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STEERING COMMITTEE FOR THE CONSERVATION
AND MANAGEMENT OF THE ENVIRONMENT AND NATURAL HABITATS (CDPE)

Committee of Experts - Protected Areas

Minsmere Nature Reserve
(United Kingdom)

ON-THE-SPOT APPRAISAL

by

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(Switzerland)

16.869
09.3

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A. TERMS OF REFERENCE

The author of this report was asked to undertake an appraisal of the MINSMERE Nature Reserve (GB), which is owned by the Royal Society for the Protection of Birds (RSPB), in accordance with the criteria for renewing the European Diploma laid down by the Council of Ministers of the Council of Europe.

B. IMPLEMENTATION OF THE TERMS OF REFERENCE

9.3.88 Arrived London - Heathrow. Made contact with Mrs M A L'Hyver, biologist in the Environment Conservation and Management Division of the Council of Europe.

Mr Peter Newbery, RSPB Reserves Manager for the East Anglia region (approximately 20 reserves), met us at the airport and accompanied us to Westleton (Suffolk) where we were to stay.

10.3.88 Together with Mr Bob Scott, RSPB Reserves Manager for the whole of England, who joined us for the morning, Mr Jeremy Sorensen, Senior Warden, examined the re-afforestation to the south of the Bungalow (Management Unit 55), the southern coastal marsh and its pools, various observation hides and the new building complex, comprising accommodation for the RSPB volunteers, the reserve's new biological toilet block and the bird shop. Also saw the enlarged car parking area, with alongside the new artificial mini-cliff inhabited in summer by the sand martins.

Walked along the coastal path on the eastern edge of the reserve to the pebble beach of the North Sea. Discussions in the late afternoon and evening.

11.3.88 Visited open land, in management unit 51 - biotope for the Sky Parks and, above all, rabbits (1) - followed by visit to the wooded area of Scotshall Covert (2), along woodland tracks and firebreaks. Took up station in Canopy Hide, an elevated structure to the east of Vault Hill, with a view of the crowns of the oak plantation. Crossed the heath from the Westleton Walks to North Walk to Dam Bridge at the extreme south-west of the reserve.

Returned via Sheepwash Lane, direct access road to the Visitor Centre. Lengthy discussions in the Warden's house and later during the evening.

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- (1) Oryctolagus cuniculus is supposed to be less numerous at the end of the winter. However, more than 115 individual observations (without too much effort) in a field of vision 300m wide seemed to represent a fairly substantial biomass!
 - (2) A wooded area severely affected by the storm of 16 October 1987. The wind, which reached speeds of more than 180 km/h (100 mph), blew down more than 3,000 trees in the reserve (particularly Quercus robur/Pinus sp./Tilia bulgaris/Fagus sylvatica/Acer pseudoplatanus as well as a plantation of young pines).

12 and Private visits to the coastal areas north and south of the reserve.
13.3.88

NB: Two full days were devoted to examining the Reserve and two days were spent in the surrounding area. We therefore had ample opportunity to observe the various environments of the reserve, and the way it fits into the regional planning fabric.

14.3.88 London - Heathrow and return to Switzerland.

ACKNOWLEDGEMENTS:

I wish to thank the people referred to above for all the help they gave me during the course of my official visit. Mr particular thanks go to Mr Peter Newbery, who made every effort to assist us in our movements and to provide all the relevant information.

I would like to offer my warm thanks to Mr J Sorensen for his friendly welcome, the information which he provided and the time he spent with us.

Finally, I wish to pay tribute to Mrs M A L'Hyver for the faultless preparation of the on-the-spot appraisal and for the energetic and good-humoured way in which she contributed to discussions and issues.

C DETAILED ASPECTS OF THE TERMS OF REFERENCE

1. Introduction

I had visited Minsmere in May 1970. Even then, I thought that the forms of wetland management employed in the reserve held promise. Later, I had received further information on the subject during a visit to RSPB headquarters at Sandy Lodge in May 1973.

I returned to the site a few years later - in September 1978, when Minsmere's candidature for the European Diploma was being considered - and noted the continuing effectiveness of the management and the satisfactory implementation of the plans which had been drawn up. This observation still applies today.

