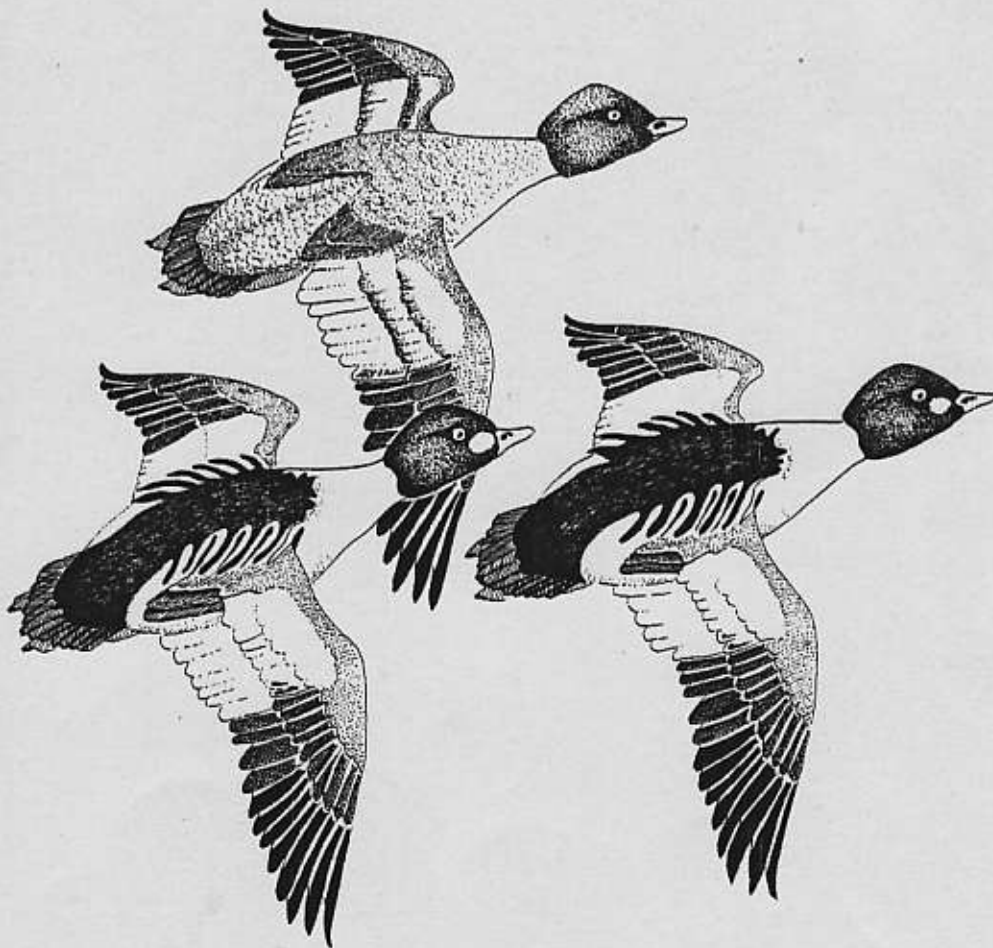

DEESIDE NATURALISTS

SOCIETY

Report on the CEGB Nature
Reserve at Connahs Quay

1981 - 1982



Deeside Naturalists Society

On the 26th April 1973, a public meeting was held in the Civic Centre, Connah's Quay, to determine whether there was sufficient interest to form a natural history group locally. The twenty people who attended agreed that there was such interest and Deeside Naturalists Club was formed.

At that inaugural meeting it was decided that the aims of the organisation should be "to stimulate interest in natural history and to play a part in the conservation of flora and fauna on Deeside and the surrounding area". These are still the aims of the Society.

Since those early days the membership of the Society has grown steadily and is currently about 300. Its success can be attributed to its wide ranging programme of illustrated lectures, its field meetings and especially its close involvement with the C.E.G.B. Reserve at Connah's Quay.

Over the winter months a programme of lectures is given in the Connah's Quay High School theatre when specialists in a variety of subjects address members, often illustrating their talks with colour slides and tape recordings. These meetings are advertised locally and non-members are invited to attend. There is no admission charge.

Field meetings are held monthly throughout the year, when members visit places of special ecological importance concentrating mainly on areas of interest within the locality.

Over the last year, however, visits have been made to the sea bird breeding colony on Anglesey's South Stack, to the reedbed reserve at Leighton Moss, to the wader roost of Morecambe's Nest Bank and to the saltmarshes of the Severn estuary at Slimbridge. These outings, made by coach, have proved most successful and will continue to feature in the Society's programme.

Details of lectures and field meetings with items of interest are circulated to members in a quarterly newsletter.

Over the years the Society has been engrossed in the development of the C.E.G.B. nature reserve and field studies centre at Connah's Quay. Conservation work on the reserve is an important aspect of the Society's activities and working parties meet throughout the year to undertake various management tasks. The Society has also been instrumental in raising several thousand pounds to finance items within the Field Studies Centre, the opening of which by H.R.H. The Duke of Edinburgh is a major landmark in the development of the Reserve. This project could not have succeeded without the interest and commitment of the C.E.G.B., the Manager and Staff of the Connah's Quay Power Station.

Every two years Deeside Naturalists Society produces a Reserve Report which lists birds, plants and butterflies recorded in that two year period. This fourth report well reflects the success of the management tasks undertaken. The Society would like to thank all those who have submitted records and maintained the logbooks. Particular thanks go to Pauline Jones for undertaking the butterfly survey, to Thelma K. Sykes for compiling and illustrating the report, and to Joan Davison for her work on its production.

Information on Deeside Naturalists Society and its current programme may be obtained from the Secretary, Deeside Naturalists Society, 38 Kelsterton Road, Connah's Quay, Deeside, Clwyd, CH5 4BJ (tel: Deeside 818339)

CEGB Nature Reserve at Connahs Quay

The Nature Reserve, owned by the Central Electricity Generating Board, is situated between Connah's Quay and Flint (SJ.275.715), along the shoreline of the Dee, an estuary well known for its wintering and passage wildfowl and wading birds. The development of this reserve over a period of seven years is a splendid example of what can be achieved when industrial and conservation groups work in partnership.

The sequence of events leading to the development of the reserve is of interest. In 1974 the Secretary of State for the Environment introduced the Quality of Life Experiment and identified Clwyd as a participant in the scheme. The purpose of the experiment was to monitor the impact of allocating funds to community organisations for specific projects which would widen interest and the range of activities undertaken. After a series of meetings with the administrators of the scheme, Deeside Naturalists Society was allocated a grant to purchase a bird observation hide.

The members of the Society decided to build the hide themselves and with the monies saved to purchase a telescope for use in the hide. Several members enrolled in the local High School evening woodwork class and the building of the hide commenced. In the meantime the members of the committee set out to resolve the problem of its eventual location. Following discussions with the manager of the Power Station at Connah's Quay, the Society was invited to site the hide on C.E.G.B. land and to assist with the development of a nature reserve on the site. It was from such beginnings that this fine reserve on the banks of the Dee has developed.

Since that time a considerable amount of conservation management work has been undertaken to improve and diversify the habitat. The 90 acres of land comprised large areas of open water, saltmarsh and tidal mudflats, and one of the first management tasks was the construction of a marsh scrape. The raised areas landscaped from the spoil remain dry on all save the highest tides, affording a roost for wading birds. It is here that spectacular flights of black-tailed godwit, oystercatcher and redshank may be seen in the two hours preceding high water when the tide is 9 metres and above.

An 18 acre salting bordering the river was enclosed within an embankment, and islands were created in the resulting lagoon. This project was threatened when a violent storm changed the course of the river channel and breached the bund; fortunately the Dee resumed its course and the embankment was rebuilt. The bund was seeded with suitable grasses to prevent erosion and is now a well stabilised and mature part of the landscape. The lagoon attracts a variety of migrant waders to roost, and provides a feeding area for heron, red-breasted merganser, and goldeneye.

A nature trail has been developed through a rough scrub zone, the paths created allowing the remainder of the area to develop naturally. Here the bramble, willow and osier provide cover for passerines; the whitethroat has returned to nest and the sedge warbler has recently held territory. The scrubland is the only area of the reserve not wide open to the winds of the estuary, and the shelter it affords has combined with the growing field layer of leguminous plants, to make this part of the reserve particularly attractive to butterflies; 19 species of butterfly were recorded in 1982.

In 1978, in recognition of the management work undertaken, the C.E.G.B. and Deeside Naturalists Society jointly received a Prince of Wales Award for Conservation.

Consideration was given to improving visitor facilities. The Manpower Services Commission provided the means whereby two additional observation hides were constructed, and an ambitious scheme for the building of a Field Studies Centre was begun.

