

Bembridge and St Helens Harbour Association



APPRAISAL OF THE ENVIRONMENT OF BEMBRIDGE HARBOUR

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PART 4 TERRESTRIAL ECOLOGY

This version DOES NOT contain maps, illustrations and some tables from the 1995 edition.

Please be aware that the report describes the situation in 1994/5, and has not yet been updated. This pdf publication is intended to form the basis of a re-appraisal project.

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4 TERRESTRIAL ECOLOGY

4.1 SUMMARY AND AIMS

4.1.1 SUMMARY

The main emphasis of this study is on St Helens Duver as it is a designated SSSI and as considerable public concern has been expressed about the area. Previous surveys of the Duver have been studied, and a series of field trips made to record and compare the flora in particular. Similar but single field visits were made to other habitats in the Harbour area including Bembridge Point. Several of the Nationally Scarce and many Locally Scarce species were found on the Duver, though possibly in reduced numbers. Some matters of conservation concern are raised and recommendations made for future action.

4.1.2 AIMS

1. To carry out a review of literature indicating flora and fauna of the environment of Bembridge Harbour focusing in particular on the flora of St Helens Duver.
2. To undertake a series of field visits to different habitats in the Harbour environment to observe and record species found.
3. To compare the findings with those of previously published material, particularly in relation to St Helens Duver.
4. To begin a photographic record of selected species and habitats for future reference.
5. To make recommendations for further study.

4.2 DESCRIPTION OF THE AREA COVERED

The area covered contains a wide variety of habitats and stretches from the Old Church, St Helens along the promenade and St Helens Duver (designated SSSI) and across the causeway beside the Old Mill Ponds. It then follows the Embankment Road including the hinterland up to the disused railway line. The track abuts the Bembridge Harbour lagoon and Harbour Farm lagoons, also designated SSSI, all of which are privately owned. Finally, the area covers Bembridge Point at the entrance to the Harbour.

4.3 METHODOLOGY

A review of literature was undertaken and copies of reports commissioned by the Nature Conservancy Council (NCC), now English Nature, and the National Trust (NT) were studied.

The group, which varied between 3 and 6 people, undertook 8 field visits between February and August, 1994 at approximately monthly intervals.

Records were made of flora and fauna observed. Some species were identified in situ using Rose (1981) *Wild Flower Key*; others at a later time, the main reference sources being McIntock and Fitter (1956), Fitter & Fitter (1974) and Keble Martin (1965).

In compiling the lists of species found on St Helens Duver, the list of Shepard (1971) was principally used for comparison and those on the Bembridge Point with Pope (1993b).

4.4 LITERATURE REVIEW

The review of literature reveals little directly concerned with the flora and fauna of Bembridge Harbour. Two general works are included but most works focus on the species-rich St Helens Duver. Nineteenth century eminent scientists recorded the flora of the Island. Snooke (1823) was one of the first, followed notably by Bromfield (1856) whose extensive documentation of the flora remains a valuable source of reference and comparison. Shepard (1971) quotes from More's botanical chapter in Venables (1860). More commends the remarkable nature of

'the tract of dunes or sandhills lying immediately below St Helens . . . not exceeding probably 40 or 50 acres, which has been ascertained to yield no less than 250 species of flowering plants'.

In 1909 Morey published his seminal *Guide to the Natural History of the Isle of Wight* to which Stratton contributed a lengthy section on *Flowering Plants and Ferns*. Morey's guide contained a comprehensive record of all the terrestrial and marine flora and fauna identified at that time. From its inception in 1922 specialist articles on flora and fauna continued to be published in the proceedings of the IWNHAS.

In 1882, at the time of the building of the railway embankment across Brading Harbour, the St Helens Duver became the site of the Isle of Wight Golf Club and continued so until 1961 when the Club presented it to the National Trust for conservation. In 1951 the Duver was designated a site of Special Scientific Interest (SSSI) on account of the richness of botanical species to be found there. It is the only example of a fixed dune system on the Isle of Wight.

