of wood calamint behind the lay-bys 2001 - 2019

four plants from the existing population to begin the establishment of plants between the two lay-bys. The plants were set out and some seed scattered on a flat ledge in the slope immediately above the lay-bys and mid-way between them, under the canopy of a well-established pedunculate oak tree (*Quercus robur* L.).

The site was visible from the road, so this conservation measure would be evident to interested botanists. The initial results of this trial were very encouraging, with evidence of germination occurring across the 3m x 2m seeding plot and the flowering of several plants in the summer of 2008. The flowering has been monitored annually in late August using the method of assessing spike abundance developed for the lay-bys (Figure 4).

In the following years, spread of the plant both downslope and in a southerly direction was recorded. Some degree of summer clearance by hand (usually in June or early July) was carried out from 2009 to 2012. Since the summer clearance was discontinued, this area has become progressively overgrown and in both 2018 and 2019, monitoring was not possible. The plant is still surviving underneath the bramble and hemp agrimony, but growth is weaker, and the flowering spikes are difficult to see.

Although this experiment has shown that the plant is able to establish and spread in this location, the requirement for clearance of rank vegetation on an annual basis is resource intensive. Consequently, it is not considered viable in the long term to continue with the attempt to join the two lay-by populations.

Proposals to move the plant to other locations within the wood

As noted above, in August 2008, the verge along Rowridge Lane, including the wood calamint site, was cut by tractor. This episode reinforced the opinion that the location of this plant solely on a road verge left it particularly vulnerable. Although very narrow, this lane, leading to a poultry farm, the BBC transmitter, and several cottages, is very well used. Vehicle widths are increasing, which results in damage to the edges of verges.

Apart from the posts in the lay-bys, the other solution for safeguarding the plant in the longer term was to enable it to grow in the wood, if places could be found where conditions for establishment were considered suitable. Scattering seed was considered but the option of growing collected seed in controlled conditions to produce 'plugs' to be set out in the selected areas was judged likely to be a more successful process.

Seed collection, germination procedures and the production of plugs

Each year seed has been collected under licence after flowering is over. The flower spikes were air-dried, and the seed shaken out. They have been grown in seed trays by IWNHAS member, Ann Campbell, in her greenhouse and garden in Bembridge. The first seed was collected on 19th November 2007 and the germination trials started on 8th March 2008. Seeds were planted in two sieved soil types, in garden soil

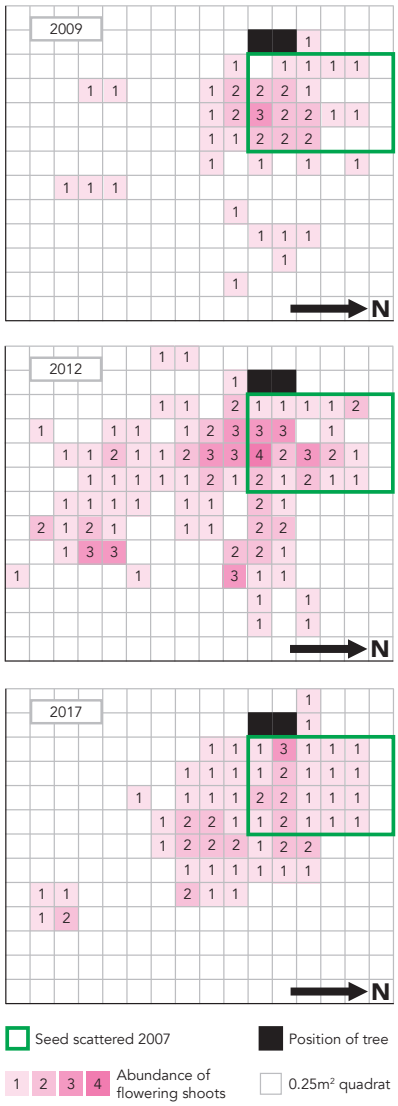

FIGURE 4: Wood calamint distribution and abundance on the plot between the lay-bys in selected years (2009, 2012 and 2017)

from Bembridge and soil collected from Brading Down, which would be expected to have a higher chalk content. Approximately 2/3 of the seeds were sown initially, with the rest kept for planting later if growth was noticeably different in the two soil types. One seed tray and four pots of each type of soil were used. Numerous wood calamint seedlings had appeared by 19th March and by 29th March, some of the seedlings were picked out and continued to grow on successfully. Germination was of the order of 90%.

No preference was shown for chalk soil, so the remainder of the seeds were planted in garden soil. By 5th June 2008 there were 110 individual small plants in both modular trays and pots containing several small plants, with more seedlings still to be potted on from the original sowing.

The plants were allowed to grow on during the summer and once they began to die back to rosettes in the autumn, they were kept in a cold frame over the winter.

Site selection for translocation

Initially, attempts were made to identify naturally occurring 'light pools' within the wood, to enable plugs to be planted. A walk-over of the slope above

the lay-bys was undertaken with Hugh Milner, of the Forestry Commission, in 2008. Sites were identified at the top of the slope above lay-bys, near the pheasant pen and at the top edge of the wood

In 2012, two narrow rides were cut by the gamekeeper to assist the work of the shoot and planting was carried out in May on that year, with groups of plants set out to the top, middle and base of these rides. In 2013, more plugs were set out in these areas as no more areas had been coppiced.

Initial establishment was good but by the second and third years the ground vegetation was outcompeting the plants. The canopy over the light pools closed in, leaving the areas unsuitable and it was evident that planting into larger cleared areas was likely to be a more suitable strategy.

Planting in coppice coupes

From 2014 onwards, coppicing schemes for the woodland were agreed between Natural England and the Nunn Harvey Clarke estate and IWNHAS volunteers set out wood calamint plugs in the spring following coppicing of an area.

Planting was done in clumps of 4 or 5 (Plate 1); the plants are easier to find when monitoring takes place, as individual flower spikes are delicate, and blend into the vegetation. They are more readily seen *en masse*. Where possible, the plants were set out in the open ground, between rowed-up hazel poles in lines across the coupe. This helped with re-finding plants initially, and in the future, may help with identification of translocation plots; regular planting indicates some form of management has occurred. Mapping of the planting by using a satellite positioning mobile phone application was attempted, but it was not particularly successful, as the tree canopy interferes with the visibility of satellites. Hand-drawn maps have been produced to assist with the relocation of clumps when monitoring is undertaken in late summer.

488 plugs have been set out 2009 - 2019. The relative locations of the sites are shown in Figure 5. Sites A - G are close together, and for clarity the general area is shown.

Monitoring and the progress of translocation

A group of volunteers undertakes monitoring between mid-August and mid-September each year, the precise timing depending on the progress of the season and the availability of volunteers. The method used depends on the age of the translocation plot. In the first autumn after planting, individual plants can be distinguished, so an assessment of the survival of the plugs can be made. It is also possible to trace the much-branched flowering shoots back to ground level, and so determine how many flowering shoots have been produced. Each shoot arising from the base of the rosette has one main flowering spike and potentially 2 or 3 pairs of side spikes.

By the second year, vegetative spread by rhizomes is commonly observed and the original plants grow to form dense clumps. Plants are also establishing further

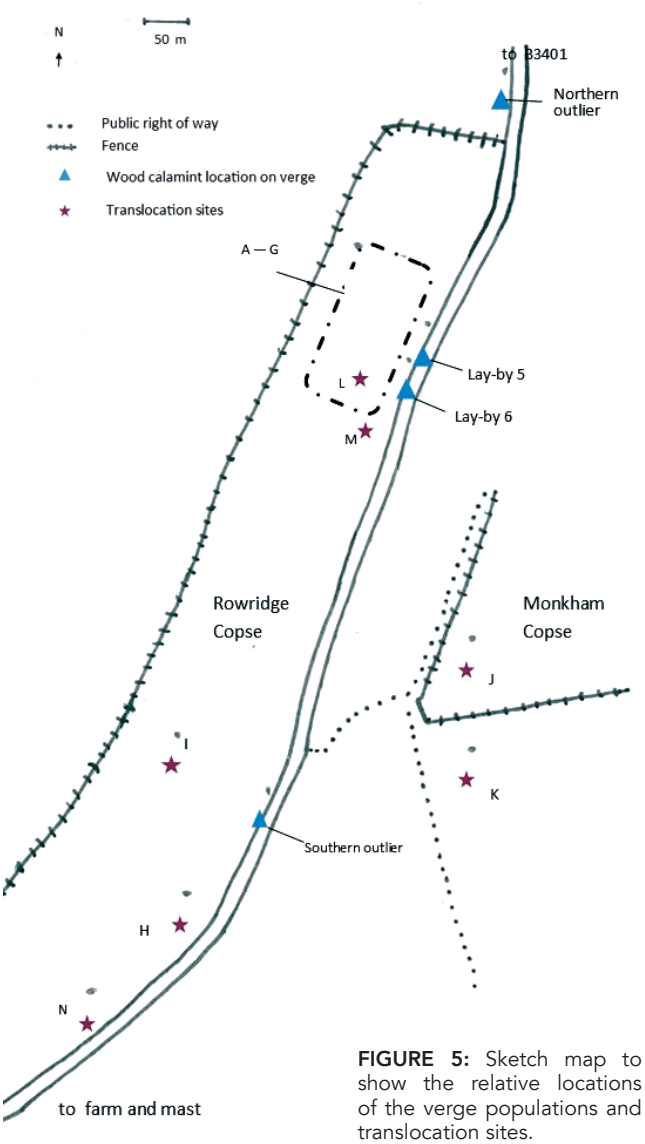

FIGURE 5: Sketch map to show the relative locations of the verge populations and translocation sites.

PLATE 1: Plugs ready to be set out

from the original planting as a result of the germination of ripe seed being scattered. It is generally now more difficult to distinguish individual plants as the clump has grown together and the flowering shoots cannot readily be traced back to the ground. Therefore, the method of assessing spike abundance for the lay-bys is used, as this was originally developed to describe the abundance of the plant growing through bramble and other competing vegetation where it was not possible to trace separate flowering shoots. This technique has the advantage of being relatively rapid, but each of the side shoots may be included in the abundance estimate. Figures quoted for 'flowering spikes' should only be used for year-on-year comparison of flowering.

By the third year, the plant is still able to grow and flower where it has not been outcompeted, but regrowth of bramble and other coarse vegetation has, in some cases, made access to the translocation sites difficult and precluded any monitoring being carried out. Tables 1 and 2 summarise these results.

A general pattern is emerging from these trials. Initial establishment is very good, with 90-95% of plugs set out surviving and flowering well in both the first and second years. After this time, in areas where the bramble has not overgrown the ground layer, the plant is able to spread further. As regrowth of coppice and bramble occurs, fewer flowering clumps have been found but those clumps which persist are flowering well. In area H the translocation is still visible after five years. In area L, the tree canopy is fairly sparse, and the bramble has rapidly overgrown the wood calamint. This makes monitoring very difficult because the plants cannot be reached; abundance cannot be assessed, but it may still be present. Some evidence for persistence of the plant in overgrown areas came in 2017, when additional clearance near sites F and G (2012 planting) was done to enable another translocation site to be established. The monitoring later that year found several relatively large flowering clumps away from the marked clumps set out that year, presumably plants put in during 2012. If the plant can survive vegetatively when hazel coppice regrows and shades out the plant, it should flower again when the next cycle of coppicing occurs. The length of coppice cycle required for this vegetative survival and

			Estimated number of flowering plants						
Site	Date	Number of plugs planted	2009	2010	2011	2012	2013	2014	Comments
B	2009 2010	6 15	5	10 + 9 not flowering	18	NR but flowering seen	-	-	Completely overgrown by 2013
C	2009	30 plus seed scattered	19	16 + 2 not flowering	4	5 + 3 very small plants	-	-	Hazel & bramble growth shaded out plants
D	2009	11	none	-	-	-	-	-	Plugs failed to establish
E	2010 2013	20 10	-	4 +8 not flowering	9	NR	11 + 1 seedling	8	Site overgrown with bramble by 2014
F	2012 2013	34 21	-	-	-	34	44 + 52 smaller plants	39	Very overgrown in 2014
G	2012 2013	34 20	-	-	-	28	41 + 58 smaller plants	23	Very overgrown in 2014

TABLE 1: Summary of planting and flowering of the experimental translocations 2009 - 2014 Sites B-G

				Estimated number of flowering spikes (clumps)						
Site	Date	Number of plugs planted	Number of clumps	2014	2015	2016	2017	2018	2019	Comments
H	2014	51	12	272 * (12)	442 (12)	539 (12)	1236 (11)	1210 (8)	1367 (7)	Ash die-back evident here. Bramble regrowth significant.
I	2015	50	12	-	201 * (12)	NR	1660 (7)	3087 (7)	1080 (2)	Site not accessible in 2016
J	2016	30	6	-	-	121 * (6)	440 (6)	888 (3)	486 (2)	Regrowth of bramble
K	2016	30	6	-	-	45 * (6)	72 (4)	19 (2)	49 (6)	2018: only part of site grazed
L	2017	40	10	-	-	-	168 * (10)	NR (4)	82 (4)	Clumps at base of slope are surviving, but largely overgrown
M	2018	42	11	-	-	-	-	384 * (11)	709 (10)	Much more rank vegetation in 2019
N	2019	44	12	-	-	-	-	-	212 * (11)	Site was coppiced in 2018, so regrowth is considerable

TABLE 2: Summary of planting and flowering of the experimental translocations 2009 - 2014 Sites H-N
*spikes counted; other numbers estimated.

subsequent flowering has yet to be determined, but there are several areas where trials could take place.

Scattered ripe seed may also be able to persist in the seed bank and germinate when conditions are favourable. Soil disturbance and an element of bare ground are required for the germination of viable seed, establishment of young plants and initial spread of the plant. A coppice regime, thinning of standards, associated extraction work, and any excavator work required (for example to create or enhance the conservation verges) all have the potential to create such conditions in coupes and along wood edges and internal rides.

The majority of the translocation sites have been within coppice-with-standards (CWS) woodland, but one experimental planting was carried out on a scrubbed-over slope (Site K) following its clearance in 2016. The plants established and flowered on this open slope in 2016 and 2017. Their growth form is different from the plants under a woodland canopy: the plants are stockier and darker in colour and have flowered up to a month later. The lower part of Site K was grazed during 2018 and two flowering clumps were re-found. The regrowth of rank vegetation made it difficult to find any evidence of flowering higher up the slope. In the following season, a flock of sheep grazed the area a time and reduced the rank vegetation considerably. The monitoring found evidence of all the original clumps surviving and flowering in a relatively open habitat. They may have been grazed by the sheep but were not destroyed.

The success or otherwise of the project to reinforce the population of wood calamint should perhaps be measured by the establishment of self-sustaining populations in different management compartments. Presently there are potentially seven sub-populations within the SSSI, in addition to the main lay-bys, as listed in Table 2.

Land management of Apes Down and the Rowridge valley: past, present, and future

Bromfield's account of the discovery of wood calamint in the Rowridge valley (Bromfield 1843) includes a habitat description '*clothed with thick woods, interrupted by bands or strips of down'* growing '*amongst the long herbage and under the shade of bushes in vast quantity, for a great part of the way towards the head of the vale, scattered over the hillside copses wherever there is shade and shelter sufficient, but unlike our common Calamintha, always avoiding open and exposed situations or where there is not plenty of herbage and undergrowth…'* Some of the herbarium sheets from the late 19th and early 20th centuries (seen via Herbaria@Home) give habitat descriptions as well as locations. 'Wooded valley', 'hedgerow', 'borders of wood', 'wooded slopes on chalk' and 'bushy places on chalk' are all recorded. It is considered to be a woodland edge plant, requiring light shade, and some of the early habitat descriptions may be referring to areas where scrub is developing.

Bromfield did not record land management, but the 1793 Mudge Map shows two woods in the vicinity of the current site separated by a triangular piece of land. In the mid-1880s, sheep farming was widespread in the parish of Carisbrooke, where Apes Down and the Rowridge valley lie. Grazing animals on the slopes and the woodland edge would have maintained patches of open land producing a mosaic habitat.

Hurdles for the shepherds' use were produced from poles made by coppicing the nearby woods. The flocks supplied the demand for meat both locally and in mainland markets. A drove road along the top of nearby Bowcombe Down and a holding enclosure on the slope above Carisbrooke, where the start of the Tennyson Trail now runs, enabled the movement of animals to a livestock market in Newport. Transporting live animals across the Solent, and their onward movement to mainland markets, was no doubt a challenging and time-consuming process. When refrigerated ships were developed in 1882, lamb and mutton could be brought relatively easily from New Zealand and sold at competitive prices, so the market for domestic-reared lamb weakened and the size of the nation's sheep flock declined. With the decline of grazing in the Rowridge valley, it was probable that open and scrubby areas underwent succession to woodland; as the need for hurdles declined, so would coppicing if there was no ready use for the product. Once the woodland stage has been reached and the hazel stools are overgrown, it becomes difficult to extract wood and it is no longer a commercial proposition. The woods in the Rowridge valley are currently leased to a pheasant shoot.

Rowridge Woods & Meadows Site of Special Scientific Interest (SSSI) was first notified in 1951 under the Wildlife and Countryside Act (1949) for its mosaic of woodland: as the 'best preserved area of ancient semi-natural broad-leaved woodland over chalk on the Island; its small population of wood calamint; and its westerly facing chalk grassland'.

A road to the BBC transmitter was constructed in 1960 which unfortunately caused the loss of some wood calamint (note in file held by IWNHAS), but it continued to survive in two of the lay-bys cut as passing places. The tenant farmer kept pigs in the woods, and IWNHAS was active in efforts to conserve the plant with the full support of the landowner, tenant, and Nature Conservancy Council (NCC: A predecessor of Natural England). An area was fenced off to protect wood calamint from damage by the pigs and when the road verge was cut. An annual late winter site clearance was commenced in 1960, with occasional additional work in May to remove hemp agrimony. Correspondence between IWNHAS conservation officers and landowner and NCC indicates that the volunteer efforts were paying off and the plant was flowering well. The fence remained until the early 2000s; by then it was in a state of poor repair and was hindering volunteer efforts to clear the bank, so it was removed.

When the citation was reviewed in 1986, a note was inserted observing that the coppice had 'not been cut

for many years.' In the 1990s the Forestry Commission and English Nature (now Natural England), in discussion with the Estate, put in place grant-funded management agreements for the SSSI. One particularly interesting management operation, agreed in 1997 and carried out in 2000, was the coppicing of the area known as The Triangle – the area which was open ground on the Mudge map. This area was searched for wood calamint in the following two years, but none was found.

In 2000 a national improvement programme for SSSIs was set up, with a clear target to bring 95% of SSSIs, measured by area, into a favourable or recovering condition by the end of 2010. Targets were set for the features for which the SSSI had originally been notified.

Since 2013, Natural England has become increasingly firm in its view that the very small area of roadside habitat supporting almost the entire national population of wood calamint could not be deemed a truly 'sustainable' population. It had already shown to be vulnerable to unforeseen impacts like poorly timed and unconsented verge cutting, and nutrient enrichment, probably arising from the upslope dumping of clippings and pheasant rearing. For these reasons, and its almost complete dependence on annual volunteer habitat management to reduce vegetative competition, an expanded habitat management vision has been formulated. It has developed from an understanding that wood calamint may be dependent upon 'traditional' CWS woodland management, as previously practised. Efforts have focussed on, and will continue to be directed towards, restoration of coppice, including increasing the density of hazel stools to make extraction of coppice wood economically viable. The intention is to plant wood calamint plugs in new areas where a sustainable population could develop.

The structural diversity of the woodland both across Rowridge and Monkham Copses has improved greatly in recent years as a result of positive interventions supported by the Woodland Grant Scheme and Higher Level Countryside Stewardship funding. Additionally, the absence of deer, and the enthusiasm of the landowners and their managing agent to achieve good ecological outcome have assisted the process. Schemes will be fully reviewed in 2022 and renewed (funding permitting) for at least another 5 years. In addition to the coppice work, stands of high forest woodland will be managed by periodic thinning and areas of non-intervention, generally where there is already a cover of mature structurally diverse and deadwood-rich high forest will be maintained. Ride maintenance works will also be carried out.

Ash die-back (*Hymenoscyphus fraxineus*) was observed in regenerating ash in Rowridge Copse in the autumn of 2017; the longer-term effect is yet to be evident, but it is likely to create gaps in the canopy. The implications of this disease on the ecology and commercial viability of the woodland and perhaps wood calamint itself will need close monitoring and consideration, particularly with regard to stocking/re-stocking with alternatives to this canopy co-dominant. The 2014 translocation plot is largely under a stand of maiden ash with some hazel understorey; this section could be targeted for hazel planting to increase its viability as a coppicing site.

There is also scope for consideration of the beneficial role that domestic sheep grazing may once have had for wood calamint in CWS woodland. After a couple of years of coppice regrowth, sheep would have been introduced to help keep the field layer down and, in particular, the highly competitive bramble cover. There is also the further interesting possibility to explore: that wood pasture may also once have been a habitat component for wood calamint.

Following a full condition assessment in 2019, Natural England now considers that the SSSI condition is clearly moving in the right direction (Natural England, 2020). The progress made with the reinforcement of the wood calamint population and its re-introduction to more areas of the woodland has been a long-term co-operative effort between the land owners, through their land agent; the shoot who have a strong vested interest in woodland management; conservation bodies the Forestry Commission and Natural England; and a large group of volunteers from IWNHAS. Along with specialist woodland conservation contractors, the intention is to continue the project. There is an ongoing role for IWNHAS members in establishing plantings into newly restored coupes and carrying out some degree of monitoring of the population. Natural England believes that it is a realistic aspiration that traditional woodland management practices will allow the population of wood calamint to be maintained sustainably and will enable it to expand throughout the woods to the abundance approaching that first noted by Bromfield. The verge site which has been the refuge for the plant for the last sixty or more years may no longer be quite so critical in its long-term survival.

PLATE 2: Close up view of wood calamint flowering spike

Appendix 1 England Red Data Book definitions of location, population, and population size

Wood calamint has been assessed as VU vulnerable with threat criterion D2: very small or restricted population with a plausible future threat that could drive the taxon to CR (critically endangered) or EX (extinct) in a very short time. The number of locations given as <5.

The number of locations, particularly for rarer species, influences the threat category. The IUCN Guidelines (IUCN 2013) state that a location is 'a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present'; and that in addition, 'the size of the location depends on the area covered by the threatening event'. The GB Red List approach, followed by the English RDB list, defines locations as 'management units', on the assumption that a land-use change e.g. ploughing, burning, tree-felling, cessation of grazing generally occurs at the management unit level.

A population is defined by the IUCN as 'the total number of individuals of the taxon throughout its distributional range'. For the England RDB, the distributional range is England, so the world-wide range is not considered. Within each population there will usually be sub-populations, defined as 'geographically or otherwise distinct groups in the population' (IUCN 2013). A plant's lack of mobility and habitat restriction are significant: two sub-populations within a large expanse of otherwise unsuitable habitat would count as two locations.

When estimating the total number of individuals in a population, defining 'an individual' is often difficult. A rhizomatous species such as wood calamint can form 'swards' of shoots so it is not possible to establish the number of individuals in a sub-population. In these circumstances, an estimate of 'extent' (e.g. square metre coverage) or numbers of 'patches' or 'clumps' may be employed alongside an estimate of the number of flowering/fruiting stems.

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HIWWT has funded reports and habitat creation. In 2014, the Trust presented IWNHAS with Peter Brough Award for volunteer conservation management in recognition of the work done with wood calamint.

IWNHAS volunteers: since 1960, there has been a continuous volunteer input from members of IWNHAS, in practical management, recording, growing plugs from seed, monitoring and report writing. In recent years, a core group of up to 20 people, contributing over 100 hours of time collectively, has been involved in any one year.

Isle of Wight Council Countryside Rangers and their volunteer groups have given practical assistance with site management.

References

Bromfield, W.A. 1843. Notice of a new British Calamintha, discovered on the Isle of Wight. *The Phytologist Art.* CLXXVII:768-770.

Stroh, P.A., Leach S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D., Taylor, I. With assistance from England Vice-County Recorders of the Botanical Society of Britain and Ireland. 2014. *A Vascular Plant Red List for England.* BSBI.

Herbaria@Home http://herbariaunited.org/atHome/ accessed 1st November 2018

IUCN. 2003. *Guidelines for Application of IUCN Red Data List Criteria at Regional Levels: Version 3.0. IUCN Species Survival Commission.* IUCN, Gland, Switzerland & Cambridge

Marston, A. 2007. The distribution and abundance of wood calamint on the Isle of Wight 1999-2005 *Proc. Isle Wight Nat. Hist. Archaeol. Soc.* **22**:42-60

Natural England 2020 SSSI condition assessment https://designatedsites.naturalengland.org.uk/SiteUnitList.aspxSiteCode=S1000631&SiteName=&countyCode=&responsiblePerson=&unitId=&SeaArea=&IFCAArea= accessed 21st January 2020

NERC Act 2006. http://www.legislation.gov.uk/ukpga/2006/16/section/41 accessed 21st January 2020

Wildlife and Countryside Act 1981. http://www.legislation.gov.uk/ukpga/1981/69/schedule/8 accessed 21st January 2020

Winship, H. R. 1995. *The conservation of wood calamint on the Isle of Wight.* Report undertaken on behalf of Wight Wildlife.

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The Creation of the Roberts' Nature Reserve at Haseley Manor, Isle of Wight

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Introduction

Haseley Manor (a 14th century grade II* building) and its grounds of 13.7ha were purchased by the Roberts family in 2000. The Manor House itself and its surrounding buildings were being used as a Museum, the Isle of Wight Museum of Agricultural and Country Life. The grounds consist of two areas separated by a narrow area of woodland. The higher land (approximately half of the area) was being used for arable farming at the time of purchase; the remainder is low-lying land in the floodplain of the Eastern Yar River which now, for the majority of the reserve, forms the southern boundary.

Planning

The decision was made to convert the agricultural land into a nature reserve. This entailed planting trees and also digging lakes/ponds. Advice was taken from various sources, and attendance at the Isle of Wight Pond Warden course was extremely valuable before the ponds were fully planned. The definition of 'lake' and 'pond' is a matter of some debate. On discussion of the project with the Isle of Wight Council planning department, planning permission was sought before the lakes were dug.

Design was made more difficult by a public footpath that zigzagged across the lower land. An application was put in to straighten the footpath, which was agreed by the Ramblers Association. In return for this, the Roberts family gave permission to the Isle of Wight Council for a bridleway running down the eastern edge of the Manor grounds.

In the next stage, four 4m deep holes were dug, and the level of the water in these holes was regularly recorded for the following year. The hole to the west of the site did not maintain its water level, and it was decided therefore that this would not be the site of a lake.

The planning permission also required an archaeological survey to be carried out, as it was known that somewhere in the Arreton valley there had been a fulling mill associated with Haseley Manor in mediaeval times. This survey was carried out by Kevin Trott in 2003 and the results are held by the Isle of Wight Council Archaeology & Historic Environment Service. No evidence of a fulling mill was found; however, the grounds contained both Mesolithic and Neolithic stone remains. Core samples were taken from boreholes, and these showed that the predominant vegetation had been Alder (*Alnus glutinosa*) carr woodland. In the drier areas, Small-leaved Lime (*Tilia cordata*) was predominant from the middle Holocene to its clearance in 3500BP. Pedunculate Oak (*Quercus robur*) and Hazel (*Corylus avellana*) were also present in some quantity, and Holly (*Ilex aquifolium*) and Ash (*Fraxinus excelsior*) had also been present in lesser amounts.

Construction of the lakes and tree planting

During the winter following the granting of planning permission, the River Yar flooded, involving all the lowlands of the prospective reserve. This turned out to be of major benefit because as the flood waters subsided, it was possible to mark out the areas of the lowest land and these were designated to be the future four lakes. Each lake was designed to have an island so that breeding birds would not be affected by foxes or other mammals which would reduce their breeding success. It was also a requirement of the planning permission that the soil removed from the lakes was taken away from the floodplain, and this was dumped in two areas of the higher arable land.

The work was carried out by Landscape Therapy who also obtained grants; for the tree planting from the Forestry Commission and for the ponds from a National Lottery grant given to Island 2000 for the enhancement of the countryside of the Eastern Yar Valley.

The tree planting was done in two phases as detailed below. The first phase was in the higher land in 2002. The main digging of the ponds started in 2003, and required approximately eight weeks, so the lower floodplain tree planting was carried out later that same year. The lower planting had a range of species, but because of the wet areas, willow trees were predominant. Glades without tree planting were also designed into the plan. There was further flooding of the lowland area in 2005, but this caused no loss of trees or other problems.

The major intention of the reserve was to preserve and further introduce natural history and especially bird life, particularly for studying the ornithology through bird ringing. This affected to some degree the actual design, and particularly of the glades.

The reserve was officially opened in June 2006 by HRH The Earl of Wessex KG. This was particularly appropriate as Haseley Manor had been owned by The Earl of Wessex (later King Harold) in 1065. The title had been dormant since then.

PLATE 1: The Official Opening in June 2006 by HRH The Earl of Wessex

PLATE 2:

The development of the reserve

PLATE 2a: Aerial photograph of the site in 1999, before work started

Image taken from Google Earth Pro ©2020 Infoterra and Blue Sky technologies

PLATE 2b: Flooding of the River Yar March 2003

PLATE 2c: Lakes dug October 2003 Before rain

PLATE 2d: Lakes dug October 2003

PLATE 2e: Lakes filling after Winter rain April 2004

PLATE 2f: Tree whips in their guards Nov 2006

Changes in the reserve between 2002 and 2019

The definition of a lake, in contrast to a pond was finally clarified. A lake is either an area of water of more than 1 ha in size or has water flowing in and flowing out. Therefore, the three areas of water in the western half of the reserve are lakes, and the lake to the far east is a pond. The medieval stew pond which is in the grounds of the Manor House is a pond, as is the small lake which was dug to the north side of Heasley Lane.

The configuration of the reserve was changed in 2012 by the acquisition of a further 0.6 ha of marshy area and a small pond to the north of the site. The actual water

PLATE 3:

The reserve in 2019

PLATE 3a: Aerial photograph of the site in 2019, showing the lakes and tree planting

Image taken from Google Earth Pro ©2020

PLATE 3b: Reed bed West lake

PLATE 3c: East lake with willows cleared

PLATE 3d: Centre lake with severe run off silt pollution from local arable fields

PLATE 3e: Trees cut beneath overhead HT cables

PLATE 3f: Willows overgrowing channel around lake with access for foxes etc.

PLATE 3g: Trees all the same height with no succession

flowing through the reserve has also to some extent changed and been recorded. It became apparent that there was a spring to the north-west of the reserve and the water from this flowed down towards the lake on the far west side. This water flow has been dammed in two places, and two further small ponds created on the higher land. To maintain the level of the water in three of the lakes, drainage has been put in between the two west lakes and the centre lake. Drainage from the Arreton stream was also incorporated to feed, and/or drain the lake directly in front of the Manor. The only pond that has not been changed has been the one furthermost east.

Tree and Shrub planting

When the land was acquired, there was an area of approximately 0.5 ha of woodland. The majority of this separated the high and low areas of the land which included two Field Maple trees (*Acer campestre*) which are possibly the largest on the Isle of Wight and, following a visit by the Forestry Commission, are now specially protected. The woodland included a spur running at right angles across the lowland. There were also conifers to the west of the cricket pitch and a considerable variety of trees (many non-native) within the Manor house grounds.

The original idea was to plant trees within the reserve areas. The tree species to be planted were agreed in discussion with the Forestry Commission, who to a large extent funded the planting. The Forestry Commission required that any new woodland planting on the Isle of Wight contained 10% of Scots Pine (*Pinus sylvestris*) to aid in the feeding of the Red Squirrel (*Sciurus vulgaris*); a considerable quantity of Hazel was incorporated for the same reason. It was also agreed that a further 10% of the total planting would be of evergreen native trees, in particular, European Holly (*Ilex aquifolium*) and European Yew (*Taxus baccata*) to aid local birds with feeding, nesting and roosting sites. The remainder of the planting would be a variety of native trees and shrub, and eventually approximately 6000 native tree and shrub of 41 species were planted. All of the trees were protected by rabbit guards.