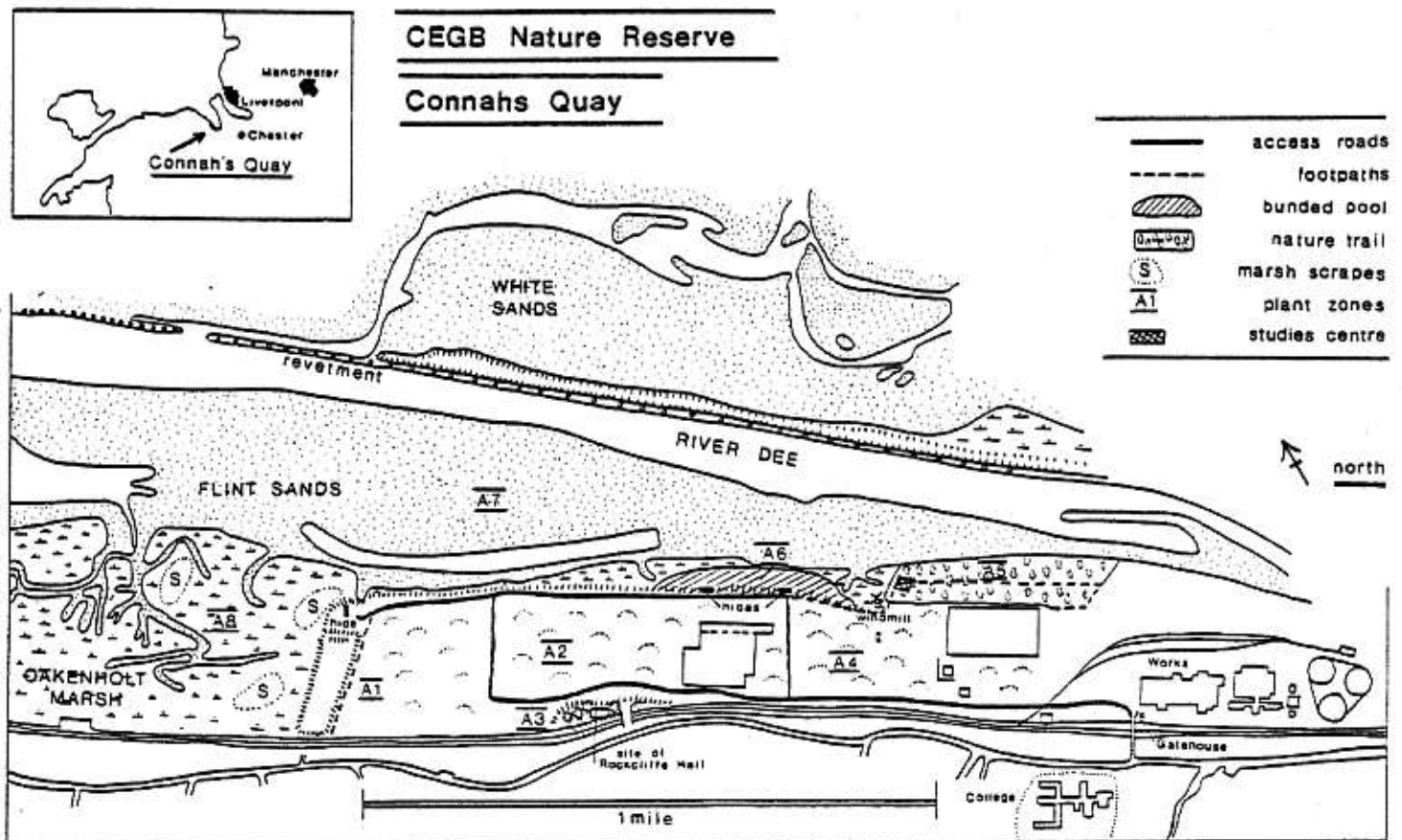
The Centre, designed and built for visitors, houses a display area of 26 sq. ft., containing interpretative material on the value of the various habitat types and display cases which illustrate the ecology of saltmarsh, mudflat, open water, scrub and grassland zones. The display is designed to convey to visitors the international importance of the Dee Estuary as a refuge for waders and wildfowl.

The Field Studies Centre is now complete and the Society is delighted that on 3 June 1983, it will be opened by H.R.H. the Duke of Edinburgh.

It is hoped that over the years many schools and colleges, as well as natural history groups, will take advantage of the facilities that the Reserve now offers. Organisations not directly associated with natural history will also be welcome.

It has taken seven years to develop the reserve to its present state. In that time many thousands of visitors have taken the opportunity to view and participate in the development of this wildlife sanctuary on Deeside. Much still needs to be done but the potential is enormous.

Arrangements to visit the Reserve can be made through the Secretary, Deeside Naturalists Society, 38 Kelsterton Road, Connah's Quay, Deeside, Clwyd, or The Manager, C.E.G.B., Connah's Quay Power Station, Connah's Quay, Deeside, Clwyd.



Classified list of Birds

The classified list is based on two years of field work by members of the Deeside Naturalists Society. The observations of members, and of visitors to the Reserve, are recorded in logbooks maintained in the hides. Subsequently these field notes are abstracted and collated to produce, for each species, an annual record figuring every sighting by number, month and locality. For any species on the Reserve, therefore, detailed information is readily accessible; its frequency; its distribution; its fluctuating numbers; or its times of migration.

The Society now has species sheets covering six years of field work, and together these form a valuable work of reference giving essential information for decisions on conservation policy and management on a site of considerable ecological importance.

Logbook entries for 1981 and 1982 show the Reserve to be watched more consistently than ever before. The full list of birds recorded here now totals 166 species. Of these, 132 are included in this report, whilst the 34 not represented in this period are listed below, the date being given where there was only a single occurrence.

Manx Shearwater	Sept.78	Jack Snipe	July 79
Storm Petrel		Great Skua	Sept.80
Leach's Petrel		Iceland Gull	Aug.77
Shag		Glaucous Gull	Nov.79
Gadwall		Mediterranean Gull	Dec.79
Mandarin Duck	Jan.80	Guillemot	Feb.80
Tufted Duck		Turtle Dove	
Long-tailed Duck	Oct.80	Barn Owl	Mar.77
Ruddy Shelduck	July 80	Tawny Owl	Feb.77
Greylag Goose		Lesser Spotted Woodpecker	Oct.79
Buzzard	Aug.79	Coal Tit	
Marsh Harrier	May 80	Long-tailed Tit	
Montagu's Harrier	July 80	Redstart	
Water Rail		Grasshopper Warbler	
Coot	Jan.79	Blackcap	
Turnstone		Nuthatch	May 77
Long-billed Dowitcher	Dec.79	Treecreeper	

The species sheets giving full data for 1977 to 1982 may be consulted in the Field Studies Centre, whilst the classified list which follows seeks to summarise and perhaps interpret the findings, to highlight the unusual, and to give some feel for the birds seen on the Reserve in 1981 and 1982.

Key to the status of species on the Reserve

B	breeding	PM	passage migrant
R	resident	V	vagrant
SV	summer visitor	S	sporadic visitor
WV	winter visitor		

OVERVIEW

In the two years under review, nine species were "new" to the Reserve; fulmar, ruddy duck, brent goose, hobby, woodcock, Wilson's phalarope, raven, sedge warbler and snow bunting. Of these, the Wilson's phalarope attracted many visitors, bringing the C.E.G.B. Reserve into national prominence, and advertising the work of the Society locally. However, the more modest sedge warbler is perhaps a greater triumph; new to the Reserve in 1981, a return was made in 1982 with a pair attempting breeding. It remains to the future to show whether the sedge warbler's song will be a regular feature of spring in the scrub of the Reserve along with that of the recently re-colonising whitethroat.

Comparisons of the annual species sheets show that in several respects 1981 and 1982 have been atypical.

The spell of snow and ice in December 1981 only heralded the onset of a severe and prolonged freeze in the following month. The absence of little grebe, goldeneye, red-breasted merganser and kingfisher from the bunded pool was not surprising under such conditions, whilst among the waders lapwing, oystercatcher and redshank evidently moved to seek better conditions, and the saltmarsh was without its skylark flocks. Although 1982 showed a return of usual numbers for most of these species, the kingfisher has not yet been recorded, nor has the little grebe returned in any number.

If some species were noticeably absent, the winter was also evidenced in the presence of others. Hard weather movements of pink-footed geese were apparent from the Reserve. For the first time black-tailed godwits were present not as birds of passage, but over wintering, and the congregations of yellowhammer and reed bunting brought spectacular colour to an otherwise white and grey landscape.

It may be that the severe conditions of the winter were reflected in the later return of migrants to their breeding grounds. Bar-tailed godwit and dunlin numbers began to accumulate in May, and their departure, when it did come, was well synchronised and total. Our returning migrants seemed to be similarly delayed. April wheatear were very few, then during the first week of May, several wheatear arrived together, rested but briefly and hurried on.

It is true that small birds are badly affected by cold, and that records of our woodland birds show a marked decline, with fewer sightings of robin, blue tit and great tit, with none of long-tailed tit, coal tit or treecreeper, and with the spotted flycatcher seemingly absent in 1982. However the Reserve has only one small area of mature deciduous trees near the site of Rockcliffe Hall, and hopefully the reduced number of records may reflect the restricted access of observers to this part of the Reserve in these two years, rather than a diminishing population of birds as the result of adverse conditions.

Sadly the absence of the stonechat is not so accounted for. The area of scrub is well monitored, and the lack of records clearly indicates the absence of the bird. Even so it is not certain that the severity of the winter is the sole cause; the decline began earlier in the year with a poor breeding season, and it may be that other factors are involved.

In total contrast was the unseasonably mild weather at the end of 1982, yet it brought equally unusual results. Curlew remained on the grazing fields well into winter before moving to the saltmarsh. Birds on migration south lingered until October, green sandpiper haunted the pools well into December, and a common sandpiper has overwintered into 1983 taking us forward to yet another year of observing and recording the birds of Connah's Quay Reserve.

CLASSIFIED LIST OF BIRDS RECORDED IN 1981 AND 1982

- GREAT CRESTED GREBE WV Usual records are of individual birds present on the Dee at the full of winter high tides in the four months from October. However there have been more sightings of groups of three, four and five of these grebe together than in previous years, with a maximum count of 8 present on 3 November 1982.
- SLAVONIAN GREBE V On 12 August 1981 one bird, in partial moult into winter plumage, was observed roosting on one of the islands of the bunded pool.
- LITTLE GREBE WV Records from 1981 follow the pattern of previous years, with up to 3 birds present from January through to March, then after an absence, from September onwards parties of 5 to 8 birds were frequently to be seen on their favoured haunt, the bunded pool. After the freezing of this pool in the hard weather of December, numbers declined dramatically, for there are only eight records over the whole of 1982, and each of these is of a single individual.
- FULMAR V The series of anticyclones which dominated the weather in mid April 1981, and which resulted in a succession of falls inland of ocean going species, accounted for the first and only sighting of a fulmar on the reserve on the 19th of the month.
- GANNET V An adult was observed over the revetment following the northwesterly winds of 21 August 1982.
- CORMORANT R WV Seen throughout the year, though both sightings and numbers increase in the winter months. The peak count was of 96 in the estuary on 7 October 1981. Individuals fish the bunded pool: one was seen to be taking eels here in the summer of 1982.
- GREY HERON R WV Each year small numbers are seen fairly regularly fishing or roosting on the reserve, from January onwards. July, and the end of the breeding season, brings an influx of newly independent young, and both sightings and numbers increase with maxima of 18 by the autumn of both years. A juvenile of the unusual dark morph arrived on the bunded pool on 10 June 1982, remaining throughout the evening.
- MALLARD WV R Present all year, though few are seen in early spring. In 1981 numbers did not increase until August, but May and June of 1982 brought an influx of birds, up to 370 by 29 May, flighting to the reserve in the early mornings and leaving for the Wirral marshes in the evening. Winter numbers have not reached the peaks of 1979 and 1980, the maximum counts being of 700 on 10 September 1981 and 300 on 16 October 1982. Pairs were forming as early as January, but despite much display there is no evidence of breeding on the reserve in these two years.
- TEAL WV Occasional visitors in the past, these two years have seen teal regularly present on the scrapes of Oakenholt marsh from August and remaining until the end of March. Numbers build up by October and counts of over 100 are often recorded with 150 the highest on 29 December 1982. 1982 also gave sightings of pairs on the bunded pool.