Shepherd (1971) led the botanical section of the IWNHAS in a study to verify the statement by More (Venables 1860) that more than 250 species of plants existed on the St Helens Duver. Many of the varieties noted by Bromfield were still in evidence, so the survey was undertaken to update the records. A checklist was devised that would indicate various other pertinent aspects of the flora. Initials indicated previous recorders of the species, i.e. B = Bromfield; M = More and P = Present during the survey. The area was divided into six habitats with abbreviations: shore = sh; moveable sand = ms; fixed grassland = fg; thickets = th; waste land = wl; wet hollows = wh. The status of the plant was indicated: c = common, nu = not unknown and r = rare. 257 species had previously been recorded, and the Botanical Section found 216 -- some originals were missing and new species found, but the report did not discuss the findings. A useful summary is given of the seasonal display one can expect to find with indications of location. Assisted by the same group, a 10-year survey culminated in the publication of *Flora of the Isle of Wight* (Bevis Kettell and Shepard, 1978), with supplements 1985 and 1990.

Sheader and Sheader (1987) surveyed the Old Mill pond, St Helens, and the brackish lagoons, Bembridge Harbour Lagoon and Harbour Farm Lagoons 1 and 2. The nationally rare Starlet Anemone, *Nematosella vectensis*, named by Stephenson (1935) was found in two of the brackish lagoons, recently confirmed by Herbert (1991).

Two other rare species, Foxtail Stonewort, *Lamprothamnium papulosum* and a rare beetle, *Paracymus aeneus* have been recorded, and are protected under the Wildlife and Countryside Act 1981. The three lagoons are now included with the Brading Marshes SSSI designation.

Concern that environmental pressures might be affecting the flora of the Duver has led to a number of studies being commissioned by national bodies concerned with conservation. Hearn and Alexander (1982) produced a biological survey of St Helens Common and Duver for the National Trust. They reported that most of the early recorded species still survive, although about 10 of the rare and local species have been lost. Cox (1983) conducted an SSSI Survey of the Duver for the Nature Conservancy Council (NCC), but this remains an unpublished report. Subsequently, as part of the NCC Coastal Ecology Research programme, Radley (1989) undertook a sand dune survey of the St Helens Duver.

Radley produced a vegetation map and detailed description of each sand dune system using the National Vegetation Classification to identify types within the site. He noted that the survey took place after a period of drought, and consequently some of the species that might have been found were not observed. He added the list of rare plants recorded by Hearn and Alexander (1982) for additional information (Appendix 1).

Pope (1993a) undertook a further botanical survey of St Helens Duver for the National Trust. Using Shepard's (1971) species list as a base line, Pope concentrated on recording the noteworthy species. Detailed vegetation maps and location maps for some nationally and locally scarce species were produced. For a further list of these notable species see Appendix 2. Recommendations are made for the continued conservation of the area.

Frazer (1990) published *A Natural History of the Isle of Wight* -- a wide-ranging review of the geology, flora and fauna and habitats found on the Island. Distribution maps of species are included, based mainly on tetrads, and most records are post 1960. Bembridge Harbour features in the chapter on salt marshes, estuaries and rivers. Attractive coloured photographs accompany the habitat studies. Finally, consideration is given to the future prospects for wildlife and need for conservation.

4.5 ST HELENS DUVER

The spit of land known as the Duver is the only example of a fixed dune system on the Isle of Wight. Further development is largely prevented by a frontal promenade which cuts off the supply of sand. It has built up over hundreds of years from sand blown up from the beaches. Sand dunes gradually become colonised and fixed by plants which have long horizontal underground stems and rapid vertical growth, principally Marram Grass *Ammophila arenaria*, Lyme grass *Elymus arenarius* and Sand Couch *Agropyron pungens*. Subsequently, other

vegetation is able to get established, consolidating and protecting the area and eventually developing into dunes grassland or scrub.

The duneland habitat is affected by soil and climate. The sandy soil is poor in humus and plant food and dries out very quickly in sunny weather. Sand dunes are also exposed to salt air and wind which can be very damaging to some plants. Most of the dune plants are deep rooted perennials, and the annuals that occur are winter annuals which germinate in the autumn and flower and fruit in spring before any summer drought arrives (IWNHAS 1969).