From the beginning there was a high rate of success of the planting of the trees with a possible loss of only 2%. Experience proved tree guards were particularly necessary for Wild Cherry (*Prunus avium*) and European Ash (*Fraxinus excelsior*) trees. Several of both species were lost when the guards were damaged or were not tall enough to protect from the local rabbits. The lost trees have been replaced where appropriate. It has been noted that the trees planted in the narrower rabbit guards had a significantly higher failure rate. This was largely caused by the occupancy of the guards by ant nests.

The trees have of course grown, often very rapidly, although surprisingly there was an area of the previous upper level arable land where growth is, and has been, noticeably less than in the surrounding areas. No obvious cause has been found, but the area is drier, and this may be the reason. The major planting problem has been in the growth of the willows (*Salix sp*). both vertically and in numbers These have both shaded out other species of trees and have also begun to invade the ponds. At the suggestion of Natural England, over the last six years from 2013 there has been both cutting back of the willows and herbicide treatment to prevent regrowth. This has been particularly successful around the two lakes to the east of the reserve, and there are plans to extend this cutting back to the lakes to the west of the reserve in the next few years.

The other problem that has become apparent as the trees have grown is that some planting was done beneath the two high tension electricity cables that cross the reserve. This has necessitated the cutting back of some trees by Scottish and Southern Electricity plc to prevent interference with the cables. SSE have been extremely helpful and have donated small shrubs to plant in the relevant areas. This has been done over the last six years.

The hazel trees, particularly in the upper areas, have rapidly grown in height. To control these, small areas of coppicing have been carried out. These have not been completely successful, and modification of the coppicing technique will be done in the next year or two. A third and unexplained fact has been that although Beech (*Fagus sylvatica*) and Small-leaved Lime have both survived well, their growth relative to other adjacent species has been considerably retarded.

One great success was the planting of Dutch Elm disease resistant hybrid Elm (*Ulmus* 'LUTECE') trees which are now approximately 16m high and are flowering successfully.

In 2012 ash dieback disease, caused by the fungus *Hymenoscyphus fraxineus*, was diagnosed by the National Trust in a few trees in the higher part of the reserve. This has now extended throughout the reserve, but with only a proportion (approximately 30%) of the trees having died up to 2019. In general, these have been the smaller, less developed trees.

There are 45 species of native tree present in the reserve, and an additional 13 non-native species (mainly fruit trees) in the Manor House grounds.

Two obvious mistakes were made in the tree planting. Firstly, the dominance of willows in particular – and to a lesser extent, Alders – in the lower wet area was an error. Secondly, planting each area in one year was a mistake. This has made the majority of the trees of the same height whereas planting at a lower annual density over five years would have given a more natural succession of growth and heights.

Plant cover in the lakes has changed considerably, and in particular reedbeds were planted in the two lakes to the west of the reserve. Common Reed (*Phragmites australis*) already existed on the banks of the River Yar within the reserve, but these beds were intentionally extended by further planting. They have been particularly successful for the birdlife that has moved in and been recorded which has included breeding Water Rail (*Rallus aquaticus*) and visiting Eurasian Bittern (*Botaurus stellaris*). No other vascular plants have been introduced intentionally. To a large extent the growth and spread of vegetation has been modified by regular cutting of pathways throughout the reserve. However there has been a large growth of Common Nettle (*Urtica dioica*), and to a lesser extent Bramble (*Rubus fruticosa* agg.), particularly in the

upper part of the reserve where the previously well-fertilised diggings from the lakes were deposited.

A major problem that has arisen since 2012 has been the arrival of Himalayan Balsam (*Impatiens glandulifera*), which first appeared after the flooding of the River Yar in 2012. It has not been cleared from the upper reaches of the river and from the southern bank where it is alongside the reserve, and despite a major clearance effort by the Island Rivers Group and the Isle of Wight Ringing Group to eliminate this non-native invasive species during the last three years, there is a strong likelihood of further infestation in the future.

Very recently Australian Swamp Stonecrop (*Crassula helmsii*) has become apparent around some of the lakes particularly in the margins in the areas that become uncovered with water during the summer seasons. This plant has the reputation of reducing the oxygen content of the water with an adverse effect on fish and other wildlife in a pond or lake. It is also known to be difficult to eliminate.

Another non-native invasive species, Sumatran Fleabane (C*onyza sumatrensis*) has also arrived since 2015. This plant has been shown to reduce growth by native plants considerably where it is established.

Sycamore (*Acer pseudoplatanus*) was present when the land was acquired in 2000. There was one large and several small Sycamore trees close to the footpath near the Manor House and these have been eliminated. There is another area of Sycamore close to the Horringford bridge and on the south side of the River Yar which has recently spread to the north side in the reserve. These will be eliminated with the agreement of the local farmer over the next two years.

Recording

Birds

Bird recording and ringing started in 2001. There have been major changes in the bird populations and species lists over this time. Unfortunately, there had been no significant recording of the bird species and numbers before the first year of planting, and this has been a major problem for a complete formal assessment of change.

The number of bird species both observed and recorded breeding has increased over the 20 years. Much of this recording has been done by the Isle of Wight Ringing Group which was founded in 2010. The results have been recorded in the Isle of Wight Bird Report and are also held by the British Trust for Ornithology in the European bird ringing records. Members of the group have also been very active in the management of the reserve.

The reserve now holds two 'constant effort sites' for monitoring breeding birds when standardised ringing is carried out on 12 occasions, equally spaced, throughout the breeding season. These contribute to the national programme of monitoring which is run by the British Trust for Ornithology (BTO).

In 2019 a new programme, again run by the BTO, to monitor the success of Common Moorhen (*Gallinula chloropus*) and their survival as adults commenced. This research is also aimed at attempting to monitor and record whether the moorhens caught are male or female, and to find at what age and how it is possible to distinguish these. The Ringing Group have also organised one or two national and international bird ringing courses each summer to coincide with the autumn migration. These courses are recognised by the BTO, have been fully attended and very successful.

The list up to 2019 (Appendix 1) has shown that 116 species have been recorded, 53 species have nested, and 89 species have either been ringed or re-trapped. In 2004 the rarest bird trapped for the Island was a male Little Bunting (*Emberiza pusilla*). This is the only record of the species on the Isle of Wight. (Roberts, 2004)

Within the Manor House and its various old barns and granaries Common Kestrel (*Falco tinnunculus*), Little Owl (*Athene noctua*), Eurasian Jackdaw (*Corvus monendula*), Barn Swallow (*Hirundo rustica*), Collared Dove (*Streptopelia decaocto*), Stock Dove (*Columba oenas*) and European Swift (*Apus apus*) have bred since 2001.

Within the reserve from 2010 to 2016, 60 bird boxes for tits were erected and are now being constantly monitored as part of the Nest Record Scheme of the BTO. In 2015, 60 dormouse nest boxes were installed, and the following year a further 60 dormouse boxes were added. It has been of interest that it has been found that dormice nest in bird boxes, particularly favouring boxes which have had a bird nest which has finished its use for that year. Within the dormouse boxes, it has been particularly noticeable that Blue Tits (*Cyanistes caeruleus*) have bred, and it has also been recorded that Great Tit (*Parus major*) and Eurasian Wren (*Troglodytes troglodytes*) have bred in the dormouse boxes. A paper was written by Robbie Phillips (Phillips, 2017) who carried out this research as part of his final year degree.

Both Eurasian Wren and Tree Creeper (*Certhia familiaris*) have also nested in other boxes. In 2018 Natural England gave funding to add a further 27 nest boxes which included boxes specifically designed for Barn Owl (*Tyto alba*), Little Owl, Stock Dove, Starling (*Sterna vulgaris*) and House Sparrow (*Passer domesticus*). The less common birds which have bred in the reserve are Cetti's Warbler (*Cettia cettia*), Spotted Flycatcher (*Muscicapa striata*) and Water Rail.

There have however been notable changes, particularly in the nesting records. Since 2009 Barn Swallows have ceased to breed, and in 2019 for the first time, the Common Swift did not return to breed. Willow Warblers (*Phylloscopus trochilus*) have ceased to breed on the reserve, and this is in line with national trends. This is likely to be related to climate change, as the numbers in the North of England, and in particular in Scotland, have increased.

Bird ringing has been carried out on a very regular basis since 2001. The birds have mostly been caught in mist nets, but whoosh nets and various traps have also been used. Everyone using any of these methods and ringing or processing the birds caught has the appropriate government licences which are issued after full training.

There have been three birds which had been ringed in Europe caught on migration or movement to the

Island. A Common Whitethroat (*Sylvia communis*) ringed in Spain was the first overseas bird, caught in 2002. Sixteen birds ringed at Haseley have been caught in Europe. The most interesting of these have been a pullus Kestrel ringed in its nest at Haseley in 2010 and found in France six months later in poor condition. Two Fieldfares (*Turdus pilaris*) were ringed in the snow in 2010 and found close to the Arctic Circle five months later. A Teal (*Anas crecca*) ringed in 2016 was shot in France two months later.

The other outstanding record from the reserve was of a Barn Owl, ringed as a pullus on the Island by James Gloyn and re-caught in 2004 and 2007. At the later date it was the longest surviving Barn Owl in British ringing records at 14 years and 7 months. In 2020 a Rook (*Corvus frugilegus*) has been found dead in Horringford, 14 years and three months since being ringed on the reserve.

Full details of the ringing results at the Roberts' Nature Reserve for all the years is available on the IW ringing group website www.iwringinggroup.org.uk

Other species
As well as the records of birds present and breeding, the butterflies have been recorded since 2001. In succeeding years, mammals, flowers, moths, dragonflies, amphibians, reptiles, bats, and beetles have also been recorded. Unfortunately, because of the absence of specialists it has not yet been possible to record other insect groups and spiders comprehensively. Fish have been recorded in the River Yar by the Environment Agency, but there has been almost no recording of the vertebrate and invertebrate life of the ponds.

Mammals
Formal recording of dormice, bats and other small mammals has been done on occasions. Recording of other mammals has been by sight, or by finding dead specimens or spoors.

Hazel Dormouse (*Muscardinus avellanarius*)
The presence of dormice in the reserve was first noted in 2014 by the finding of hazel nut shells showing the classic signs of being opened by dormice. The following year, dormouse nest boxes were put up with the agreement and help of the People's Trust for Endangered Species (PTES). Since then the boxes have been recorded on a monthly basis during the period from April until October each year. All the boxes, both dormouse and bird, are cleaned annually either in December or when no hibernating dormice have been found in the boxes. On only one occasion was a dormouse nest with young found in a natural habitat rather than in a nest box. As well as formal recording, the reserve is also used as a training site by PTES for people who are working towards a national dormouse licence.

From the results held nationally, in 2017 the concentration of Hazel Dormice per hectare in the reserve was higher than in any other recorded site within the United Kingdom. The dormouse breeding at Haseley is earlier than anywhere else in Britain and has been so for several years. (Ian White *pers. comm*.) The results are held in the National Dormouse Monitoring database.

As well as the Hazel Dormouse, Wood Mice (*Apodemus sylvatica),* European pygmy shrew (*Sorex minutus*) and Bank Vole (*Myodes glareolus*) have also been recorded in the boxes.

Bats
Recording of bats has been formally done on three occasions, twice using hand-held bat recorders. On the third occasion bat recorders were left in place for a week. Ten species were recorded. As well as those recorded whilst flying, bats of undetermined species are known to roost in various of the Manor barns/granaries. A male Barbastelle Bat (*Barbastella barbastellus*) has also been found dead in one barn. Further surveys are planned by Jon Whitehurst and the Isle of Wight Bat Group during 2020.

Other mammal species
European Rabbits (*Oryctolagus cuniculus*) are seen daily, and Red Squirrel (*Sciurus vulgaris*), European Water Vole (*Arvicola amphibius*) and European Badger (*Meles meles*) (all nationally protected species) are recorded on a regular basis weekly or monthly. Badgers were present with two setts before the reserve was created and have now spread throughout the area. Red Squirrel was first seen in 2006; the numbers have since slowly risen but are very variable from year to year. Water Vole was recorded soon after the lakes were dug and have been seen or heard several times each year.

Other species of mammal that have been seen are Brown Rat (*Rattus norvegicus*), Weasel (*Mustela lutreola*), Stoat (*Mustela erminea*), Red Fox (*Vulpes vulpes*), European Mole (*Talpa europaea*) and House Mouse (*Mus musculus*).

On only one occasion have small mammal traps been left in place over night. Two species were recorded: Common Shrew (*Sorex avaneus*) Short Tailed Vole, also known as Field Vole, (*Microtus agrestis*).

Reptiles
Grass Snakes (*Natrix helvetica*) are regularly seen during the summer months. They have also been found whilst ditching in the Arreton stream on several occasions during the winter months. Common European Viper (*Vipara berus*) has been recorded on six occasions during the last 19 years.

Amphibia
Slow Worms (*Anguis fragilis*) are very common on the reserve, and under the four special waterproof sheets put out for them, there can be up to 12 slow worms present at any time during the summer months.

Both Palmate Newt (*Lissotriton helveticus*) and Smooth Newt (*Lissotriton vulgaris*) have been found in several of the ponds but particularly in the pond to the north of Heasley Lane.

Arthopoda

Beetles
Beetles have been recorded on a yearly basis by Dr Roger Booth and Sir Anthony Galsworthy from the Natural History Museum in London since 2007. They have been collected in pit traps, by beating bushes, and by close observation. As well as the yearly collecting, beetles have been kept and sent to the Natural History Museum in London for identification at any other time.

Three nationally rare/scarce beetles have been found. These are Spanish Fly (*Lytta vesicatoria*), Telmatophilus *brvicollis* (Red data book 1994 – rare) which feeds on *Sparganum* sp (bur-reed) in the marsh area, and a ground beetle *Elaphrus uliginosis* which is nationally scarce (2016). The total number of beetle species recorded to date is 232.

A beetle which has become very common since 2018 is the Alder Leaf Beetle (*Agelastica alni*). This had been considered extinct until rediscovered in Lancashire in 2004, and it is now spreading southwards.

Dragonflies
Dragonflies and damselflies have been monitored during their flying season on a regular basis most years by Dave Dana and Jim Baldwin since the creation of the lakes. The unusual records have been Downy Emerald (*Cordulia aenea*), Red-eyed Damselfly (*Erythronima najas*) and Small Red-eyed Damselfly (*Erythronima viridulum*).

Butterflies
Butterflies have been recorded on a regular and on an arbitrary basis, and on specific repeatable walks to add to the annual national surveys when they have occurred. Grayling *(Hipparchia semele)* is one of the more unusual species of the 30 that have been recorded.

Moths
Moths have been recorded by light trapping on six occasions at yearly or two-yearly intervals by Richard Smout and Iain Outlaw. Six nationally rare species have been recorded of the 215 species recorded to date. Regular moth surveys are happening.

Other Insects
Some formal recording of other orders of insect has been carried out both in the Bioblitz of 2019, and by Galsworthy on an annual basis. This has included mites (David Biggs) and Ichneumon Flies. Five species of Bumblebee, including the Tree Bumblebee (*Bombus hypnorum)* which since 2016 has nested in one or more bird boxes, one species of Masonry Bee, and the Western Honey Bee (*Apis mellifera*) have been recorded.

Arachnida
The visually striking Wasp Spider (*Argiope bruennechi*) was seen in 2014, 2017 and 2018.

Flowering Plants
The first botanical survey was carried out in 2003/4 by Bill Shepard and Sue Blackwell of Isle of Wight Natural History and Archaeological Society. A total of 211 species were recorded. A formal assessment of the botany of the wetland areas to the north of Heasley Lane and around the lakes to the south was carried out in 2008 by ECOSA Ltd for the Isle of Wight Council. In 2019, as part of the Island Bioblitz, further recording was carried out. All species records for the reserve are held in the IWNHAS database

The Future of the Reserve
The profile of any natural reserve will change with time. It is already a requirement for the Higher Level Stewardship (HLS) from Natural England that 10 to 15% of each reed bed is cut each year, and the cut vegetation removed to higher land. This has the advantage of preserving the reed bed which would otherwise fill with the dead vegetation of each year, allowing further non-reed plants to germinate more easily. The next problem which will need continual monitoring and management is the reduction in the willows, and their natural seeding which otherwise will continue to result in the take-over of the lakes and the pond.

It is also known that for the reserve to remain ideal for the Hazel Dormouse, coppicing will be needed at regular intervals in the future. With the agreement of Natural England, a trial of coppicing against pollarding is to be carried out in the next year or two. This coppicing/pollarding might also be of advantage to several species of bird which are otherwise likely to decrease with the increase in height of the trees and the reduction of low vegetation.

It is intended to continue with the recording of the various animal phyla which have been done for the past years, and scientists who are able to identify other phyla are being sought, and it is hoped that more complete recording both of species and of numbers will be carried out in the next few years.

The long-term plan on the sale of the Manor House is that the reserve will be separated and given to the People's Trust for Endangered Species so that it remains in perpetuity as a reserve for conservation and for scientific recording. Just one building, of limited size, as a study centre and store would be allowed to be added.

References
Colenutt, Simon. 2008. Vegetation Survey of Wet Grassland Sites on the Isle of Wight Final Report Ecosa Ltd

National Dormouse Monitoring Programme (NDMP) PTES https://ptes.org/campaigns/dormice/surveying-and-monitoring-hazel-dormice/national-dormouse-monitoring-programme-ndmp/ Accessed 25th May 2020

Phillips, R. 2017. Unpublished undergraduate dissertation University of Exeter

Roberts, A. 2004. Little Bunting (*Emberiza pusilla*) at Arreton. A new species for the Isle of Wight. *Isle of Wight Bird Report* 2004, p137

Trott, K. 2003 'An archaeological evaluation at Haseley Manor, Arreton, Isle of Wight', KTAS specification no 40

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Island Rivers Group and the Isle of Wight Ringing Group have carried out conservation work to remove Himalayan Balsam.

Pond Warden course organisers have given practical advice and training

Isle of Wight Ringing Group have made a major contribution to the recording effort, and assistance has also been given by many national and local experts.

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Appendix 1 Birds of the reserve 2001 - 2019

IOC World Bird List international English name	Scientific name	Breeding recorded	Ringed
Red-legged Partridge	*Alectoris rufa*	*	
Grey Partridge	*Perdix perdix*	*	
Common Quail	*Coturnix coturnix*		
Common Pheasant	*Phasianus colchicus*	*	
Canada Goose	*Branta canadensis*	*	#
[Bar-headed Goose]	*Anser Indicus*		
Mute Swan	*Cygnus olor*	*	#
Gadwall	*Mareca strepera*		
Eurasian Wigeon	*Mareca penelope*		
Mallard	*Anas platyrhynchos*	*	#
Eurasian Teal	*Anas crecca*		#
Tufted Duck	*Aythya fuligula*	*	#
Common Swift	*Apus apus*	*	#
Common Cuckoo	*Cuculus canorus*		
Rock Dove/Feral Pigeon	*Columba livia*		
Stock Dove	*Columba oenas*	*	#
Common Wood Pigeon	*Columba palumbus*	*	#
Eurasian Collared Dove	*Streptopelia decaocto*	*	#
Water Rail	*Rallus aquaticus*	*	
Common Moorhen	*Gallinula chloropus*	*	#
Eurasian Coot	*Fulica atra*	*	#
Little Grebe	*Tachybaptus ruficollis*		#
Great Crested Grebe	*Podiceps cristatus*		
Northern Lapwing	*Vanellus vanellus*		#
Common Ringed Plover	*Charadrius hiaticula*		
Little Ringed Plover	*Charadrius dubius*		
Black-tailed Godwit	*Limosa limosa*		
Dunlin	*Calidris alpina*		
Eurasian Woodcock	*Scolopax rusticola*		
Jack Snipe	*Lymnocryptes minimus*		#
Common Snipe	*Gallinago gallinago*		#
Common Sandpiper	*Actitis hypoleucos*		#
Green Sandpiper	*Tringa ochropus*		#
Wood Sandpiper	*Tringa glareola*		
Common Greenshank	*Tringa nebularia*		
Black-headed Gull	*Chroicocephalus ridibundus*		#
Mediterranean Gull	*Ichthyaetus melanocephalus*		
Common Gull/Mew Gull	*Larus canus*		
Great Black-backed Gull	*Larus marinus*		
European Herring Gull	*Larus argentatus*		#
Lesser Black-backed Gull	*Larus fuscus*		
Great Cormorant	*Phalacrocorax carbo*		
Grey Heron	*Ardea cinerea*		#
Great Egret	*Ardea alba*		
Little Egret	*Egretta garzetta*		
Eurasian Sparrowhawk	*Accipiter nisus*		#
Hen Harrier	*Circus cyaneus*		
Red Kite	*Milvus milvus*		
Common Buzzard	*Buteo buteo*		#
Western Barn Owl	*Tyto alba*		#
Little Owl	*Athene noctua*	*	#
Eurasian Hoopoe	*Upupa epops*		
Common Kingfisher	*Alcedo atthis*		#
Great Spotted Woodpecker	*Dendrocopos major*	*	#
European Green Woodpecker	*Picus viridis*	*	#
Common Kestrel	*Falco tinnunculus*	*	#
Eurasian Hobby	*Falco subbuteo*		#
Peregrine Falcon	*Falco peregrinus*		
Eurasian Jay	*Garrulus glandarius*	*	#
Eurasian Magpie	*Pica pica*	*	#
Western Jackdaw	*Coloeus monedula*	*	#
Rook	*Corvus frugilegus*		#
Carrion Crow	*Corvus corone*	*	#
Northern Raven	*Corvus corax*		
Coal Tit	*Periparus ater*		#
Eurasian Blue Tit	*Cyanistes caeruleus*	*	#
Great Tit	*Parus major*	*	#
Eurasian Skylark	*Alauda arvensis*		
Sand Martin	*Riparia riparia*		#
Barn Swallow	*Hirundo rustica*	*	#
Common House Martin	*Delichon urbicum*		#
Cetti's Warbler	*Cettia cetti*	*	#
Long-tailed Tit	*Aegithalos caudatus*	*	#
Wood Warbler	*Phylloscopus sibilatrix*		#
Yellow-browed Warbler	*Phylloscopus inornatus*		#
Willow Warbler	*Phylloscopus trochilus*	*	#
Common Chiffchaff	*Phylloscopus collybita*	*	#
Sedge Warbler	*Acrocephalus schoenobaenus*	*	#
Eurasian Reed Warbler	*Acrocephalus scirpaceus*	*	#
Common Grasshopper Warbler	*Locustella naevia*		#
Eurasian Blackcap	*Sylvia atricapilla*	*	#
Garden Warbler	*Sylvia borin*		#
Lesser Whitethroat	*Sylvia curruca*	*	#
Common Whitethroat	*Sylvia communis*	*	#
Common Firecrest	*Regulus ignicapilla*		#
Goldcrest	*Regulus regulus*	*	#
Eurasian Wren	*Troglodytes troglodytes*	*	#
Eurasian Treecreeper	*Certhia familiaris*	*	#
Common Starling	*Sturnus vulgaris*	*	#
Ring Ouzel	*Turdus torquatus*		#
Common Blackbird	*Turdus merula*	*	#
Fieldfare	*Turdus pilaris*		#
Redwing	*Turdus iliacus*		#
Song Thrush	*Turdus philomelos*	*	#
Mistle Thrush	*Turdus viscivorus*	*	#
Spotted Flycatcher	*Muscicapa striata*	*	#
European Robin	*Erithacus rubecula*	*	#
European Pied Flycatcher	*Ficedula hypoleuca*		#
Common Redstart	*Phoenicurus phoenicurus*		#
Whinchat	*Saxicola rubetra*		#
European Stonechat	*Saxicola rubicola*		#
Northern Wheatear	*Oenanthe oenanthe*		
House Sparrow	*Passer domesticus*	*	#
Dunnock	*Prunella modularis*	*	#
Western Yellow Wagtail	*Motacilla flava*		#
Grey Wagtail	*Motacilla cinerea*		#
Pied Wagtail	*Motacilla alba yarrellii*	*	#
Meadow Pipit	*Anthus pratensis*		#
Tree Pipit	*Anthus trivialis*		#
Common Chaffinch	*Fringilla coelebs*	*	#
Brambling	*Fringilla montifringilla*		#
Eurasian Bullfinch	*Pyrrhula pyrrhula*	*	#
European Greenfinch	*Chloris chloris*	*	#
Common Linnet	*Linaria cannabina*		#
Lesser Redpoll	*Acanthis cabaret*		#
European Goldfinch	*Carduelis carduelis*	*	#
European Serin	*Serinus serinus*		
Eurasian Siskin	*Spinus spinus*		#
Yellowhammer	*Emberiza citrinella*	*	#
Little Bunting	*Emberiza pusilla*		#
Common Reed Bunting	*Emberiza schoeniclus*	*	#

Re-discovered Items from the Shanklin Natural History Museum Collection (1935 - 1943)

Colin R. Pope

Abstract *The Isle of Wight Natural History Museum was opened on 17th April 1935 by Sir Edward Bagnall Poulton at the Swiss Chalet in the grounds of Rylstone Manor at Shanklin. Many important items were donated by members of the Isle of Wight Natural History & Archaeological Society. The Museum had a short life. It suffered damage during the Second World War and was never re-opened. Many specimens were irretrievably damaged and what survived was poorly housed and suffered further deterioration. By 1989, what remained was moved back to Rylstone Chalet and in due course, was properly curated and is now safely housed by the Isle of Wight Council Museum Service at Cothey Bottom Heritage Centre. Most of the original bequests were believed to have been lost over the intervening years and were documented by Bingham & Larkum (2014). Remarkably, a number of co-incidences over the past five years have meant that several important items have been returned or re-discovered , and are now in safe keeping.*

Rylstone Manor, situated on the south side of Shanklin Chine, was a private gentleman's residence constructed in 1863. A Swiss chalet (Plate 1) was constructed in the grounds in 1880. It originally served as a billiard room and library for the Manor House. The Manor remained in private hands until 1923 when the house, grounds and chalet came into the ownership of Shanklin Urban District Council.

PLATE 1: Rylstone Chalet, Rylstone Gardens, Shanklin

In the early 1930s, following the death of Reginald Fox, a distant relative of Charles Darwin, a former President of IWNHAS, and resident of Shanklin, his brother Rev Gilbert Basil Darwin Fox (1865-1941) donated Reginald's collection of lepidoptera and birds' eggs to Sandown & Shanklin UDC, together with items connected with Charles Darwin and Rev W. Darwin Fox (Poole 1935, Bingham & Larkum 2014).

Hubert F Poole, a prominent member of IWNHAS was appointed, at his request, to curate and expand the collection, to be housed in Rylstone Chalet. On 14th November 1934, Poole gave an address to members of the IWNHAS entitled 'The museum of Isle of Wight Natural History: Its origin, purpose and prospects' in which he stated that the late Reginald Fox had bequeathed his collection of birds, birds' eggs, butterflies and moths to the District Council. The Council had provided two rooms and made a grant of £20 towards the purchase of exhibition cases. The whole of the Fox Collection was in store-boxes unsuitable for display. Suitable new cases were procured, built to match the general scheme of furnishing in light oak. Other donations included various mounted birds in cases. Lt-Col. R.M. West, another prominent Society member, had promised a collection of Coleoptera.

In due course, the Museum of the Isle of Wight Natural History was opened by Sir Edward Bagnall Poulton on 17th April 1935. Jim Cheverton, a prominent member of the Society and past president who died in 2015, attended the opening ceremony at the age of 13. He remembered seeing the stuffed birds and birds' eggs (Stafford, 2009). Hubert Poole's aim as curator was to limit the collections to botany and zoology of the Island, and to make the collection fully illustrative of Frank Morey's '*Guide to the Natural History of the Isle of Wight*' (1909).

Hubert Poole worked hard at encouraging donations of items and curating the collections, but his health deteriorated, and he was unable to continue beyond September 1939. He died in 1945. Despite the efforts of Sandown & Shanklin UDC to find a replacement, this did not happen. During the War, in early 1943, the roof of the chalet was damaged when a German bomb exploded in the grounds. Much damage was caused to the cases, cabinets and specimens, causing the museum to be closed for the period of the War (Poole, 1943). The damage to the roof was not repaired, thus allowing water penetration to cause further deterioration and the Museum never re-opened to the public.

Soon after the War, the Museum became the responsibility of Mr Jackman, the Sandown-Shanklin librarian. Faced with the task of salvage, he was apparently ruthless in discarding specimens (Stafford, 1973). After strong protests from Dr J. Cowper, he agreed to keep what he could, although by this time much had already been lost. Around this time, the surviving exhibits were removed to storage in Shanklin Fire Station. John Stafford reports having seen them here in 1955 and he describes that they were 'stacked high against a wall in a very bad environment.' In

1958, they were examined by Rev. A.P. Allan and, on his advice, some further specimens were discarded, and the remainder were moved to the Reading Room in Shanklin Library. They remained here until they were moved back to Rylstone Chalet where they were re-united with the Society for a period of ten years from 1991 to 2001, when it was used as a base by the Society. However, prior to their return to Rylstone, some items including biological records, some insect cases and birds' eggs, were stored for a time in the storeroom at Ryde Library.

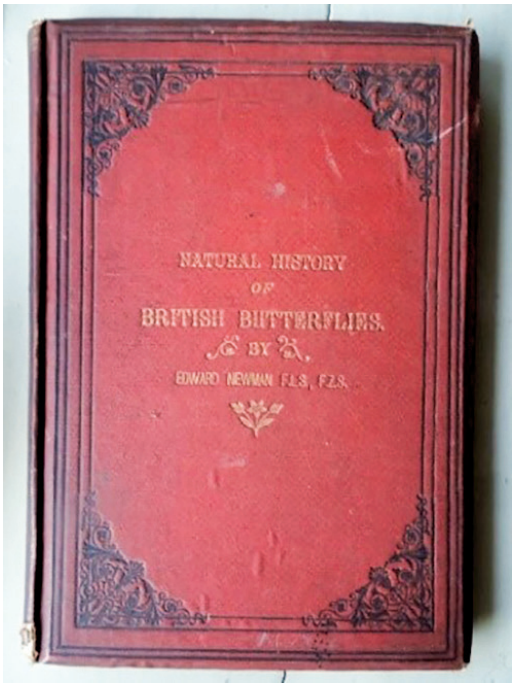
Given the chequered history and long periods of neglect, it is remarkable that anything from the Natural History Museum survives but some items do. After the Society moved out of Rylstone Chalet, the Isle of Wight Council Museums Service arranged for the remaining items to be inspected by Dr C. J. Palmer, Keeper of Biology for Hampshire County Museum Service. On his advice, the material was sent to the Booth Museum, Brighton for conservation. What was returned was finally in good condition and is now safely held at the Isle of Wight Museum Stores, Cothey Bottom, Ryde in a secure environment. Not all of this collection of natural history items was associated with the Museum, but it includes what remains of Herbert Poole's entomological collection and Col. West's cabinets of Coleoptera.

Taxidermy Specimens

According to the records, mounted birds donated to the Museum included a Rose-coloured Pastor (Rose-coloured Starling) donated by Mr Riddick and a Golden Oriole donated by Poole, who picked up a female oriole, in a dying condition, on May 3rd 1899. When John Stafford viewed the collection of items when stored at Sandown Library (1973) he records seeing four birds all presented by Dr Marshall. These were Rose-coloured Starling (1830), Roller (1877), Bee-eater (1880) and Golden Oriole (1880). The labels on the back of the cases revealed that the first three had all been obtained in different mainland locations and it was likely that the Golden Oriole, which had lost its label, was also obtained there. John Stafford was unaware of any previous reference to these birds and he considered that they have no connection with the Museum.