GARGANEY

V A single drake was noted in a group of 10 teal on the receding tide of 4 October 1981.

WIGEON

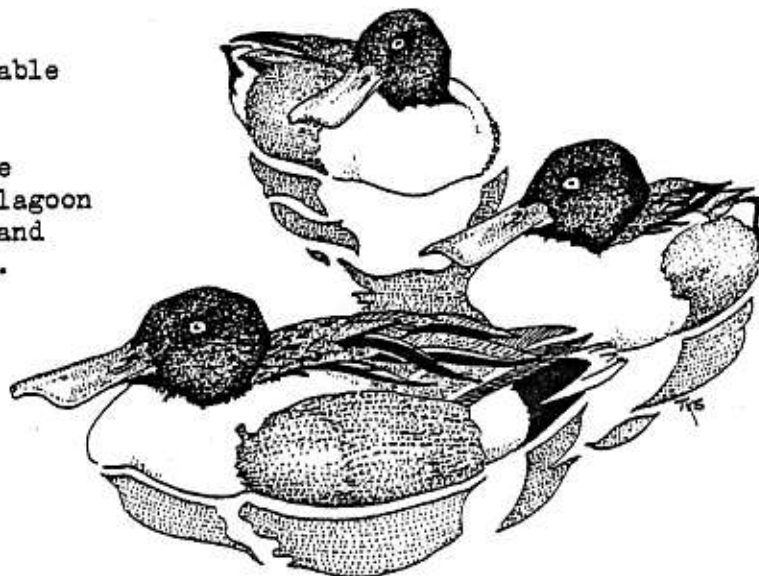
WV Return to the west marsh in August each year, as do teal, riding out full tides on the reserve through the winter months, until March. Numerous in the hard weather of 1981-82, peaking at 800 by 15 December 1981, the milder end of year in 1982 brought fewer than 50 at any one time. Conservation work to reduce the growth of vegetation on the margins of some saltmarsh creeks and pool islands accounts for the presence of small groups of wigeon regularly grazing these areas in 1982.

PINTAIL

WV Present on the estuary from August to March, the numbers have continued to increase, with the Wirral side of the Dee the preferred area. Rafts of 2,100 and 3,000 were seen riding out high tides on 10 September and 22 November 1981, and skeins of pintail are regularly recorded. Nevertheless the number of birds alighting within the confines of the reserve remains small.

SHOVELER

PM A notable increase, with small numbers taking advantage of the fly ash lagoon in the spring, and again in autumn. Three fine drakes in breeding plumage were present in March 1982, whilst 26 August 1982 gave an unprecedented count of 8.



SCAUP

V A female scaup was observed on the bunded pool on five dates from the 4th until the 12th December 1982.

POCHARD

V An incidental visitor to the reserve, selecting the only available freshwater of the fly ash lagoon. In 1981, 2 were present on 12 January, whilst 4 reached the lagoon following the high winds of 10 September where 3 remained until the 12th. One date only from 1982, when a female was observed on 10 December.

GOLDENEYE

WV The bunded pool continues to attract parties of up to 13 redheads regularly from October throughout the winter until April. December 1981/January 1982 were exceptions, for with the freezing of the pool the birds left to seek open water. The milder weather of February saw their return for a few weeks, though not in the usual number, 3 redheads being the maximum. The October 1982 post breeding return however, showed no decline, from 8 to 13 frequently logged including a first winter male in transitional plumage, as well as a fine adult drake.

- RUDDY DUCK V The first record of this species on the reserve was made on the evening of 4 August 1982 when a female or immature was seen on the fly ash lagoon, at a time when the pool was the haunt of many small waders.
- RED-BREASTED MERGANSER WV Fewer in numbers than in previous years. Sightings in 1981 were of only one or two individuals from January to March, and again from October. December's weather accounted for their complete absence at the end of the year. The spring of 1982 brought a summer plumaged drake to the bunded pool, whilst from October up to 5 birds, 2 of them males, were regularly fishing there.
- SHELDUCK WV R B Occurs in greatest numbers in November and December, when the birds congregate on the slack water flooding Oakenholt marsh to await the uncovering of the mudflats on the ebb of the spring tides. Numbers are higher than in previous years, with maxima in December of 500 on 12th 1981 and 390 on 15th 1982. Disappointingly 1981 produced no records of downy young on the reserve, but in 1982 a pair brought a brood of 10 on 23 May, and thereafter reports of adults with young continue until the end of July when the juveniles became independent of the creches. The Society fostered two 'lost' ducklings which were successfully integrated with a brood on the fly ash lagoon.
- PINK-FOOTED GOOSE V Recorded only in 1982. Hard weather movements in January found skeins of these geese overflying the reserve on three dates: two skeins of 70 and 60 birds on 5th, a total of 400 birds on 9th and 60 on 12th. A single bird present on the reserve on 9 April was seen to fly off toward Burton the following day, whilst on 17 November a bird circled the reserve before continuing its flight, again in the Burton direction.
- BRENT GOOSE V An addition was made to the list of species for the reserve when, on 12 November 1982 two brent, of the dark bellied race, alighted on Oakenholt marsh, one an immature bird, lacking the half white collar which characterised the adult.
- CANADA GOOSE V Irregular singles on five dates, with 2 together on 27 March, all records falling within 1982.
- MUTE SWAN S Sightings are irregularly scattered throughout the year, and are usually of singles or pairs on the Dee. Three immature birds were together on the reserve from 6th to 8th October 1982, whilst the maximum was a party of 8 overflying on the evening of 27 June 1982.
- BEWICK'S SWAN V One record only, of four flying upriver on 5 December 1982, and very different from the previous two year period when this species was present for a short time in each of the four winter months.
- SPARROWHAWK WV The recovery of this raptor after its decline in the early '70's is reflected in the continued increase in the number of logbook entries. The sparrowhawk is now a regular predator of the finch flocks which haunt the winter saltmarsh. Both sexes are recorded, though females predominate.

HEN HARRIER

WV A predator regularly quartering the reserve from the autumn until March, most usually flying from and returning to the Burton/Parkgate marshes. Its presence is marked by the mobbing of crows, or by the panic flight of wildfowl and waders. Male and female birds have been recorded in both years, with 2 males and an associated merlin hunting on 6 March 1981, and on 6 January 1982 2 ringtails, harried off the reserve by a furious crow.

HOBBY

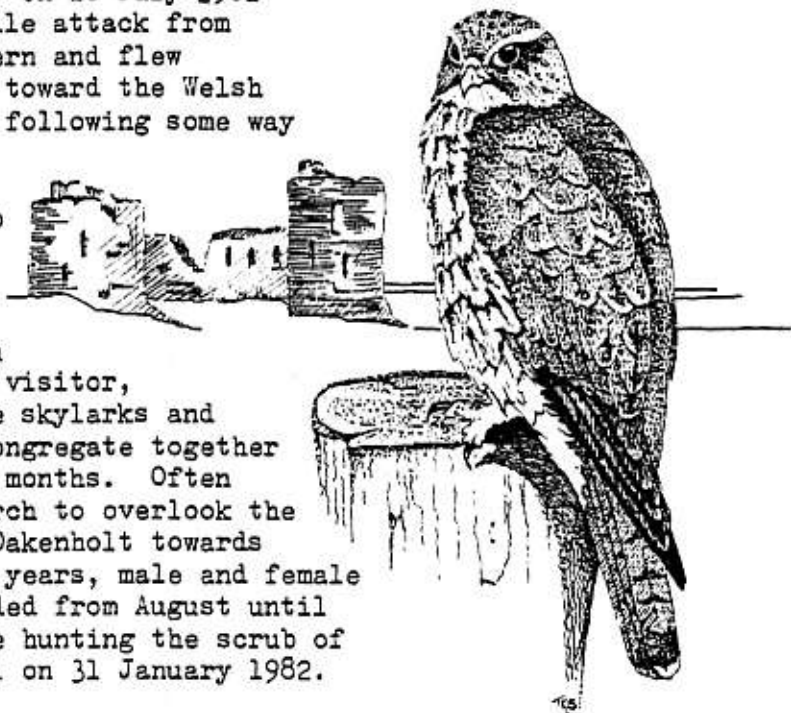
V A first record, when on 11 August 1981 a male flew over the revetment across the river and along the reserve towards Oakenholt marsh. 1982 brought a second bird in dashing flight towards the Cheshire bank on 22 August.

PEREGRINE

WV A raptor now regularly to be seen on the reserve; records have escalated from the 3 reported for the two years 1977-78 to 33 in the period under review. Absent during the breeding season, the peregrine returns to the area in August, remaining until March. Both sexes have been recorded, with an immature present through November and December 1982. An unseasonal bird, on 18 July 1981 suffered a hostile attack from a lone common tern and flew steadily inland toward the Welsh hills, the tern following some way in pursuit.

MERLIN

WV Not so frequently present as in the previous two years though still a regular visitor, attracted by the skylarks and finches which congregate together over the winter months. Often hunts from a perch to overlook the saltmarsh from Oakenholt towards Flint. In both years, male and female birds are recorded from August until March. Two were hunting the scrub of the nature trail on 31 January 1982.



KESTREL

R B? Seen at all times of year, save during the sub-zero temperatures of the end of 1981, January 1982. A pair were together from March 1982 and much in evidence until the end of May. Both years have few sightings in June, after which records of 2 and 3 together became common, perhaps indicating a successful brood on the reserve.

PARTRIDGE

R B The increasing frequency of observations from September onwards, and the larger coveys reported suggest that 1982 was a successful breeding season. There are records of a pair with 5 young on the reserve. The maximum covey of 8 from September 1981 contrasts with the presence of two groups on 30 November 1982 totalling 20 birds.

PHEASANT S Rare in past years, the eight winter records from 1981 and 1982 probably concern birds known to have been released in the area.