Within the area of approximately 30 acres a wide diversity of habitats has developed. Different studies (Shepard 1971, Hearn & Alexander 1982, Radley 1989, Pope 1993a) use slightly differing terminology to describe the various habitats. However, overall they include areas of moveable sand, fine grassland, coarse grassland, scrub and wet areas. Pope (1993a) includes *Juncus/ Scirpus* marsh areas besides dune scrub. He identifies the types of sandy grassland as open, closed and brackish and further differentiates dry acidic closed grassland (closed grassland 1) and slightly lower, damper closed grassland (closed grassland 2). Map 4:1, a vegetation map of St Helens Duver, is taken by permission from Pope (1993a). There is also a small area of saltmarsh, and, south of the site, a developing shingle area not classified as SSSI.

There is an extensive area of dune scrub colonised by Sea Buckthorn *Hippophae rhamnoides* behind the St Helens Promenade. The southern part of these outer dunes are dominated by Marram Grass, *Ammophila arenaria*. Scrub areas recur intermittently between south and central grassland areas. Some of the areas of fine closed grassland which get heavily trampled, support acidic grassland species such as the clovers, some of which are nationally rare. There are low lying wet areas -- subject to flooding when there are very high tides, where rushes and moisture-loving plants can be found, and brackish grassland nearer to the Mill Pond. An attractive feature is the widespread presence of Thrift *Armeria maritima*. A small area of developing saltmarsh is found north west of the site near the bridge crossing the brook. Extensive rabbit warrens are in evidence in the scrub areas and large populations of rabbits have been observed. The scent of foxes was noted in the vicinity of the footbridge crossing to St Helens Common: this sour musky smell is noticeable in many lanes and footpaths around the Harbour and marshes.

Map 4:1 St Helens Duver: Vegetation

Sketch map of St Helens Duver showing areas of various vegetation cover (from Pope 1993a)

4.6 CLASSIFICATION OF RARITY OF SPECIES

In undertaking the various studies of the St Helens Duver researchers have been keen to establish whether rare or notable species previously recorded still survive. There is now a nationally recognised method of registering rarity of species and lists are held by English Nature (formerly NCC). Measurement is based on kilometre squares of the National Grid and appropriate units are used for different recording needs. The Isle of Wight is covered by 450 1 km. squares. Four adjacent 1 km. squares make up a tetrad so that 127 tetrads cover the Island. 25 Tetrads make up a 10 km. square on the National Grid.

Red Data Books contain lists of plant and animal species protected under the Wildlife and Countryside Act, 1981 which belong to Endangered, Vulnerable or Rare categories, according to the number of 10 km. squares in which they are found in Great Britain and the severity of the threat of extinction (Frazer 1990). Nationally Scarce (NS) is another category which comprises those species thought to occur in less than one 10 km. square in Great Britain. A Locally Scarce (LS) category comprises those species arbitrarily described as one extant in five or fewer of the 100 tetrads covering the Island (Pope, 1993).

St Helens Duver supports two species of invertebrates of Red Book status. Hearn and Alexander (1982) recorded the most notable as the **Bee Wolf Mining Wasp**, *Philanthus triangulum* and this was confirmed by Pope (1993) and the current investigation.

4.7 FINDINGS

4.7.1 St Helens Duver: field visits

Field visits to the Duver took place on 7 February, 7 March, 27 March, 10 and 28 June and 5 July 1994. An extended visit on 28 June was assisted by Reg Kettell, a co-author of the Bevis Kettell & Shepard (1978) survey, Elizabeth Dollery, Mary Kettell, and Muriel Lee.