Having completed the required local visit and appraisal, and heard the views of the officials concerned, I can state that the documents submitted by the United Kingdom government in support of the application to renew the European Diploma give a true and realistic picture.

2. On the spot appraisal, in accordance with Resolution (73) 4 - Regulations for the European Diploma

Location

The RSPB's Minsmere Reserve is situated in the county of Suffolk, on the North Sea coast approximately 145 km north-east of London.

A feature of the coastline on which the reserve is located is that over a 15 km stretch - between Walberswick in the north-east and Thorpeness in the south - there is no coastal road, other than in the small village of Dunwich and the large nuclear power station at Sizewell.

1.5.4.a Effectiveness of the system of protection

Land use planning

The local coastline is subject to a number of specific measures which guarantee the integrity of the area:

- Suffolk Heritage Coast - the authorities have introduced special urban planning controls.
- Area of outstanding natural beauty - AONB.
- Site of special scientific interest - SSSI Category 1. All proposed developments must be approved by the Nature Conservancy Council (NCC).
- Bird sanctuary. This designation makes it possible to impose heavier penalties for any offences committed.
- Project Mar - Category A, of international importance.
- The site is listed as being a "wetland of international importance" under the Ramsar Convention (No 76 - Minsmere-Walberswick 1687 ha).

- European Diploma awarded in 1979 - Resolutions (79) 13 and (84) 6 of the Committee of Ministers of the Council of Europe.

Since 1977 the 607 ha. site has been owned by the RSPB; approximately one-tenth of the area is accessible to the public, who must remain on signposted paths. The reserve is very carefully managed by the society in accordance with a detailed management plan covering woodland, heathland, areas subject to reforestation, phragmites and pools.

Staffing

Supervision, improvement and environmental maintenance are the responsibility of two highly qualified wardens with internal policing powers.

Two additional part-time staff would be desirable. Currently, an employee on contract spends six months in the reserve before moving on to another RSPB property on a temporary basis, as part of a series of placements in a range of protected areas. The assistant to the senior warden acts as a foreman. He organised young people who take part in major works. On average five people per week provide such manpower.

Efforts have been and will continue to be made to attract greater voluntary participation.

In 1987, for example, there was a total of 230 volunteers, an average of 4.5 per week.

Fifty people are required each year to man the counter in the bird shop, while during the nesting season 100 local volunteers man the information service on the beach.

For the past four years, as part of a scheme to help the unemployed, the Government has provided the RSPB with eight people for two months for the upkeep of the heathland. From this year on, state support will make it possible to keep a group of eight workers on forestry work for a six-month period.

Camping, fishing, and shooting are forbidden. Shooting is also banned in most of the area surrounding the reserve.

In periods of drought visitors are asked to take the greatest precautions and are not allowed to smoke.

Rudimentary fire-fighting equipment has been placed at various strategic points in the reserve.

Light civil aircraft are not authorised to overfly the site at a height of less than 400 m.

However, military aircraft (probably used for training purposes) fly over at fairly low altitude. There is also a US airforce base not far from Minsmere.

For the sake of the peace of the reserve - particularly in the nesting period - the take-off path towards the sea should be moved. In any case, the concentration of birds in the area could create a risk of bird strikes in certain circumstances.

A proposal to route a car rally along a road adjacent to the reserve was firmly rejected. The senior warden also takes great care to prevent trail bikes from making incursions into the reserve. The very limited number of horse riders, however, creates no problems.