Whilst the collection was housed at Rylstone Chalet, several of these specimens were still in existence (Plate 2). Apparently, the Rose-coloured Starling was deemed to be in poor condition, and was destroyed when the collection was sent to Brighton. The Roller and the Golden Oriole were restored and returned and are housed at Cothey Bottom. However, Plate 2 shows that the case containing Golden Oriole contained both male and female birds. When sent for restoration, the female was in poor condition and considered not to be part of the original setting so it was removed. It is just possible that this was the female Golden Oriole

PLATE 2: Part of the collection housed at Rylstone



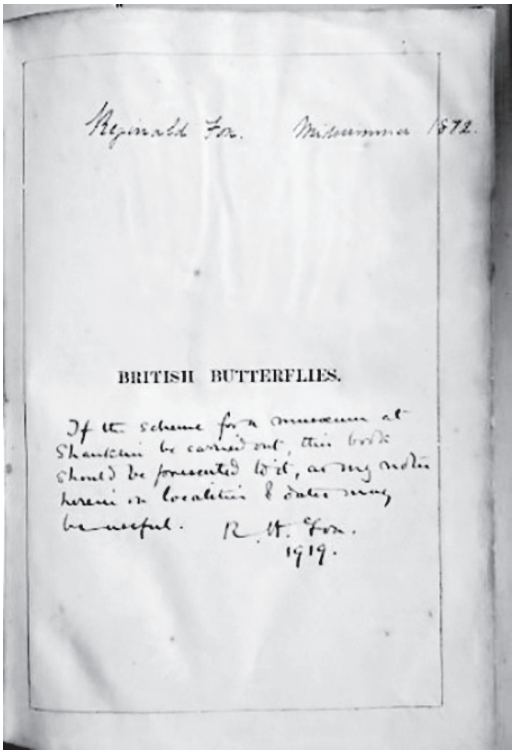


PLATE 3: (right) The copy of 'Natural History of British Butterflies', by Edward Newman, belonging to Reginald Fox showing the inscribed frontispiece (Property of IWNHAS)

donated by Poole. The Cothey Bottom collection also contains a case containing two Black Guillemots and a Razorbill with no information.

Reginald H. Fox bequest of Butterflies and Moths

The collection of birds, birds' eggs, butterflies and moths left to the Museum by the late Reginald Fox formed the foundation of the Museum collection. Sadly, Fox's insect collections have not survived. However, in 2019 the Society was donated a copy of 'An Illustrated Natural History of British Butterflies' by Edward Newman (1871) which was owned by Reginald Fox (Plate 3).

The book came from the library of the late Bernard J. Hawkins of Ryde. It is inscribed 'Reginald Fox, midsummer 1872', so it was probably given to him by his father just after the book was published, when he was twelve years old and living at Delamere in Cheshire. The book is full of manuscript annotations of butterfly sightings dating from 1877 up until 1930, three years before his death. In the frontispiece is a note 'If the scheme for a museum at Shanklin be carried out, this book should be presented to it, as my notes herein on localities and dates may be useful. R. H. Fox 1919.'

The museum was not established until Easter 1935 but Fox's annotated notes provide a flavour of what his collection would have included. One of his earliest records refers to the Wood White, long extinct on the Island. Fox says, 'once took a specimen at Borthwood about 1877'. This could well be the latest Isle of Wight record, and is not published elsewhere. Borthwood (i.e. Borthwood Copse) was a popular collecting ground for butterflies in the late nineteenth and early twentieth century when the wood would have been actively managed providing plenty of open, flowery ground for insects. With respect to the Purple Hairstreak, Fox says, 'I once saw this insect so truly abundant in Borthwood that I took five in the net at one sweep: they were playing about over scrub oak in the evening sunshine: this would be in about 1910'. Frank Morey, founder of IWNHAS, bequeathed Borthwood Copse to the National Trust in 1926, having purchased it a few years earlier to preserve it for wildlife.

The book includes extensive notes on localities and abundance of the Glanville Fritillary. Although many of our butterflies have declined in more recent years, it is worth remembering that some species which are common today have not always been so. Fox describes the Speckled Wood as being not common on the Island and the Grizzled Skipper as being 'Never really common, but always to be found in May'. The Comma was a rarity away from its stronghold in the West Midlands. Fox says, 'Used to get these in rotten fruit in Cheshire. Not at all uncommon in Worcestershire in hop-gardens in 1880: could get all I wanted at a penny per pupa R.H.F.' and he records the slow colonisation of the Island in the late 1920s after its reappearance at Wootton in 1921.

There is a letter inserted into the book from Shanklin Lawn Tennis Croquet and Bowling Club dated 15th August 1930 requesting Reginald Fox to renew his annual membership. He was a keen golfer and he died following an accident on Sandown Golf Course in 1933.

The Darwin Fox Watercolours of Birds' Eggs

Poole (1935) records the gift of 'Six water colour drawings of birds' eggs. A series of these, taken from eggs collected by the Rev. W. D. Fox, was made by Mrs Fox for Charles Darwin. The remainder of the series is in the Shrewsbury Museum.' When inspected by John Stafford and A. L. Hutchinson in September 1973 in the reading room of Shanklin library, they found that the watercolours were in poor condition. 'The drawings themselves are very dusty, and their surround is badly stained. We recommend that they be cleaned professionally and reframed. A suitable person to undertake this work would be Mr W. G. Stapleton, 2 Holyrood Street, Newport.' Stafford (2009) remembers seeing the paintings again in the 1980s and no work had been done to them. They were in the office of Dr Alan Insole (Museums Officer) in the basement of Ryde Library. He had apparently rescued them from a pile of rubbish outside which was due to be burned. I remember being shown them by Dr Alan Insole when the collection had been moved to Rylstone Chalet. There were three paintings, each about postcard size, in poor condition in a single frame. They have not been seen since. I have contacted Shrewsbury Museum Service regarding the other water colours and Emma-Kate Lanyon, Collections and Curatorial Services Team Leader has replied, 'I am afraid I can find no reference to the watercolours of birds' eggs in our current collections database or that of Shropshire Archives. I have also checked the accession registers for the museum, which go back to the foundation in 1835. I can find no reference to a donation by a member of the Fox family apart from a taxidermy specimen of a Goosander shot by Darwin and presented by Mrs Gerard Fox. Unfortunately, it seems that this was disposed of along with a large number of taxidermy specimens in the mid twentieth century.'

However, on recent inspection of documents relating to H. F. Poole held by Carisbrooke Castle Museum, I was surprised to come across a card with two mounted water colours of bird's eggs (Plate 4) and an inscription by Poole in which he states that the bulk of the collection is in the Shrewsbury Museum and six are with the Darwin-Fox items at Rylstone Museum, Shanklin. Clearly, Poole must have retained two of the paintings and these are now at Carisbrooke Castle Museum. The two eggs are labelled Sparrowhawk, dated July? (month unclear) 1839 and Spotted Gallinule, dated 14th December 1839. Spotted Gallinule is an old name for the Spotted Crake, a very rare and poorly known breeding bird in Britain and Ireland and one for which it is notoriously difficult to find nests. Land drainage and wetland conversion contributed to the rarity of this bird but it was probably breeding very locally in the early part of the nineteenth century.

The dates on these paintings confirm that they were painted by Fox's first wife, Harriet Fletcher. William Darwin Fox graduated from Cambridge in the winter

of 1829 and took up a curacy at Epperstone, near Nottingham. He was forced to take sick leave in 1833 and convalesced at Ryde on the Isle of Wight. The Fox family had a long-standing connection with the Isle of Wight (Bingham & Crombie, 2009). Fox's mother Ann Fox née Darwin, had 'stayed there often and there are drawings in the family made by Ann Darwin at Binstead, Isle of Wight.' It was here that he met his first wife Harriet Fletcher and they were married on 11th March 1834. However, by the time Harriet painted the eggs, William had taken up a curacy at Delamere near Chester. Charles Darwin was interested in the variation of birds' eggs and he wrote letters to his cousin about this topic. William Darwin Fox was an avid birds' egg collector and he obtained series of birds' eggs to illustrate their variation. He was in regular correspondence with William C. Hewitson of Newcastle, who was the foremost authority of birds' eggs in this country at the time and published 'British Oology – Illustrations of the eggs of British birds' in 1831, illustrated by his own paintings. Fox was a subscriber to this book and Hewitson credits his 'friend Rev. W. D. Fox' in his acknowledgements for supplying information and specimens of nests and eggs. They regularly corresponded and exchanged eggs. There is a letter from Darwin to Fox, held by Cambridge University Library, asking if he can borrow his copy of 'British Oology.'

Interestingly, in February 2014 the County Records Office at Newport received two small batches of historic letters found in the basement of Ryde Library. They included a letter from Charles Darwin to William Darwin Fox regarding domestic matters and, more pertinent, a letter from William Hewitson to Darwin Fox offering him birds' eggs. It is dated 18th December 1836 and is addressed to Rev. W. D. Fox, Ryde, Isle of Wight. In the letter he relates to a gentleman, Mr Hoy, who has returned from Holland on an egg collecting expedition and is offering his duplicate eggs for sale, to raise funds to enable him to return. Hewitson says, 'he has most liberally sent such a box of rarities to dream of.' Although Hewitson considered that the prices were too high, he sent an order for £5 and offered to obtain further specimens for Fox and for his Newcastle friends. He provides a list of 25 birds' eggs with prices per egg in shillings.

These are Purple crested Heron (Purple Heron) 2s; Spoonbill 2s; Little Bittern 5s; Black-tailed Godwit 1s; Ruff 1s; Crested Grebe (Great Crested Grebe) 2s; Garganey Duck 3s; Shoveller Duck 2s; Gadwall 3s; Sheld Drake 1s; Water Rail 2s; Spotted Rail (Spotted Crake) 1s; Golden Plover 1s; Little Owl 5s; Great Shrike (Great Grey Shrike) 2s; Woodchat 2s; Wood lark 2s; Ortland Bunting 2s; Blue throated Warbler (Bluethroat) 2s; Grey headed Wagtail 2s; Golden Oriole 2s; Hoopoe 2s; Cirl Bunting 2s; Bearded Tit 2s; and Night Heron 4s. It appears that Fox has marked the list with his choices, namely Garganey, Gadwall, Golden Plover, Woodlark and Cirl Bunting. Spotted Crake is on the list but it is likely that he already had

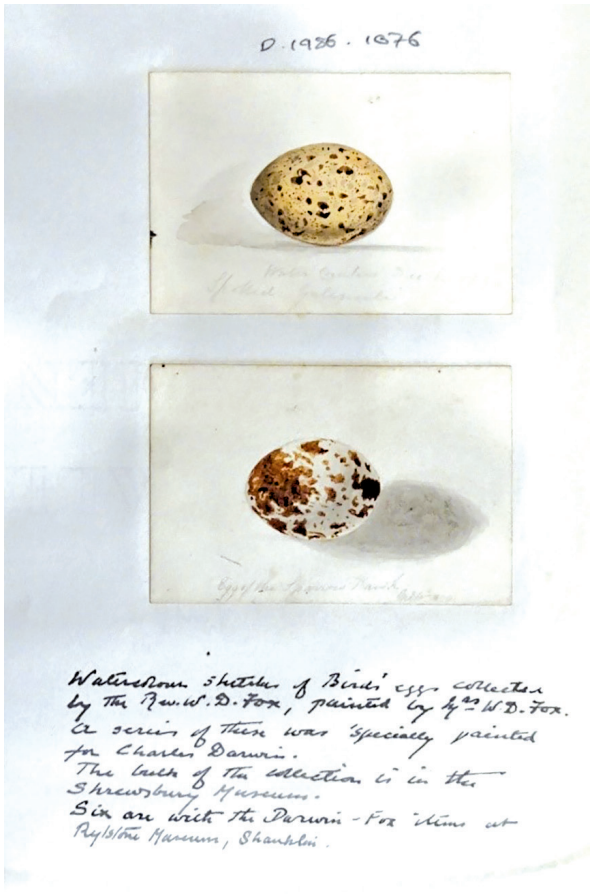


PLATE 4: Water colours of Spotted Crake (top) and Sparrowhawk (bottom) eggs by Harriet Fletcher Fox (Property of Carisbrooke Castle Museum)

eggs of this species as he has not marked it as one of his requirements.

The origin of these letters from the basement of Ryde Library is curious. They all seem to have been sent to addresses in Ryde. At one time there was a small museum, the property of the Isle of Wight Philosophical and Scientific Society, in the School of Art, a building which opened in 1874 on the site of the present Ryde Library. The collection included a number of interesting fossils and some fragments from the ruins of Quarr Abbey (Ward Lock 1912). There is also a suggestion that there was some correspondence from Darwin. In 1933, Ryde branch library was opened at the School of Art for 1½ hours a week. In the following year, the library was transferred to the reading room in the old branch of the Ryde Y.M.C.A. in 5 Lind Street. It remained in this location until 1965 where the library was moved back to its current location following the demolition of the School of Art and the building of the current library. At some stage, thirty-nine geological specimens from the Ryde Museum were transferred to Sandown Geological Museum (Peaker & Bingham, 2016). For a period of time in the 1980s, the Council's Museum Officer, Dr Alan Insole, held an office in the basement of Ryde Library where biological records and other items were kept in store before being moved to Rylstone Chalet. The historic letters found in the basement of Ryde Library were left behind when the other items were moved to Rylstone Chalet. It is possible that they may owe their origins to the early museum.

Reginald H. Fox bequest of Birds' Eggs

Fox's collection of birds' eggs was donated in store boxes, unsuitable for display. It is likely that some display cases were made up for exhibition purposes. When Stafford (1973) examined what remained at Shanklin Library, he reported that 'They are mostly of common species, but contain some interesting series of colour varieties. A few have been broken, and many are missing, including some of the most significant, e.g. Chough.' The fact that the collection included colour series points to the possibility that these eggs may have originated from the Fox family. Several small boxes of birds' eggs survived the various moves and were taken to Brighton for conservation. The collection had no supporting data so it could not be determined whether they originated from the Fox collection or from subsequent gifts of eggs known to have been donated to the Museum. The decision was taken not to retain them and they were crushed.

Until recently, that was believed to have been the end of the story. However, in November 2019, a chance discussion between Jillie Pope and David and Selena Bone revealed that an historic collection of blown birds' eggs was still in existence. Apparently, on John Stafford's death in 2010, Bill Shepard arranged for them to collect the eggs from the Stafford's house and look after them. They were stored in the Bone's loft. The collection comprised a wooden box containing two compartmented drawers of mostly labelled clutches of eggs in cotton wool, together with a battered old cardboard box dated 1988 containing a large jumbled collection of eggs. Egg collecting was a very popular pastime in the late nineteenth and early twentieth century. It cannot be confirmed that this collection of eggs is connected with that of Darwin Fox but it is possible that John Stafford took charge of them at the time when the Museum collection was being transferred from storage to Rylstone Chalet, presumably with a view to sorting and documenting them. There is no evidence that he actually did this.

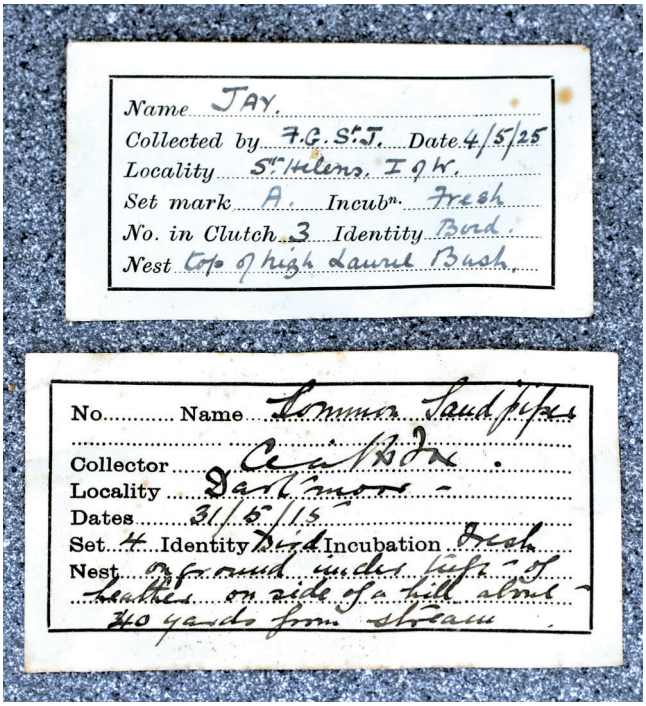


PLATE 5a: Examples of some of the labels accompanying the eggs, giving collection details

PLATE 5b: A clutch of Red-backed Shrike eggs (both items are property of IWNHAS)

The eggs collection fits John Stafford's description of the eggs seen by him at Shanklin Library in 1973, namely mostly common species, but containing some interesting colour varieties, but there are also a few more unusual species amongst them. Many of them have beautifully written inscriptions on the shells, a highly skilled job. These inscriptions vary but generally comprise one or more of dates of collection, names and locations. There are also labels with some of the eggs providing more detailed information (Plate 5a). Eggs or labels with dates range from 1851 to 1925 and, assuming this is all one collection, many eggs were acquired from other collectors. There are Osprey eggs from Japan, Common Tern eggs from Syria and Coot and Little Grebe eggs from Turkey (Iskenderun). There are several collections from Essex (Harwich and Copperas Wood), Kent and Suffolk. There are some eggs from F. G. St John and, intriguingly some eggs collected by a Cecil H. Fox in Devon and Cornwall in 1915 and 1917. To date, no link between Cecil Fox and the Darwin Fox family has been established.

Where the information is given, only a small percentage of the eggs were taken on the Island and these have dates ranging from 1919 to 1925, a period when Reginald Fox was active on the Island. These are all common species apart from a clutch of five eggs of Red-backed Shrike taken on the Island in May 1922 (Plate 5b). The handwriting on the labels is believed to be that of Hubert Poole (P. Bingham, pers. com.) Fox (1909) says that this bird is 'not uncommon in the Island. Though I have examined many clutches of eggs, I have not met with the red-spotted form here.' However, subsequent authors consider it to be extremely rare as a breeding species and there is no reference to a 1922 breeding record. Red-backed Shrike has not bred on the Island for over sixty years and indeed it has declined to extinction in southern England where it was once not uncommon.

Collection of birds' eggs was outlawed in the UK under the Protection of Birds Act 1954 and it is only legal to possess a wild bird's egg if it was collected before 1954 unless otherwise by special licence for research purposes. The Natural History Museum outpost at Tring (Herts.) holds the largest collection of historic birds' eggs in the World.

Darwin and Fox relics given by Reginald Fox's brothers on his death

An important set of relics of the Fox and Darwin families donated by Gilbert Basil Darwin Fox was bequeathed to the Museum in 1935. These were described by curator H. F. Poole (1935) and some of them were illustrated.

In 2009, John Stafford related his understanding that during the war, Hubert Poole had taken some of the Darwiniana items into his care, and that these were auctioned on the Island in 1958 after the death of Poole's son (Bingham & Larkum, 2014). This might well be the case, but in June 2018 some of the Darwiniana items were returned to the County Collection having been acquired, in good faith, a number of years previously at an auction in Bournemouth. The purchaser recollected that there were two lots of Darwin items (he could not afford the second lot), and in addition there may have been a Darwin letter. The purchaser does not recollect when he purchased the items and only realised they were part of the Fox bequest when he showed the items this year to an IWNHAS member.

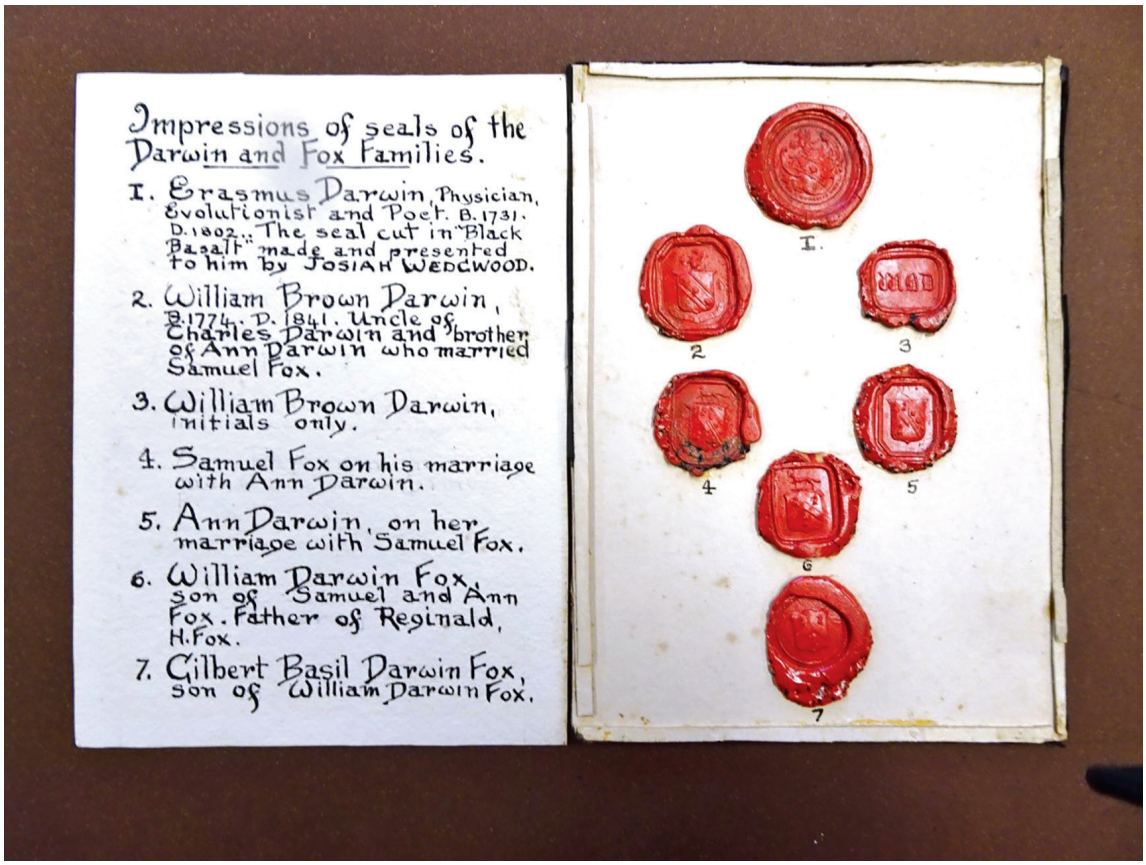


PLATE 6: Wax seal impressions of members of the Darwin and Fox families (County Records Office)

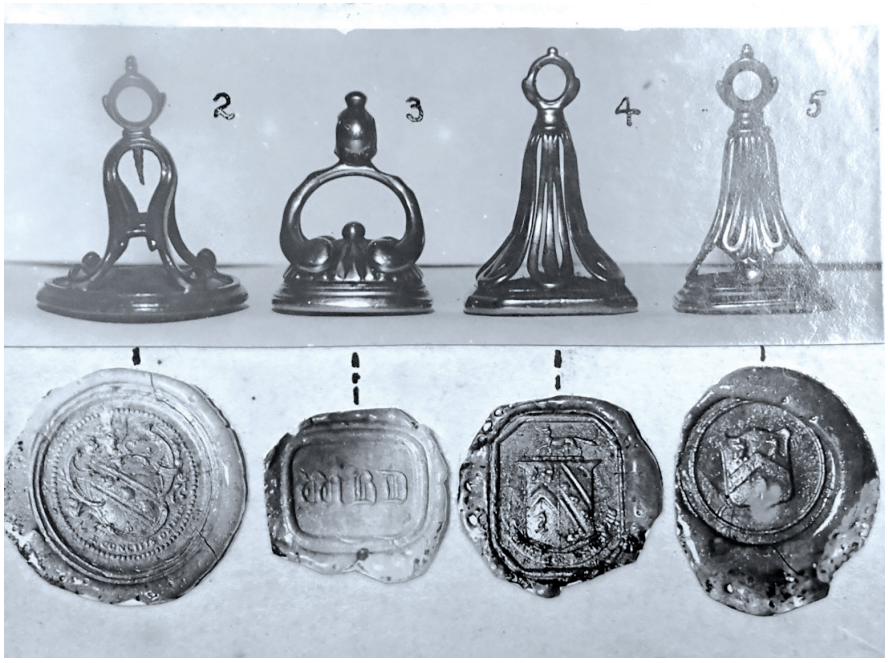


PLATE 7: (Right)
Photograph by Hubert Poole (1935) of four of the Darwin/Fox seals (County Records Office)

The returned items comprise material from the Darwin and Fox families, and corresponds with some of the items listed by Poole as having been donated to the Shanklin Museum (correspondence, photographs and imprints of family wax seals).

In the mid-19th Century, the cost of postage began to incorporate the number of sheets of paper being sent rather than merely the weight of the package, causing the cost of sending letters to rise considerably. Using a wax seal to seal the paper closed was a cheaper option than using an envelope, or to seal an envelope at the time when gummed envelopes had yet to appear. Wax sealed letters became commonplace (Plate 8a). Many people had their own seal designed, incorporating interlocking letters or symbols, or a family crest if they had one. This was the case with members of the Darwin and Fox families. The collection of seven seals donated to the Shanklin Museum (none of which have been returned) comprised those of Erasmus Darwin 1731-1802; William Brown Darwin 1774-1841 (uncle of Charles Darwin and brother of Ann); William Brown Darwin; Samuel Fox on marriage to Ann Darwin; Ann Darwin on marriage to Samuel Fox; William Darwin Fox (son of Samuel and Ann); and Gilbert Basil Darwin Fox who donated the collection. What has been returned, are the wax imprints of these seals (Plate 6) and the photograph of the seals and their imprints taken by Hubert Poole (Plate 7) and originally published in the Proceedings (Poole, 1935). The Society also holds a poor copy of wax impressions of the seals; the origin of these is unrecorded. Carisbrooke Castle Museum has a different black and white photograph of the imprints of the seals taken by Poole (item D.1986.1060). The manufacture of pre-gummed envelopes and postal reforms led to a steady decline in the use of seals during the 20th Century.

Also included in the collection is a Carte de Visite of Charles Darwin taken by Elliott and Fry of Portman Square, London, a signed copy given by Darwin to the Rev W. Darwin Fox (Plate 8b). A Carte de Visite

PLATE 8a:
An illustrated letter from Robert Alvey Darwin to his cousin, dated 11th November 1845 with sealed envelope

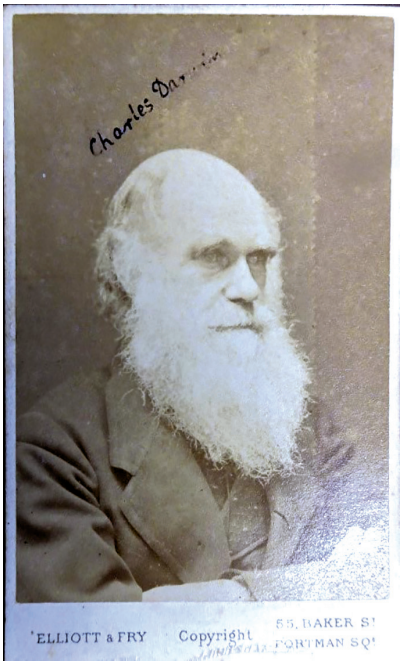


PLATE 8b:
Carte de Visite of Charles Darwin (held at the County Records Office)

was a small type of photograph, usually made of an albumen print mounted on thicker paper card so that it is more robust and can be used as a visiting card. They became very popular in the late nineteenth century and were traded amongst friends and visitors. Darwin was a photography enthusiast and he used the firm Elliot and Fry to produce Carte de Visites for him on several occasions. They would travel down to his home, Down House in Kent, to take the pictures. This one dates from the 1870s.

Other items returned to County Records Office were correspondence from Erasmus Darwin to a Mrs Hughes, and an impression of a seal used by Dr Erasmus Darwin. In total, they correspond with items referred to as 4, 8, 9, 13 and 16 in Poole's paper.

H. F. Poole's bequest of Butterflies and Moths

Two 20-drawer cabinets containing British butterflies and moths from Mr. Hubert Poole are in the collection (Plate 9). As well as being Honorary Curator, Poole wrote the chapter Lepidoptera in Morey's Guide (1909) and Additions (1921). In his second paper he says 'I am indebted for the bulk of these records to Mr. Louis B. Prout F.E.S., to whose generous kindness my note books and cabinets both testify.'

The cabinets were seen by Hutchinson & Stafford (1973). At the time it was considered that they were from Fox's collection. When the collection was seen at Rylstone Chalet (Palmer, 1992), they were described as having some past and present evidence of attack by museum beetle, one drawer with living beetle, but most specimens were in good condition. Subsequently the collection was treated for insect infestation and it now resides at Cothey Bottom Heritage Centre. The collection comprises species from mainly Island localities collected principally 1900-1910. Most of the specimens are in good collection and labelled but some specimens have been lost.

The collection warrants a thorough cataloguing and assessment. Amongst the interesting specimens surviving are a pair of Lulworth Skippers (Plate 10a) collected between Sandown and Shanklin (probably above the cliffs) by Mr. G.W. Boass in August, 1910 (Poole, 1921). This, the only Island record for Lulworth Skipper, is curious. Lulworth Skipper is restricted to the extreme south of Dorset where it can be found in large numbers along a stretch of coastline centred on the village of Lulworth. Its range does not appear to have changed greatly since it was first discovered in 1832. The butterfly does not travel far and its food plant, Tor grass (*Brachypodium rupestre*) did not grow on the Island at the time of its discovery. According to Poole (1921), 'The specimens were brought to the late Mr. J. Taylor for identification whilst still fresh, and proving of special interest were given to him. Mr L.B. Prout saw them at the same time. They are now in my cabinet.' Poole says they were taken at Sandown but the label on the specimens says Shanklin.

Fritillaries represented in the collection include 14 specimens of Pearl-bordered Fritillary from Bordwood (Borthwood Copse) taken on 16th May 1909 and 3rd June

PLATE 9: Part of the Poole Lepidoptera bequest Property of IWNHAS, housed at Cothey Bottom)

1913 and 16 specimens of Small Pearl-bordered Fritillary from Parkhurst Forest taken on 28th June 1898, 21st June 1907, 10th July 1907 and 9th June 1911. The last record of Pearl-bordered Fritillary from the Island was in 2013, and the last record of Small Pearl-bordered Fritillary in 2011. There are three unlabelled specimens of High Brown Fritillary. These may have come from Parkhurst Forest; Fox says that this butterfly is 'taken in Parkhurst Forest, but never freely.' There are sixteen specimens of Marsh Fritillary but all excepting for one come from the mainland. The Island specimen (Plate 10b) is labelled Parkhurst 9th June 1911. Poole (1909) says 'a few may be obtained on the western outskirts of Parkhurst Forest.' Later, Jeffrey (1928) says, 'The locality to the west of Parkhurst Forest mentioned in Poole's list in Morey's Guide had a splendid number flying in 1912 but in the following winter this ground was under water for many weeks and a good search in the next spring produced only two larvae, and one of these was ichneumonised. About 1918 or 1919 this spot was put under the plough.' The last record of Marsh Fritillary from the Island was in 1956.

Another interesting butterfly specimen is that of a Brown Hairstreak (Plate 11). One of the three specimens is labelled Parkhurst 1899, P. Wadham. Interestingly, this record does not appear anywhere in print. Poole said that in 1896 he saw a fresh specimen that had been captured in the Undercliff but this is not represented in the collection.

The moths included several specimens, both male and female, of Emperor Moth all from Shanklin Down (Plate 12). The labels are difficult to read but visible dates are 19th April 1913 and 1910. Poole (1909) says, 'may be obtained occasionally on the downs between Shanklin and Ventnor.' However, it is generally believed that this striking moth has been lost from the Island.

One of our rarest moths, just hanging on at Cranmore, the Reddish Buff Moth (*Acosmetia caliginosa*) was re-discovered on the Island by Reginald Fox in 1909, when he captured about 20 specimens. Sadly, these specimens must have been subject to insect attack for none remain in cabinet, just pin holes where the specimens would have been displayed.