MOORHEN S 1981 has two records, of 2 on 5 April and a single on 11th in the vicinity of the damp woodland neighbouring the reserve at the site of Rockcliffe Hall. Not recorded in 1982.

OYSTERCATCHER WV R B? Both 1981 and 1982 are unusual in that the greatest numbers occurred not over the winter months but in spring, with 350 on 17 April 1981 and unparalleled counts of 1,500 and 2,000 in May 1982, the maximum coinciding with the peak count of 3,000 dunlin on the 31 foot tide of 22 May. Winter 1981 brought exceptionally few birds, but the mild 1982 saw flocks 400 in strength. Display and piping threesomes were common in spring, with females on nests in both years, but as in 1979 and 1980 there was no evidence that any young were hatched.

LAPWING WV R Scarce between March and early June, numbers increase gradually throughout the summer as birds of the year find roosts around the bunded pool. Winter totals reached 2,500 by 22 November 1981, but, highly weather sensitive, the lapwings sought more clement parts in mid-December and were conspicuous by their absence. 1982 winter numbers were at a more usual level, commonly 300 - 500 with a September peak of 1,200.



RINGED PLOVER PM Spring passage was unusually protracted in 1981 with a single as early as 26 February, and two records from March. In contrast, autumn passage, which normally spans three months, was concentrated between 15 July and 21 August with peaks of 40 on 4th and 18th August. The 1982 maximum of 80 was recorded on the evening of 13 August.

LITTLE RINGED PLOVER PM Autumn passage records only, 26 July and 20 August 1981; in 1982 a juvenile recorded on the fly ash lagoon on 22 July was seen again on 24th, whilst August records, also from the fly ash pool were on 4th, 5th and 14th. Two dates coincide with Temminck's stint.

GREY PLOVER WV PM Lone birds or groups up to 6, are casual winter visitors, with November having the most frequent sightings at nine dates. 26 April 1981, a cold wet day of high winds, brought a summer plumaged bird to the reserve for a few hours.

GOLDEN PLOVER PM WV Uncommon on the reserve, 5 records from 1981, 4 from 1982 spanning August to December. The strong south westerlies of 22 November 1981 occasioned a flock of 59 strong.

- SNIPE** WV This species favours the fly ash lagoon on returning to the reserve in August after an absence of four months. Sightings are common August - September, usually 2 or 3 together with a maximum of 9 on 8 September 1981, but dwindle to one or two dates only in the remaining winter months, with birds brought out of cover by a high tide.
- WOODCOCK** V The woodcock flushed from the scrub undergrowth at the nature trail on 19 December 1982 is the reserve's first and only record.
- CURLEW** WV PM The bubbling song haunts the marsh on mild days from late January to April after which only a few non-breeding birds remain. On return in July, the birds particularly favour the grazed fields with a gradual move towards the saltmarsh and mudflats in autumn when numbers reach their peak of 60 - 80. In 1982 small groups frequented the fields until the end of December, the mild wet winter contributing to prolong the value of this area for feeding.
- WHIMBREL** PM Very few spring passage birds, 3, 4 and 1 in May 1981, two singles March/April 1982. Return migration however, is bringing an increasing number of logbook entries from mid-July to mid-September. 1982 was a particularly good year, with a concentration in August of 18 records of from 1 - 6 individuals, and an exceptional count of 15 among a number of curlew on the grazing fields on 7 August.
- BLACK -
TAILED
GODWIT** WV PM Records from 1977-79 show this species to be a passage migrant most numerous in August/September. In 1980 small numbers remained into December. The tendency to over-winter is now marked. Even the arctic two months December 1981/January 1982, during which many wintering waders were absent, have 17 black-tailed godwit dates, in numbers reaching 60 birds. The presence in 1982 is yet more pronounced with an influx after the end of autumn passage giving 31 November and December records, eighteen of these in excess of 100 birds, the maximum of 400 counted on 12 December.
- BAR-TAILED
GODWIT** PM Few in 1981: four dates from passage migration in August and three winter records with a maximum group of 6. The concentrated spring passage of 1982 is shown by five records of 100, 100, 88, 50 and 60 between 21st and 27th May. The few black-tails remaining at this time were advancing into breeding plumage, but no trace of red was evident among the bar-tailed flock.
- GREEN
SANDPIPER** PM WV Records have increased over the two years such that this species is now common on the reserve in August/September. Over 40 records from these two months in 1982 with up to 4 present between 19th and 31st August. 1982 also has a continuing winter presence, the fly ash lagoon being abandoned for the bunded pool where there are 19 accounts of 1 or 2 birds seen.
- WOOD
SANDPIPER** PM Return migrants only, with singles on four days in July/August 1981 and two days July and September 1982. 3 were together on the bunded pool in the heavy rain of 15 August 1981.

COMMON
SANDPIPER

PM WV First dates of 20th and 4th March respectively. A few singles only visit on spring passage, but the reserve becomes an important stopping place for migrants en route south, the fly ash lagoon providing a feeding ground, and the islands of the bunded pool a safe evening roost. It is from the east side that maximum numbers are recorded, of 40 on 8 July 1981 and 31 on 18 July 1982 gathering to rest. The mild winter of 1982 encouraged one or two birds to remain giving regular sightings throughout October, November and December.



REDSHANK

WV R The islands formed by the creation of scrapes on Oakenholt marsh, attract birds seeking to roost out the high tides of winter, and it is at such times that numbers can be assessed. On return from breeding, in July onwards, the bunded pool is favoured, with a gradual shift of preference to the saltmarsh, where roosts of 300 to 500 are regular from September until February. The count of 1,000 on 10 February 1982, the highest recorded on the reserve to date, resulted from an influx of birds after the much reduced numbers during the four week freeze.

SPOTTED
REDSHANK

PM Previous years' records have a spread of July to January, and 1981 was typical with a peak of 60 on 9 August. In 1982, however, spotted redshank were on the reserve between February and June, when there are 12 records of ones or twos. Perhaps weather denied them a timely return to the breeding grounds. Certainly numbers seen on autumn passage were significantly low, a maximum of only 18 on three September dates.

GREENSHANK

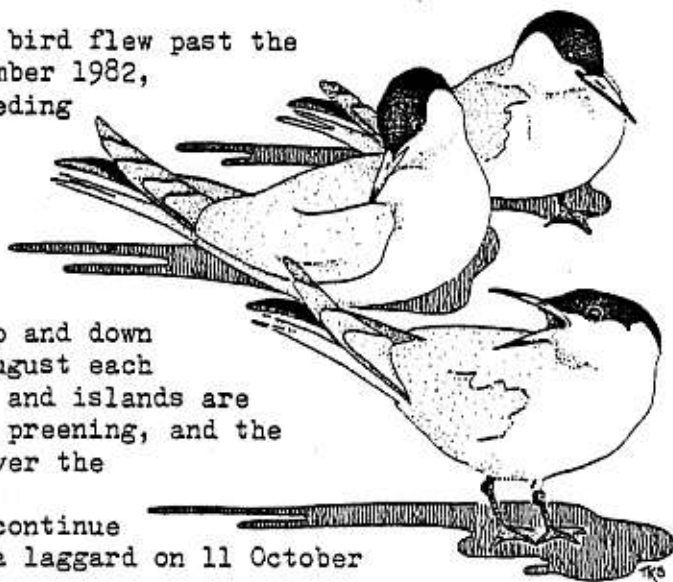
PM Greenshank use the reserve as a staging post on autumn migration. In July, August and September the species is frequent on both bunded and fly ash pools, and the evocative call identifies it on the saltmarsh. The 1981 maximum of 9 on 20 September is usual for the reserve. Exceptional numbers were present in 1982, with nine August counts in excess of 10 together, and on 24 September, an unprecedented maximum of 20 birds.

KNOT

PM WV Despite the vast numbers of knot wintering on the Dee, the species is rare on the reserve. Indeed the mudflats of Flint sands attract very few of the short billed waders, and the knot which are recorded here are individuals separated from the flock and temporarily associating with other species either on migration, or seeking to roost out a high tide. The two records of any numbers, 30 on 5 September 1982 and 50 on 7 October 1982 concern groups in flight following the river and not alighting on the reserve.

- LITTLE STINT PM Autumn passage records only: 2 on 20 August and singles on four dates between 3rd and 13 September 1981. 1982 brought singles on 25 July and 14 August.
- TEMMINCK'S STINT PM A rare visitor on autumn migration, under the same prevailing weather conditions which bring little stint. One on 20 August 1981. One, which first drew attention on the evening of 20 July 1982 by its erratic flighting over the fly ash pool, remained over the following two days.
- DUNLIN PM WV Birds overwintering on the Dee spend out the high tides on unflooded higher ground created on Oakenholt marsh, 100 to 200 being usual. Much more numerous at times of migration, with peaks in 1981 of 1,000 on 21 March and 500 in July and August. In 1982 a delayed spring passage was again indicated by uncharacteristic counts in May, as many as 3,000 on 22nd.
- CURLEW SANDPIPER PM Only autumn passage records spanning four weeks from mid-August. Three dates in 1981 brought singles, with 3 on 20 September. 1982 has three records: 4 on 31 August, a single on 4 September, whilst the strong north-westerlies of 8 September account for the reserve's highest total of 9 together.
- SANDERLING PM Rare on the reserve and not recorded at all in 1982. A single amongst oystercatchers moving before the tide on 21 March, and a flock of 20 on 2 August 1981.
- RUFF PM Reserve records are of autumn migrants only, and in past years sightings have been infrequent. However in 1981 and 1982 small numbers were regularly using the fly ash lagoon in August and September. 1981, the best year, gave 34 logbook entries, a maximum of 5 on 18 August, and two late birds in October.
- WILSON'S PHALAROPE V An exciting addition to the reserve's list of species. The phalarope was first seen on 31 August, and on that day it spent much time on the bunded pool feverishly feeding, spinning on the surface so close to a solitary redshank as to cause evident annoyance. Later it flew to the west end of the reserve, regularly commuting from saltmarsh to fly ash lagoon where it was seen on each day until its departure on 6 September 1982.
- ARCTIC SKUA V A dark phase bird harassed gulls over the Dee on 27 December 1982.
- GREAT BLACK-BACKED GULL WV R Present throughout the year in ones and twos. The few sightings from March to May are of non-breeding immatures, after which the species is more frequent and more numerous. Peak counts of 20 in the autumn of 1981 and of 50 in 1982.
- LESSER BLACK-BACKED GULL SV PM Recorded in every month, though few in the winter months from October to February. Maximum counts were from June in both years, though the numbers, 200 and 100 respectively, are a decline from the exceptionally high presence in 1980. Individuals of the darker scandinavian race are on record.
- HERRING GULL R Recorded in each month in small numbers, the maximum for the two years being of 50 on the evening of 24 May 1981. Again the predominance of immature birds is apparent in March, April and May.