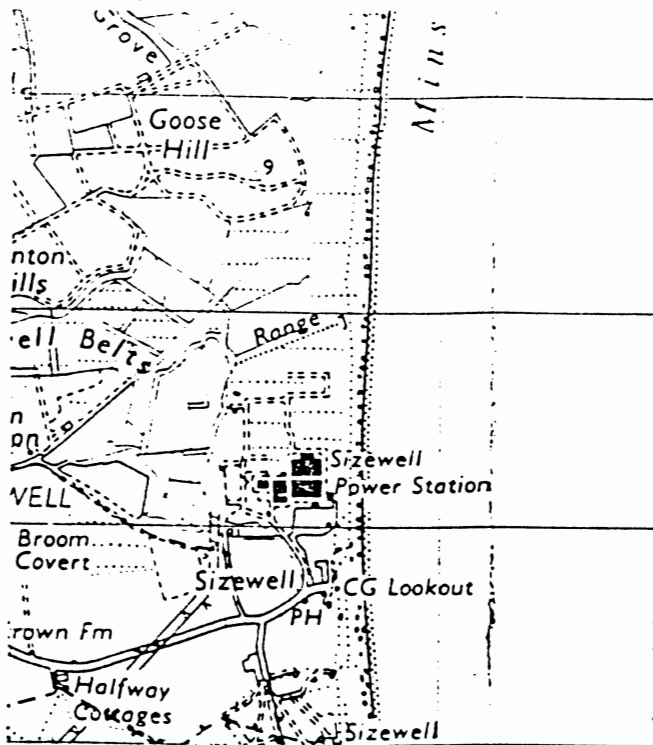
No land-based army manoeuvres take place on the coastline or adjacent areas.

There is no agricultural activity in the reserve, apart from the two areas entirely enclosed by the RSPB's land.

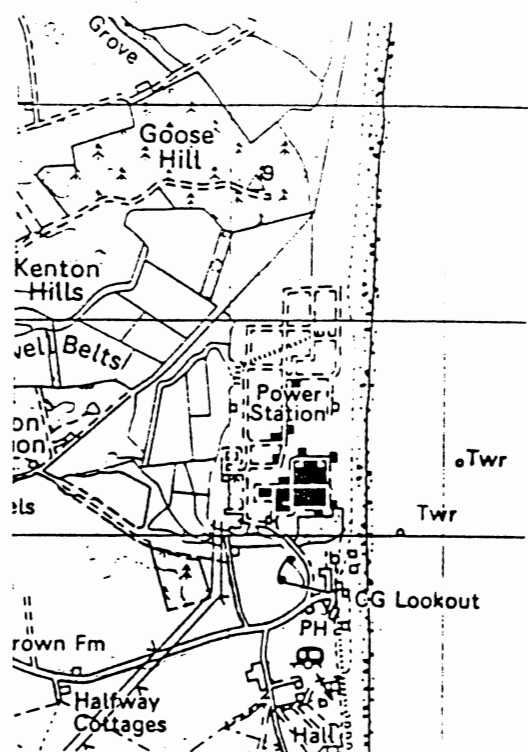
In addition, although water from the drainage channels and ditches of the neighbouring agricultural area flows into the Minsmere River to the south, there is no link with the reserve's hydrological network, so the water in the pools is not subject to physico-chemical change resulting from agricultural activities outside the protected area.

The development of mass tourism does not represent a cause for concern for the managers of the reserve, since there is none. The caravan site on Dunwich Cliffs, more than 2 km away as the crow flies, has no harmful effects as it is only occupied on a very short-term basis.

No urban or industrial development is planned. However, note should be taken of a proposed rerouting of a road to the north of Leiston to divert Sizewell traffic around the town. Stages II and III of the power station development are planned to go ahead before the year 2000.



Situation 1974



Situation 1984

This development and the planned rerouting of traffic will not affect Minsmere as the work will be carried out 2.5 km to the south of the reserve. However, consideration should be given to the possible consequences of extracting aggregate from the sea: effects on the morphology of the coastline and the seabed; changes to local currents; damage to underwater biotopes, resulting in trophic effects on fish life and, as a result, on bird life - all valuable bio-indicators of the quality of the environment.

1.5.4.b Scientific studies

- The ecology and dynamics of the following species (1):
 - Avocet (Recurvirostra avosetta): 64 pairs raised 94 young in 1987. The outcome of the improvements to the Scrape in 1986.
 - Marsh harrier (Circus aeruginosus): 2 males and 3 females raised 12 young in 1987.
 - Bittern (Botaurus stellaris): at least 5 singing males in 1987.
 - Little tern (Sterna albifrons): 36 pairs raised 62 young in 1987.
 - Nightjar (Caprimulgus europaeus): 20 breeding territories (maximum recorded in 1986; 13 territories in 1987, an unfavourable breeding year for the species).

etc.
- Systematic recording of birds (317 species observed since 1948).
- Continuing research into the management of the reserve. This includes the phragmites, woodland and heathland, and control of the level (2) and salinity of the water, which in terms of biotopes functions as a nursery area, to encourage the production of invertebrates on which water birds feed.