Species found during field visits to Duver

Honeysuckle Family *Caprifoliaceae*

Honeysuckle *Lonicera periclymenum*

Pink family *Caryophyllaceae*

Bladder campion *Silene vulgaris*

Sea Campion *Silene maritima* (LS)

White Campion *Silene alba*

Little Mouse Ear *Cerastium semidecandrum*

Sea Mouse Ear *Cerastium atrovirens*

Mouse Eared Chickweed *Cerastium vulgatum*

Chickweed *Stellaria media*

Lesser Stitchwort *Stellaria gramnea*

Procumbent Pearlwort *Sagina procumbens*

Sea Pearlwort *Sagina maritima* (LS)

Sea Sandwort *Honkenya peploides*

Sand Spurrey *Spergularia rubra*

Goosefoot Family *Chenopodiaceae*

Frosted Orache *Atriplex laciniata*

Grass Leaved Orache *Atriplex littoralis*

Halberd Leaved Orache *Atriplex hastata*

Annual Sea Blite *Suaeda maritima*

Prickly Saltwort *Salsola kali* (LS)

Sea Beet *Beta maritima*

Glass Wort *Salicornia europaea*

Sea Purslane *Halimione portulacoides*

Daisy Family *Compositae*

Bristly Oxtongue *Picris echioides*

Lesser Hawkbit *Leontodon taraxcoides*

Common Cats Ear *Hypochoeris radicata*

Creeping Thistle *Cirsium arvense*

Spear Thistle *Cirsium vulgare*

Sow Thistle *Sonchus oleraceus*

Prickly Lettuce *Lactuca seriola*

Canadian Fleabane *Conyza canadensis*
Pineapple Weed *Matricaria matricarioides*
Scentless Mayweed *Tripleurospermum maritimum*
Common Ragwort *Senecio jacobaea*
Heath Groundsel *Senecio sylvaticus*
Coltsfoot *Tussilago farfara*
Nipple Wort *Lapsana communis*
Burdock *Actium minus*
Mugwort *Artemisia vulgaris*
Feverfew *Chrysanthemum parthenium*
Sea Wormwood *Artemisia maritima* (LS)

Bindweed Family *Convolvulaceae*

Sea Bindweed *Calystegia soldanella* (LS)
Field Bindweed *Calystegia arvensis*

Stonecrop Family *Crassulaceae*

Biting Stonecrop *Sedum acre*
English Stonecrop *Sedum anglican*

Cabbage Family *Crucifereae*

Hedge Mustard *Sisymbrium officinale*
Swine Cress *Coronopus squamatus*

Teasel Family *Dipsacaceae*

Wild Teasel *Dipsacus fullon*

Oleaster Family *Elaeagnaceae*

Sea Buckthorn *Hippophae rhamnoides*

Gentian Family *Gentianaceae*

Centaury *Centaureum erythraea*

Geranium Family *Geraniaceae*

Doves Foot Cranesbill *Geranium molle*
Common Storksbill *Erodium cicutarium*

Grass Family *Gramineae*

Lyme Grass *Elymus arenarius* (LS)
Marram Grass *Ammophila arenaria*
Yorkshire Fog *Holcus lanatus*

Rush Family *Junaceae*

Saltmarsh Rush *Juncus gerardi*
Sea Rush *Juncus maritimus*
Toad Rush *Juncus bufonius*

Thyme Family *Labiatae*

Black Horehound *Ballota nigra*

Gipsy Wort *Lycopus europaeus*

Hedge Woundwort *Stachys sylvatica*

Wood Sage *Teucrium scorodonia*

Pea Family *Leguminosae*

Clover Burrowing *Trifolium subterraneum* (LS)

Clover Clustered *Trifolium glomeratum* (NS)

Clover Haresfoot *Trifolium arvense* (LS)

Clover Knotted *Trifolium striatum* (LS)

Clover Red *Trifolium pratense*

Clover Rough *Trifolium scabrum* (LS)

Clover Suffocated *Trifolium suffocatum* (NS)

Fenugreek *Trifolium ornithopoides* (NS)

Gorse *Ulex europaeus*

Tree Lupinus *Lupinus arboreus*

Black Medick *Medicago lupulina*

Birdsfoot Trefoil *Lotus corniculatus*

Narrow Leaved Vetch *Vicia augustifolia*

Smooth Tare *Vicia tetrasperma*

Lily Family *Liliaceae*

Autumn Squill *Scilla autumnalis* (NS)