PLATE 10a: The two lower specimens are Lulworth Skipper collected at Shanklin in 1910

PLATE 10b: The middle specimen is a Marsh Fritillary collected at Parkhurst in 1911

PLATE 11: Above Brown Hairstreak collected in Parkhurst in 1899 by Percy Wadham (middle left specimen)

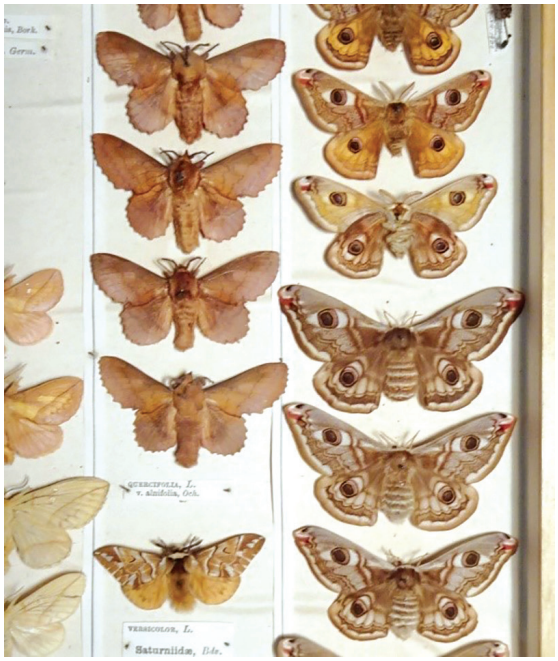


PLATE 12: Right Part of a collection of seven Emperor Moths collected on Shanklin Down in the 1930s together with a pupa and a larva (right hand specimens) All specimens property of IWNHAS, housed at Cothey Bottom

Lt Col R. M. West's Coleoptera bequest

The Sandown & Shanklin Free Library and Museum Minute Book (County Records Office) has an entry for 20th October 1936 which reads, 'Mr Mew referred to the gifts of two cases of insects to the Natural History Museum under the will of the late Lt. Col. West and on his proposal, seconded by Rev. Nickelus, the Clark was instructed to convey to Mrs West the best thanks of the Committee therefore.' A 20-drawer cabinet containing approximately 3,000 specimens of Coleoptera from Col. R.M. West survives to this day, held at Cothey Bottom. They were collected in the 1920s. When seen by Palmer (1992) at Rylstone Chalet, they were described as specimens in superb condition and beautifully mounted and presented, although too cramped and pins too tight for easy use.

The specimens are indeed beautifully mounted and displayed. It is a marvel to see how even the tiniest of beetles are exquisitely set and arranged (Plate 13). The beautiful labelling is very fine but the tiny writing in black ink is difficult to view as the specimens are very closely packed. At one time a card index was held with the collection, but this no longer survives. However, the Society is in possession of Col. West's bound handbook where he recorded in equally meticulous small writing the details of his collections and this complements the collection.

There are likely to be many important specimens in this collection. West was interested in collecting series of colour variants and these are represented in the collection. For instance, West (1935) lists 5 colour varieties of the rare Cliff Tiger Beetle (*Cicindela germanica*) and these are represented in his collection (Plate 14a) namely var. *coerulea*, 5 specimens; var. *fusca* 4 specimens; var. *seminuda* 2 specimens; var. *sobrina* 1 specimen; and var. *deuteros* 5 specimens, all collected at Blackgang. Col West's notebook (Plate 14b) gives the following localities for this species:

'Chale Bay in coarse grass at foot of Blackgang Chine, June; runs rapidly in sun on dry mud. Ditto July 27,

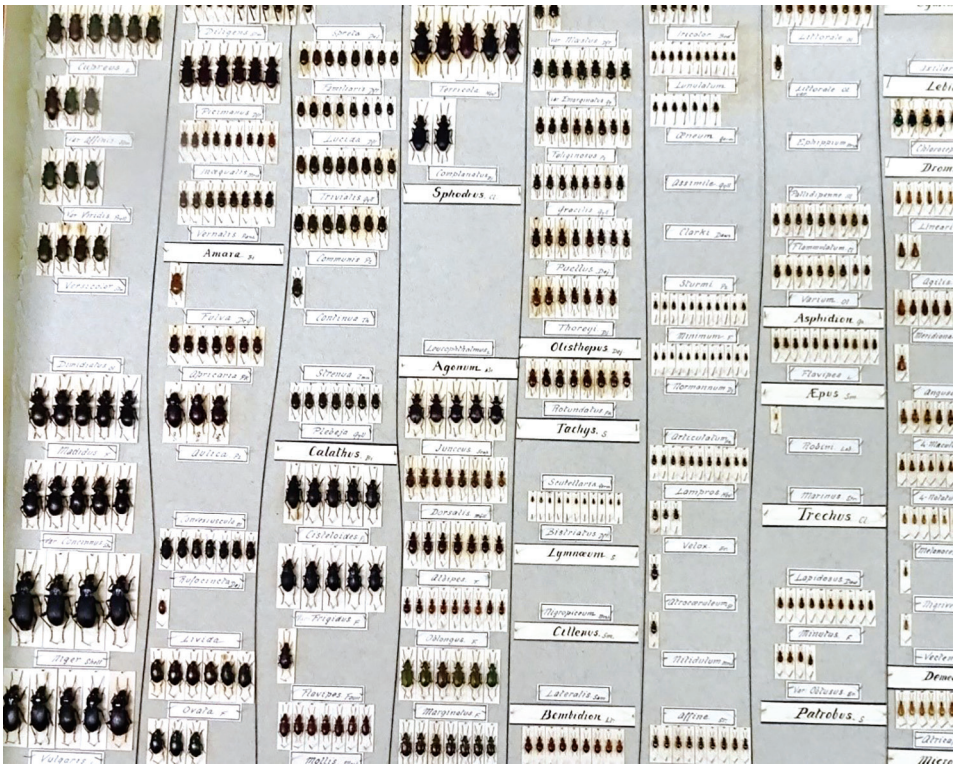


PLATE 13:
Part of one tray of Coleoptera collected by Col. West illustrating the superb setting and labelling skills of the collector.
(Property of IWNHAS housed at Cothey Bottom)

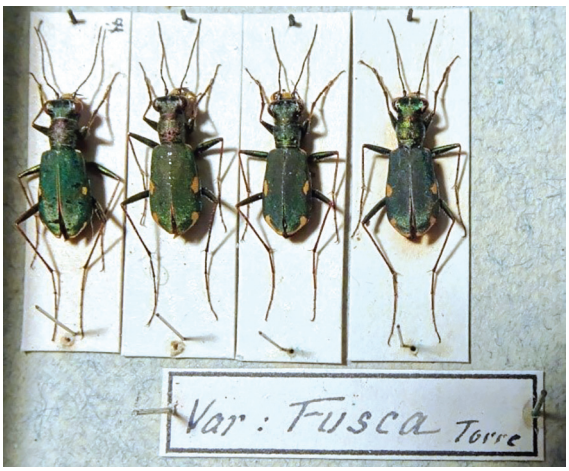


PLATE 14a: A series of a colour form of Cliff Tiger Beetle, *Cicindela germanica*, collected by Col West
(Property of IWNHAS housed at Cothey Bottom)

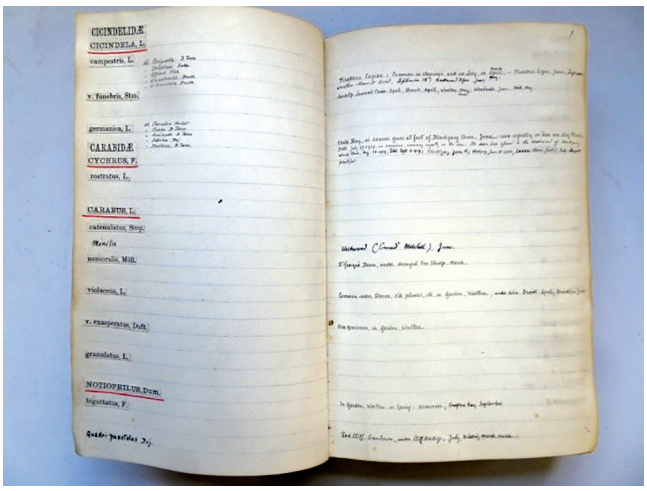


PLATE 14b: A page of his notebook detailing the particulars of this collection. (Property of IWNHAS)

1929, in numbers, running swiftly, in the sun. Its area has spread to the westward of Blackgang. Whale Chine, Aug 26th 1929; ditto Sept 5th 1929; Blackgang June 16th; Blackgang June 15th 1930; Ladder Chine, foot of, July, August, plentiful.'

The Great Silver Water Beetle (*Hydrophilus piceus*) is the largest British water beetle. Clearly, always a rare species with us, a noteworthy record was made by Col. West at Kemphill, 'where he took a series' (Jeffrey, 1935). There are four specimens in West's cabinet (Plate 15) and his notebook records that he had one male and one female on 10th April 1931; four females on 20th April 1931; one female on 30th April 1931 and one male and one female on 11th May 1931. There is a pond at Kemphill, near Havenstreet, which was well known to botanists and entomologists throughout much of the twentieth century. It is an old clay pit lying alongside Stroud Wood Road known locally as Pottery Shute and also as Manpit pond, owing to the story that a man on his horse drowned in the pond.

Records show that West paid many visits to this pond in different months, recording many aquatic beetles. Botanists were believed to be responsible for the introduction of Water Soldier (*Statiotes aloides*) and Flowering Rush (*Butomus umbellatus*) in the early twentieth century. In the 1960s and 70s, Manpit pond was subject to amphibian surveys by Oliver Frazer and conservation work to control the spread of invasive Water Soldier.

A survey for newts on 4th April 1965 (the pond is referred to as Pottery Shute) revealed no newts. It was described as being very weedy, water soldier, floating pondweed and ivy-leaved duckweed, full of life including large dragonfly larvae and three-spined sticklebacks. It is likely that, had the beetle still be present at that time, it would have been noted. There are very few subsequent records of this species from the Island but in recent years, larvae have been found on Brading Marshes and an adult appeared on the revetment at Bonchurch (Jim Baldwin pers. comm.). They are powerful fliers.

The Stag Beetle was also rarely recorded from the Island and West (1931) says, 'In view of the paucity of records of the capture of *Lucanus cervus,* the Stag-horn Beetle, in the Isle of Wight, it may be of interest to note the taking of a specimen of this insect which flew to light into a room in Spencer Road, Ryde, in July of this year. Unfortunately, its somewhat diabolical appearance so alarmed the captor, that not only was the insect knocked down, but also trodden upon to insure death – and it was in a somewhat dilapidated condition that the specimen reached me.' The partly crushed specimen appears in West's collection.

Considering the uncertain fate of the Museum and its contents for most of its life, it is surprising that anything does survive. The re-discovery of certain items in recent years is heartening and the surviving collections provide an opportunity for further investigation. In addition, there is a cabinet of Lepidoptera collected by A. H. Greenham, mostly on the Island from the 1940s, which is an additional resource for research.

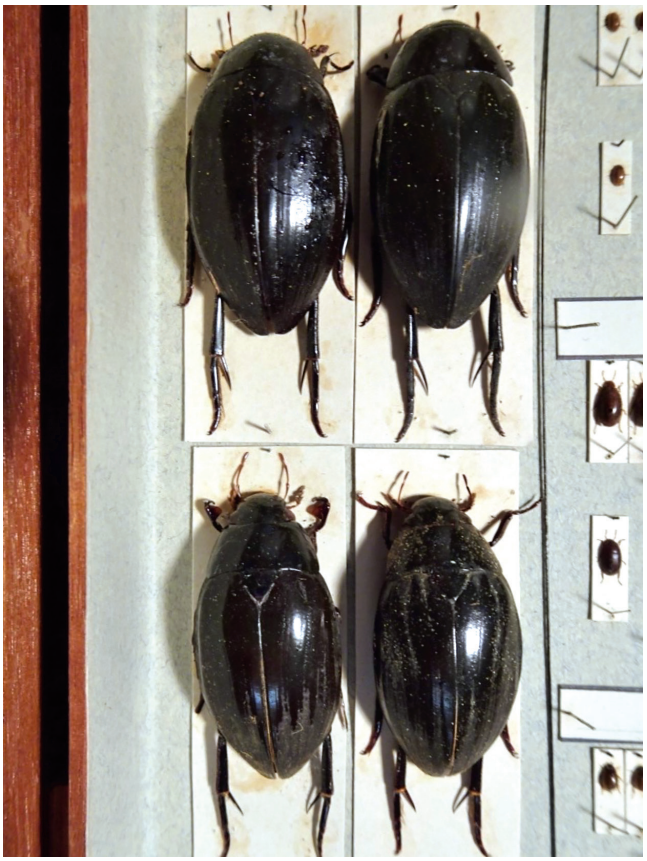


PLATE 15: The four specimens of Great Silver Water Beetle collected by Col. West from Pottery Shute pond, Stroud Wood Road, Ryde.
(Property of IWNHAS housed at Cothey Bottom)

Acknowledgements
I am most grateful to Richard Smout (County Records Office); the staff at Cothey Bottom Heritage Centre (Isle of Wight Council); Carisbrooke Castle Museum; Jim Baldwin; and David & Selena Bone for assistance with this paper and for providing access to some of the items.

References

Bingham, P. & Crombie G. (2009) William Darwin Fox, Charles Darwin, the Isle of Wight and W.D.F.'s sons. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* **24**: 13-21.

Bingham, P. & Larkum A. (2014) The Isle of Wight Darwin Collection; Lost but not unrecorded – Some reflections on the permanency of bequest. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* **28**: 53-58.

Fox, R. H. (1909) Birds, pp. 497-528, in Frank Morey's *Guide to the Natural History of the Isle of Wight.* The County Press, Newport, Isle of Wight.

Hutchinson, A.L. & Stafford J. (11 September 1973) The Museum of Isle of Wight Natural History. Report to IWNHAS Council. Unpublished.

Jeffrey, H. G. (1928) A supplementary list of Isle of Wight Lepidoptera. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* I (IX): 584 - 598.

Jeffrey, H. G. (1935) Coleoptera *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* II (VI): 483-493.

Palmer, C. J. (1992) Isle of Wight County Museums: Biology Collections. Report to Isle of Wight Council. Unpublished.

Peaker, A. & Bingham P. (2016) A History of the Museum of Isle of Wight Geology. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* **30**: 65-78.

Poole, H. F. (1909) Lepidoptera, pp. 394-438, in Frank Morey's *Guide to the Natural History of the Isle of Wight.* The County Press, Newport, Isle of Wight.

Poole, H.F. (1921) Additions to the list of Isle of Wight Lepidoptera. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* I (II): 81- 83.

Poole, H.F. (1934) General Meeting: The museum of Isle of Wight Natural History: Its origin, purpose and prospects. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* II (V): 362 - 364.

Poole, H.F. (1935) Charles Darwin and the Isle of Wight, with an account of the 'Darwiniana' in the museum of Isle of Wight Natural History, Shanklin. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* II (VI): 464-469.

Poole, H. F. (1943) The Natural History Museum at Rylstone, Shanklin. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* III (VI): 392.

Stafford, J. (1973, 24 July) The Museum of Isle of Wight Natural History, Shanklin. Report to IWNHAS Council, unpublished.

Stafford, J. (2009, 14 October) Darwiniana in the museum of Isle of Wight Natural History. Unpublished.

Ward Lock (1912) The Isle of Wight Illustrated Guide Book. Ward Lock & Co, London.

West, R.M. (1931) Stag-horn Beetle taken at Ryde *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* II (II): 145.

West R.M. (1935) A list of some named varieties of Coleoptera occurring in the Isle of Wight. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* II (VI): 476-482.

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Using Historical Imagery to Support Understanding of Long-Term Coastal Change 1770-Present Day. A Research Programme Founded On The Isle Of Wight

Robin McInnes and Chloe Stanford-Clark

Abstract *The remarkable variety of landforms, scenic character and resulting interest in the Isle of Wight coast arises from not only its complex geological history and physical processes but also from the story of our seafaring nation and our rich cultural heritage. The Island's coastline, which varies considerably in terms of its durability, has been subjected continuously to the processes of erosion, landsliding, flooding and weathering. The recognition of coastal change and the practical experiences of its impacts over the last 250 years, in particular, has clearly demonstrated that the coastal zone is an area that is naturally dynamic and prone to significant changes over time. Climate change, with less predictable weather patterns and increasing levels of risk from sea level rise, presents significant challenges for coastal management and land use planning on the Isle of Wight. It is now well established that sustainable management of coastal zones can only be achieved through a thorough understanding of both long-term coastal evolution and the natural processes at work. Alongside the technical tools that are available to inform us about coastal change, historical evidence particularly artworks, have supported recognition of the nature, scale and rate of change over a much longer timeframe than has been considered in the past by coastal scientists and engineers. The use of artworks in particular was promoted in this latest study, taking advantage of the significant increase in the availability of these media online. However, the foundation for this work was the understanding of the landscape and discovery of the rich art record of the Isle of Wight, home to the author, a coastal scientist and art historian for over 60 years. Over the last five years the author has been involved in supporting the photographing and use of the nation's public collections of oil paintings, now held on the ArtUK website (https://artuk.org), and the more recently launched 'Watercolour World' project website (www.watercolourworld.org), which together are making available thousands of images of the coastline for use by researchers and other new audiences, many publicly available to view for the first time. Bridging the disciplines of science and the arts, and extensively illustrated with historic Island artworks the authors describe how the particular physical, environmental and cultural qualities of the Isle of Wight have provided an invaluable foundation for this field of study, which has proved to hold much wider translational value and interest.*

4.1 Introduction

The coastal zones of the Isle of Wight are of enormous variety, geomorphological interest and scenic beauty on account of the wide range of geological exposures to be observed. The geological history, including the impacts of mountain building phases, have caused the rocks to be compressed, folded and faulted and, subsequently, they have been subjected to the processes of weathering and erosion over millions of years. The impacts of changes in sea level have led to the evolution and shaping of the coastline as we know it today. This variety has provided the opportunity to test the potential of historical artworks in terms of improving our understanding of long-term coastal change and informing wise decision-making in the face of climate change.

All those involved in coastal management require high quality data and information including a thorough understanding of the physical processes at work around our coastlines. Therefore, an appreciation of the impacts of past and potential evolutionary processes is fundamental if we are to understand and manage our coastlines in the most effective and sustainable way.

The preparation of shoreline management plans (SMPs) over the last three decades has recognised the importance of taking a long-term perspective of coastal evolution in order to inform effective decision-making. In many locations coastal monitoring is a relatively recent innovation and there are few locations where systematic monitoring has been in place for more than 30 years. It has, of course, been possible to make use of photographic images and these can provide coastal information, albeit mainly in black and white, dating back to the 1860s. However, by making use of the art imagery resource it is possible to take advantage of the wisdom of hindsight by reviewing detailed paintings of our coastlines, extending back as far as the 1770s, and in full colour.

At a time when local authorities and nature conservation bodies are examining increasingly the environmental gains that may be derived from altering or removing coastal defence structures art provides the opportunity to review the coastline in its natural condition since the 1770s. Such images can, therefore, be valuable tools informing wise decision-making and aiding designs.

The popularity of the Isle of Wight's seaside, particularly during the nineteenth and early twentieth centuries, meant that there is excellent coverage of most parts of its coastline through the medium of art. This includes original paintings in both oil and watercolour and also many kinds of engravings, which were often included in illustrated topographical travel books and guides. The same artists would often return to the spot many times to re-paint or update a particular view as coastal development expanded over that time period. Where one is confident of the accuracy of the artist it has, therefore, proved useful to examine sequences of their works or to group artists' works together to help increase our understanding of change at a particular

location. The Isle of Wight art and coastal change research studies have sought to examine the physical impacts of change both on coastlines themselves and their natural environments and cultural heritage. The study approach has involved identifying those locations where there is a suitable selection of art images available that span the period from the late eighteenth century up to the 1930s, and then to compare these artworks with present day photographs. This methodology has sought to provide as complete as possible a chronology of change (or lack of it) over the last 250 years. The study has utilised the artistic tours of several key artists:

1. William Daniell RA, who, between 1814 and 1825, toured the whole of the British coastline producing 308 aquatint engraved views, which were contained in his publication 'A Voyage Round Great Britain' (Daniell & Ayton, 1814-1825); there are nine views of the IW.

2. For the nineteenth century there is a rich resource of landscape paintings, many of which were exhibited at the Royal Academy and other principal London exhibitions, as well as more local works often produced by amateur artists. One important group that contributes in particular to this study is the Pre-Raphaelite Brotherhood that flourished from the late 1840s to the early 1850s, who sought to paint nature out of doors and in a truthful and highly accurate manner. Although the Pre-Raphaelite Brotherhood was relatively short-lived, Its Followers continued to paint in this highly detailed manner until nearly the end of the nineteenth century. There is a rich resource of works by these artists that depict the Isle of Wight coast in fine detail.

3. In the early twentieth century postcard manufacturing companies commissioned artists to paint colourful watercolours of the coastal towns and villages as they expanded in order to fulfil the popular demand for sending postcards and also to meet the demand of those who wished to collect cards. Artists include Alfred Robert Quinton, who alone painted particularly between 1900 and 1934 and produced over 2,500 watercolour views of coastal towns and villages in England and Wales, including nearly 100 views of the Isle of Wight.

4. From the late 1980s until 2000 the distinguished architect and watercolourist, David Addey, took on the monumental task of revisiting nearly all of the coastal vantage points painted by William Daniell on his 'Voyage Round Great Britain' and the results are a series of watercolours which provide a very important record depicting the extent of coastal change (or lack of change) some 160 years after Daniell's initial voyage. Combined with present day images, these sequences of artistic works have been used to assess the state of the coast and to comment on change that has taken place over time (Addey, 1995; 1997; 2000; 2002).

The chronology of Isle of Wight art imagery research has been as follows:

'Art as a tool to support understanding of coastal change in Hampshire and the Isle of Wight'. Report for The Crown Estate – Caird Fellowship (McInnes, 2008).

'A Coastal Historical Resources Guide for England'. Report for The Crown Estate (McInnes & Stubbings, 2010).

'British Coastal Art 1770-1930'. Cross Publishing (McInnes, 2014).

'Isle of Wight Landscape Art 1650-1930'. Cross Publishing (McInnes, 2016c).

'The State of the British Coast' Study, Coastal & Geotechnical Services (McInnes & Stanford-Clark, 2019).

'The Most Painted Place – Bonchurch and the Isle of Wight School of Artists' (McInnes, 2019).

4.2 Accuracy and Confidence in the Ranking of Artists and their works

A key component of this field of research has been the development and gradual refining of an art ranking system (McInnes *et al.*, 2010-2014; Momber *et al*, 2013; McInnes, 2016a). This has provided a robust methodology for identifying those artists that depicted Island coastal scenery most accurately since the late eighteenth century. The purchasers of artworks, including wealthy Victorian and Edwardian customers on holiday on the Isle of Wight, required accurate depictions of scenery in full colour. These were deemed preferable to the recently invented black and white photographic images that were becoming available. The Victorians particularly appreciated the hours and days of effort involved in creating the best artworks. Some of these artists, such as the Pre-Raphaelites and their Followers, had been influenced by the Victorian art critic, John Ruskin, who promoted the ethos of painting 'out of doors' and who had visited the Isle of Wight regularly since the age of nine. In his Edinburgh lecture in 1853, Ruskin had stated that "Pre-Raphaelitism has but one principle, that of absolute, uncompromising truth in all that it does, obtained by working everything down to the most minute details from nature and nature alone" (Ruskin, 1853). The emerging science of geology in parallel with Pre-Raphaelitism resulted in a growing interest in depicting geological coastlines, which, by necessity, required artistic accuracy (Holmes, 2017). Artists such as John Brett and Edward William Cooke were both greatly encouraged by Ruskin to paint the Undercliff coastal scenery.

4.3 The added value of colour art images over Black and White Photography

The use of colour washes, together with pen and ink, started to become available from the mid-seventeenth century. Watercolour art became very popular with paint boxes providing an easy means of depicting landscapes in colour in the field. Art, both oils and watercolours, has continued to be an effective colour illustration medium through to the present day.

It has been explained that photography emerged in the 1840s but the use of this medium for portraying the landscape only became popular from 1855-1860 onwards as portraiture had been the prime interest before that time. Paintings of the landscape and coastal scenery in colour were very much favoured by Victorian and Edwardian customers over black and white photography, because art provided a more complete record of the coastal scenery that they had visited and enjoyed on their holidays. In fact, when

photography first emerged as a potential competitor to art, many critics were dismissive of the notion that photography could be considered an 'art' in its own right. This was because artworks in colour were able to display the splendour of real life as the viewer could actually see it, and thereby provide a permanent record and visual reminder of the landscapes and scenery enjoyed by visitors to the coast when they returned to their homes inland or in the large cities. Colour photography started to emerge in the early twentieth century, but it is recognised that initially the quality was very poor and, in fact, it could be argued that it was not until the early 1990s that the quality of colour photographs was sufficient to make a real difference in terms of usage of colour for scientific purposes such as coastal monitoring and archaeological studies and investigations.

Artworks do, therefore, provide a permanent, enduring colour record extending back at least to the 1770s. The addition of watercolour paint to aquatints and other engravings practiced by leading art galleries and distributors such as Ackermann's of London, has provided us with a unique and often accurate record of past conditions. Tours to various parts of the country by artists such as William Daniell RA and others allow us to inspect these coastlines with the benefit of full colour some 50 years before the evolution of black and white topographical photography, and over 150 years before colour photography became more widely available.

As part of the author's research, evidence has been sought as to the perceived added benefits of colour photography over black and white, but no published papers have been found on the subject to date. Coastal monitoring using aerial photography undertaken by the Environment Agency and later by the Channel Coast Observatory moved from black and white to colour in the early 1990s and there is no doubt that the added dimension of colour enhances the interpretation of coastal zones from the air. Colour artworks, therefore, extending back to the late eighteenth century, provide us with the opportunity to examine the changing coast over a very long time period in as realistic a medium as possible, and the applications of this have been illustrated in numerous case studies contained in this report.

This study has sought to highlight the potential of such historical artworks to inform us of the impacts of change over time. Those studying environmental and heritage topics are often familiar with both the interpretation of old photographs, and use of new technologies such as high-resolution aerial photography and Lidar rather than art. The findings of this study recognise the significance of the art resource and consultees have helpfully highlighted potential uses for art images across a broad range of scientific fields including landscape evolution, habitats and species changes, climate change impacts, heritage at risk on coasts and rivers.

Although black and white topographical photography started to become available from the 1860s it was not until the 1920s that colour film was introduced. As a result, the only colour medium available for coastal views until the early twentieth century was through art (paintings, watercolours and prints). Whilst black and white photographs from the Victorian and Edwardian periods were often very clear the benefits of watercolour can be seen clearly in the examples below.

4.5 Application of the Isle of Wight Art Research Results

The results of the various studies described and illustrated above have proved to be of value to a wide range of organisations and individuals with an interest in coastal management and planning, nature and earth science conservation, heritage, culture and the arts; these include researchers, practitioners and stakeholders involved in the following fields:

1.2.1. Coastal Management & Planning

- Encouraging an improved understanding of long-term coastal evolution and the rate and scale of coastal change;
- Establishing the commencement and chronology of coastal defences and noting their impacts over time;
- Identification of Coastal Change Management Areas (CCMAs) in support of Planning policies;
- Understanding the changing patterns of coastal development over the last 200 years;
- Informing local land use planning including Conservation Area Statements and Development Control.

Users: Local Authority Coastal Engineers; Coastal Defence Groups; Environmental and Nature Conservation Organisations; Coastal & Estuaries Partnerships; Coastal Landowners, Coastal Scientists and Researchers.

1.2.2. Nature and Earth Science Conservation

- Improving understanding of long-term environmental changes affecting coastal land;
- Observing habitats and species' changes and their gains and losses;
- Informing Landscape Character Assessments, Area of Outstanding Natural Beauty (AONB) Plans and Countryside Management.

Users: Nature Conservation Organisations; AONB Partnerships; Countryside Managers.

1.2.3. Heritage and Culture

- Establishing the chronology of coastal heritage sites;
- Assisting identification of heritage at risk;
- Informing Historic Environment Records (HERs);
- Supporting the recording of coastal development – such as alterations to and losses of Listed Structures;
- Raising awareness of local/regional art history;
- Identification of locations of previously unknown artworks;
- Supporting fine art research;
- Bridging science and art;
- Encouraging art history studies and coursework at the full range of academic levels;
- Raising awareness of the work of both ArtUK and 'Watercolour World' initiatives.

Users: Culture and Heritage Bodies; Researchers; Local Authority Historic Environment Services; Museum and Art Gallery Curators; Schools.

FIG. 4.1: Black and white postcard (c.1900) of coastal road, Niton, Isle of Wight, UK (right).

FIG. 4.2: Shows the same view in the watercolour drawing by A. R. Quinton, c.1910 (below). The route was destroyed by a rockfall in 1928.
Image courtesy of Salmon's

FIG. 4.3 & 4.4: Two views of Ventnor, Isle of Wight, showing the contrasts between black and white and colour images.

The photograph dates from 1900 and the watercolour by Randolph Schwabe was painted in 1933.

FIG. 4.5: 'Brading, IW'. William Daniell RA. Aquatint. 1823.

FIG. 4.6: 'Brading from the Downs'. Clarkson Stanfield RA. Watercolour. 1834. *Image courtesy: Agnews.*

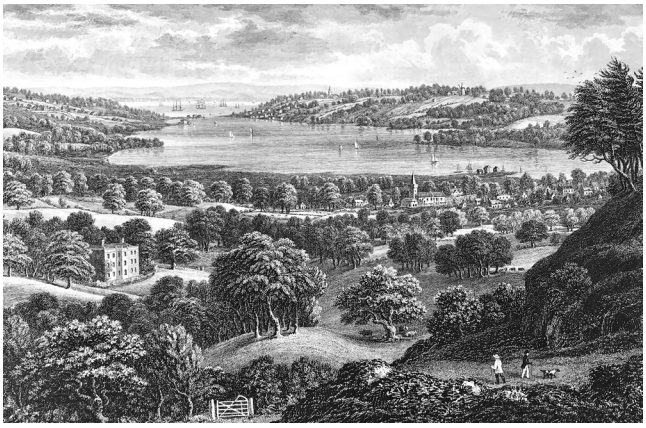


FIG. 4.7: 'View from Nunwell Down'. George Brannon. Steel engraving. 1839.

FIG. 4.8: 'Brading'. David Addey. Watercolour. 1996.

FIG. 4.9: 'Brading from the Downs'. Present day photo. *Image courtesy: Geograph/Peter Trimming.*

FIGS. 4.5 - 4.9: Illustrate the chronology of changes to the landscape at the mouth of the Eastern Yar between 1823 and the present day. The views show the impacts of human intervention in particular following the construction of a causeway between St Helens and Bembridge to create a rail and road link and the drainage of the harbour for agricultural purposes. See also Figs. 4.10 & 4.11 which compare Daniell's view with an annotated recent photograph.

FIG. 4.10: (above): William Daniell RA produced numerous aquatint engravings of the British coast between 1814 and 1825; he is regarded as one of the finest early topographical artists. The view of 'Brading, Isle of Wight' (1823) was made before the harbour was reclaimed for agricultural use. A railway link and, later, a road were provided across the harbour together on a tidal embankment.