- COMMON GULL PM WV Absent from the reserve during the breeding season, small numbers are irregularly recorded from June or July until April, with a concentration in autumn, the maximum being of 30 on 30 August 1982. However this gull is present in its thousands on the estuary for the evening roost, and the steady stream of gulls following the Dee flight path is a feature of most late afternoons on the reserve.
- BLACK-HEADED GULL R Common and numerous, particularly taking advantage of the standing water on the reserve for feeding and roosting afloat, or using the lee of the islands for shelter from high winds. The protection of clumps of spartina now colonising the banks of the Dee's channel, is also sought out when the wind is strong off the sea.
- KITTIWAKE V A wind blown single on 4 January 1981, the day on which an auk was also off course, whilst on 15 December 1982, the force 6 - 7 south westerlies brought a juvenile close inshore.
- BLACK TERN PM An immature bird flew past the west hide on 21 September 1982, and was later seen feeding on the saltmarsh pools further up the river.
- COMMON TERN SV Present to fish the banded pool, and commuting up and down the Dee from May to August each year. The pool banks and islands are used for roosting and preening, and the raucous call echoes over the lagoon throughout the summer. A few birds continue into September, with a laggard on 11 October 1981.
- ARCTIC TERN PM An autumn record from each year, of one bird on 3 September 1981 and two on the evening of 13 August 1982.
- LITTLE TERN PM The only record from 1981 was of 2 on passage with a sandwich tern on 10 August. None is found from 1982.
- SANDWICH TERN PM Two singles on southward migration on 10 and 29 August 1981, though not recorded in 1982.
- AUK SP. V A single blown inshore on 4 January 1982.
- STOCK DOVE SV WV As in earlier years, small numbers are recorded on the banded pool or saltmarsh throughout the summer into October, the maximum being 5 on 9 June 1982. However a return was made for a few weeks over the hard winter, there being 5 records of 1 to 5 birds from December 1981/January 1982.



- WOODPIGEON R Present in small numbers throughout the year though most frequently seen in late summer. The largest flock was of 27 feeding in the pastureland on 11 April 1981. No records of large winter gatherings on the saltmarsh exist from these two years.
- COLLARED DOVE R Probably under recorded. The collared dove finds only the urbanised strip fringing the reserve's inland boundary to be of its liking.
- CUCKOO SV Many more sight records than in previous years, when the cuckoo has been mainly a voice. Usual entries concern individuals flying between the nature trail area, and the steelworks reserve across the Dee, known to be a successful breeding area. An early record from 17 April 1981 contrasts with the 6 May return in 1982.
- LITTLE OWL R B A pair continue to frequent the reserve, and on 30 August 1981 two adults were hunting accompanied by a young bird of the year. A mated pair were together the following April, but there is no evidence that any young were fledged in 1982.
- SHORT-EARED OWL WV Absent in 1981, this owl evidently found favourable hunting in 1982, with 5 winter records, two of them concerning 2 birds quartering the reserve.
- SWIFT SV The date of arrival is most consistently towards the end of the first week in May. After this swifts regularly hawk for evening insects over the bunded pool, until an abrupt departure from the reserve in mid-August.
- KINGFISHER R 1981, like the previous year, had a pair regularly flying up the reserve to fish the bunded pool in all months save April to June. The main activity was in October when there are 12 records of one bird, and one of the two together. With the onset of freezing weather the records cease, but the sight of a bird on 3 January 1982 gave hope that the pair had survived the icing up of open water. There was another onset of harsh weather in January, however, and the kingfisher has unfortunately not since been recorded in 1982.
- GREAT SPOTTED WOODPECKER R? Records have declined to only 3 in 1981, from March, July and October, and in 1982 none at all.
- SKYLARK WV R B The grazing fields and drier areas of saltmarsh afford breeding sites for resident birds, and pairs with young were present in both years. The saltmarsh usually attracts migrant and wintering birds though this was not the case in 1981 when numbers were few; even 1982 has not seen the flocks of a few hundred birds of earlier years, the maximum count being 62 in November.



- SWALLOW SV The first migrant birds were on 13 April in 1981 and 8 April in 1982, though the swallow does not really become a presence on the reserve until May. From then on sightings are frequent though very weather dependent, with the peak of activity in August after the fledging of the young. In 1982 a few lingered on into October.
- HOUSE MARTIN SV Like the swallow this species finds the fly ash pool a source of food, and in May of 1982 at least one bird collected mud from the pool for nest building. Less common on the reserve than the swallow, favouring the area of dwellings along the inland boundary.
- SAND MARTIN SV A great drop in the numbers recorded compared with the previous two years, 1981 having only 11 entries from March to September. 1982 improved on this, but a group of 12 in April was the most numerous.
- RAVEN V A 'first' for the reserve when on 17 November 1982 two carrion crows were seen to be mobbing a raven as it flew along the revetment.
- CARRION CROW R Always present in twos or threes in the grazing fields or on the foreshore. The large numbers convening on the pulverised fuel ash tip in November 1980 continued into early 1981 with 60 on 1 February, but since that time numbers have returned to normal, with 15 the maximum in the winter of 1982.
- ROOK WV Not a species common on the reserve. Sightings are irregular and infrequent, usually confined to the winter months, and concern small groups of only 2 to 7 birds.
- JACKDAW S Uses the grazing fields of the reserve for foraging over a 10 to 12 week period spanning April and May, when the flock numbers up to 38 birds. Rarely seen at other times of year, and then only few together.
- MAGPIE R B After the 'population explosion' of 1980 recounted in the previous report, 1981 and 1982 numbers have dropped to single figures. The mild weather at the end of 1982 seems to have encouraged the early formation of 'parliaments' for it is unusual to record the peak count, which was 9, in the month of December.
- JAY S The area gardened by the power station, and the scrubland edges of the railway line brought a record of two on 21 April 1981, and 5 logbook entries between May and October in 1982.
- GREAT TIT R B Rarely seen, except for July 1981 when a pair with young were logged.
- BLUE TIT R B Frequents the scrub of the nature trail, and now particularly the maturing willows planted as a screen to the bunded pool. 1981 is the first year breeding has been proved with 2 pairs raising young in this year, and at least one successful brood in 1982.

- WREN R The tangle of bramble and undergrowth around the banded pool has a resident wren, whilst the nature trail scrubland is an even more favourable habitat with 5 counted here on 20 December 1982.
- MISTLE
THRUSH R WV Recorded in most months of previous years. 1981 was a poor year with no sightings after May. Fortunately there has been a return late in 1982 with 9 records from the last three months, a maximum of 16 on 11 October and a pair regularly together in the fields adjacent to the substation.
- FIELDFARE WV Scarce on the reserve in both winters, with only 4, 1 and 1 birds, though 1982 brought two small flocks.
- SONG
THRUSH S Less frequently seen than in prior years; four irregular singles in 1981; not recorded in 1982 until October which had a single, as did November and December.
- REDWING WV No winter flocks in 1981, the only record being of 7 on the power station vegetable gardens on 22 November. Larger groups were present from the second week of December in 1982, with a flock of 200 in the woodland at the reserve boundary on 19 December.
- BLACKBIRD R B Mainly in evidence from spring through to July. A young bird was present with 2 adult males in May 1981, and in 1982 a pair were together in April, and a female was with young in July.
- WHEATEAR PM 1981 was typical with a trickle of migrants through in March after the first 2 males on 21st, and the main passage in April with a peak on 27 April of 10 together. In 1982 spring passage began late; March had but one bird through, and that not until 28th. April added 5 singles, and a threesome. The first week in May saw a remarkable concentration with 14 birds, mostly male, on 3rd and 14 again on 6th which coincided with a fall of yellow wagtails and a whinchat. Autumn passage was slight both years, though protracted in 1982 with 6 birds through during October.
- STONECHAT R A pair were regularly together in their usual haunt in the nature trail in February/March 1981, and a male and 2 females were there in April. Uncharacteristically, May has only a single record, and it is evident that breeding was not successful. After two sightings in July, there is no record of a stonechat on the reserve in any of the five remaining months of 1981, nor has any been seen throughout 1982.
- WHINCHAT PM R B? In previous years the pattern of whinchat sightings has been indicative of migrant birds only, with the emphasis on spring passage. In 1981, however, 7 records span April to September, whilst 1982 has 15 records in the same period. It may be that this species filled a niche made available by the stonechat's absence, for a pair were together in May, and by July a male bird was in evidence, as was a female with one young.
- BLACK
REDSTART V A female was actively feeding on the verge of the road leading to the field studies centre on 1 December 1982, and later on the same day a pair were seen together.

ROBIN

R Infrequently seen, especially in the summer months. 1982 records are particularly scant: 2 singles in January and again in April, then nothing until October, though in December 3 were present.

SEDGE
WARBLER

SV A 'first' for the reserve in 1981 when a bird was located in the vegetation of the nature trail on 24 and 25 May. A further sighting was logged on 29 August. 1982 saw this newcomer to the list an established summer visitor. The trail attracted an individual at the end of May, his territorial song was heard and by early June a pair were together. Logbook entries continue into July. It is possible that the developing scrub layer might prove an alternative for birds displaced by the recent deterioration in the stands of phragmites on the steelwork's reserve.



WHITETHROAT

SV B Established as breeding in the nature trail in 1979, the whitethroat success story continues with 4 males singing in May 1981 and a pair feeding 2 young by 12 July. The first returning male in 1982 was as early as 21 April. By 6 May, 3 males were in song, and at least 2 pairs were resident in June. Adults with young are recorded in July and August, and a laggard was present on 11 September.

LESSER
WHITETHROAT

PM Only one record from 19 July 1981 when 2 birds, one of them a juvenile, were together in the shrub screen near the centre hide.

WILLOW
WARBLER

SV Records have declined from previous years; only 6 entries in 1981, all but one are in April. 1982 has only one May record.