Mallow Family *Malvaceae*

Common Mallow *Malva sylvestris*

Marsh Mallow *Althaea officinalis* (NS)

Willow Herb Family *Onagraceae*

Rosebay Willow Herb *Chamaenerion augustifolium*

Scented Evening Primrose *Oenothera odorata*

Large Flowered Evening Primrose *Oenothera erythrosepala* (LS)

Wood Sorrel Family *Oxalidaceae*

Pink Oxalis *Oxalis floribunda*

Yellow Oxalis *Oxalis corniculata*

Poppy Family *Papaveraceae*

Yellow Horned Poppy *Glaucium flavum*

Opium Poppy *Papaver somniferum*

Plantain Family *Plantaginaceae*

Buckshorn Plantain *Plantago coronopus*

Ribwort Plantain *Plantago lanceolata*

Sea Plantain *Plantago maritima*

Sea Lavender Family *Plumbaginaceae*

Sea Lavender *Limonium vulgare*

Thrift *Armeria maritima*

Dock Family *Polygonaceae*

Common Knotgrass *Polygonum aviculare*

Shelf Sorrel *Rumex acetosella*

Broad Leafed Dock *Rumex obtusifolius*

Curled Dock *Rumex crispus*

Polypody Family *Polypodiaceae*

Common Buckler Fern *Dryopteris dilatata*

Primrose Family *Primulaceae*

Scarlet Pimpernel *Anagallis arvensis*

Sea Milkwort *Glaux maritima*

Mignonette Family *Resedaceae*

Weld or Dyer's Rocket *Reseda luteola*

Rose Family *Rosaceae*

Bramble *Rubus fruticosus*

Silver Weed *Potentilla anserina*

Dog Rose *Rosa canina*

Parsley Piert *Aphanes arvensis*

Bedstraw Family *Rubiaceae*

Lady's Bedstraw *Galium verum*

Marsh Bedstraw *Galium palustre*

Goose Grass *Galium aparine*

Nightshade Family *Solanaceae*

Woody Nightshade *Solanum dulcamara*

Figwort Family *Scrophulariaceae*

Fox Glove *Digitalis purpurea*

Common Mullein *Verbascum thapsus*

Umbellifer Family *Umbellifereae*

Alexanders *Smyrniolum olusatrum*

Sea Holly *Eryngium maritimum* (LS)

Rock Samphire *Crithmum maritimum*

Corky Fruited Water Dropwort *Oenanthe pimpinelloides* (NS)

Wild Celery *Apium graveolens*

Bur Chervil *Anthriscus caucalis* (LS)

4.7.2 Disused railway track from the Yar bridge to Harbour Farm lagoon: field visit 18 April 1994

This track, privately owned, is an attractive pathway bounded on the north by a ditch containing water running alongside the track and on the south by fields and ponds owned by Harbour Farm and forming part of the SSSI designated Brading Marshes area. After passing behind the car park of Brading Haven Yacht Club there is encountered an area beyond the ditch between the track and Embankment Road which was submerged in mud and sludge being pumped from the Harbour during dredging operations in 1992. It is also subject to flooding in winter. Although apparently devoid of any plant life for a long period, regeneration is now taking place and the area is being colonised by species favouring rough waste ground. On either side of the path brambles and common hedgerow plants and bushes can be found. As one approaches the rear of industrial units near the corner of Embankment Road a large area of common reedbed appears and Bembridge Harbour Lagoon can be seen on the left. The path narrows and passes through a wooded area on the right before emerging on to the private road leading to Harbour Farm.

Crossing the road, a narrow path invaded by bushes on either side can be followed with Harbour Farm Lagoon 1 to the right and another, smaller pond/lagoon area between the path and Embankment Road, on the left.