In the present day view in **FIG. 4.11** (below): The East Yar River has been channelized and development has taken place at Bembridge (on the right). Artworks of this kind can record not just physical changes but also human intervention, which may result in environmental change. *Photograph courtesy of Wight Light Gallery.*

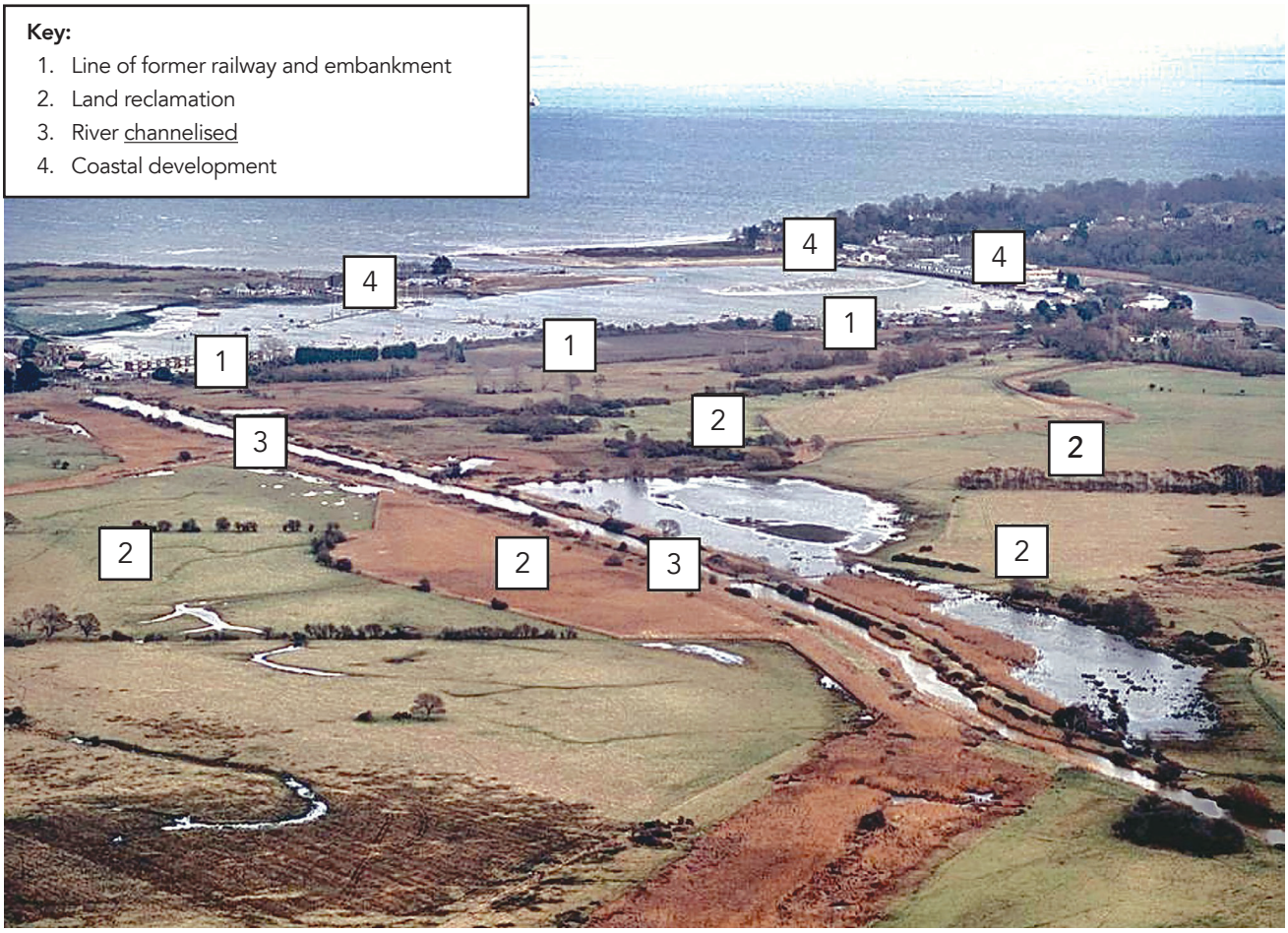
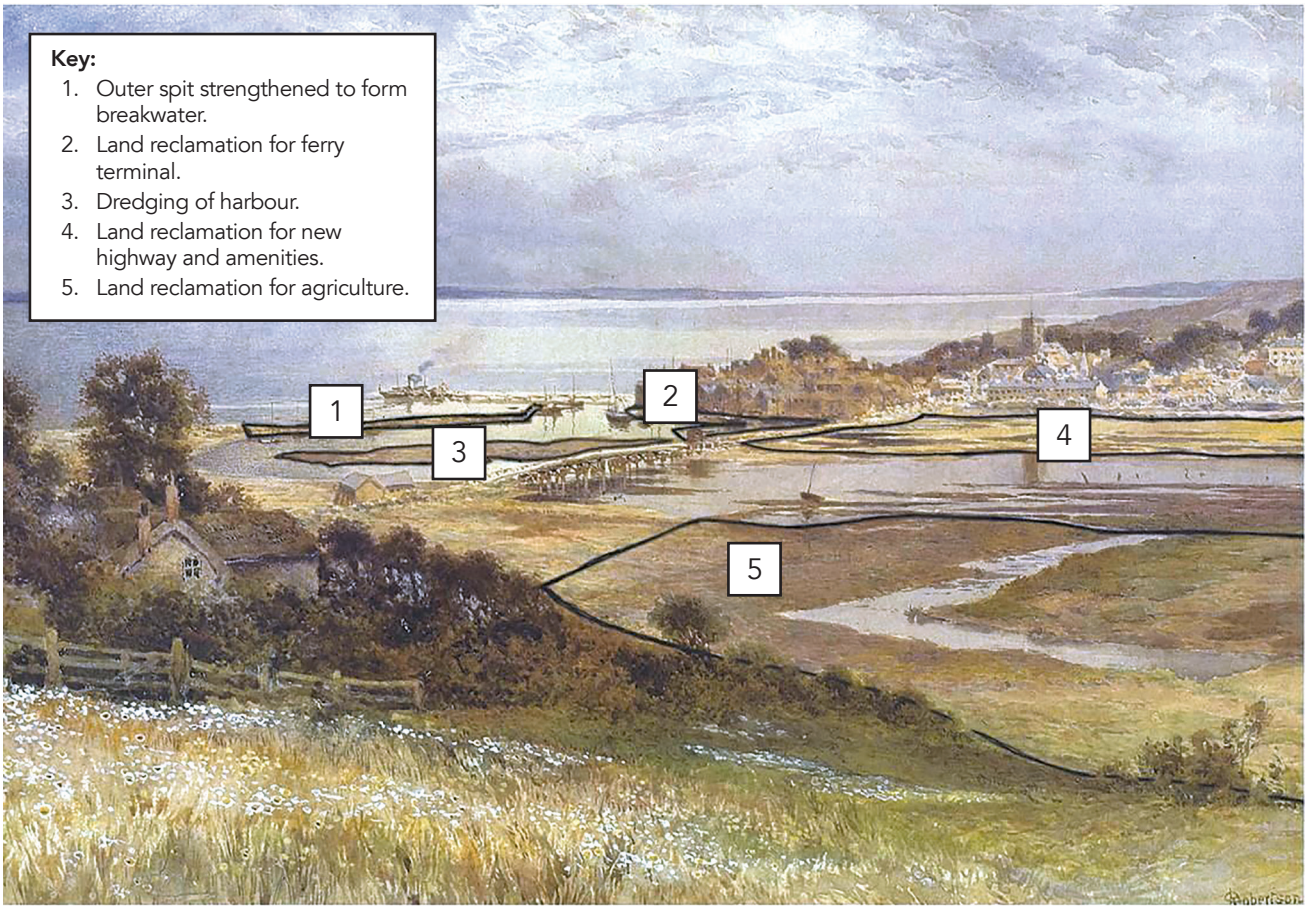


FIG. 4.12: 'Yarmouth' by S. Barth & J. King. 1813. Copper Plate engraving

FIG. 4.13: 'Yarmouth from the West'. Alfred Vickers. c.1842. Oil.

FIG. 4.14: (left): 'Yarmouth from the West'. William Gray. c.1858. Oil. Private Collection.

FIG. 4.15: (below): Changes at the mouth of the Western Yar at Yarmouth superimposed on a watercolour by Charles Robertson. 1891. Private Collection.



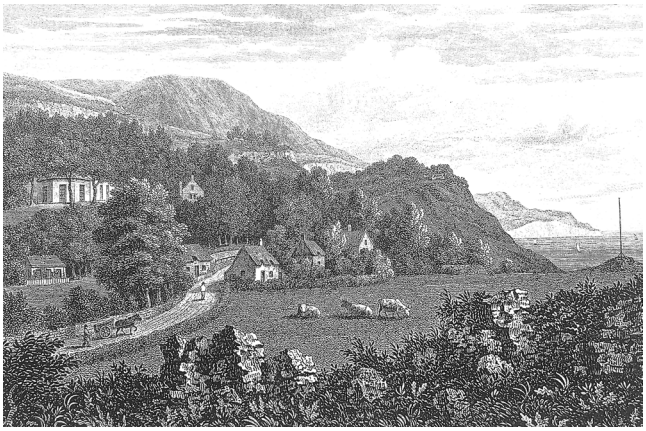


FIG. 4.16: 'Steephill'. George Brannon.
Copper Plate engraving. 1822.

FIG. 4.17: 'Ventnor from Flower's Brook'. Fanny Minns.
Watercolour. 1898.

FIG. 4.18: 'Ventnor from the West'.
Alfred Robert Quinton. c.1900. *Image courtesy: Salmon's.*

FIG. 4.19: 'Ventnor from the West'. Henry B. Wimbush. c.1900.
Image courtesy: IW Council Heritage Service.

FIG. 4.20: 'Ventnor'. Randolph Schwabe. 1933.
Private Collection.

FIG. 4.21: Present day view for comparison.

This series of views show the progressive recession of the soft cliff line between Steephill and Ventnor Bay as a result of coastal erosion. This has led to the regular diversion upslope of the popular coastal footpath (see Figs. 4.17 & 4.21). In those coastal zones where there is a rich art resource the study of change can be observed in full colour through such sequences of images. Since 1992 coastal erosion (and reduced landslide risk) result from construction of a substantial rock revetment between Ventnor and Steephill Cove by the former South Wight Borough Council.

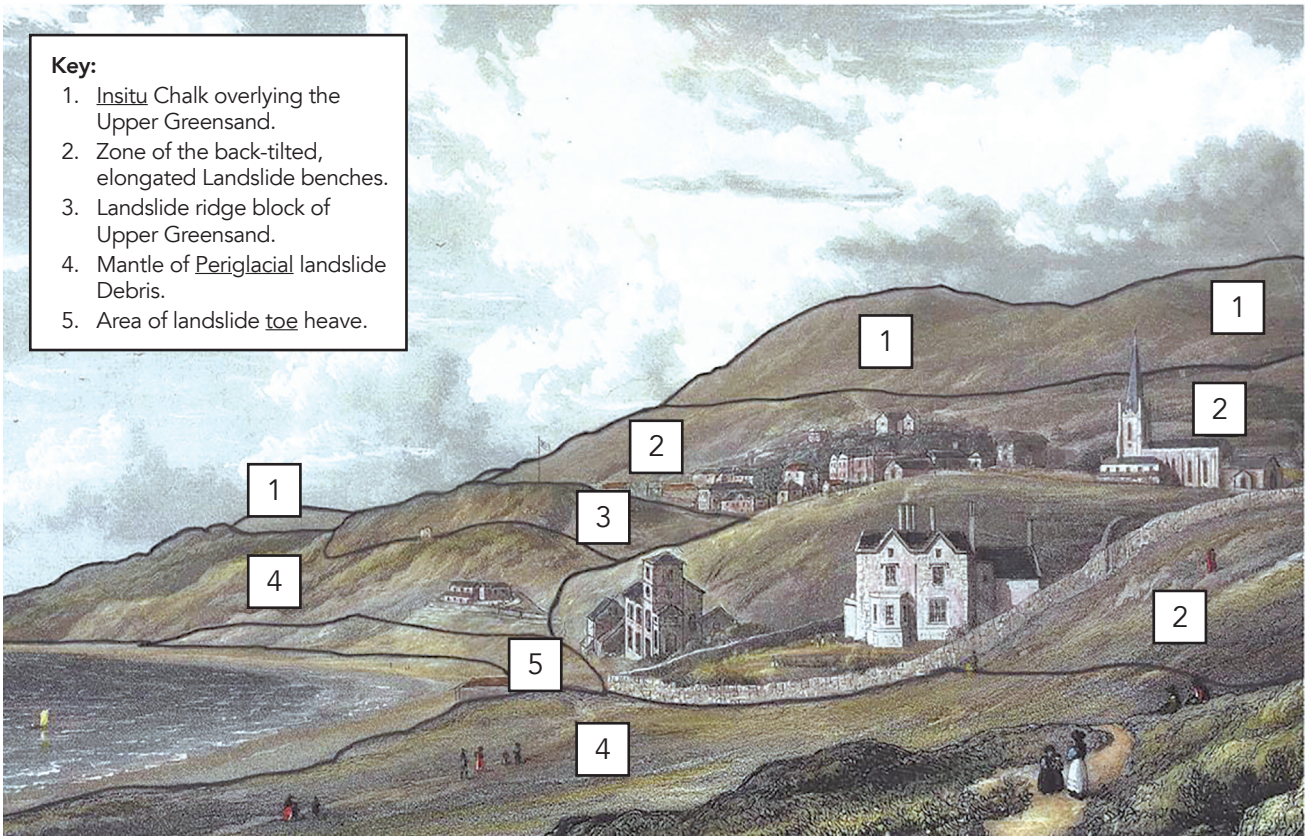


FIG. 4.22: This engraving of Ventnor by William Westall (1842) shows the topography of the landslide complex before the downs and slopes were masked by growth of Evergreen Oak and by developments. Such views have assisted in understanding the nature of the Undercliff and management of instability problems.

FIG. 4.23: (left) engraved in 1865 shows the line of a relic cliff that existed sea-ward of the current Esplanade. This image helped the preparation of a landslide model for the town of Ventnor.

FIG. 4.25: The view from St Helens across the mouth of Bembridge Harbour has been a popular subject for artists since the 18th century. This watercolour by Charles Tomkins (1809) shows clearly the St Helens spit and the wide entrance channel allowing access for shipping to the quay at Brading.
Private Collection.

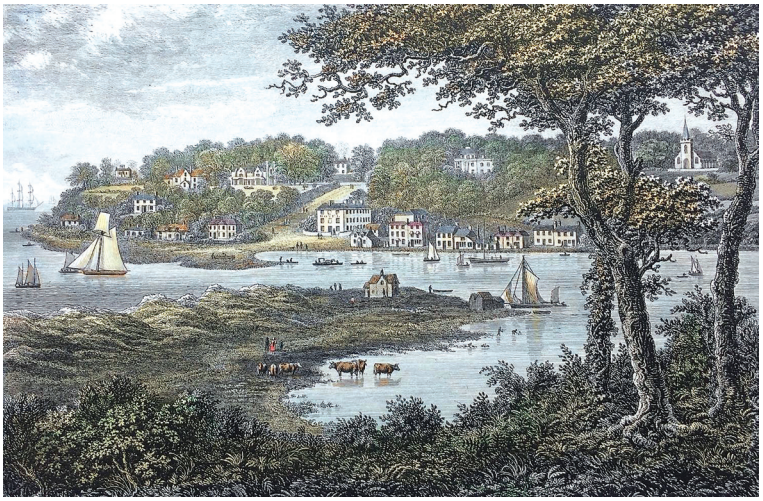


FIG. 4.26: George Brannon's engraving (1836) taken at High Water shows the increasing developments of the village of Bembridge and the extensive harbour and channel. The background has been foreshortened by the artist to provide a clearer view of the prominent coastal residences.

FIG. 4.27: A. V. Copley Fielding was a leading watercolourist of the traditional English School and he produced many detailed views of the IW coastline. The nature of the St Helens spit bears a close resemblance to Tomkins' view rather than that of Brannon (whose views tend to be more 'Picturesque' in style).
Private Collection.

FIG. 4.28: The present day view at High Water appears to show little change over time. However, St Helens Duver is now protected by a seawall and groynes. This scene masks the dramatic siltation of the harbour, which is no longer flushed out by the outflow from the Eastern Yar. These changes have curtailed significantly the nature of activity within the harbour itself.

4.6 Transferability of Approach

The authors believe that art imagery that is becoming increasingly available through 'Watercolour World' in particular will attract multiple users and have wide transferability value across Great Britain and abroad. For example, following the research described above, art imagery has already been applied very effectively to support understanding of coastal and estuarine changes in France (Motte, 2014, Motte, 2017) and Portugal (Amorim *et al.*, 2019). Apart from examination of the British coast, as described in this report, this methodology can be applied to the thousands of artworks and subjects portrayed by travelling artists across Europe, the British Empire and the world. For example, the Daniell family of artists also travelled and painted extensively in India and the Far East.

5 Conclusions

1. The coastal zones of the Isle of Wight are subjected to significant risks arising from the hazards of coastal erosion, landsliding, weathering and flooding. These processes and their impacts on life, property, heritage assets and environments will become increasingly severe over the next decades as a result of climate change and sea level rise. Whilst increasingly sophisticated approaches and more systematic monitoring of change within coastal zones have been introduced in recent years, a thorough understanding of long-term coastal evolution is also required to support coastal planning and adaptive management approaches.

2. A programme of research into the value of historical artworks, founded on the Isle of Wight, has demonstrated that art provides a continuity of full colour images for most frontages with some artworks dating back to the 1770s. It was a further 80 years before the wider introduction of landscape black and white photography and 150 years before the introduction of colour photography. Use of art images allows coastal scientists and practitioners to view the coast in colour before development took place in many locations, and thereby take advantage of the wisdom of hindsight when setting coastal policies for the future.

3. Whilst photographic images, both terrestrial and aerial, are familiar aids used by researchers and practitioners, for example in the preparation of Shoreline Management Plans and for Rapid Coastal Zone Assessments, the rich art resource has been much less used. This has been partly because of a lack of awareness of the range of images available but also due to uncertainty about their accuracy. An art ranking system has been refined as part of these studies; it has been suitably tailored to the needs of those wishing to study all aspects of the coastline. A list of over 50 artists who painted the Isle of Wight coast most accurately has been provided in this paper.

4. Research by the authors has confirmed the substantial art resource held in public collections and some private collections. Thousands of coastal images are available for view on the ArtUK (http://artuk.org/) and Watercolour World (https://watercolourworld.org/) websites. The most accurate artistic depictions of the coast are those completed by artists with architectural, topographical, geological or Naval backgrounds. Artists of the Pre-Raphaelite Brotherhood and their Followers in particular produced numerous finely detailed coastal views.

5. Artworks form an additional, very valuable and currently under-used resource available to a wide range of scientists, practitioners and other stakeholders. The more popular subjects tend to be locations with dramatic coastal scenery, coastal castles, mansions and monuments or ports, harbours and fishing villages whilst low-lying coastlines were painted less frequently. Whilst most locations around the coastline were painted, current gaps are likely to be filled as more artworks become available through the ArtUK and Watercolour World websites. Numerous artworks depicting historic Isle of Wight coastal towns and villages are available and together they allow the progression of coastal development to be plotted and better understood. Such images, which record the detail of changes to both individual buildings as well as street layouts can inform planning processes and can be used to inform Conservation Area planning.

6. Some of the artworks produced over the last 200 years are so topographically accurate that they can support both qualitative and quantitative studies of cliff and beach change over time; for example, the works of E. W. Cooke RA and John Brett ARA. However, compared to the nineteenth and twentieth centuries up to 1930 there are very few artworks for the timeline between 1930 and 1950. This was a result of changing public tastes away from the traditional landscapes of the Victorian and Edwardian eras, the effect of two World Wars and the advent of new styles of modern art. Since the 1960s there has been a strong revival of traditional landscape painting.

7. The research has adopted a sequential approach to the use of images through time. Four artists or artistic groups have produced numerous and often detailed views of the coast. They are William Daniell, RA (fl.1814-1825), the Pre-Raphaelite Brotherhood and their Followers (c.1850-1890s), Alfred Robert Quinton (fl.1910-1934) and other postcard artists, and the architect and watercolour artist, David Addey, who retraced William Daniell's voyage (1990s-2002). Combined with present day photographs these artists provide a number of benchmarks over time which can be helpfully compared when assessing coastal change.

8. Early coastal artworks depict the open coast before defences were constructed and seafronts started to develop. In some locations consideration is being given to removal of existing defences for environmental and other sustainability reasons. An examination of these early art images may assist understanding of the implications of changing approaches to coastal management.

9. Some sections of the Isle of Wight coastline remain in a near pristine condition and appear to show little change since they were visited and painted by late eighteenth-century artists. These conditions have been sustained through a robust planning framework, a co-ordinated approach to coastal management and the availability of an excellent range of coastal policy, guidance and strategy publications.

10. The completion of this field of research could not have been achieved without the keen support of a wide range of coastal management and fine art bodies, organisations and individuals; their kind assistance is most gratefully acknowledged by the authors.

FIG. 5.1: Comparing E. W. Cooke's 1857 painting of Bonchurch Cliffs with the present day view. Cooke's scene is masked by a row of Victorian villas, tree growth and coastal defences.

References

Adams, W. H. D. 'The History, Topography and Antiquities of the Isle of Wight'. James Briddon. Ryde, IW.

Addey, D. 1995. 'A Voyage Round Great Britain – Sheerness to Land's End'. Spellmount Limited. ISBN: 1- 873376-34-0.

Addey, D. 1997. 'A Voyage Round Great Britain – Land's End to the Clyde'. Spellmount Press. ISBN:1-873376-97-9.

Addey, D. 2000. 'A Voyage Round Great Britain – The Highlands & Islands of Scotland'. Spellmount Limited. ISBN: 1-86227-110-0.

Addey, D. 2002. 'A Voyage Round Great Britain – Orkney to Southend-On-Sea'. Spellmount Limited. ISBN:1-86227-184-4.

A. C. Black (Publ.). 1916. 'Isle of Wight Watercolours'. London.

Amorim, J. C., Pives, A. & Chaminé, H. E. 2019. 'A Brief History of Portuguese Coastal Art – Insights through Science and Technology'. ISBN: 2532-7623 (online).

Bradbury, A. P. 2007. 'Benefits of a Large Scale, Long-Term Regional Coastal Monitoring Programme for Southern England'. In McInnes (Ed.) Proc. Int. Coastal Mgt. Conf. Cardiff. Thomas Telford.

Bradbury, A. P. 2007. 'Strategic Monitoring of the Coastal Zone – Towards a Regional Approach'. SCOPAC.

Bradbury, A. & Mason, T. 2015. 'Review of the South Coast Response to wave conditions in the Winter 2013/14'. Report for SCOPAC. Channel Coast Observatory.

Brannon, G. & A. 1821-1876. 'Vectis Scenery'. Private Press. London.

Christie's, 2002. 'Pictures and Watercolours from Longleat'. Catalogue: Norton 6682. 14/06/2002. Cooke, W. B. 1808. 'A New Picture of the Isle of Wight'. Private Press. London.

Daniell, W. & Ayton, R. 1814. 'A Voyage Round Great Britain'. Private Press. London.

Defra. 2006. 'Shoreline Management Plans Guidance'. Crown Copyright. London.

Defra. 2009. 'A Strategy for Promoting an Integrated Approach to the Management of Coastal Areas in England'. Crown Copyright.

Dodds, W. 2017. 'Flood and Coastal Erosion Risk Management in Wales'. Research Service, National Assembly for Wales © Paper 17-024.

Ellis, A. (Ed.). From 2004. 'Catalogues of Oil Paintings in Public Collections'. The Public Catalogues Foundation.

Englefield, Sir H. 1816. 'The Isle of Wight – A Description of its Scenery, Antiquities and Geological Phenomena'. Private Press. London.

English Heritage. 2015. 'Historic Environment Records – Brief Guide'.

European Commission. 1999. 'Lessons Learnt from the European Commission's Demonstration Programme on ICZM'. DG Environment, Brussels.

European Commission. 2002. 'Recommendations of the European Parliament and Council concerning the Implementation of ICZM in Europe'. Brussels.

European Commission. 2004. 'EUrosion – Living with Coastal Erosion in Europe'. Luxembourg. ISBN: 92-894-7496-3.

Gilpin, W. 1804. 'Observations on the Coasts of Hampshire'. London.

Hansom, J. D.; Fitton, J. M. & Rennie, A. F. 2017. 'Dynamic Coast – National Coastal Change Assessment'. CRW 2014/2.

Holmes, J. 2018. 'The Pre-Raphaelites and Science'. Paul Mellon Centre. ISBN: 978-0300-232066HB.

Koff, S. R. 1999. 'The Role of Arts in Undergraduate Education'. Journal of General Education 48:9-6.

MAFF. 1993. 'Strategy for Flood and Coastal Defence in England and Wales'. HMSO. London.

McInnes, R. G. 1989. 'The Isle of Wight Illustrated'. Cross Publishing. Chale, IW.

McInnes, R. G. 1999. 'The Garden Isle – Landscape Paintings of the Isle of Wight'. Cross Publishing. Chale, IW.

McInnes, R. G. 2005. 'Fifty Years Along the Undercliff of the Isle of Wight'. Cross Publishing. Chale, IW. ISBN: 1873295 66 9.

McInnes, R. G. 2008a. 'Art and Coastal Change in Hampshire and the Isle of Wight'. The Crown Estate. London. ISBN: 978-1-906410-08-7.

McInnes, R. G. 2008b. 'Coastal Risk Management – A Non-Technical Guide'. Report for SCOPAC. 86pps.

McInnes, R. G. 2014. 'British Coastal Art 1770-1930'. Cross Publishing. ISBN: 978-1-873295-46-5.

McInnes, R. G. 2016a. 'CHeRISH' – Coastal Heritage Risk – Imagery in Support of Heritage Management in South-West England'. Report for Historic England. 265 pps. http://cherish.maritimearchaeologytrust.org/

McInnes, R. G. 2016b. 'Vistas and Panoramas of the East Wight AONB Landscape'. 'Down to the Coast' Heritage Lottery Fund project. Final Report, 129 pps.

McInnes, R. G. 2016c. 'Isle of Wight Landscape Art – An Illustrated Dictionary 1650-1930'. Cross Publishing. Chale, IW. ISBN: 978-1-873295-62-5.

McInnes, R. G. 2019. 'The Most Painted Place – Bonchurch and the Isle of Wight School of Artists'. Report for the 'Down to the Coast' Heritage Lottery Fund project. 93pps.

McInnes, R. & Benstead, S. 2013a. 'Art as a Tool in Support of the Understanding of Coastal Change in Wales'. The Crown Estate 107 pages ISBN: 978-1-906410-42-1.

McInnes, R. & Benstead, S. 2013b. 'Art and Coastal Change in Scotland'. The Crown Estate. 97 pages. ISBN: 978-1-906410-49-0.

McInnes, R. G. & Stanford-Clark, C. 2019. 'The State of the British Coast – Observable Changes Through Art Imagery 1770-Present Day'. Coastal & Geotechnical Services, Isle of Wight, UK www.coastalgeotechnicalservices.com. 442 pps.

McInnes, R. & Stubbings, H. 2010. 'Art as a Tool in Support of the Understanding of Coastal Change in East Anglia'. The Crown Estate, 92 pages. ISBN: 978-1-906410-10-0.

McInnes, R. & Stubbings, H. 2011. 'A Coastal Historical Resources Guide for England'. The Crown Estate. 90 pages. ISBN: 978-1-906410-19-3.

McInnes, R. G., Tomalin, D. & Jakeways, J. 2000. 'Coastal Change, Climate and Instability'. Final Report for the European Commission LIFE Environment Programme.

Ministry of Housing, Communities & Local Government. 2019. 'National Planning Policy Framework'. Crown Copyright. ISBN: 978-1-5286-1033-9.

Mitton, G. E. 1911. 'Isle of Wight'. Beautiful Britain Series. A. & C. Black. London.

Momber, G., Satchell, J., Tidbury, L., Daire, M-Y., Motte, E. & McInnes, R. G. 2013. 'Arch-Manche Archaeology, Art and Coastal Heritage'. Interreg 2 Seas Programme. www.archmanche-geoportal.eu.

Moore, R. & McInnes, R. G. 2020 (in Press). 'Coastal Hazards and Climate Change – A Guide for Planners and Policymakers'. Jacobs. 88 pps.

Moore, R.; Roger, J.; Woodget, A. & Baptiste, A. 2010. 'Climate Change Impact on Cliff Instability and Erosion in the UK'. FCRM10. Proc. 45th EA Conf. of Coastal & Rivers Engineers.

Motte, E. 2014. 'L'usage de représentations artistiques des rivages comme outil de connaissance de l'évolution du littoral: examples bretons'. Revue d'Histoire maritime, No. 18, pp. 339-357.

Motte, E. 2017. 'Iconographie et Géomorphologie: l'usage de représentations artistiques des rivages comme outil de connaissance de l'évolution du littoral'. Thèse de doctorat, Université Rennes 2.

Munday, J. 1996. 'Edward William Cooke, RA – A Man of his Time'. Antique Collectors' Club. Woodbridge. ISBN: 1-85149-222-4.

The National Trust. 2015. 'Shifting Shores – Adapting to Change and Playing our Part at the Coast'. http://www.nationaltrust.org.uk/shiftingshores.

Pennant, T. 1801. 'Journal from London to the Isle of Wight'. London.

Prideaux, S. T. 1909. 'Aquatint Engraving'. Duckworth. London. Raye, C. 1825. 'A Picturesque Tour of the Isle of Wight'. London.

Richmond, L. 1814. 'Annals of the Poor'. London. Rowe, G. 1826. 'Views of the Isle of Wight'.

Ruskin, J. 1857. 'Lecture on Architecture and Painting at the Philosophical Institute, Edinburgh'.

Thomas, E. 1911. 'The Isle of Wight'. Beautiful England Series. Blackie & Son. London.

Thomas E.; Heath, S. & Danks, C. c1920s. 'Our Beautiful Homeland Canterbury, Isle of Wight, Winchester and Swanage'. The Gresham Publishing Company Ltd. London.

Tomkins, C. 1976. 'A Tour of the Isle of Wight'. Private Press. London.

Turley, R. V. 1975. 'Hampshire and Isle of Wight Bibliographies'. Barry Shurlock & Co. Winchester. 429 pps.

Turley, R. V. 1977. 'A Directory of Hampshire and Isle of Wight Art'. Univ. of Southampton.

Whitehead, J. L. 1911. 'The Undercliff of the Isle of Wight'. London. Woollard, D. c.1919. 'Pencil Sketches of the Isle of Wight'. A. & C. Black, London.

Wyndham, H. P. 1793. 'A Picture of the Isle of Wight'. London.

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New and Interesting Fungi, Isle of Wight, 2019

Colin Pope and Jackie Hart

When autumn finally arrived, we experienced a long, wet mild period which encouraged abundant fruiting making 2019 a noteworthy autumn for fungi. Our main foray weekend, 19th and 20th October, was most productive. The grounds of Osborne House were spectacular and there was so much to see and record that we didn't travel far. With our visiting experts, Alan Outen and members of the Hampshire Fungus Recording Group, we recorded 168 taxa from the Osborne Estate on Saturday and 139 taxa from Firestone Copse on Sunday.

Throughout the season, some nineteen taxa were recorded for the first time on the Island. First Island records are indicated by * and include some interesting nationally rare species and one new species to the UK. In addition, George Greiff has recorded a number of microfungi, including several bryophilous species which were new to the Island, including some which were firsts for the UK and one previously undescribed species. These have not been included here but may form the subject of a subsequent paper.

AGARICS (Agaricomycetes)

***Agaricus bresadolanus* (= *A. romagnesii*)**
An infrequently recorded mushroom and a first for the Island, recorded from Osborne Estate (JD, det. AO).

Remarkably, three rare *Amanita* species, all firsts for the Island, were recorded in 2019.

Amanita inopinata
A single specimen growing in bare ground beneath a conifer in the lawn in front of Osborne House (SR). This distinctive *Amanita* has only been found recently in the British Isles; it is possible that it originated in New Zealand. It is found associated with conifers in man-made environments such as cemeteries, hedgerows and gardens. Unusually for an *Amanita* it is not believed to be mycorrhizal. It has now been recorded from several southern counties of England as far north as Suffolk. There is one known site, a cemetery, in Hampshire. (Plate 1)

PLATE 1 *Amanita inopinata,* Osborne

Amanita mairei
A single specimen found in Ryde Cemetery during a foray on 24th November was determined as this species after careful microscopic examination (CP). This is a rare thermophilic taxon, which in the past could have been recorded as *Amanita vaginata* (Grisette). (Plate 2)

PLATE 2 *Amanita mairei,* Ryde Cemetery.