CHIFFCHAFF

PM Spring passage is marked by four April records in 1981. Not recorded at all the following year.

PHYLLOSCOPUS SP.

The mild close of 1982 accounts for 3 sightings of "willow/chiff" between 13 and 19 December.

GOLDCREST

S Both years have one record, each falling on 11 October.

SPOTTED
FLYCATCHER

PM The excellent year in 1979, with a continuous presence over 4 months, has not been repeated. An individual at the site of Rockcliffe Hall on 13 June 1981 is the only record from the two years.

- DUNNOCK** R Noted throughout the year, singly or in pairs, and almost certainly breeds on the reserve, though the reclusive habits of the species are such that this is not proven. Particularly favours the low brambles developing beneath the silver birch and willow which screen the bunded pool.
- MEADOW PIPIT** PM WV Numbers are down on previous years. A steady trickle of spring migrants passed in March/April 1981, with fewer birds seen on the September return. 1982 spring passage has four records involving only 7 birds from March/April, but a fall of 18 on 6 May. Autumn records from this year, are more regular with up to 5 birds remaining at the year end.
- ROCK PIPIT** PM One entry only, from 1981, which concerns an individual flying over the reserve in the heavy drizzle of the overcast 9 March.
- PIED/WHITE WAGTAIL** PM R B A movement of pied wagtails is noticeable in spring, and again in autumn, but the majority of records come from July and August, as newly independent young birds gather, with adults, to take advantage of the abundant insect life found on pool edges and among the cattle in the fields. An unusual fall of 20 birds occurred in 1981 on 6 February.
- PM The white wagtail is a bird of passage only, and after the well marked April/May movements of 1979 and 1980 with anything up to 60 birds at a time, 1981 and 1982 are disappointing with but a single bird through on 4 April 1981, and two April records in 1982. Autumn passage is usually slight, so the four records, maximum being 6 together, from June to August in 1981 were some compensation for their absence in spring. Unfortunately no autumn records were logged in 1982.
- GREY WAGTAIL** S Occurs only incidentally, usually single birds are seen, as in March and August 1981 and April 1982, though two were together on 2 June 1982.
- YELLOW WAGTAIL** SV PM B Reaches the grazing fields by early May each year, falls of migrant yellow wagtails often coinciding with the arrival of yet more wheatear, or a whinchat. 1981 numbers were low both on the way to the breeding areas and again on return south when 5 was the largest group. 1982 showed a recovery with a spring passage peak of 16 on 30 May, and on 2 August, in the mid-day heat of that very warm day, a gathering of 20 birds bathing and preening together at the fly ash lagoon, where starling and lapwing were also enjoying the water.
- GREAT GREY SHRIKE** PM A rare visitor to the reserve last recorded in January 1977. A bird was present on the early morning of 18 April 1982, whilst in the same year, one was sighted in the nature trail area on 15 October, and again on 17th.
- STARLING** PM WV R Present throughout the year, though numbers fluctuate dramatically with the seasons. The main concentrations occur in autumn when flocks of juveniles forage on marsh and field. Numbers of 300-400 are not unusual but the maxima were 4,000 on 18 October 1981 and 1,500 on 18 July 1982.

- GREENFINCH WV R Sightings have been irregular, and numbers low over the two years. The hard weather of December 1981 saw a few greenfinch with other finches attracted to the grain put down as feed. The maximum count, however, of a group of 10, belongs to April 1982.
- GOLDFINCH R B WV Present in small numbers throughout the year with occasional "charms" such as the 20 on 21 April 1981 and 30 on 25 November the same year. Numbers were fewer in 1982, but the species was logged more frequently, adults with young are recorded in late summer.
- SISKIN S Previously recorded only in July 1979, 14 March 1981 gives the reserve its second record of this species.
- LINNET WV R B Since logbooks have been kept on the reserve, no month has passed without the recording of linnets until the three months of January to March 1982, following the arctic conditions of the winter, when the species was noticeably absent. A return was made in April, with counts of 65, 50 and 50, and these are unusually high for this time of year. Small numbers are recorded throughout the summer of 1982, when a parent bird was observed feeding two young. By November, the wintering flock had reached 160 strong, and such numbers continued to feed and rest on the reserve until the end of the year.
- TWITE PM WV Two poor years for twite records. Four were with a flock of linnets and goldfinch on 8 January, and 12 were feeding on the marsh, concentrated on to an island of grass by the full spring tide on 9 March 1981. Not seen during 1982.
- BULLFINCH R Local to the wooded area at the site of Rockcliffe Hall, but infrequently recorded. Three singles in 1981 with the male in evidence in March, and in 1982 a pair together in March.
- CHAFFINCH WV Present from October through the winter until February/March each year. The hard winter of 1981 was no exception, and chaffinch flocked to the grain put out for them throughout December and January. The maximum count was of 120 birds from December 1982.
- BRAMBLING WV Only 7 records of one or two birds with chaffinch flocks from the harsh November 1981 and January 1982. The species was not seen on the reserve during the mild closing months of 1982.
- CORN BUNTING V One record of individual birds from each year, on 13 April 1981 and on 3 January 1982.
- YELLOWHAMMER WV Never present regularly nor in any numbers, until the freeze of December 1981 brought a concentration of up to 50 to feed on the grain scattered daily and to take refuge in the screen of willows by the centre hide. Reed bunting and tree sparrow associated particularly with the yellowhammers.

REED
BUNTING

WV R Seen in small numbers regularly throughout 1981, though the winter did not bring any records of flocks, as previously reported, the maximum being only 6. 1982 sightings have been few, with no records between March and September, but by December up to 6 were again habitually present. The trees planted to screen the bunded pool between the east hide and the field studies centre are a favourite perch.

SNOW
BUNTING

V The 3 males which together flew over the reserve on 10 January 1982 added yet another new species to the reserve's total.

HOUSE
SPARROW

R Not common, save along the urbanised strip adjoining the inland boundary to the reserve, from which it is attracted to the power station gardens. An exceptional count was made of 150 feeding on grain in this area on the evening of 18 August 1982.

TREE
SPARROW

WV R Has been fewer in numbers than in previous years with a maximum of 17 in February of 1981. 1982 has been a particularly poor year with only two records of 7 and 2 both from April. Although small numbers of tree sparrows were attracted, by the grain supply, to the area around the centre hide, their more usual haunt is the hedge of hawthorn which borders the power station vegetable gardens very near to the gatehouse.



Butterflies

It was in 1981, at the request of the C.E.G.B., that consideration was first given to undertaking a survey of the butterflies to be found on the reserve.

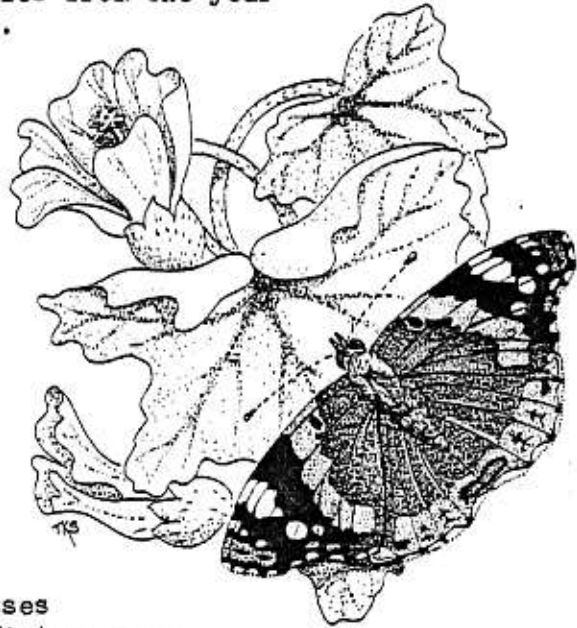
Advice on a controlled method of monitoring butterflies was sought from the Institute of Terrestrial Ecology, and with their help a pilot survey was made in late summer 1981.

The method of recording requires a transect to be determined, that is a fixed route which will be walked at least once in each week from the beginning of April until the end of September. The weekly walk is made under the best possible conditions for butterfly flight, namely between mid morning and 3.30 p.m., preferably in temperatures 17°C and above, or in temperatures down to 13°C only if the day is sunny. Each sighting of a butterfly is recorded, and the results entered on weekly record sheets along with details of time, temperature, wind speed and cloud cover. At the end of the 26 week survey, all results are combined to provide full information for the year.

This selective method of recording does not give an indication of breeding populations nor even of the total numbers present: its importance lies in producing controlled information which may be used for comparison. This first survey, for instance, shows only the abundance of one species in relation to another, but information from succeeding years will monitor the relative abundance of any single species from one year to the next, and reveal annual trends.

The Nature Trail has always seemed a 'good spot' for butterflies, and the transect walk was a loop taking in the full length of this area of scrub. The choice was a lucky one, for the survey has shown that this area is indeed attractive to butterflies, and the reasons for this may now be identified.

The scrub area is on land reclaimed from the marsh in 1956-57 by using pulverised fuel ash (PFA), a waste product from the generation of electricity by the coal-fired Power Station at Connah's Quay. The area was first sown with a mixture of grasses to prevent wind erosion, but since PFA is a very 'poor' soil it was also seeded with nitrogen fixing plants, and these were white clover, and lucerne. Lucerne particularly, is an important source of nectar and well loved by butterflies.



In other parts of the reserve where land has been reclaimed, the tall leguminous plants have been grazed or cropped, but in the nature trail the field layer has developed naturally and other nectar rich plants have become established, more importantly bramble, thistle, and "pussy" willow.

With the organisation of a nature trail, the gravelling and mowing of paths kept disturbance from human pressure to well defined areas, allowing most of the site to grow untrampled, and this is of importance to butterflies in their larval and pupal stages, and whilst overwintering.

Furthermore this area of the reserve is the only part receiving some shelter from the winds of the estuary by virtue of a raised bank along one boundary, and the wall of the Transmission sub-station on the opposite boundary; it may even be that the heat retaining property of this extensive concrete wall serves to raise the ambient temperature.

The results of the survey will be a guide to future management of the area for butterflies. The nature trail is already rich in nectar-giving plants and their continued presence must be ensured. The habitat may be improved for breeding by augmenting the larval food plants of certain species. The dominant grasses of *Poa* and *Festuca* species provide for the larvae of the Brown butterflies. The stinging nettle and thistle are also common for the small tortoiseshell, peacock and comma, and the migrant red admiral and painted lady. Birdsfoot trefoil is plentiful towards the east of the trail where the common blue and dingy skipper whose larvae depend on it, are also at their most abundant.