In September 1994 it was observed that the area between Embankment Road and the former rail track which had been submerged during dredging, was regenerating with common waste ground and marshy area flora. A pinkish hue which appeared to cover the area nearest Harbour Lagoon 1 was caused by Annual Sea Blite *Sueda maritima*. A patch of Common Reedbed *Phragmites* and Sea Club Rush *Scirpus maritimus* was developing centrally and low-lying plants such as Silverweed *Potentilla anserina* were widespread.

Species found adjacent to path

Honeysuckle Family *Caprifoliaceae*

Honeysuckle *Lonicera peniclymenum*

Dogwood Family *Cornaceae*

Dogwood *Cornus sanguinea*

Cabbage Family *Crucifer*

Hairy Bittercress *Cardamine hirsuta*

Teasel Family *Dipsacaceae*

Teasel *Dipsacus fullonum*

Beech Family *Fagaceae*

Oak Tree *Quercus robur*

Geranium Family *Geraniaceae*

Common Storksbill *Erodium cicutarium*

Herb Robert *Geranium robertianum*

Grass Family *Graminae*

Wood Melick *Melica uniflora*

Labiata Family *Labiatae*

Bugle *Ajuga reptans*

Pea Family *Leguminosae or Papilionaceae*

Tree Lupin *Lupinus arboreus*

Common Vetch *Vicia sativa*

Gorse Whim or Furze *Ulex europaeus*

Yellow Broom *Sarothamnus scoparius*

Lily Family *Liliaceae*

Bluebell *Endymion non-scriptus*

Olive *Oleacia*

Privet *Ligustrum vulgare*

Plantain Family *Plantaginaceae*

Buckthorn Plantain *Plantago coronopus*

Buttercup Family *Ranunculus*

Meadow Buttercup *Ranunculus acris*

Lesser Celandine *Ranunculus ficaria*

Rose Family *Rosaceae*

Blackthorn *Prunus spinosa*

Wild Strawberry *Fragaria vesca*

Hawthorn *Crataegus monogyna*

Bramble *Rubus fruticosus*

Silverweed *Potentilla anserina*

Dog Rose *Rosa canina*

Wild Plum *Prunus domestica*

Bedstraw Family *Rubiaceae*

Goose grass *Galium aparine*

Snapdragon Family *Scrophulariaceae*

Germander Speedwell *Veronica chamaedrys*

Umbellifer Family *Umbellifereae*

Corky Fruited Water Dropwort *Oenanthe pimpinelloides* (NS)

Valerian Family *Valerianaceae*

Common Valerian *Valeriana officinalis*

4.7.3 Bembridge Point: field visit 20 August 1994

Bembridge Point is situated at the south east entrance to the Harbour forming a natural barrier and creating shelter in the Point beach area. Maps in the Geography Section illustrate the tides and winds affecting the Spit and Point areas. Wind blown sand accumulates creating a sand dune foreshore. The colonising of sand by pioneer grasses is readily visible as one approaches Point Beach from the left of the Palmer Memorial fountain. There are large areas of Buckthorn thickets higher up behind the foreshore. Distinct habitats are found here, as they were on the St Helens Duver and are shown on Map 4:2. Part of the area is despoiled by commercial mineral extraction. Other areas are used as car parks for various recreational pursuits. However, some interesting flora can be found. Pope undertook a survey of the flora of Bembridge Point and this was available for comparison (Pope 1993b).

Species found at Bembridge Point

Goosefoot Family *Chenopodiaceae*

Sea Beet *Beta vulgaris*

Prickly Saltwort *Salsola kali* (LS)

Daisy Family *Compositae*

Prickly Lettuce *Lactuca serriola*

Spear Thistle *Cirsium vulgare*

Mugwort *Artemisia vulgaris*

Cat's Ear *Hypochaeris radicata*

Cabbage Family *Crucifer*

Sea Rocket *Cakile maritima*

Oleaster Family *Eleagnaceae*

Sea Buckthorn *Hippophae rhamnoides*

Geranium Family *Geraniaceae*

Doves Foot Cranes Bill *Geranium molle*

Grass Family *Gramineae*

Marram Grass *Ammophila arenaria*

Lyme Grass *Elymus arenarius* (LS)