Amanita simulans
A single specimen found by Sue Rogerson in Firestone Copse on 20th October. There are only a handful of British records, and material from this specimen has been sent to Sheffield University for DNA sequencing. It is another taxon which in the past could have been recorded as *Amanita vaginata* (Grisette). (Plate 3)

PLATE 3 *Amanita simulans,* Firestone Copse, a first for the Island. Photos Sue Rogerson

***Rubroboletus* (*Boletus*) *satanus* (Devil's Bolete)**
This is a large and famous rare Bolete because of its striking colours and toxicity. It is confined to calcareous soils in southern England and is regularly seen on a slumped coastal slope beneath Holm Oak (*Quercus ilex*) at Fort Victoria. This year a second site, remarkably similar to the first, was reported by Malcolm Smith on holiday in early September. He found up to ten specimens by the footpath on slumped ground at Priory Bay, again beneath Holm Oak. (Plate 4)

PLATE 4 The Devil's Bolete, *Rubroboletus* (*Boletus*) *satanus*, in Priory Woods. Photo Malcolm Smith

Xerocomellus* (*Boletus*) *cisalpinus
This is not a noteworthy species: however, in this instance, the location is. Chris Kidd found specimens growing out of one of the cellar walls in one of the buildings at Ventnor Botanic Garden, some 10m below ground level. *Xerocomellus cisalpinus* is a mycorrhizal species so would not normally be expected to grow in cellars. However, above the building are several mature Holm Oak trees. The fruiting bodies must be associated with deep roots growing close to the walls of the cellar. (Plate 5)

Clathrus ruber (Red Cage fungus)
The Red Cage Fungus is something of an Island speciality having first been found by the botanist Dr Bromfield at Appley in the mid nineteenth century. This year it has been reported from two new localities. It was found growing on disturbed ground created by tree removal by the railway embankment at Skew Bridge, Shanklin. It was first spotted by Eve Helen Pearch on 24th October when travelling to work by bus and reported on Facebook, and fruiting continued into December. What is remarkable at this site is the quantity of fruiting with up to fifty fruiting bodies being present at any one time (Plate 6). There are no other sites known that produce more than a handful of fruiting bodies at any one time. A second new site, reported by Chris Hicks, was also unusual. This one was found growing in a plant pot in a garden at Hamstead Road, Cranmore.

PLATE 5 *Xerocomellus* (*Boletus*) *cisalpinus* growing in a cellar at Ventnor Botanic Garden

PLATE 6 A clutch of *Clathrus ruber* on the railway embankment at Shanklin

Crucibulum laeve (Common Bird's Nest)
Growing on wood chip in the walled garden at Osborne House (EJ). Although described as the Common Bird's Nest, we rarely see this, more often finding the two *Cyathus* species, Fluted Bird's Nest (also present in the walled garden at Osborne) and Field Bird's Nest. *Crucibulum laeve* was last recorded in 1976 by Oliver Frazer during a foray at Swainston. There are earlier records by E. W. Swanton (1934). (Plate 7)

PLATE 7 Common Bird's Nest, *Crucibulum laeve* at Osborne on woodchip

Cystolepiota moelleri
Found at Osborne (EJ)

Dermoloma pseudocuneifolium
Found at Osborne (EJ)

Entoloma undatum
Found at Firestone Copse (AL)

Gymnopus villosipes
Jillie Pope came across a troop of brown agarics at Osborne which looked unfamiliar. She showed them to Eric Janke and Alan Outen, neither of whom had any idea what they could be. Subsequently, Eric sent extracted material for DNA sequencing and this resulted in a name *Gymnopilus villosipes* which fits well with the material and is new to the UK. It is distinguished by a hygrophanous, wrinkled, dark-brown cap that fades to dingy tan, a mild odour, a pubescent stipe, and a tendency to produce large gregarious fruitings under conifers (Desjardin, Halling & Perry, 1997).

Subsequently, Alan Outen believes he has found the same taxon during a foray at Sandy Lodge, Beds on 3rd November 2019. (Plate 8)

PLATE 8 *Gymnopus villosipes* from Osborne, new to the UK Photo: Alan Outen

***Gyroporus castaneus* (Chestnut Bolete)**
Found by Jacqui Darby at Osborne, conf. AO. This distinctive bolete, found associated with Oak and Sweet Chestnut, is not particularly frequent. It was last recorded in 2006 in Borthwood Copse (AO) and in 2002 in America Woods by Derek Reid.

Hemimycena mairei
Some fungi have particularly good years and this must have been the case for this little white grassland bonnet toadstool. It was found for the first time this year at both Quarr Abbey and Osborne (AO). (Plate 9)

PLATE 9 *Hemimycena mairei* at Osborne

Hygrocybe coccineocrenata
This small, reddish waxcap grows with *Sphagnum* moss in bogs, a rare habitat today. There is one previous record from Munsley Bog in 1992 (conf. Derek Reid) and this year it was found on a visit to Bohemia Bog, Godshill on 28th June (CP). (Plate 10)

PLATE 10 *Hygrocybe coccineocrenata* at Bohemia Bog

***Leucopaxillus giganteus* (Giant Funnel)**
This is one of our largest toadstools with a white cap and usually grows in rings, and yet we have precious few records for it. One of the reasons is that it most often grows in grassy places where we would not usually foray, but also it is described in the books as being widespread but occasional. Indeed, we had only one record, from Swainston in 1976 until Iain Outlaw reported that his brother had found a ring of them in grassland in a large private garden at Niton on

7th October. He measured the largest specimens as having a remarkable cap diameter of 45cm! (Plate 11). I have heard reports this autumn of other very large white toadstools from Ventnor Park and private gardens that may have been of this species, but these are unconfirmed.

PLATE 11a Above *Leucopaxillus giganteus* in garden at Niton.

PLATE 11b below Close up (tape measure is 9cm wide.)

Photos Iain Outlaw

Melanotus horizontalis
Found at Firestone Copse (AL).

Mycena mirata
Found at Quarr Abbey (AL/SR)

Physalacria stilboidea
Last year, a visiting New Zealand mycologist staying at Scarborough, East Yorkshire, discovered tiny white toadstools of this taxon growing on fallen, partly decayed leaves of an evergreen New Zealand bush, *Griselinia littoralis,* which is widely planted in coastal areas. There have been very few British records and the request went out to look for it in suitable locations. On 21st June, I examined fallen leaves of *Griselinia* at Ventnor Botanic Garden and was very soon able to find specimens. Their identification was confirmed by Martyn Ainsworth and material has now been deposited at Kew herbarium. (Plate 12)

PLATE 12 *Physalacria stilboidea* on *Griselinia* leaf, Ventnor Botanic Garden. First for the Island.

Ramariopsis kunzei
Another species having a particularly good year. There were only two previous records for this white grassland club fungus but this year it was found at Quarr Abbey (AO) and Ryde Cemetery (CP). (Plate 13)

PLATE 13 *Ramariopsis kunzei* at Ryde Cemetery

Russula faginea
Found at Osborne (EJ).

Eucalyptus is known for hosting a distinctive suite of mycorrhizal fungi that have been little recorded on the Island. Ventnor Botanic Garden is the best place to see Eucalyptus and a wide range of species have been planted.

PLATE 14 Three-year *Eucalyptus globulus* plantation, Ventnor Botanic Garden

Carol Hobart, a British Mycological Society member who lives in Sheffield has been studying hypogeous (truffle type) fungi for many years and visited the Garden during the BMS in Autumn Field Meeting in October 2010. However, she failed to find any hypogeous fungi under Eucalyptus, considering that the trees were too mature and the build-up of leaf litter under them was too great. On 21st November of the same year, Colin and Jillie Pope searched beneath Eucalyptus and managed to find a few truffles which Carol identified as *Hymenangium album,* a first for the Island. This has recently been renamed as *Descolea alba.* (Plate 15)

PLATE 15 *Hymenangium album* (*Descolea alba*) *under* Eucalyptus, Ventnor Botanic Garden
21st November 2010

More recently, two collections of Tasmanian Blue Gum (*Eucalyptus globulus*) have been planted in the Garden. One of these is a new shelter belt and the second is a plantation intended for oil extraction. The trees are already large, but they are only in their third year, having been grown from seed. However, in November, both these plantations were remarkable for the abundance of two new mycorrhizal fungi.

The Pink False-truffle, *_Hydnangium carneum_, (Plate 16) was growing in abundance, the fruiting bodies at or just below the surface of the ground. This is the most widespread Eucalyptus associate although it was new for the Island.

Growing with it, also in abundance, was an unusual dark capped little fungus which proved to be ***Descolea (Setchelliogaster) tenuipes***. This is described as being a secotoid fungus meaning that the fruit bodies do not fully open and the lamellae are convoluted. It has distinctive lemon-shaped spores that are not actively discharged. It was first found in Britain by Carol Hobart in a Nottinghamshire Eucalyptus plantation in 2010 and it has since been found at Kew and a couple of other locations, so there are currently only a handful of records from this country. (Plate 17)

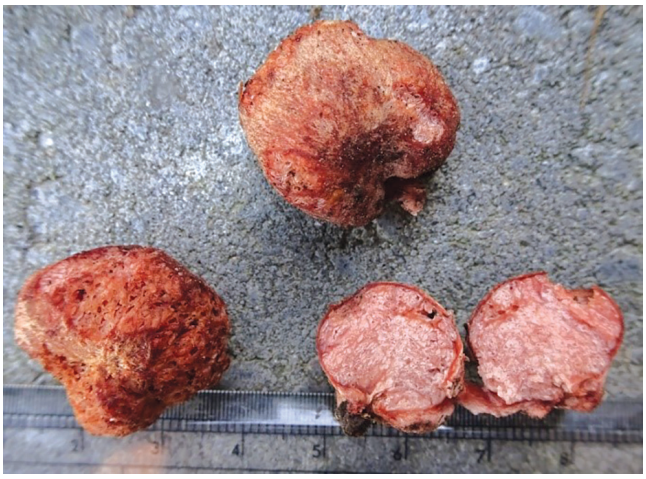

PLATE 16a Above *Hydnangium carneum*
PLATE 16b Below in cross-section

PLATE 17a Above: *Descolea* (*Setchelliogaster*) *tenuipes,* beneath *Eucalyptus* at Ventnor Botanic Garden
PLATE 17b Below: in cross section

Apparently in Australia, in the early stages of a Eucalyptus plantation there are abundant fruitings of a few (up to ten) species in the first seven years and subsequently there is only limited fruiting (Lu *et al,* 1999). As these trees are only three years old, there are likely to be other mycorrhizal species appearing over the next few years.

TOOTHED FUNGI

***Auriscalpium vulgare* (Ear Pick Fungus)**
Selena Bone found a fungus growing on a pine cone during a Parkhurst Forest foray which turned out to be the Ear Pick Fungus, a very distinctive little fungus (Plate 18). Although considered to be not uncommon, it has never turned up on our very many forays across the Island and there are only two earlier records, both by E. W. Swanton (1934), from Shanklin and Mottistone.

PLATE 18a Above**:** Ear Pick Fungus, *Auriscalpium vulgare* at Parkhurst Forest **Plate 18b** Below: to show gills

RESUPINATES

****Dendrothele griseocana***
This rarely recorded resupinate was recorded at Osborne by Alan Lucas, a first for the Island.

Peniophora polygonia
Recorded from Firestone Copse on ash twigs (AL/SR). (Plate 19). A rare species with previous records from Lock's Copse, Porchfield 1989 Derek Reid and Swanton 1934 Marvel Copse.

PLATE 19 *Peniophora polygonia* in Firestone Copse.
Photo Alan Outen

****Vesiculomyces citrinus***
Recorded from Firestone Copse on rotting wood (AL/SR). An uncommon resupinate fungus.

RUSTS & SMUTS

****Pucciniastrum vaccinia* (Bilberry Rust)**
Bilberry (*Vaccinium myrtillus*) is a rare Island plant but conservation management by the National Trust on the top of Ventnor Downs has resulted in a substantial increase in the population and this is the principal Island site. It also survives in small quantity in overly shady conditions in Parkhurst Forest. This year, the leaf spot Bilberry Rust was found to be not infrequent on Bilberry bushes on Ventnor Down (conf. Brian Spooner) (Plate 20).

PLATE 20: *Pucciniastrum vaccinia* on Bilberry, Ventnor Downs

MICROFUNGI

Chromelosporium ochraceum
This is the asexual stage of a *Peziza* cup fungus growing on dead herbaceous plant material and was found by Selena Bone on a foray in Parkhurst Forest on 6th October, det. CP. There is one previous record; it was found in Parkhurst on a visit by the British Mycological Society in 2010. It is not much to look at until examined under a microscope when the much-branched structure bearing clusters of spherical conidia at the tips of the branches is very distinctive (Plate 21).

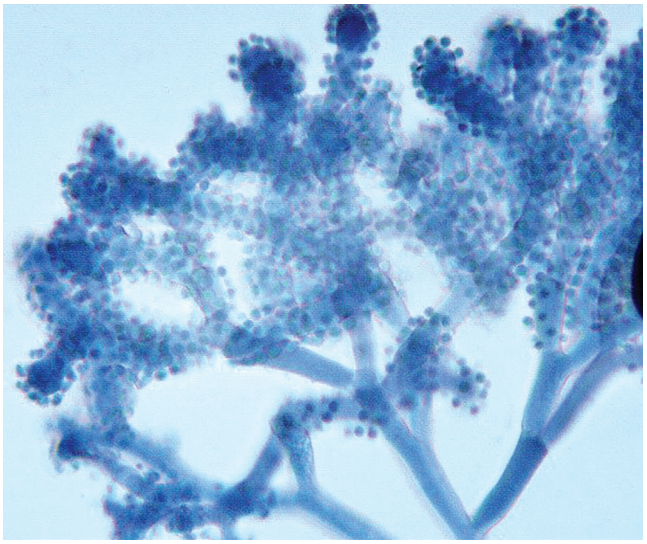

PLATE. 21a Above *Chromelosporium ochraceum* on vegetation at Parkhurst: **Plate 21b** Below Under the microscope, clusters of conidia on branched conidiophores, stained with Cotton Blue (photo Malcolm Storey)

Septoria lysimachiae

A leaf spot confined to Yellow Loosestrife (*Lysimachia vulgaris*) was found in wet woodland at Alverstone on 27th August (CP, GG).

Recorders

AL Alan Lucas
JD Jacqui Darby
CP Colin Pope
EJ Eric Janke
IO Iain Outlaw
MS Malcolm Smith
AO Alan Outen
CH Chris Hicks
DB David Biggs
GG George Greiff
SR Sue Rogerson

Many thanks also to the many forayers who have found interesting and noteworthy specimens this year, including Dave, Natalie & Selena Bone, Jillie Pope, Mike Cotterill, Chris Kidd and Eve Helen Pearch.

Abbreviations:
det. Determined by; conf. Confirmed by

All photographs by the author, excepting where indicated.

References

Desjardin, D., R. Halling & B. Perry (1997) *Gymnopus villosipes*- a common collybioid agaric from California. *Mycotaxon* LXIV, 141-147.

Hugill, Paul & Alan Lucas (2015) *A Field Guide to Resupinates of Hampshire*. Privately printed.

Lu, X., Malajczuk, N., Brundrett, M. & Dell, B. (1999) Fruiting of putative ectomycorrhizal fungi under blue gum (*Eucalyptus globulus*) plantations of different ages in Western Australia. *Mycorrhiza* 8:255-261.

Swanton, E.W. (1934) List of Fungi found in the Isle of Wight *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* II (V) 365-394.

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Flowering Plants and Ferns, Isle of Wight, 2019

Colin R. Pope

2019 was the final year for the Botanical Society of Britain and Ireland Atlas 2020 project to obtain updated plant records from across the British Isles. We have been able to submit a large dataset so that coverage of the Island is currently good. It has been particularly pleasing to record native plants for which there had been no post 2000 records. The list below covers new and other interesting records. I am grateful to everyone who submits their records; all of them are valuable, and all records have been stored, whether reported here or not, and have been submitted to the BSBI.

Abbreviations used at the start of the accounts are an attempt to establish the status of the records, namely: N. Native; C. Casual Alien; E. Established Alien; P Planted.

Australian Tree-fern *Dicksonia antarctica*
E. Several young plants in Shanklin Chine originating from mature planted specimens near the Café SZ584810 (PA). This fern is also regenerating in the Tree Fern Dell at Ventnor Botanic Garden (CRP).

Maidenhair Fern *Adiantum capillus-veneris*
E. Seen growing on a wall in Atherley Road, Shanklin during a visit of the British Pteridological Society SZ583818 (PA).

Marsh Fern *Thelypteris palustris*
N. Re-found growing in a small, very wet woodland at Alverstone SZ578853 (CRP/GG). This is a well-known historic site first recorded in 1856. Plants used to be visible around the northern edge of the wood but only one patch was found in the north-western part of the wood. It was last recorded from here in 1996.

Chain Fern *Woodwardia radicans*
E. Recorded on a visit of the British Pteridological Society at Shanklin Chine SZ584810 (PA). Young plants growing in Chine originating from planted material. One plant which was seen through binoculars on a ledge near the top of the Chine was considered to be *W. fimbriata.*

Narrow Buckler-fern *Dryopteris carthusiana*
N. Scattered plants seen in the north marsh, Freshwater Marshes SZ344865, during a visit of the British Pteridological Society (PA). Although the hybrid with Broad Buckler-fern is known from here, Narrow Buckler-fern itself was last recorded here in 1992. Still frequent in the northern end of wet woodland at The Wilderness SZ504823 (JN) where it was last recorded in 1996. Found growing in a small relict bog at Rookley Farm SZ501830 (PS/ML).

Dryopteris x deweveri
N. One plant growing with both parents in relict bog at Rookley Farm SZ501830 (PS/ML).

Tulip Tree *Liriodendron tulipifera*
P. A young tree about 1.5m high, presumably planted in a hedgerow near the Medina cycletrack at Werrar SZ504927 (DB).

Prickly Poppy *Roemeria (Papaver) argemone*
N. In arable at Beckford Cross, Kingston SZ482809 (PS).

Dense-flowered Fumitory *Fumaria densiflora*
N. Abundant in spring sown pheasant crop at Cheverton Farm SZ440841 (ML).

Mossy Stonecrop *Crassula tillaea*
E. About 200 plants on kerb edge at Merrie Gardens Public House, Lake SZ580833 and three plants in a drive at Brighstone SZ426825 (PS).

Egyptian Clover *Trifolium alexandrinum*
C. Growing as a fodder crop in fields at Nettlestone SZ616904 and Merstone SZ524851 (GNT).

Hollyberry Cotoneaster *Cotoneaster bullatus*
E. Six or seven large fruiting bushes in mixed scrub on floor of Shide Quarry SZ505881 (mo, conf. EJC).

Hardy Cotoneaster *Cotoneaster induratus*
E. Several bushes at Shide Quarry SZ505881 (mo, conf. EJC). Slowly increasing since Paul Stanley recorded a single bush here in 2013.

Large-leaved Avens *Geum macrophyllum*
C. A single plant on a roadside verge at Saunders Way, Kingston SZ508938 (PS).

Sherard's Downy-rose *Rosa sherardii*
N. Found growing at Garrett's Farm, St George's Down SZ514874 (PS).

Fen Nettle *Urtica dioica* subsp. *galeopsifolia*
N. Growing in flood plain woodland at the southern end of Briddlesford Copse SZ554902 (CRP).

Mediterranean Nettle *Urtica membranacea*
C. A patch beneath the benches at Forest Road nurseries, Parkhurst SZ480898 (PS).

Bermuda-buttercup *Oxalis pes-caprae*
E. A weed in the front garden of a house in Belvedere Street, Ryde SZ594923 (CRP).

Spear-leaved Willowherb *Epilobium lanceolatum*
N. Singletons at Shalfleet SZ410893 and a touring camp in Whitefield Woods SZ605893 (PS).

Marsh Mallow *Althaea officinalis*
N? Still persisting and doing well in overgrown fen at Haseley Manor, Arreton SZ546855 (CRP). The origin of this inland population is unknown.

PLATE 1: Sea Campion *(Silene uniflora)* growing with Autumn Squill *(Scilla autumnalis)*

PLATE 2: Cornflower *(Centaurea cyanus)*

Upright Chickweed *Moenchia erecta*
N. About thirty plants in turf at Sandown Golf Course SZ584846 (PS). This is likely to be an historic site for this plant although there are no previous records from here.

Four-leaved Allseeed *Polycarpon tetraphyllum*
C. Recorded from two roadside sites in Newport - near Coppins Bridge SZ503894 and Collingwood Road SZ495886 (PS).

Sea Campion *Silene uniflora*
N. Four patches persisting on St Helen's Duver growing in close proximity SZ635892 (CRP). Although this is an historic site, first recorded in 1909, it was last recorded here in 1996. (Plate 1)

Night-flowered Catchfly *Silene noctiflora*
N. Two plants in spring cultivated pheasant crop at New Barn Farm, Calbourne SZ437860 (ML).

Striped Goosefoot *Chenopodium strictum*
C. Found growing in a field edge at Hardingshute, Ashey SZ5988 (GNT).

Guernsey Pigweed *Amaranthus blitum*
C. Six plants at Bettesworth Road, Ryde SZ586913 (PS).

Wall Bedstraw *Galium parisiense*
C. Recorded from several urban sites around Newport on the Medina Industrial Estate SZ500902 and St Cross Business Park SZ500905 (PS).

Yellow Dodder *Cuscuta campestris*
C. A seed contaminant of Niger (*Guizotia abyssinica*) bird seed at a field entrance at South Thorness SZ449928 (PS).

Common Calamint *Clinopodium ascendens*
N. Large patch on open ground alongside Bonchurch Landslip carpark SZ580789 (CRP).

Venus Looking-glass *Legousia hybrida*
N. Seen in arable from footpath to Snowdrop Lane, Gatcombe SZ483857 (RG).

Mediterranean Thistle *Galactites tomentosus*
C. A few plants on the roadside opposite Freshwater thatched church SZ344860, originating from a Council planting scheme (PS).

Cornflower *Centaurea cyanus*
N. Around eight plants growing in arable field edge at Rookley Farm SZ506830 (PS). This is at the southernmost extent of the native Bleak Down arable population. (Plate 2)

Smooth Cat's-ear *Hypochaeris glabra*
N. A plant of parched acid grasslands. In great abundance opposite the Chequers Inn on Bleak Down SZ510830; Beckfield Cross, Kingston SZ480810; and Grammars Common, Brighstone SZ413843 (PS).

Spreading Hedge-parsley *Torilis arvensis*
N. About one hundred plants in stubble at Whippingham SZ510943 (PS). An excellent record of this increasingly rare arable plant thought to have become extinct on the island until it was rediscovered in 2008 and subsequently seen at a small handful of sites.

Toothed Hawkweed *Hieracium calcaricola*
N. Sect. *Tridentata* Frequent by a footpath along the south boundary of Ventnor Radar Station, St Boniface Down SZ566783 (CRP det. Mike Shaw). The first Island record since it was found by Bromfield (1845).

Tall Fleabane Erigeron *annuus*
C. Growing on road verge north of Beckfield Cross, Kingston SZ479814 (PS).

Chamomile *Chamaemelum nobile*
N. Abundant in mown, goose-grazed amenity grassland at Salterns Holiday Park, Seaview SZ623914 (PS/ML).

Shoddy Ragwort *Senecio pterophorus*
E. An established weed in Ventnor Botanic Garden, now spreading to gardens and waste ground in Steephill Road SZ549770 (CRP).

Eelgrass *Zostera noltii* and *Z. angustifolia*
N. Both Eelgrass and Dwarf Eelgrass found growing in Thorness Bay SZ455935 (JC). This is a recent recolonization of this area of intertidal. Judy Stoneley noticed a few detached plants washed up here in 2006, but Eel-grass has now spread across much of the bay growing unusually on rocky ground around the ledge. Historically, Eelgrass beds were known from Thorness Bay, but it has been absent for at least thirty years.

PLATE 3: Broad-leaved Helleborine *(Epipactis helleborine)* in Lidl car park

PLATE 4: Heath Rush *(Juncus squarrosus)*

Blunt-leaved Pondweed *Potamogeton obtusifolius*
N. Growing in Clayden pond on MOD land at Jersey Camp, Porchfield SZ441909 (CRP). Otherwise, this pondweed is only known from field ponds at Elmsworth Farm to the north. Presumably spread naturally by water birds.

Broad-leaved Helleborine *Epipactis helleborine*
N. Three flowering shoots were found on the roadside verge close to Whitefield Forest Touring Park SZ605893 (mo). There are no previous records from Whitefield Woods; unfortunately, the plants were strimmed a few days later. The discovery of two flowering plants amongst ornamental planting at Lidl carpark in Newport SZ499895 was remarkable (PS). Despite busy foot traffic in this area, the plants were undisturbed and set seed. (Plate 3)

Bee Orchid *Ophrys apifera*
N. A huge population of flowering plants, numbering several thousand on ex-arable land at Luccombe SZ576797 being converted to permanent grassland by the National Trust (RL).

Heath Rush *Juncus squarrosus*
N. A handful of plants (less than 10) growing on restored heathland near the ponds on Bleak Down SZ512818 (CRP). Although it is one of the commonest plants of moorland in upland Britain, it has always been a rare plant on the Island, confined to the Bleak Down area. It was feared to have become extinct having been last found in a different but nearby location in 1997. (Plate 4)

Orange Foxtail *Alopecurus aequalis*
N. Growing in a dried-up field pond east of Burnt Wood, Porchfield SZ446928to the east of other known sites at Elmsworth Farm (PS & ML).

In addition, Paul Stanley has recorded the following hybrids in 2019, all new to the Island:

Epilobium* x *dacicum One plant at Birchmore pond, Merstone, conf. Geoff Kitchener.

Epilobium* x *schmidtianum One plant with parents at Cridmore Bog, conf. Geoff Kitchener.

Hypochaeris* x *intermedia At least one plant with both parents at Grammars Common, Brighstone, conf. Tim Rich.

Leontodon* x *vegetus East Cowes, conf. Tim Rich.

Carex otrubae* x *divulsa On verge at Three Gates Farm, Guyers Heath.

***Carex* x *elytroides* (*Carex acuta* x *nigra*)** Several clonal patches with both parents, Morton Marsh, conf. Mike Porter.

Agrostis* x *gigantifera Arable field, Atherfield, conf. Tom Cope.

X *Agropogon robinsonii* One plant with parents on waste ground. Parkhurst carpark and Newport building plot, Conf. Tom Cope.

***Polypogon* x *adscendens*.** 4 plants in carpark of Butterfly World, Wootton Common. First of two British records, conf. Mike Wilcox & Mike Porter.

Recorders

CRP Colin Pope	PA Pat Acock
DB David Biggs	PS Paul Stanley
EJC Eric Clement	RG Richard Grogan
GNT Geoff Toone	RL Robin Lang
JC Jonathan Cox	JN John Norton
ML Mark Larter	RW Robin Walls

mo many observers (Botany Group meeting)
conf: confirmed by det: determined by

All photographs by the author.

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Tephritid Galls, Isle of Wight 1975 - 2019

Dr. D. T. Biggs

The dipteran family Tephritidae has flies which have patterned wings. They are known in English as picture-winged flies. J.W. Saunt wrote an account of them on the Isle of Wight in 1946 when the family was known as Trypetidae. E.W. Swanton wrote an account of Isle of Wight galls in 1937 but described only one Tephritid gall. This paper describes Tephritid fly galls discovered on the Island between 1975 and 2019.

Dithryca guttularis (Meigen, 1826) on Yarrow A*chillea millefolium*
This gall was not recorded in Swanton (1937). Saunt recorded the fly from the Wilderness and from Thorness. I have one record of the gall, from Freshwater Causeway SZ3487 on Oct. 20th 2006 when one plant with two galls was found.

Each gall is unilocular with thick fleshy walls, found at the base of the stem, almond-shaped and 10 x 4mm. The larva is white; the emerging adult fly is black and brown, body length 2.8 – 4.2mm, with a reticulate wing pattern and a large hyaline spot at the apex. It emerges from the host plant July to August.

It is said to be widespread in England and throughout most of the Palaearctic as far east as Kazakhstan.

Myopites eximius (Séguy 1932) on Golden Samphire *Inula crithmoides*
Not recorded by Swanton. The adult fly was recorded by Saunt from Newtown and Shalfleet. The first record of the gall was on Oct. 13th 1995 from Newtown. Subsequent records have been from Hamstead Duver, Werrar and Medham.

The base of the capitulum is thickened, enlarged and the flowerhead is more conical with small elongate projections. These indicate the underlying larval chambers, each containing one larva from July onwards. The adult fly emerges up to September, is yellowish with faintly banded wings, and 2.5 - 3.2mm in length.

This fly and gall is found in Southern England as far north as Essex. Elsewhere it is recorded from west and south-west Europe. It is a Red Data Book Species.

Myopites inulaedyssentericae (Blot, 1827) on Fleabane *Pulicaria dysenterica*
Not recorded by Swanton. Saunt had records of the fly from Sandown, Yarmouth, Shalfleet, East Cowes, the Folly and Kingston. I now have records from nine of our ten 10 km squares and from 52 tetrads.

The receptacle is inflated, hard and more conical and convex than the ungalled flowerhead. One or more larval chambers are present, each containing a white larva or brown puparium. The adult fly, which is 2.4 – 3.2mm in length, is yellowish with wings which demonstrate faint broken brown cross-bands. It emerges June to September.

It is a usually coastal species from Hampshire to Kent. It is found in western, central and eastern Europe. Although common on the Isle of Wight, it was recorded as a Red Data Book Species.

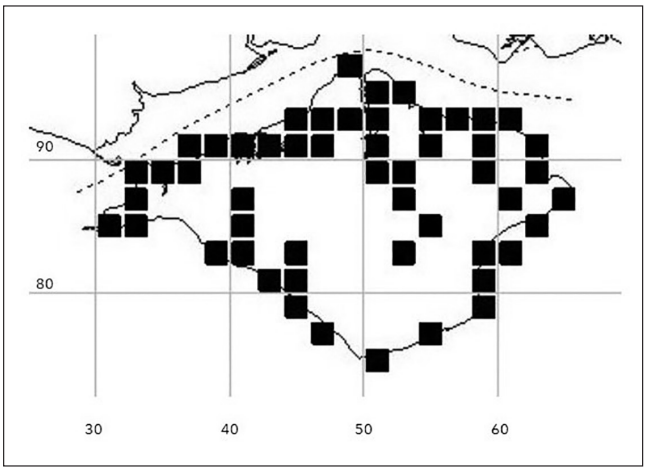

FIGURE 1: Distribution of *Myopites inulaedyssentericae* in the Isle of Wight

Noeeta pupillata (Fallén, 1814) on a Hawkweed *Hieracium umbellatum*
Not recorded in either Swanton or Saunt and I have no records for it. M. Niblett did find it at Shalfleet "causing a swelling of the capitulum" Jan. 15th1946 according to Saunt.

The flower-heads are swollen and usually remain closed. The bracts are thickened, and the heads are sometimes light yellow in colour. One or more white or grey larvae or black puparia are present. Two generations of the black fly emerge April to June, and then July to September. The body length is 3.3 – 4.1mm and the wing pattern is reticulate with marked elongate border cells.

It is recorded from Yorkshire southwards, but is uncommon. Found throughout the Palaearctic except from the Mediterranean region. Again, this is a Red Data Book Species.

Oxyna nebulosa (Wiedemann, 1817) on Oxeye Daisy *Leucanthemum vulgare*
Not recorded in Swanton. Saunt reports "Yarmouth, East Cowes, Whippingham, causing root galls". I have no records of this species.

The gall is a fleshy pea-shaped swelling in the root or base of the stem, one- or many-chambered and each containing a white larva or brown puparium. The adult fly is black and 3.0 – 4.4mm in length, with a reticulate

wing pattern. There have been no recent records from England.

Old records have been from England and Wales as far north as Herefordshire. Found throughout mainland Europe to Russia, and in Israel. Very rare. Again, a Red Data Book fly.

Tephritis bardanae (Schrank, 1803) on Burdocks *Arctium lappa and A. minus*
Surprisingly, not recorded by Swanton. The fly, but not the gall, was recorded from many sites by Saunt in his 1946 paper. I now have records of the gall from seven 10km squares and from 35 tetrads. Apparently widespread, but tends to be missed.

Slight swelling of the flower head is easily discovered by palpation. The tissue of the receptacle and achenes is replaced by callus. Up to six larvae, then black puparia are found, the former from July to September and the latter from autumn to early winter. The adult fly is orange with a reticulate wing pattern and with a large hyaline cell at the apex. Its body length is 3.9 – 4.5mm.

This is common in southern England but found throughout the British Isles. Elsewhere, in the western Palaearctic to Kazakhstan.