However, it should be possible to establish other food plants, such as garlic mustard, which already grows elsewhere on the reserve, and perhaps even to attempt the introduction of species such as cuckoo flower.

Such selective management of the field layer as had already been undertaken is also beneficial. The tall denser grasses cater well for those species such as meadow brown, which favour a rank field layer, but without some cutting as along the edges of pathways, the shorter turfs, which so attract the common blue, would soon be lost.

In all 19 species of butterfly were identified in this area in 1982 with only one species, the orange tip, recorded elsewhere on the reserve, and not on the transect walk.



Figure 1 overleaf gives brief information on the life cycle and biology of each of the 20 species of butterfly identified on the Reserve in 1982.

Figure 2 summarises the results for the 26 week survey, week 1 beginning on April 1st. The figures entered for each week are the counts made on the transect walk and do not include butterflies recorded elsewhere on the reserve. Where the results clearly identify different generations of a single species this is indicated in the notes column, by I, II and III.

FIGURE 1

FAMILY	SPECIES	NO. OF GENERATIONS	OVERWINTERING STATE	LARVAL FOOD PLANTS
SATYRIDAE The Browns	Speckled Wood	2	Young larva or pupa	Grasses - Couch, Cock's foot
	Wall	2 (3)*	Young larva	Most common grasses
	Grayling	1	Young larva	Grasses - Couch, Sheep's fescue
	Meadow Brown	1 (2)*	Young larva	Grasses - especially Poa species
	Gatekeeper	1	Young larva	Grasses - Couch, Cock's foot
	Small Heath	2	Young larva	Grasses - especially Poa species
NYMPHALIDAE Fritillaries Vanessids etc	Red Admiral	1 or 2	Migrant, a few may overwinter as butterfly	Stinging nettle
	Painted Lady	1 or 2	Migrant, cannot survive our winter	Thistle, Burdock
	Small Tortoiseshell	2	Hibernating butterfly	Stinging nettle
	Peacock	1	Hibernating butterfly	Stinging nettle
	Comma	2	Hibernating butterfly	Stinging nettle, Sallow
LYCAENIDAE Blues and Coppers	Common Blue	2- 1 in north 3 in south	Young larva	Birdsfoot Trefoil, Clover
	Small Copper	3	Larva	Sorrel, Dock
PIERIDAE Whites and Yellows	Large White	2	Pupa	Cruciferous plants
	Small White	2	Pupa	Cruciferous plants
	Green Veined White	2	Pupa	Charlock, Garlic Mustard
	Orange Tip	1	Pupa	Cuckoo Flower, Garlic Mustard
HESPERIIDAE Skippers	Dingy Skipper	1	Full grown larva	Birdsfoot Trefoil
	Small Skipper	1	Newly hatched larva	Soft grasses - Yorkshire Fog
	Large Skipper	1	Larva	Grasses - Cock's Foot

() * in favourable years

FIGURE 2

SPECIES	APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER				1982 TOTAL	NOTES		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			25	26
Speckled Wood																								1			1	I - 0 II - 1
Wall					1	2	7	5	8	1							4	7	14	5	2	1					57	I - 24 II - 33
Grayling														1	2	27	42	45	6	8	1	5	2				139	
Meadow Brown									2	3	5	36	43	45	50	28	4	12	3	1						232		
Gatekeeper															2	1											3	
Small Heath									1	1	1	1															4	I - 4 II - 0
Red Admiral												1	2	1	1	1	2				5	2	1				16	
Painted Lady									1	1	2	1	1	2	1	1	2	2	1	11	6	3	1	2	1		39	
Small Tortoiseshell	1	3	5	4	1	1	2			3	4	7	5	5	10	7	10	44	9	54	20	38	11	4	3		251	Overwintered - 17
Peacock					4	1	2										3	32	22	26	9	5					104	Overwintered - 7 I - 97
Comma													1														1	Overwintered - 0 I - 1
Common Blue									8	34	13	15	10	1	2	2	6	23	30	19	54	39	10	8	1		275	I - 85 II - 190
Small Copper															1	1	4		1			1	1				9	I - 0 II - 6 III - 3
Large White					2	1	3	1	4	2	2	4	2	3	3	2	3	10		16	3	5	1				67	Generations not distinct
Small White						2	1		1	3	4	1	1	2	1		1	5	1	11	6	3	4	1			48	I - 3 II - 31 III - 14
Green Veined White								1							1	4	12	35	2	4	1		1				61	I - 1 II - 60
Dingy Skipper							2	2	4																		8	
Small Skipper														6	6	2	2										16	
Large Skipper									4	19	15	37	26	34	47	7	1										190	

Classified list of Plants

Key to Reserve Area Map

- A2 A4 - the plant occurs in sections A2 and A4
- A2-A4 - the plant occurs in sections A2, A3 and A4
- A2/A4 - the plant occurs on the boundary of A2 and A4
- * - one plant only recorded

PTERIDOPHYTA - FILICALES

Male fern	
<i>Dryopteris filix-mas</i>	A3
Wall-rue	
<i>Asplenium rutamuraria</i>	A3
Hart's tongue	
<i>Phyllitis scolopendrium</i>	A3
Bracken *	
<i>Pteridium aquilinum</i>	A5

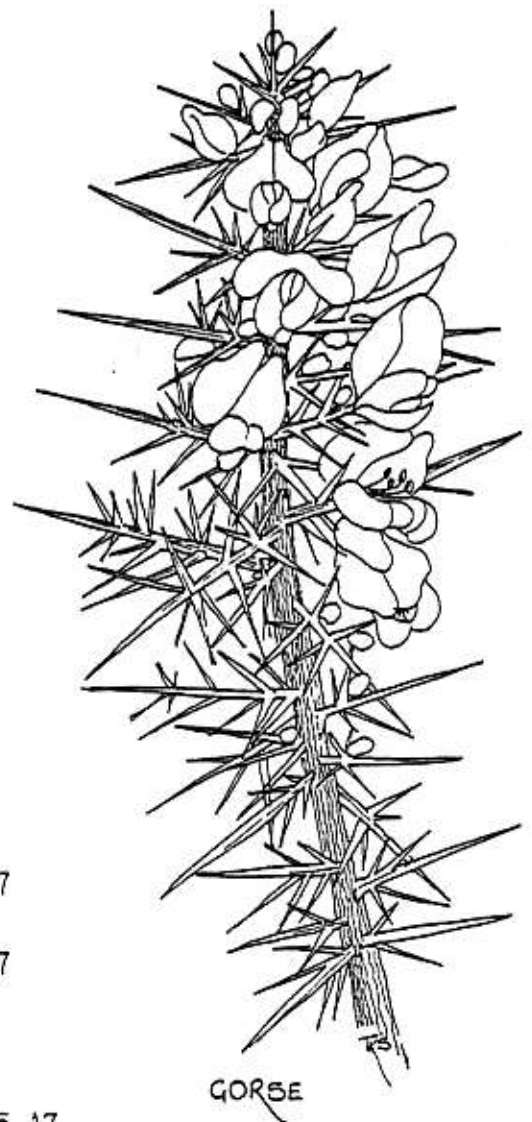
SPERMATOPHYTA - ANGIOSPERMAE

Meadow buttercup	
<i>Ranunculus acris</i>	A3 A5
Lesser celandine	
<i>Ranunculus ficaria</i>	A3
Field poppy	
<i>Papaver rhoeas</i>	A1-A7
Greater celandine	
<i>Chelidonium majus</i>	A3
Common fumitory	
<i>Fumaria officinalis</i>	A5 A6
Charlock	
<i>Sinapis arvensis</i>	A1-A6
Shepherd's purse	
<i>Capsella bursa-pastoris</i>	A1-A6
Common scurvy-grass	
<i>Cochlearia officinalis</i>	A7
Hairy rockcress	
<i>Arabis hirsuta</i>	A3
Garlic mustard	
<i>Alliaria petiolata</i>	A3
Hedge mustard	
<i>Sisymbrium officinale</i>	A1-A7
Weld	
<i>Reseda luteola</i>	A1-A5 A7



FIELD
POPPY

Perforate St. John's wort <i>Hypericum perforatum</i>	A1 A3
Bladder campion <i>Silene vulgaris</i>	A3 A5
Red campion <i>Silene dioica</i>	A2 A3 A5
White campion <i>Silene alba</i>	A2 A3 A5 A7
Red x white hybrid * <i>S.dioica x S.alba</i>	A5
Common mouse-ear chickweed <i>Cerastium fontanum</i>	A1-A6
Sticky mouse-ear chickweed <i>Cerastium glomeratum</i>	A1-A3
Chickweed <i>Stellaria media</i>	A1-A6
Lesser sea-spurrey <i>Spergularia marina</i>	A7
Good King Henry <i>Chenopodium bonus-henricus</i>	A1-A6
Fat hen <i>Chenopodium album</i>	A1-A6
Common orache <i>Atriplex patula</i>	A1-A6
Annual sea blite <i>Suaeda maritima</i>	A7
Glasswort <i>Salicornia europaea</i>	A7
Common mallow <i>Malva sylvestris</i>	A2 A7
Round-leaved cranesbill <i>Geranium rotundifolium</i>	A3-A6
Dove's-foot cranesbill <i>Geranium molle</i>	A3-A6
Herb robert <i>Geranium robertianum</i>	A1-A6
Gorse <i>Ulex europaeus</i>	A5
Lucerne <i>Medicago sativa</i>	A2 A5 A7
Black medick <i>Medicago lupulina</i>	A2 A5 A7
Spotted medick <i>Medicago arabica</i>	A1-A6
Common melilot <i>Melilotus officinalis</i>	A2 A4 A5 A7