Dune Fescue *Vulpia mebranaceae* (NS)

Rat's Tail Fescue *Vulpia myuros*

Sea Couch *Agropyron pungens*

Sand Couch *Agropyron junceiforme* (LS)

Thyme Family *Labiatae*

Black Horehound *Ballota nigra*

Pea Family *Leguminosae*

Rough Clover *Trifolium scabrum*

White Clover *Trifolium repens*

Hare's Foot Clover *Trifolium arvense* (LS)

Mallow Family *Malvaceae*

Common Mallow *Malva sylvestris*

Plantain Family *Plantaginaceae*

Buckthorn Plantain *Plantago coronopus*

Willowherb Family *Onagraceae*

Fragrant Evening Primrose *Oenothera odorata*

Rose Family *Rosaceae*

Salad Burnet *Poterium sanguisorba*

Bedstraw Family *Rubiaceae*

Hedge Bedstraw *Galium mollugo*

Dock Family *Rumex*

Sheep Sorrel *Rumex acetosella*

Nightshade Family *Solanaceae*

Duke of Argyll's Tea Plant *Lycium halimifolium*

Valerian Family *Valerianaceae*

Red Valerian *Centranthus rubra*

Map 4:2 Bembridge Point: Vegetation

Sketch map of Bembridge Point showing the areas of various vegetation cover

4.8 DISCUSSION AND CONCLUSIONS

The limitations of time and opportunity caused the Terrestrial Ecology group to focus principally on the flora of the environment of the Harbour rather than the fauna. A wide diversity of habitats was found. Since local concern has been expressed about the damage being caused to the Duver SSSI area by heavy public usage, six visits were made during the Spring and Summer seasons to record the species present. The extensive biological surveys of the area previously undertaken were available for comparison.

Radley (1989) noted that his survey took place after a period of drought and similar conditions were experienced in 1994. It is highly probable that more species would have been found after a period of rain. Of the 114 species found by the group, 5 of the Nationally Scarce species were found and 11 of the Locally Scarce species. Some of the species for which the Duver is known such as Thrift *Armeria maritima*, Autumn Squill *Scilla autumnalis* and the clovers, may be reduced in number, but are still widespread. Of the 12 Clovers *Trifolium* found by Shepard (1971), 8 were found by the current project group. The Red Data Book's Bee Wolf Mining Wasp was also confirmed as present.

Concerns for the conservation of the area have led to certain measures being undertaken, i.e. building of steps and protection of some grassy areas with concealed wire netting.

An area of Marram grass-supported sand dune has been fenced off to allow regeneration. This has also been effective in providing protective cover for other typical species. Periodic fencing of endangered areas may help preserve diversity of species.

To counteract the widespread fouling by dogs being exercised in the area, dog bins have been provided in the car park, but from observation few dog owners use them. Enforcement is difficult and education a slow process.

Another cause for concern is the recent increase in the parking of cars behind the St Helens Promenade near the cafe, formerly not allowed. Many cars were seen parked in the sandy area backing on to the Buckthorn thickets -- liable to cause damage to the flora and be disturbing to the birds that frequent the area. This problem needs to be addressed.

Other areas of the Duver not included in the SSSI status near the industrial workshops and yards have been shown to support interesting species such as the Yellow Horned Poppy *Claucium flavum* and the best surviving Sea Holly *Eryngium maritimum* on the Duver, and on the developing shingle area, Prickly Saltwort *Salsola kali* and Sea Sandwort *Sagina maritima*.

The Mill Causeway (Public Footpath R86) is a favoured route for walkers and bird watchers and is also used by anglers. Care needs to be taken when maintaining the path and cutting back the verges that important plants are not lost -- in particular the Rock Samphire to be found on the wall area.

The path of the former railway track is not a Public Right of Way, but would make an attractive local amenity for walkers and bird watchers if it were so. Flora adjacent to the path are able to grow comparatively undisturbed and are supported by the water levels in the ditches and nearby Marshes area. The Bembridge Harbour Lagoon 1 is currently being encroached by vigorous Common Reed beds *Phragmites*, which will need to be managed and controlled so the SSSI status is not endangered and its value diminished.