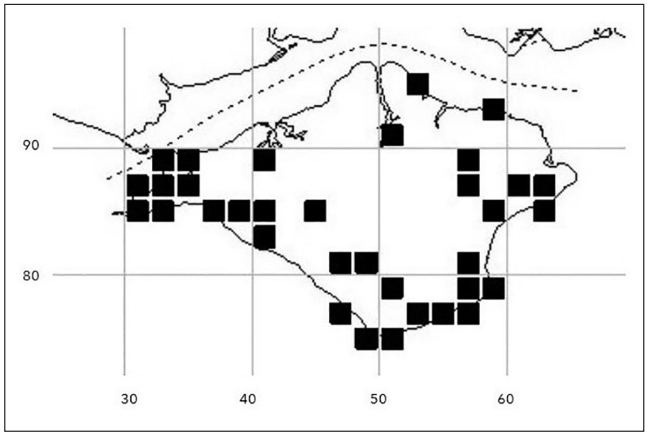

FIGURE 2: Distribution of *Tephritis bardanae* in the Isle of Wight

Terellia tussilaginis (Fabricius, 1775) on Lesser Burdock *Arctium minus*
Not recorded in Swanton and the fly, not the gall, reported as common by Saunt. My records now are from all ten 10km squares and from 53 tetrads.

The gall is a swollen capitulum, determined by palpation. Up to 12 white larvae live inside enlarged achenes. Each achene has a small entrance hole towards the top and a larger exit hole blocked with debris at the base. The larvae are found from August through to May of the following year and pale brown puparia in May and June. The yellowish fly emerges May to July, has a body length of 2.9 – 4.1mm and has wings with five dark streaks.

Found throughout England and Wales, common in the south. Throughout the Palaearctic except the Far East.

Urophora cardui (Linnaeus, 1758) on Creeping Thistle *Cirsium arvense*
Swanton noted this from Carisbrooke by Frank Morey

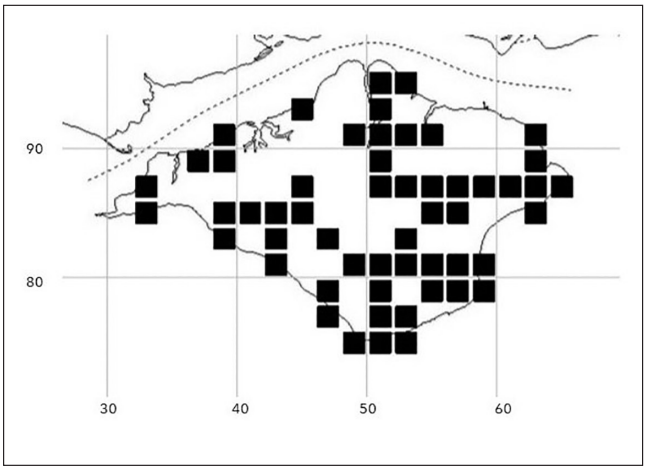

FIGURE 3: Distribution of *Terellia tussilaginis* in the Isle of Wight

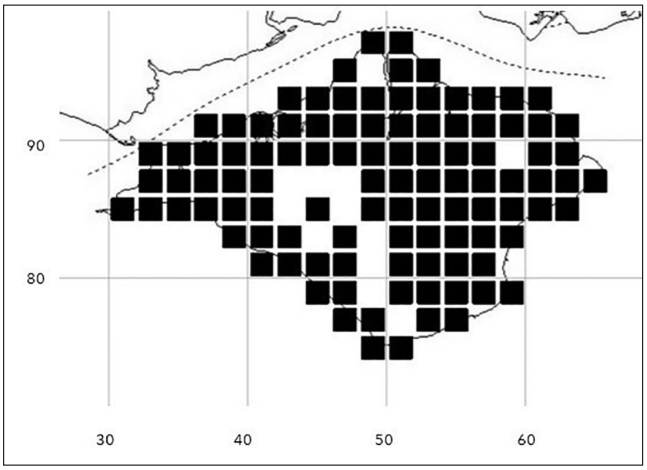

FIGURE 4: Distribution of *Urophora cardui* in the Isle of Wight

in 1922 and himself in Brook 1937. Saunt recorded the fly as "frequent on the Island". I now have records from all ten of our 10km squares, and from 103 of our 123 tetrads.

This gall is well-known as a large green swelling, usually 10 x 3cm, on the stem of Creeping Thistle becoming hard and woody in autumn. It contains up to four chambers, each with a white larva, July through to April and a puparium May to June. The orange-brown fly has a body length of 3.7 – 5.4mm and with a large dark zig-zag on its wings.

It was locally common from the Midlands southwards, but its range has extended into the northern half of England recently. It is found throughout western and central Europe. It has been introduced into Canada as a biological control agent to reduce weed infestation.

Urophora jaceana (Hering, 1935) on Common Knapweed *Centaurea nigra*
Again, not recorded by Swanton. Saunt had records from East Cowes, Thorness, Yarmouth, Arreton, Bembridge, Rookley, Freshwater, Shalfleet and Parkhurst. My records are from nine of our ten 10km squares and from 33 tetrads.

This is another gall recognised by palpation. Initially soft and fleshy, the gall incorporates the receptacle and achenes. Usually several chambers are found, each with one larva from August through to April. By early September, the galls coalesce into a large, hard

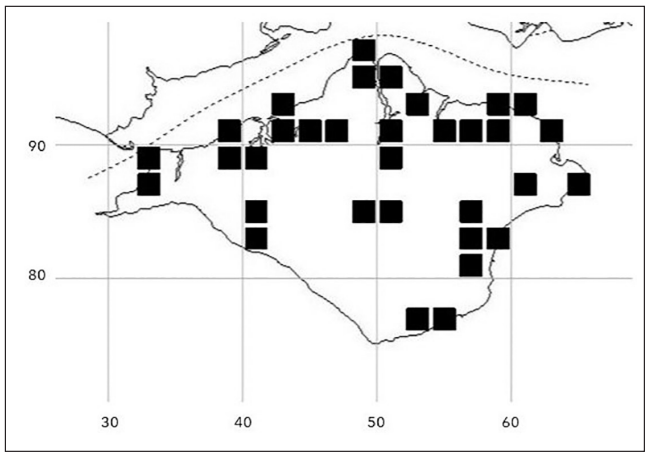

FIGURE 5: Distribution of *Urophora jaceana* in the Isle of Wight

and woody growth. Larvae overwinter in the galls and pupate inside brown puparia in April. The adult flies which are orange and pale brown emerge in June and July, the body length being 3.5 – 4.6mm, and the wings with four dark stripes.

This is very common throughout the British Isles, western, north-western and central Europe. The fly has been accidentally introduced into Canada.

It is interesting that Common Knapweed has been called 'Hard-heads' throughout England. (Mabey 1996)

Urophora quadrifasciata (Meigen, 1826) on Common Knapweed *Centaurea nigra*
Neither Swanton nor Saunt recorded this gall or its causative fly. I only have two records, the first from Rew Down in 2002 and the second from Newtown Rifle Range 2016.The achenes become enlarged with flimsy paper-thin walls, with an opening at the top. The gall is not lignified unlike other *Urophora* galls. It is unilocular, having a full-grown barrel-shaped larva with a dark brown posterior plate from August through to April. The emerging fly, from May to August is small and orange-brown, with four dark crossbands on its wings.

In England it is found in the Midlands and south but is uncommon. Elsewhere, it has been recorded throughout Europe, the Middle East and North Africa. The fly has been introduced into western Canada as a biological control agent.

Urophora spoliata (Haliday, 1838) on Saw-wort *Serratula tinctoria*
Again, this fly was not recorded by Swanton. Saunt recorded it from Newtown, Cranmore, Parkhurst and Firestone Copse. I only have two records, both from Walters Copse SZ432904. One galled capitulum was found on October 9th 1992 and a capitulum with an orange/yellow larva on August 17th 2002.

The capitulum is swollen and deformed, found best by palpation. The walls of the achene are lignified. One or several larvae are found. The fly emerges June to July. The wings are without cross-bands but with one dark mark.

This was known only from south Hampshire and the Isle of Wight in 1998, but there are recent records from Devon and Cornwall. Rare.

Urophora stylata (Fabricius, 1775) on Lesser Burdock *Arctium minus,* Creeping Thistle *Cirsium vulgare* and Musk thistle *Carduus nutans*
Not recorded by Swanton. Saunt recorded the fly from East Cowes, Kingston, Shalfleet, Compton, Calbourne, Brading, Woodside and Brook. I have records of galls on Burdock and galls with larvae on Creeping Thistle *Cirsium vulgare*. The former from Atherfield SZ465799 on February 10th 2001, confirmed by Ian White of the Natural History Museum; and the latter from Medham SZ5093 on September 11th 2012.

The receptacle and achenes develop into a hard, woody gall, hardly visible or not at all visible from outside. Again, best found by palpation. Within the gall are one or more larval chambers, each containing one larva July through to April, or a puparium May to June in old heads. The flies emerge May to July, are orange and pale brown in colour with a body length of 4.6mm and wings with three distinct cross-bands.

Widespread and common in Great Britain as far north as Yorkshire, in Ireland, in Europe and the Middle East. Introduced into Canada as a biological control agent, in British Columbia where seed production on *Cirsium vulgare* was substantially reduced. It was also released in Quebec, but there it died out. Accidentally introduced into Australia.

Bibliography and references

Chandler, P. (Ed.) 1998. *Checklists of Insects of the British Isles (New Series) Part 1: Diptera*. London: Royal Entomological Society.

Mabey, R. 1996. *Flora Britannica* London: Sinclair-Stevenson Reed International books Ltd.

Redfern, M., Shirley, P. and Bloxham, M. 2011 *British Plant Galls.* Field Studies Council. (AIDGAP series) 2nd edition.

Saunt, J.W. 1946. Isle of Wight Trypetidae (Diptera). *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* **4**: 33-40.

Swanton, E.W. 1937. 'A Preliminary Annotated List of Plant Galls Observed in the Isle of Wight'. Ibid. **2** (8) 654-699.

White, I.M. 1988. *Handbooks for the Identification of British Insects. Vol. 10, Part 5(a). Tephritid Flies. Diptera: Tephritidae.* London: Royal Entomological Society.

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Additional Records of Plant Galls, Isle of Wight, 2019

Dr. D. T. Biggs

During the year, three gall inducing species were found new for the County; one of these was new for Great Britain.

ACARI

Acalitus rigidus (Nalepa) on Saw-wort *Serratula tinctoria*

Newtown Rifle Range SZ4491 was the site for this new mite gall, the first record for the U.K. It was recorded by Barry Angell on May 21st 2019. Several young plants were affected. The new leaves were atrophied and twisted, with thickened in-rolled edges and profusely covered with white curled hairs. The mites lived amongst the hairs. Described originally from central and southern Europe, the mite has been found recently in Scandinavia and the U.K. but the gall has not been found here before.

Aceria ecchii (Canestrini) on Viper's-bugloss *Echium vulgare*

One galled plant was found by Colin Pope on September 4th 2019 on Compton Down SZ3785. The whole plant was converted in to a grey hairy mass. All the flower parts were deformed, and reverted to primitive leaves (phyllanthy) and covered with long, pointed hairs, amongst which were discovered the causative eriophyoid mites. This gall is found in central, western and southern Europe.

DIPTERA

Dasineura spadicea Rübsaamen 1917 on Tufted Vetch *Vicia cracca*

A Botanical Section meeting on September 7th 2019 at Shide Chalk Pit SZ5088 yielded this cecidomyiid gall (Diptera; Cecidomyiidae) found by Colin Pope. Nine leaflets of one plant were thickened and folded upwards to form closed pods, pale yellowish-green and containing one or several whitish or yellowish-white midge larvae each.

Bibliography

Buhr, H. 1965 *Bestimmungstabellen der Gallen (Zoö und Phytocecidien) an Pflanzen Mittel-und Nordeuropas.* Jena. Gustav Fischer Verlag.

Houard, C. 1908 Les *Zoocécidies des Plantes d'Europe et du Bassin de la Méditerrané.* Paris: Hermann et Fils.

Redfern, M., Shirley, P. and Bloxham, M. 2011 *British Plant Galls.* Field Studies Council. (AIDGAP series) 2nd edition.

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Notable Moths, Isle of Wight, 2019

Iain Outlaw

Although fewer species were recorded than in recent years, there was still plenty of interest as it started early in the year. A Red-headed Chestnut (*Conistra erythrocephala*) was recorded at Bonchurch in February, the same trap site accounting for five of the eight county records. Also from that site were two infrequently seen micro-moths *Povolnya leucapennella* and *Ypsolopha mucronella*. In March, a torchlight search at Rocken End produced one Barred tooth-striped (*Trichopteryx polycommata*) and *Agonopterix purpurea* was recorded in Shanklin and Bonchurch.

The summer months were relatively quiet but a few of the scarcer immigrants did appear including the first of three Dewick's Plusia (*Macdunnoughia confusa*) at Bonchurch in mid-May. In June, there were a further three records of *Agrotera nemoralis* which has been seen annually since 2017. The fourth Druid (*Aedia funesta*) for the county was trapped at Bonchurch along with a Plumed Fan-foot (*Pechipogo plumigeralis*), another two of which were recorded at Wheeler's Bay. July and August saw four records of *Acrobasis tumidana* including seven at Bonchurch on 25 July and there were two superb finds at Cranmore with White Spot (*Hadena albimacula*) and Neglected Rustic (*Xestia castanea*).

Numbers of immigrant moths were rather low during the autumn. Dewick's Plusia was recorded at Bonchurch in September and at Brook in October. The best moth of the autumn was Grass Webworm (*Herpetogramma licarsisalis*) trapped at Brook in October.

New vice-county records

All were recorded at light unless otherwise stated and species were confirmed by dissection where necessary.

35.064 *Argolamprotes micella* ([Denis & Schiffermüller], 1775)
A Nationally Scarce species found predominantly from Cornwall to Dorset. One was trapped at Shanklin on 30th June.

49.041 Summer Fruit Tortrix *Adoxophyes orana* (Fischer von Röslerstamm, 1834)
This species is a naturalised accidental introduction but remains scarce. One was recorded at Bonchurch on 20th July.

63.113 *Ancylolomia tentaculella* (Hübner, 1796)
This is a very rare immigrant from the continent with only six British records up to 2019. Several were recorded from south coast counties during the summer, including one at Shanklin on 31st July.

63.001 *Paracorsia repandalis* ([Denis & Schiffermüller], 1775)
This is another rare immigrant with nine British records up to 2018. One was trapped at Moons Hill, Totland on 25th July.

The following are a few of the other notable records

30.002 *Agnoea subochreella* (Doubleday, 1859)
Known previously only from Newtown in 1969; three were recorded at Briddlesford Copse on 15th May and one at Parkhurst Forest on 28th June.

32.002 *Semioscopis steinkellneriana* ([Denis & Schiffermüller], 1775)
With previous records from Freshwater in 1900 and 1990, the third for the county was one trapped at Briddlesford Copse on 20th April.

35.151 *Carpatolechia proximella* (Hübner, 1796)
Although common on the mainland this species is scarce on the Island. One at Mottistone Down on 1st July the third record.

37.046 *Coleophora deauratella* Lienig & Zeller, 1846
There is a historical record from 1900 and one recent unverified specimen. One at Shanklin on 2nd July was confirmed by dissection.

37.050 *Coleophora albidella* ([Denis & Schiffermüller], 1775)
The third county record was of one at St. Catherine's Point on 23rd June.

37.099 *Coleophora striatipennella* Nylander [1848]
There is one previous record from Freshwater. Two were confirmed this year with a male at Shanklin on 11th June and a female on 31st July.

49.042 *Neosphaleroptera nubilana* (Hübner, [1799])
Ten at Windy Corner, St. Catherine's Point on 23rd June were the first to be recorded on the Island since the 19th century.

49.047 *Eana incanana* (Stephens, 1852)
Previous records are from Alverstone in 1933 and Borthwood in 2016. One was trapped at Shanklin on 2nd July.

49.363 *Pammene argyrana* (Hübner, [1799])
One previous record is from Parkhurst Forest in 1978. Three were trapped at Briddlesford Copse on 20th April.

49.365 *Pammene albuginana* (Guenée, 1845)
One at Shanklin on 14th June was the third county record.

52.008 Red-tipped Clearwing
Synanthedon formicaeformis (Esper, 1782)

Recorded only once before, there were seven records from four sites between 24th June and 4thJuly totalling 49 individuals. All to pheromone lure.

63.055 Grass Webworm
Herpetogramma licarsisalis (Walker, 1859)
This is a rare immigrant from the continent with just 15 British records prior to 2019. A male trapped at Brook on 5th October was the third county record.

63.071 *Eudonia lineola* (Curtis, 1827)
Last recorded from Chale Green in 1993, five were recorded over four dates at Freshwater Cliffs.

73.028 Pale Shoulder
(*Acontia lucida*) (Hufnagel, 1766)
The second county record of this rare immigrant, one was trapped at Moons Hill, Totland on 27th July.

73.284 White Spot
Hadena albimacula (Borkhausen, 1792)
One to actinic light at Cranmore on 17th August was the second county record.

73.355 Neglected Rustic
(*Xestia castanea*) (Esper, 1798)
One of the form *neglecta* came to actinic light at Cranmore on 30th August was the first to be recorded since 1930.

My thanks go to everyone who submitted records, in particular Phil Barden, Andy Butler, Sue Davies, James Halsey, Chris Hicks and Sam Knill-Jones. I would also like to thank the Forestry Commission, National Trust, People's Trust for Endangered Species and Royal Society for the Protection of Birds for allowing access to their estates.

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New Vice-County Records for Hemiptera 2019

Iain Outlaw

Eleven species were recorded new to the Isle of Wight during the year.

Heteroptera: Rhopalidae

Stictopleurus punctatonervosus (Goeze, 1778)
Recorded at Newtown Rifle Range on 29th April. This species is now established and widespread in the south of the country, favouring grassland habitats.

Heteroptera: Pentatomidae

Nezara viridula (Linnaeus, 1758) Southern Green Shieldbug
Two nymphs were found on Nasturtium *(Tropaeolum majus)* at Wheelers Bay, Ventnor on 22nd August. A polyphagous species that is native to Africa and now widespread in southern Europe.

Auchenorrhyncha: Cicadellidae

Metidiocerus rutilans (Kirschbaum 1868)
This species is associated with poplar *(Populus* sp.*)* and willow *(Salix* sp.*)* and is locally distributed across southern counties. Two were recorded as by-catch at a moth trap in Shanklin. The first on 8th August and the second on 8th October.

Sternorrhyncha: Aphididae

Aphis farinosa (Gmelin, 1790)
Recorded at Shide Quarry where it was found to be common on willow *(Salix* sp.*)* at the east side of the quarry on 21st June.

Aphis grossulariae (Kaltenbach, 1843)
A yellow-flowering currant *(Ribes* sp.*)* in a Shanklin garden found to be infested with these aphids on 11th April.

Cinara acutirostris (Hille Ris Lambers, 1956)
Found on new growth shoot of Corsican Pine *(Pinus nigra)* in Shanklin on 9th June. Several specimens collected and examined. Ratios of tarsal segments HTI/HTII and rostral segments RIV/RV identified the species as *C. acutirostris*.

Dysaphis plantaginea (Passerini, 1860)
Collected from galled leaves on an apple tree *(Malus* sp*)* in the garden on 11th May.

Macrosiphoniella tanacetaria Kaltenbach, 1843
Large numbers found on Tansy *(Tanacetum vulgare)* near Sandown airport on 14thJune. Some 17 aphid species known from Tansy are found in Britain with at least one, *Uroleucon tanaceti,* having been recorded from Tansy on the Island.

Phyllaphis fagi (Linnaeus, 1767)
Several Beech *(Fagus sylvatica)* leaves were collected at Shanklin Big Mead on 14th June because they had mines of the Beech Weevil (*Orchestes fagi*). On examining the leaves, a number of *Phyllaphis fagi* were found to be present as well.

Rhopalosiphum padi (Linnaeus, 1758)
Small numbers present inside the galled leaves of a Bird Cherry *(Prunus padus)* at Seaclose Park on 13th May. This species host alternates; the primary host is Bird Cherry with alates flying to various secondary host grass species before the end of June. It is considered a pest of cereal crops and is known to be the vector of a number of plant pathogens, particularly Barley Yellow Dwarf Virus.

Thelaxes dryophila (von Paula Schrank, 1801)
Found on Pedunculate Oak *(Quercus robur)* at Hersey Nature Reserve during a moth survey on 30th April.

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Odonata, Isle of Wight, 2019

Jim R. Baldwin

The 2019 recording season was a notable one for Odonata. It was the longest recorded flight season for this group for the Isle of Wight, with the first and last record spanning February to November. Strangely it was the same species which produced the first and last records, the migrant species Vagrant Emperor *(Anax ephippiger)* on 23rd February and 14th November respectively.

The first sighting of a resident species was a Large Red Damselfly *(Pyrrhosoma nymphula)*, on 10th April, 11 days earlier than in 2018. The combination of a dry winter and hot weather during the early summer resulted in some ponds having either very low water levels or being completely dry. It remains to be seen if this will have an adverse effect on some species as there was a similar situation in 2018.

Despite the new addition of Vagrant Emperor, there was still only 24 species of Odonata recorded in 2019, the same total as in 2017 and 2018. Unfortunately, no reports were received for Downy Emerald *(Cordulia aenea)* for the first time since 2015. This was possibly due to the combination of this species having a 1-2year life cycle before emerging, meaning it might not appear at some sites every year, and not all of the known sites being covered.

The taxonomic sequence and nomenclature follow the BDS Checklist of British Species.

Southern Emerald Damselfly *(Lestes barbarus)*
As in 2018, there was regular monitoring of the breeding site at Bouldnor by Peter Hunt. The flight season was shorter this year, spanning 31st May to 17th September. Numbers were lower than in 2018 with a maximum of six, all males, on 1st August. It is hoped that this does not represent a reduction in the breeding population. Following a dry winter, the two breeding ponds were completely dry by the first week in July. This may not affect this species as they are used to these conditions in the Mediterranean.

Migrant Hawker *(Aeshna mixta)*
This species gets its vernacular name from its appearance as a migrant species in the 20th century. Prior to this it was known as the Scarce Hawker which highlighted its rarity status at the time. It is now a breeding resident and found widespread across England, with numbers thought to be boosted by migrants from continental Europe.

There was an interesting record of a Migrant Hawker seen along the revetment at Wheeler's Bay on 5th November which was a possible true migrant.

PLATE 1: Migrant Hawker *Aeshna mixta* (Jim Baldwin)

Vagrant Emperor *(Anax ephippiger)*
After only two previous records for the Isle of Wight, both in 2011, it was surprising to receive sightings at both ends of the year for this primarily Afro-tropical species. On both occasions warm southerly winds were responsible for this powerful migrant to travel beyond its normal limit of southern Europe.

The first report was on 23rd February with one coming in off the sea along the revetment between Bonchurch and Wheeler's Bay. It flew around the observers, Andy Butler (who saw the first record in May 2011) and Dave Nordell, giving close views before flying north up the cliff and out of sight.

PLATE 2: Vagrant Emperor *(Anax ephippiger)* (Jim Baldwin)

The 14th November record was thanks to Yarmouth naturalist John Walton. John contacted me to advise that his neighbour, John Currie, had forwarded a dragonfly specimen to him which he had found dead outside his house after an overnight frost. I met John and identified the specimen as a female Vagrant Emperor. The specimen has been retained by the IWNHAS.

PLATE 3: Scarce Chaser *Libellula fulva* (James Gloyn)

Scarce Chaser *(Libellula fulva)*
Scarce Chaser is the only Isle of Wight breeding species of Odonata to appear on the GB Red List. It currently has 'Near Threatened' status for Britain. The small population in the Eastern Yar valley appears to be slowly increasing with a maximum of seven seen on 29th June. Thankfully the majority of the sites will be under the management of the Hampshire & IW Wildlife Trust so its future on the Island looks promising.

Keeled Skimmer *(Orthetrum coerulescens)*
On the annual visit on 8th July to the Blackgang terrace population by Andy Butler, there were 30-35 individuals, which is similar to 2018. Two reports this year from the Rocken End lower pond had a maximum of 5 on 8th July.

Red-veined Darter *(Sympetrum fonscolombii)*
For the second successive year, this migrant species was recorded ovipositing at a reservoir in the Atherfield area when a pair plus two males were present on 21st June. As in 2018, there were no reports of subsequent breeding success. Red-veined Darter again arrived in good numbers from continental Europe, it has been reported on the Island annually since 2013, with maximum counts of 19 on 3rd July and 13 on 2nd August, which was the last sighting of the year of this species.

References

Daguet, C. A., French, G. C. and Taylor, P. (eds) 2008. The Odonata Red Data List for Great Britain.

Species Status **11**: 1-34, JNCC, Peterborough. http://archive.jncc.gov.uk/pdf/pub08_speciesstatus11.pdf

Mill, P. (ed) 2019. 'Scientific and English names of British Odonata'. *Journal of the British Dragonfly Society*. **35**: (1).

Acknowledgements

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Coleoptera, Isle of Wight, 2019

Jim R. Baldwin

There was an increase in the number of records received in 2019, principally due to two of the country's leading Coleopterists visiting the Isle of Wight, Mark Telfer in February and Mark Gurney in June. Between them the experts recorded 17 new species for the Vice-County.

New VC records

The taxonomic sequence and nomenclature for the species below follows the standard checklist (Duff 2018).

Laemostenus complanatus

A ground beetle. One male was seen at Ventnor Botanic Gardens on 12th February.

Omalium excavatum

A rove beetle. Two sieved from woodchip heaps at Yaverland on 13th February.

Omalium rugatum

A rove beetle. Nationally Scarce status. One male was sieved from woodchip heaps at Yaverland on 13th February.

Nehemitropia lividpennis

A rove beetle. Three sieved from woodchip heaps at Yaverland on 13th February.

Myrmecocephalus concinnus

A rove beetle. Found during sieving woodchip heaps at Yaverland on 13th February.

Anotylus inustus

A rove beetle. Two males found in the meadows at Newtown NNR on 13th February.

Gabronthus thermarum

A rove beetle. A female was sieved from woodchip heaps at Yaverland on 13th February.

Philonthus discoideus

A rove beetle. Three sieved from woodchip heaps at Yaverland on 13th February.

Heterothops niger

A rove beetle. Two recorded in the meadows at Newtown NNR on 13th February.

Clambus simsoni

A fringe-winged beetle. One sieved from woodchip heaps at Yaverland on 13th February.

Cryptophilus integer

A pleasing fungus beetle. This is a non-native subcosmopolitan species, possibly arriving here in horticultural soils. The species was initially found in the London area during 2006/2007. It appears to have subsequently expanded its range with records also received from Hampshire, Kent, Berkshire and Buckinghamshire. Twelve sieved from woodchip heaps at Yaverland on 13th February.

Rhyzobius chrysomeloides Round-keeled Rhyzobius

A ladybird. One recorded at Culver Down on 5th June.

Oxystoma pomonae

An Apionid weevil. A single record at Bembridge Down on 5th June and another at Tennyson Down the following day.

Catapion pubesce

An Apionid weevil. Found at two separate sites at Culver Down on 5th June.

Stenopterapion tenue

An Apionid weevil. Two found at Red Cliff, Yaverland on 13th February.

Mecinus labilis

A True weevil. Found at two sites on Mottistone Down on 4th June.

Magdalis cerasi

A True weevil. Recorded on Culver Down adjacent to Bembridge Fort on 6th June.

Other noteworthy records

There were many noteworthy records received; the following are a selection of the more significant ones

Hydrophilus piceus Great Silver Water Beetle

Near Threatened status. One was seen and photographed at the Bonchurch end of the revetment on 31st March. This is the third record for the Island and the first adult sighting since 1931. RSPB Brading Marshes warden Keith Ballard reported seeing a full-grown larva at the reserve in July 2017.

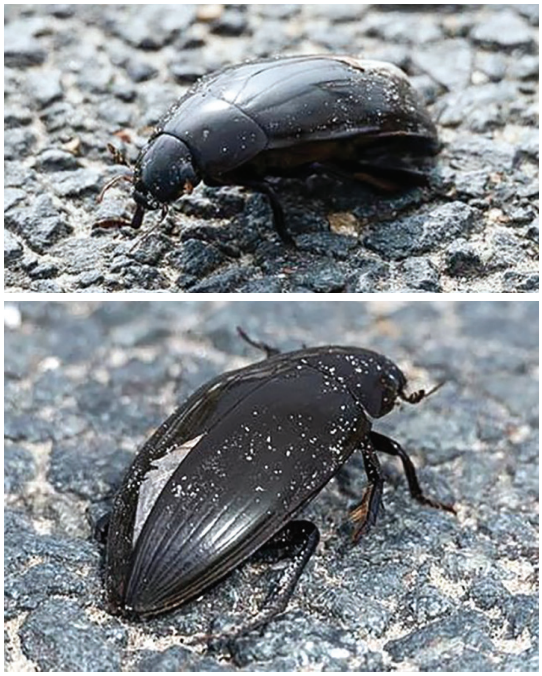

PLATE 1: Great Silver Water Beetle Photos: Owen Cass

Oxypoda opaca
A rove beetle. A female was sieved from woodchip heaps at Yaverland on 13th February. The second record for the Island and the first report of this species since April 1983.

Astenus pulchellus
A rove beetle. Five sieved from woodchip heaps at Yaverland on 13th February. The second record for the Island and the first report of this species since September 1950.

Lucanus cervus Stag Beetle
A male was reported and photographed at Ryde Mead Lawn Tennis Club on 5th April. This is the earliest ever record for the Vice County for this species. Previously found on 7th April 2006 at the same location. There is a suggestion from these records that the sheltered site, combined with warm soil temperatures, supports an early emergence.

Endomychus coccineus False Ladybird
One was seen and photographed at Knighton on 22nd June. This is only the second reported record of this species for the Island. It is likely to occur more widely but it is another example of under recording of invertebrates, particularly beetles.

PLATE 2: False Ladybird Photo: Sue Sibley

Lytta vesicatoria Spanish Fly
Three reports were received this year. Although classified as a scarce, irregular immigrant from Southern Europe, there appears to be a small breeding population on the Island and in Kent. Two were seen and photographed at Orchard Bay on 25th May, while a male was recorded at Bembridge Down on 6th June, a new site for this species. Finally one was seen and photographed in the Orchard Bay area on 3rd August, the latest record for this species.

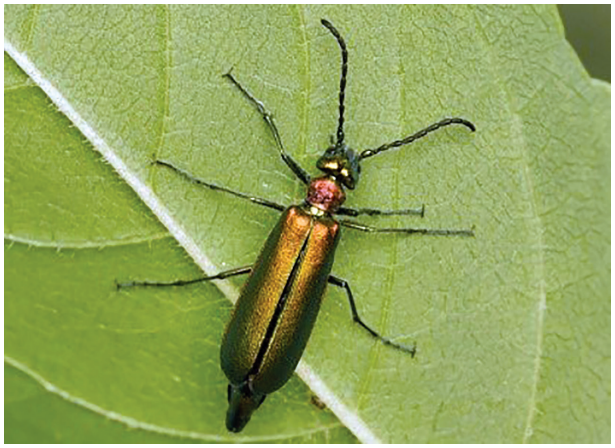

PLATE 3: Spanish Fly Photo: Mark Gurney

Bruchus rufimanus Bean Seed Beetle
Seen at two separate sites at Carisbrooke Castle on 17th June. This is the third and fourth records for the Island and the first reported sighting since August 1984.

PLATE 4: Bean seed beetle Photo: Ian Middlebrook

Cassida vittata Bordered Tortoise Beetle
One recorded at Newtown Quay on 13th February was the second record for the Vice County. Previously reported at Bembridge in May 1979.

Neocoenorrhinus aequatus Apple Fruit Rhynchites
Recorded at Mottistone Down on 3rd June and at Culver Down on 5th June. The second and third records for the Vice County since it was first seen at Blackwater in June 1975.

Perapion marchicum
An Apionid weevil. One was seen at Mottistone Down on 3rd June. The second record for the Island after it was originally reported during a National Trust survey at Littleton Down and Coombe Bottom on May 2010.