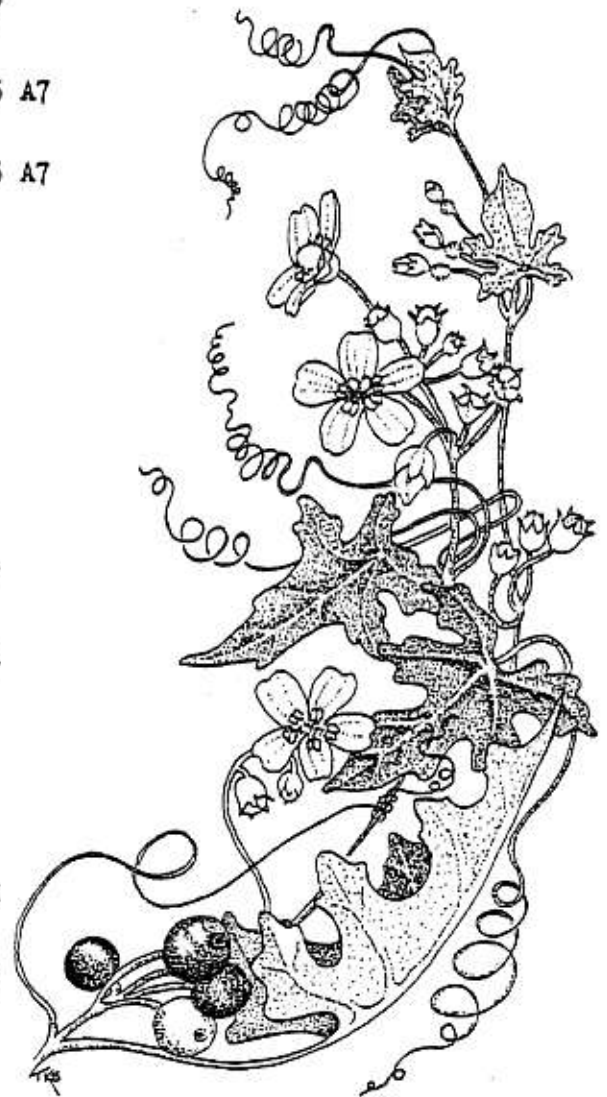
GORSE

White melilot		
<i>Melilotus alba</i>		A2 A4 A5 A7
Hop trefoil		
<i>Trifolium campestre</i>		A2 A7
White clover		
<i>Trifolium repens</i>		A1-A7
Hare's foot		
<i>Trifolium arvense</i>		A1-A7
Red clover		
<i>Trifolium pratense</i>		A1-A7
Large hop trefoil		
<i>Trifolium aureum</i>		A1-A6
Birdsfoot trefoil		
<i>Lotus corniculatus</i>		A1-A7
Hairy tare		
<i>Vicia hirsuta</i>		A4
Tufted vetch		
<i>Vicia cracca</i>		A1-A7
Bush vetch		
<i>Vicia sepium</i>		A2 A7
Common vetch		
<i>Vicia sativa</i>		A1-A6
Grass vetchling		
<i>Lathyrus nissolia</i>		A1-A6
Meadow vetchling		
<i>Lathyrus pratensis</i>		A1-A7
Bramble		
<i>Rubus fruticosus</i>		A1-A7
Silverweed		
<i>Potentilla anserina</i>		A1-A6
Creeping cinquefoil		
<i>Potentilla reptans</i>		A1-A6
Dog rose		
<i>Rosa canina</i>		A2 A3 A5 A6 A7
Great hairy willow-herb		
<i>Epilobium hirsutum</i>		A5
Small-flowered willow-herb		
<i>Epilobium roseum</i>		A2 A7
Rosebay willow-herb		
<i>Epilobium angustifolium</i>		A1-A7
Broad-leaved willow-herb		
<i>Epilobium montanum</i>		A5
Ivy		
<i>Hedera helix</i>		A3 A5
Cow parsley		
<i>Anthriscus sylvestris</i>		A1-A6
Upright hedge parsley		
<i>Torilis japonica</i>		A1-A6



DOG ROSE

Hogweed	<i>Heracleum sphondylium</i>	A1-A7
Wild carrot	<i>Daucus carota</i>	A1-A7
White bryony	<i>Bryonia cretica</i>	A3
Sun spurge *	<i>Euphorbia helioscopia</i>	A6
Knotgrass	<i>Polygonum aviculare</i>	A2 A5
Persicaria	<i>Polygonum persicaria</i>	A2 A4-A7
Pale Persicaria	<i>Polygonum lapathifolium</i>	A2 A4-A7
Sheep's sorrel	<i>Rumex acetosella</i>	A2 A7
Common sorrel	<i>Rumex acetosa</i>	A2 A7
Curled dock	<i>Rumex crispus</i>	A2 A5 A7
Stinging nettle	<i>Urtica dioica</i>	A2 A5 A7
Common Centaury	<i>Centaureum erythraea</i>	A4
Yellow-wort *	<i>Blackstonia perfoliata</i>	A4
Great bindweed	<i>Calystegia sylvatica</i>	A3
Bittersweet (Woody nightshade)	<i>Solanum dulcamara</i>	A3
Mullein *	<i>Verbascum thapsus</i>	A2/A7
Common toadflax	<i>Linaria vulgaris</i>	A2-A4
Foxglove	<i>Digitalis purpurea</i>	A3
Red bartsia	<i>Odontites verna</i> *	A5
Common field speedwell	<i>Veronica persica</i>	A1-A6
Yellow rattle	<i>Rhinanthus minor</i>	A4 A5
Self-heal	<i>Prunella vulgaris</i>	A3
Hedge woundwort	<i>Stachys sylvatica</i>	A3



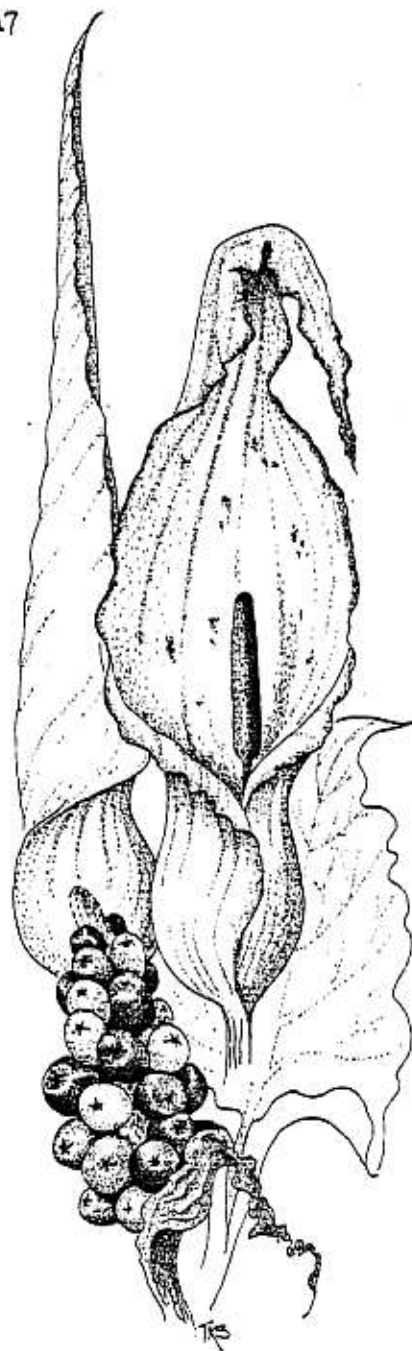
WHITE BRYONY

Red dead-nettle	<i>Lamium purpureum</i>	A1-A6
White dead-nettle	<i>Lamium album</i>	A1-A6
Greater plantain	<i>Plantago major</i>	A1-A6
Hoary plantain	<i>Plantago media</i>	A5
Sea plantain	<i>Plantago maritima</i>	A5-A7
Ribwort plantain	<i>Plantago lanceolata</i>	A1-A6
Cleavers	<i>Galium aparine</i>	A1-A7
Elder	<i>Sambucus nigra</i>	A2 A7
Teasel	<i>Dipsacus fullonum</i>	A1
Ragwort	<i>Senecio jacobaea</i>	A1-A7
Oxford ragwort	<i>Senecio squalidus</i>	A1-A7
Groundsel	<i>Senecio vulgaris</i>	A1-A6
Groundsel var. radiatus	<i>Senecio vulgaris</i> var. radiatus	A2 A3
Ox-eye daisy	<i>Leucanthemum vulgare</i>	A4
Coltsfoot	<i>Tussilago farfara</i>	A2 A5 A7
Winter heliotrope	<i>Petasites fragrans</i>	A3
Daisy	<i>Bellis perennis</i>	A1-A6
Yarrow	<i>Achillea millefolium</i>	A1-A7
Scentless mayweed	<i>Tripleurospermum inodorum</i>	A3-A7
Scented mayweed	<i>Matricaria recutita</i>	A3-A7
Rayless mayweed	<i>Matricaria matricarioides</i>	A3-A7
Feverfew	<i>Chrysanthemum parthenium</i>	A1-A7



WHITE DEAD-NETTLE

Tansy	<i>Chrysanthemum vulgare</i>	A1-A7
Mugwort	<i>Artemisia vulgaris</i>	A1-A7
Great burdock	<i>Arctium lappa</i>	A2 A3 A7
Spear thistle	<i>Cirsium vulgare</i>	A1-A7
Creeping thistle	<i>Cirsium arvense</i>	A2 A3 A5 A7
Scotch thistle	<i>Onopordum acanthium</i>	A2 A7
Black knapweed	<i>Centaurea nigra</i>	A2-A4
Nipplewort	<i>Lapsana communis</i>	A2-A6
Catsear	<i>Hypochaeris radicata</i>	A1-A7
Goatsbeard	<i>Tragopogon pratensis</i>	A2-A6
Wall lettuce	<i>Mycelis muralis</i>	A3
Prickly lettuce	<i>Lactuca scariola</i>	A2-A6
Perennial sow-thistle	<i>Sonchus arvensis</i>	A2-A6
Smooth sow-thistle	<i>Sonchus oleraceus</i>	A2-A7
Prickly sow-thistle	<i>Sonchus asper</i>	A2-A6
Smooth hawksbeard	<i>Crepis capillaris</i>	A1-A6
Common dandelion	<i>Taraxacum officinale</i>	A1-A7
Black bryony	<i>Tamus communis</i>	A3
Southern marsh orchid	<i>Dactylorhiza praetermissa</i>	A4
Common spotted orchid	<i>Dactylorhiza fuchsii</i>	A3 A4 A5
Lords and ladies	<i>Arum maculatum</i>	A3
Great water-grass	<i>Glyceria maxima</i>	A2 A7



LORDS AND LADIES