The Bembridge Point area is subject to many pressures -- the mineral extraction company and its heavy lorry usage

which periodically cause noise and air pollution; invasive leisure pursuits such as trail bikes, motor bikes and barbecuing and its debris. Offshore, from Silver Beach, sailboarders, jet ski enthusiasts and yachtsmen enjoy their pastimes. It is somewhat surprising, but very welcome, to find that some species of flora and birds are still supported on Bembridge Point. The situation needs monitoring and preventive action taken to ensure that there is a reasonable balance kept between the legitimate use of the area for recreation and the need to preserve the habitats of flora and fauna.

Besides the various field visits described, a visit was also made to St Helens Common, a mixed deciduous woodland area owned by the National Trust which rises from the edge of the Mill Pond and Duver. For the purposes of the current study it has been omitted, but would be worth surveying in greater depth at some future stage. This is within the SSSI.

A photographic record of habitats and species has been started and will be continued. A Resource Collection detailing habitats at different times of the year may prove useful in monitoring changes or identifying 'at risk' areas in the future. The Resource Collection will be held by the Association.

4.8.1 RECOMMENDATIONS FOR FUTURE STUDY

1. Further localised investigation of the Duver area to check for the presence of Nationally and Locally Scarce plants not found this year.
2. More extensive recording of flora along the disused railtrack area.
3. Recording of fauna in the area and checking on the presence of dragonflies previously recorded here.
4. Monitoring of the lagoons and the salt marsh areas behind Embankment Road, to record any changes in use, infill, pollution incidents etc.

4.9 REFERENCES

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APPENDIX 1: RARE AND NOTABLE PLANTS

from Hearn and Alexander (1982)

Nationally scarce species

number of 10km squares within Britain

Slender Hare's Ear <i>Bupleurum tenuissimum</i>	58
Upright Chickweed <i>Moenchia erecta</i>	82
Corky Fruited Water Dropwort <i>Oenanthe pimpinelloides</i>	94
Autumnal Squill <i>Scilla autumnalis</i>	28
Bastard Toadflax <i>Thesium humifusum</i>	73
Clustered Clover <i>Trifolium glomeratum</i>	37
Fenugreek <i>Trifolium ornithopoides</i>	85
Suffocated Clover <i>Trifolium suffocatum</i>	40
Bearded Fescue Grass <i>Vulpia ambigua</i>	40
Dune Fescue Grass <i>Vulpia membranacea</i>	44

Other notable plants

Grass *Bromus ferronii*

Grass *Catapodium marinum*

Pale Flax *Linum bienne*

Hare's Foot Clover *Trifolium arvense*

Strawberry Headed Clover *Trifolium fragiferum*

Rough Clover *Trifolium scabrum*

Subterranean Clover *Trifolium subterraneum*

APPENDIX 2: FURTHER LOCALLY SCARCE SPECIES

from Pope (1993)

	status
Sea Champion <i>Silene maritima</i>	(LS)
Sea Sandwort <i>Sagina maritima</i>	(LS)
Prickly Saltwort <i>Salsola kali</i>	(LS)
Knotted Clover <i>Trifolium striatum</i>	(LS)

Least Yellow Trefoil *Trifolium micranthum* (LS)

Common Bird's Foot *Ornithopus perpusillus*

Sea Holly *Eryngium maritimum* (LS)

Smooth Cat's Ear *Hypochaeris glabra*

Grasses

Bulbous Meadow Grass *Poa bulbosa* (LS)

Sand Twitch *Agropyron junceiforme* (LS)

Lyme Grass *Elymus arenarius* (LS)

Curved Hard Grass *Parapholis incurva* (NS) not found 1993

Tufted Saltmarsh Grass *Puccinellia fasciculata* (NS) not found 1993

Procumbent Saltmarsh Grass *Puccinellia rupestris* (NS) not found 1993

Dune Fescue *Vulpia membranacea* (NS)