References

Cox, M.L. 2007 *Atlas of the Seed and Leaf Beetles of Britain and Ireland.* Oxford: Pisces Publications.

Duff, A.G. 2018 *Checklist of Beetles of the British Isles.* Iver: Pemberley Books.

Hammond, P.M. 2007 Cryptophilus integer (Heer, 1841) (Languriidae) found in the open in Britain. *The Coleopterist* **16** (3):150-151.

Acknowledgements

Thank you to Graham Andrews, Owen Cass, Mark Gurney, Ian Middlebrook, Sue Sibley, Mark Telfer and Melanie Tuffen for their records used in this paper. Additional thanks to Owen Cass, Mark Gurney, Ian Middlebrook and Sue Sibley for the photographs. I would also like to thank the many other contributors who submitted other records during 2019.

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Meteorological Report for Shanklin, Isle of Wight, 2019

Clive Cooper

Abstract *Shanklin Weather Station was established approximately 69 years ago, although weather diaries are only available from February 1983. The station is owned by the Isle of Wight Council and is maintained by the Met. Office. The station is situated at The Mead, a park area near Shanklin 'Old Village' towards the outskirts of the town and is 50 feet above sea level. The station is a simple one consisting of a 5" standard rain gauge and a Stevenson's Screen equipped with three thermometers. Readings and observations are taken once daily at 09.00GMT. The Campbell Stokes sunshine recorder is located on the roof of Shanklin Theatre, at a height of 180 feet above sea level. Sunshine recordings resumed in April on the 3rd, although still affected by the telephone mast. The recorder was moved on the 20th August. All temperatures rainfall and sunshine recordings are now being compared to the Shanklin climate data averages 1981-2010.*

Temperatures

The yearly mean temperature was 11.47°C and was 0.62°C above the long-term average. 2019 was 8th warmest year in the 37year series. Nine of the twelve months had positive anomalies. The months with the positive anomalies were February with 1.9°C, March with 1.8°C, December with 1.3°C, April with 1.0°C, July with 0.9°C, June, August and September all with 0.6°C, October with 0.2°C. May which was equal to its long term average. There were two months with a negative anomaly; January with 0.8°C and November with 0.6°C of its long-term average. The winter period December 2018 - February 2019 was the 8th warmest that I have recorded since the winter of 1983-1984, when the weather diaries started. The spring of 2018 was the 5th warmest with 2012 in the series. Summer 2019 was the 6th warmest. Autumn 2019 was the 20th warmest in the series.

The highest temperature of the year, 27.1°C, occurred on the 27th August. There was a total of 35 days (the long-term average being 30) when the temperature reached or exceeded 21.1°C *(70°F)*: 2 in April, none in May, 6 in June, 16 in July and 10 in August and 1 in September. The lowest maximum daytime temperature, 3.2°C, was recorded on the 1st February. The highest overnight temperature was 18.9°C and recorded on 24th July. The lowest overnight minimum temperature was -(minus) 3.2°C, on 31st January. There was a total of 15 air frosts, defined as a temperature below 0.0°C; 9 in January, 2 in February, 1 in April, and 2 in November and 1 in December. The latest frost was recorded on 11th April. The first frost of the following autumn/winter was on the 9th November.

Rainfall

The rainfall for the year 2019 totalled 1001.3mm, representing 115% of the long-term average. There were 165 days with measurable rainfall. The nine months with above average rainfall were December with 165.3mm, September with 111.6mm, June with 72.8mm, October with 155.4mm, August with 71.6mm, November with 138.0mm, February with 75.8mm March with 69.8mm and July with 49.9mm. This represented 164% 158%, 157%, 135%, 131%, 127%, 116%, and 2 months with 106% positive anomalies, respectively. The three months with below average rainfall were May with 18.9mm, January with 42.9mm and April with 29.3mm. This represents 36%, 47%, 55% of their respective negative monthly anomalies.

2019 was the 9th wettest year that I have recorded. The winter (Dec 2018-Feb 2019), producing 301.1mm of rain, was the 12th wettest in the 37 year series. Spring, with 118.5mm, was the 8th driest in the 37 year series. The summer produced 194.3mm of rain and was the 9th wettest in the series. Autumn, with 405.0mm, was the 4th wettest in the series. During the winter of 2018/2019 there was a period of 22 days with no rain recorded, the 24th December till 14th January. In contrast a wet period started on the 21st September and lasted till the 10th November 51 days with a total of 328.6mm of rain which exceeded the autumn 1981-2010 average by 34.5mm.

An amount of rainfall reaching or exceeding 25.4mm *(1 inch)* in a 24 hour period ending at 09.00 GMT, occurred on two days; 19th July 32.7mm and on 23rd September when 38.9mm of rain was recorded.

Sunshine

Problems arose in March 2017, when tele-communication masts were installed adjacent to the sunshine recorder. This caused a shadow to fall across the recorder and was too close for safe observations to be carried out. After consultation with the Meteorological Office, it was decided to suspend sunshine recordings due to Health and Safety constraints. In February I attended a Health and Safety course which the Met. Office required in order to satisfy the criteria for working at height. Sunshine readings resumed on the 3rd of April but unfortunately the phone masts were still a problem as sunshine hours were being depressed. The sunshine recorder was moved in front of the mast on 20th August.

The sunniest month was July which, even with depressed figures, still had 268.6 hours of sunshine, 102% of the climate average. August recorded 245.9 hours which was also 102% of the climate average; August recorded 127.7 from the 20th till the 31st after the recorder had been moved. September had 188.6 hours, 109% of its climate average. October had 85.3

hours which was only 70% of its climate average and made it the dullest on record. November had 68.6 hours of sunshine which was 83% of its climate average. The sunshine for the autumn period 342.5 hours and made it the 11th dullest in the series. December, in contrast, had 76.9 hours of sunshine which was 127% of the climate average.

Miscellaneous

Thunder was heard on 4 days in 2019; 2 in July, 1 in September and 1 in October.

Hail was recorded on two days in 2019; 2 in December.

Sleet/Snow was observed at Shanklin in 2019 on 29th and 31st January, as sleet. Snow fell on the 1st February and 3rd April.

Gales occurred on 20 days during the year; 2 in January, 3 in February, 8 in March, 2 in August, 1 in October, and 4 in December.

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PLATE 1: Campbell Stokes sunshine recorder on the roof of Shanklin Theatre Photo by Clive Cooper

Month	Average Temperature °C	Mean Maximum Temperature °C	Mean Minimum Temperature °C	Rainfall mm	Sunshine hours
JAN	5.0	7.7	2.3	42.9	Not recorded
FEB	7.3	10.1	4.5	75.8	Not recorded
MAR	8.9	11.8	6.0	69.8	Not recorded
APR	9.9	13.6	6.1	29.3	195.4
MAY	12.0	15.9	8.1	18.9	228.7
JUN	15.3	18.4	12.1	72.8	200.1
JLY	17.8	21.4	14.2	49.9	268.6
AUG	17.6	20.8	14.4	71.6	245.9
SEP	15.7	18.6	12.9	111.6	188.6
OCT	12.5	15.0	9.9	155.4	85.3
NOV	8.1	10.6	5.6	138.0	68.6
DEC	7.7	10.3	5.1	165.3	76.9
YEARLY FIGURE	11.47	14.52	8.43	1001.3	1558.1

TABLE 1: Monthly records for weather at Shanklin

FIGURE 1:
Shanklin maximum temperature comparisons (°C) with long term averages

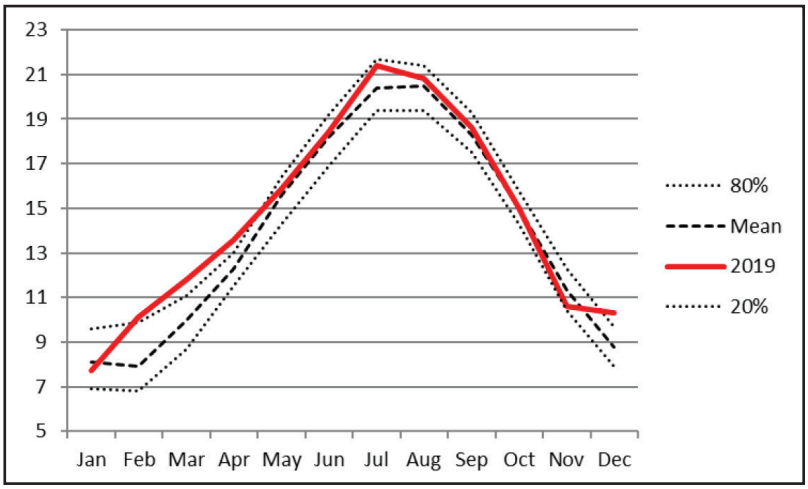


FIGURE 2:
Shanklin minimum temperature comparisons (°C) with long term averages

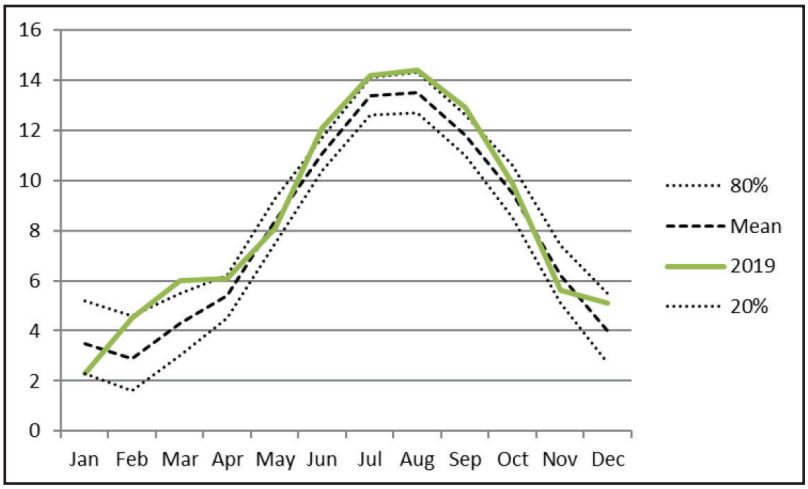


FIGURE 3:
Shanklin rainfall comparisons (mm) with long term averages

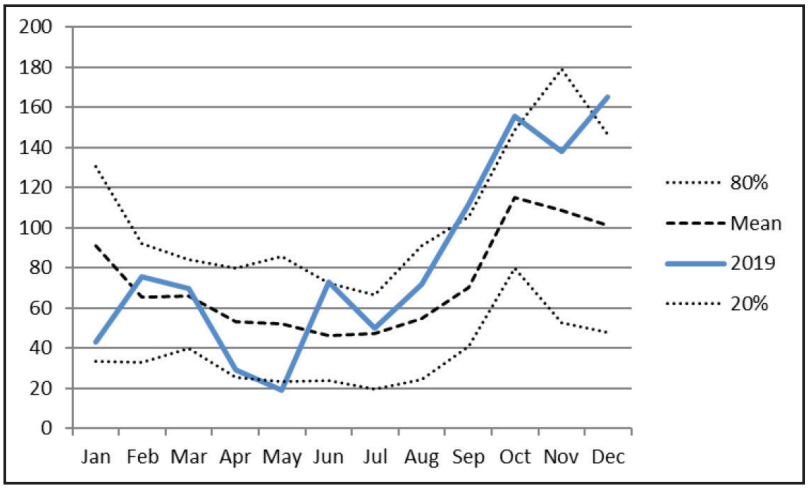
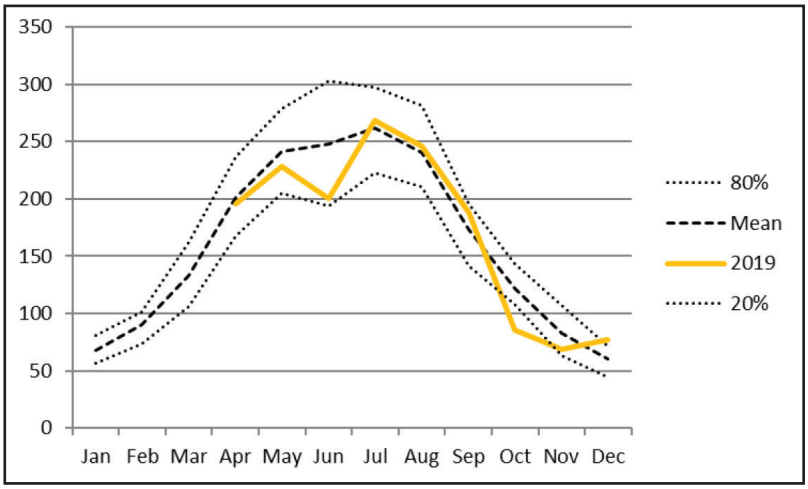


FIGURE 4:
Shanklin sunshine hours comparisons with long term averages



Obituary

Patrick John Ewbank

1930 - 2019

Patrick John Ewbank was born on 15th May 1930, in Clapham and was the middle son of three brothers.

One of his earliest memories was of being evacuated to a farm in Derbyshire during the second world war. He returned home for a short time. However, when the German bombing began, he moved out to Benfleet in Essex with his family. They stayed with family friends, the Verinis, who had a goat farm.

This period of time made a great impression on Pat as he would often tell us tales, in his final years, of the old farm with its unmade roads and the barn with a pond behind it. There was a tree next to the pond and Pat would climb along its branch to look down at the pond; and this was perhaps where his lifelong love of wildlife started. Pat helped milk the goats and delivered milk. The Verini family did not have a car so they would deliver milk by horse and cart. Pat helped look after the horse. He would also go birdwatching on Canvey Island with his school friends, the start of another lifelong interest.

Pat sadly lost his brothers when he was young. His elder brother died in the Second World War, and his younger brother died in a tragic car accident. Despite this Pat always retained a positive attitude towards life.

When he left school, he joined the Navy and travelled to the Middle East carrying out coastal surveys. When he left the Navy, he trained and was very proud to graduate as a teacher from Goldsmiths University in London and Worcester University.

He married Janet Redfearn and they raised their two children Rick and Andrea in Hockley, Essex. Pat had some unusual pets including a bush baby, stick insects and ornamental fowl. They lived in Hockley until 1974 when Pat got his dream job on the Isle of Wight with the Isle of Wight County Council. He became the Warden of Newtown Local Nature Reserve where he managed the reserve and monitored the bird life. A major aspect of the work on the reserve was running the first Isle of Wight Field Studies Centre from an office in Corf Camp. School children and university students were encouraged to come and learn about the nature reserve with its woodlands, fields, saltmarshes and mudflats.

Perhaps Pat's legacy on the reserve was the construction of the Scrape and Observation Post which are still there today. Fund-raising and working with many volunteers, the Scrape was designed to hold the dwindling black-headed gull breeding colony – the oldest on the Solent as well as attract other breeding birds, especially terns. In 1990 his aspirations were fulfilled when the Scrape included breeding black-headed gulls, the first IW breeding Sandwich terns and the first IW breeding Mediterranean Gulls. The Scrape also attracted overwintering waders including little stint, little egret, spoonbill, and avocet.

During their married life Pat and Jan would have a family holiday every year mainly in this country but also in Spain and France. Later in life they loved to go further afield including to places like the Greek Isles, Norway, China and even Australia. Jan and Pat shared many common interests including a love of classical music, historic buildings, gardens, and wildlife. Pat was a long-term supporter of the RSPB and the National Trust. Originally coming to Freshwater, in 1982 they moved to rural Wellow where Pat put a lot of work into the house and garden.

I first met Pat in 1983 when I visited the Isle of Wight as part of a conservation working party from University of London helping with work on the Reserve. I continued to visit the Island, and Newtown LNR, annually either as a volunteer for the National Trust or for dormouse studies. I will always be indebted to Pat as he gave me my first job in conservation on the Island, as his assistant on the reserve in 1987.

Sadly, Pat had to retire early from work in 1988 as he developed an inherited eye condition. There was no treatment available at the time and he gradually went blind. He never complained but became more and more restricted in what he could do until he could no longer see his beloved birds. His main consolation was listening to his radio especially Classic FM.

In his final years Pat had to move into a residential home as he had become too frail for Jan to look after at home. He remained interested in birds and wildlife and would listen to bird songs. He particularly liked the song of the blackbird which reminded him of his garden. Pat gradually faded away and fell asleep peacefully in hospital.

A long and contented life and a legacy of love for nature and birds. Very few people manage to get a job they truly love, but Pat was one of them. He was 89 years old when he died on 30th December 2019.

Pat was very proud of his six grandchildren Pat, Jack, Linna, Lucy, Holly and Toby and he was pleased to hear about his great grandchildren Owen, Olive and Albie.

Richard Grogan (with Stephen Taylor)

Obituary

Ron Smith

1924 - 2019

Former Isle of Wight County Councillor Ron Smith has died, aged 95, on Boxing Day 2019. After serving in the Fleet Air Arm during the Second World War, he settled on the Island with his wife Audrey in 1957. Celebrated for his pivotal role in the original Isle of Wight festivals, and a key figure in the setting up of the West Wight Sports Centre; Ron also was a popular local councillor and an influential figure in the County Council during the 1980s and 90s. As chairman of the Amenities and Countryside Committee of the Isle of Wight County Council, his interests within the authority were wide-ranging, including museums, parks, beaches, archaeology, trees, libraries, rights of way and the arts. He was involved in the establishment and running of many projects, including Quay Arts and Dimbola Lodge. But Ron's passion was the landscapes of the Isle of Wight. Much of what is still the Isle of Wight Council's involvement with countryside and heritage was strongly influenced by Ron's campaigning leadership.

Ron was instrumental in the creation of the Isle of Wight AONB Joint Advisory Committee in 1993, the formal body with the responsibility of managing the Area of Outstanding Natural Beauty which had been declared thirty years earlier in 1963. Ron led the campaign to attract the government money necessary to sustain this important work - funding which continues to this day.

Ron Smith was very much a hands-on councillor, and the pioneering partnership of the Island's Countryside Management Service set up in 1986 was a typical example of his bold solutions to practical problems. Ron had a knack for obtaining government funding, for example getting grants to set up and maintain new country parks at Fort Victoria and Golden Hill, which are still popular now. Although with hindsight this seems straightforward, without Ron Smith's drive and determination this would not have taken place. He was very keen on working parties and site visits and was often to be seen out working as a volunteer on the country parks and nature reserves that he loved, providing an enthusiastic driving force for councillor colleagues and officers alike.

With the council's outstanding network of rights of way, the estate of country parks and nature reserves, and the range of heritage, community and sporting organisations he supported; Ron Smith leaves a legacy of public service to the Isle of Wight that will be hard to equal, and will continue to benefit all who live on and visit the Island for many years to come.

Matthew Chatfield

Articles about the Isle of Wight that have recently appeared in other publications

The fauna and flora of the Insect Limestone (Late Eocene), Isle of Wight: Volume 2
Volume one of this publication, in the *'Earth and Environmental Science Transactions of the Royal Society of Edinburgh',* was published in 2014 and highlighted in our Proceedings in 2015. Volume 2 of this publication appeared in 2019 and includes a further 8 chapters on the fauna of this famous strata.

The Isle of Wight Undercliff
Chapter by Roger Moore in *'Landscapes and Landforms of England and Wales'* Springer 2020

Abstract: The Isle of Wight Undercliff is a unique coastal landscape. Formed by deep-seated mass movement, the origins of the Undercliff can be traced back through the Holocene and Late Quaternary, when sea level and climatic conditions were very different from today. The spectacular landscape of stepped terraces with open sea views, coupled with a warm humid micro-climate, became popular in Victorian times, a period of rapid development of Ventnor and other villages located within the Undercliff. The occupation and development of the Undercliff has exposed development and infrastructure to repeated damage from incipient ground displacement. Occasional more rapid ground movement and landslide events have occurred leading to the evacuation of residents, severe damage and abandonment of affected areas. This chapter gives an account of the landscape and landforms of the Isle of Wight Undercliff as observed from Victorian times to the present day. It presents new work to construct a three-dimensional model of the underlying geology which has a profound influence on the various landslide ground models that form the Undercliff. The sustainability of development and continued occupation of the Undercliff gives rise to many challenges and risks that requires effective management of land instability to mitigate the potential economic losses, which are anticipated to increase in future due to climate change and rising sea level.

Total organic carbon and pyrolysis analysis of the Lower Cretaceous in Compton Bay and Atherfield, Isle of Wight
Silva, R. L., Wach, G. D., Hesselbo, S. P. &, O'Connor D. E. 2020 *Proc. Geo. Assoc.* **131** (1), 51-59.

Abstract: The Wessex Basin (United Kingdom) includes hundreds of metres of Lower Cretaceous clays, silts, and sands deposited in a wide range of depositional environments. Studies have investigated these depositional systems from the organic matter (OM) perspective. However, questions remain concerning the composition, source, and the overall depositional constraints on the distribution of sedimentary OM in this area. Elemental (carbonate % and total organic carbon - TOC) and pyrolysis analyses were conducted on representative lithofacies of the Lower Cretaceous from the Wessex Basin at the Compton Bay and Atherfield sections, Isle of Wight. The highest TOC contents were determined in the upper part of the Ferruginous Sands and Sandrock formations. These elevated TOC intervals are associated with predominantly estuarine deposition. Except for one sample from the Vectis Formation, Hydrogen Index (HI) in all studied units is low and indicates Type IV kerogen assemblages, interpreted to be linked with strongly variable climates (with pronounced dry periods) and significant water table fluctuations in the source area and during transport. The one sample with a Type II-III kerogen assemblage from the lagoonal Vectis Formation supports previous studies which suggested that OM in the Vectis Formation varied vertically as a function of fluvial sediment and terrestrial organic matter input to the lagoonal environment with changes in salinity, sediment resuspension, and turbulence as a result controlling the abundance of dinoflagellate cysts.

Trial of a bridge for reconnecting fragmented arboreal habitat for hazel dormouse *Muscardinus avellanarius* at Briddlesford Nature Reserve, Isle of Wight
White, I. C. & Hughes, S. A. 2019 *Conservation Evidence* **16,** 6-11.

Abstract: The hazel dormouse *Muscardinus avellanarius* has experienced a marked decline in the UK in recent years, attributable in part to habitat fragmentation associated with an expanding road and rail network. A number of arboreal crossing structures have been installed in the UK to reconnect fragmented habitat, but the only proven usage of such structures by wild hazel dormice has been associated with a large-scale land bridge. This has highlighted the need for affordable, evidence-based alternative designs. We tested the effectiveness of a new dormouse bridge, previously shown to be used by Japanese dormice *Glirulus japonicas* in Japan, in reconnecting two woodland patches bisected by a railway in southern England. Hazel dormice were recorded on the bridge within nine hours of its erection and exhibited a clear preference for using the bridge, with more than ten times more observations of dormice on the bridge compared to crossing the railway at ground level. Red squirrels *Sciurus vulgaris*, another rare UK mammal, were also recorded on the bridge. The trial provided evidence of the effectiveness of this design of crossing structure in reconnecting arboreal habitat for hazel dormice and other wildlife, with implications for hazel dormouse mitigation in infrastructure project.

A new ammonite fauna from the *Walpenites* horizon of the upper Aptian (Lower Cretaceous), Isle of Wight

Lehmann, J., Simpson, M. I. & Bayliss, H. M. 2020 *Proc. Geo. Assoc.* in press.

Abstract: The Lower Greensand Group on the Isle of Wight in southern England forms the basis for the Aptian ammonite biostratigraphy in western Europe mainly established by the work of Raymond Casey between 1960 and 1980. It thus became a world reference succession, due to many ammonite finds from excellent outcrops along the coastline of the Island exposing the fossiliferous Atherfield Clay and Ferruginous Sands formations. Nevertheless, some of the members of these formations only rarely contain ammonites: an example is the horizon containing Walpenites (Group X according to the classical nomenclature of Fitton), in the upper Aptian Epicheloniceras martinioides Zone. Hitherto, this horizon has yielded only very rare Walpenites, a cryptic micromorphic ammonite only known from the type specimen. We report additional specimens of this rare ammonite, unequivocally demonstrating that Walpenites is a heteromorphic ammonite with only a part of the early whorls coiled in a planispiral with whorls attached to each other. Furthermore, the new material allows us to regard Luppovia as a junior subjective synonym of Walpenites, a genus based on material from Kazakhstan and Turkmenistan. Additionally, a new fauna of small ammonites from the Walpenites horizon is described; it contains *Epicheloniceras martinioides, E. subnodosocostatum, E. tschernyschewi* and the heteromorph cf. *Toxoceratoides.* This has improved the biostratigraphical dating and correlation of the stratigraphical level herein called the Walpenites horizon and, in contrast to earlier ideas, it contains ammonites that are distributed almost globally in all major faunal realms.

A remarkable dropstone from the Wessex Formation (Lower Cretaceous, Barremian) of the Isle of Wight

Sweetman, S. C., & Goodyear, M. 2020 *Proc. Geo. Assoc.* in press.

Abstract: A remarkably large, derived, metamorphic clast of Palaeozoic aspect weighing approximately 20 kg was recently recovered from a plant debris bed occurring in the Lower Cretaceous (Barremian), fluvial, lacustrine and terrestrial Wessex Formation exposed on the south-west coast of the Isle of Wight, southern England. It is interpreted as a dropstone transported in tree roots from a source locality on the Cornubian Massif. During the Early Cretaceous the eastern extremity of this has been estimated to be some 110 km to the west of the collection locality. Polished extrabasinal clasts of similar lithology are commonly encountered in the Wessex Formation but all recorded to date are much smaller and the majority have been interpreted as gastroliths, although some must be dropstones. The occurrence of this clast demonstrates long distance, floating transport of large root systems and therefore the potential to transport, over long distances, some of the logs and dinosaur remains encountered in the Wessex Formation. Direct evidence for this has been lacking until now and it suggests that some of the dinosaurs recorded from the Wessex Formation of the Isle of Wight may not have been floodplain residents or visitors.

From Woodstock to Glastonbury to the Isle of Wight: The Role of Festival Films in the Construction of the Countercultural Carnivalesque

Anderton, C. 2020 *Popular Music and Society* **43** (2), 201-215.

Abstract: This article examines the narrative construction of two British music festival films, Message to Love: the Isle of Wight Festival (1995) and Glastonbury Fayre (1972): films which demonstrate narratives and techniques familiar from Woodstock – Three Days of Peace and Music (1970). I argue that these films, which portray the 1970 Isle of Wight Festival and the 1971 Glastonbury Fayre, have helped to construct and reinforce what I refer to as the "countercultural carnivalesque" – a way of thinking about festival culture that is informed by a particular understanding of the youth counterculture of the late-1960s.

Wight Studies: Notes for the Guidance of Authors

Wight Studies is published annually in August and papers on all topics within the range of interest of the Isle of Wight Natural History and Archaeological Society (IWNHAS) are welcomed. The managing editor Paul Bingham (iowpaulb@aol.com) welcomes prior discussion with potential authors, especially if longer papers are proposed.

Various types of articles are published

Original papers report on original research related to the objectives of IWNHAS. These generally do not exceed 8000 words.

Review papers, on topics related to the objectives of IWNHAS, may either summarize areas of importance, provide an up-to-date account of the present status of active research areas, or give a perspective for future research.

Short notes and annual reports are brief papers that contain significant observations, of the order of 2000 words in length.

Comments and replies: Comments relate to articles published in Wight Studies in the previous year. Their intention has either to be a substantial critique of the original article or the clarification of a major misunderstanding that could have been caused by the original article. The authors of the articles commented on have the right to reply. Comment and reply will be published together.

Submission of a manuscript implies that the work described has not been published before and that it is not under consideration for publication anywhere else, unless exceptional circumstances are agreed with the editor; its publication has been approved by all co-authors (if any), as well as (if applicable) by the responsible authorities at the institute where the work has been carried out; and it will become the copyright of IWNHAS.

Papers should be submitted electronically to the managing editor, using the guidelines below.

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To meet the publication and distribution dates in mid-August, the deadline for the submission of original papers is 28th February. Short notes and annual reports should be submitted by 30th April.

On receipt, submitted material will be forwarded to the appropriate member of the editorial board for review and comment. If any part is thought to require reworking, there will be discussion with the author(s) before the paper is accepted.

Once accepted, the paper it will go through the copy-editing process; checking for clarity; provisional formatting; and proof-reading. Once this has been done, the material will be returned to the corresponding author via email; this must be returned with any further minor corrections and/or revisions that the author deems necessary within the time-frame specified by the editor.

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Title Page
The title page should include:

The name(s) of the author(s) and indication of who is the corresponding author

A concise and informative title

An abbreviated title to serve as a running header

The affiliation(s) of the author(s) if applicable, i.e. institution, department

A clear indication and an active e-mail address of the corresponding author

If applicable, the 16-digit ORCID of the author

Acknowledgments
Acknowledgments of people, grants, funds, etc. should be placed in a separate section on the title page. The names of funding organizations should be given in full.

Abstract
Please provide an informative summary of the paper, in not more than 200 words. A list of up to 5 keywords is also desirable. If a report is commercially funded, contact the managing editor for guidelines.

Text Formatting guidelines
Manuscripts should be submitted in Word (or in a Word-editable file) using a plain font (e.g. Times Roman 10, Calibri 11) for text; italics may be used for emphasis. Indentation, paragraph spacing, columns and other formatting will be determined at the designer's layout stage. The layout and the font used in the final publication will conform to the house style of Wight Studies.

The automatic page numbering function should be used to number the pages, but not field functions as these may cause problems in the production process. Tab stops should be used for indents, rather than the space bar.

Files should be saved in .docx format (Word 2007 or higher), .doc format (for older versions) or other format which can be opened in Word.

Headings may be used, but no more than three levels.

Abbreviations should be defined at first mention and used consistently thereafter.

Scientific style Genus and species names should be in italics, with taxonomic authority at first mention and/or reference to an authoritative classification/catalogue for example *World Register of Marine Species* (WoRMS).

Measurements All measurements should be given in SI units. When referring to measurements in older literature, imperial values may be quoted together with the SI equivalent.

Numbers 1-9 should be given in words; 10 and over as numerals.

Citations References should be cited in the text by name and year in parentheses e.g. Smith (2001). A separate list of references should be supplied.

Reference List This list should only include works that are cited in the text. Personal communications should only be mentioned in the text. Reference list entries should be alphabetical by the last names of the first author of each work and conform to the following style.

Book Pope, C., Snow, L. & Allen, D. 2003. *The Isle of Wight Flora.* Wimborne: Dovecote Press.

Chapter in a book or monograph Allen, D. 2003. A history of Botanical Recording in the Isle of Wight in Pope, C., Snow, L. & Allen, D. 2003 *The Isle of Wight Flora*. Wimborne: Dovecote Press, pp36-48.

Editors and Editions Douglas, D.C. & Greenway, G.W. (eds.) 1981. *English Historical Documents* vol. 2. 2nd edition. London: Eyre Methuen.

Journal article Margham, J. 2011. Place-names in an Island Landscape: Hills and Valleys Part 1, *Proc. Isle of Wight Nat. Hist. Archaeol. Soc* **25**:16-51.

Cite the actual publication date of an individual journal volume where there is a discrepancy between the 'official' date and the actual date e.g. vol 21 of the Proceedings: the official date was 2005 but the volume was actually published in 2006; the latter date should be cited.

Online document Elith, J *et al* 2011. A statistical explanation of Max Ent for ecologists. *Diversity and Distributions* 17: 43-57. [online] http://onlinelibrary.wiley.com/doi/10.1111/j1472-4642.2010.00725.x/pdf.

Dissertation Scaife, R.G., 1980. *Late-Devensian and Flandrian palaeoecological studies in the Isle of Wight* University of London, Kings College. PhD thesis.

Series Edwards, H. 1988. The Charters of the Early West Saxon Kingdom BAR British Series 198. Oxford.

Unpublished source Chatters, C. 1984. *The downs and heaths of the Isle of Wight.* Isle of Wight Countryside Heritage Study: Unpublished document.

Quotations from other sources Substantial quotations within the paper from other texts (i.e. over 2 lines) should normally be in italics, substantially indented and separated from the main text by a line space at both the beginning and end of the quotation. Shorter quotations in the body of the text should be within single apostrophes.

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