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- (1) To some extent these represent a challenge and give a measure of the appropriateness of the RSPB's special management method.
 - (2) Lowering the water level of a mud-bottomed lake in the autumn has made it possible to attract, and retain for a short time, migrating shore or wading birds, and even to record the appearance of migrating birds blown off course by unusual weather conditions (for example Glareola nordmanni and Tringa melanoleuca)

- The production of a list of flowering plants, mammals, reptiles and batrac. ians, rhopaloceros (diurnal) and heteroceros (nocturnal) butterflies, dragonflies (odonates), grasshoppers and crickets, and mushrooms (1).
- Hydro-biological monitoring
- Monitoring of the otter (Lutra lutra). Three individuals were introduced in 1985; at the end of 1987 there was a population of one male adult, two female adults and two juveniles.
- Monitoring of the natterjack toad (Bufo calamite) which was reintroduced in 1985.
- An examination of the effects of limiting the use of herbicides (2).

- (1) Research into spiders could produce findings of relevance to the development and management of various habitats. The reserve's spider population is probably very varied: some species show tolerance for varying degrees of humidity while others prefer a dry or wooded environment.
- (2) . 2-4-5 T: Toxic. High residual potency. If its use has not already ceased it should do so. Banned in Switzerland since 1987 and use of stocks to cease in mid-1988.
 - . Amcide Asulox - contains Asulam: Residual effects. In Switzerland it is authorised in specific cases for agricultural use.
 - . Glyphosate - constituent (31%) of Roundup: Very low toxicity. Appears to present no toxicological remanence.
 - . Roundup: Appears to present no toxicological remanence. Very low toxicity. Acts through foliar absorption.
 - . Asulam - constituent (34%) of Asulox (trade name).
 - . Dalapon: Relatively low toxicity, but irritates human eyes and skin. Previous data suggested that it had very low toxicity for fish but a recent report suggest the contrary. Highly soluble in water (570 g/litre). Continues to act in the soil for a few months.

NB: The breakdown of herbicides into inorganic compounds seems to apply to only some of their constituents. If the use of growth inhibitors continues, there must be a physico-chemical analysis of the water and sediments, to establish whether there are secondary effects on the biocenosis of the marsh pools and possibly on the bird life.

- A pilot study of the effects of putting down an undersoil plastic cover to inhibit plant growth on the artificial islands. The study would benefit all the RSPB reserves which have required to use the technique.

1.5.4.c Improvement to and maintenance of the natural environment

Work undertaken: (the increase in the number of birds and the nesting achievements confirm the success of the management methods).

- Upkeep of the heathland (1). The felling of silver birch, scots pine and Rhododendron ponticum - all of which are undesirable. Crushing and removal of old heather debris over several hectares in order to revitalise the area with more recent growths.
- In the heathland, the clearance, of ground underneath carefully chosen shrubs to provide nesting locations for Caprimulgus europaeus.
- Maintenance of woods, tracks and firebreaks; cultivation and thinning in the scots pine plantation.
- In the grassland, at the intersection of co-ordinates 47 and 67 (management unit 55), planting of broad-leaved trees, protected by long box-sleeves or plastic strips:

750 oak (Quercus robur)
 100 beech (Fagus sylvatica)
 100 hornbeam (Carpinus betulus)
 100 wild cherry (Prunus avium)
 100 rowan (Sorbus aucuparia)
 100 hawthorn (Crataegus monogina)

In another location 1500 alder (Alnus glutinosa) have been planted.

- Erection of a fence to give protection against deer and rabbits (2).

- (1) Plebejus-argus: the silver-studded blue. A rare butterfly in the United Kingdom, where Minsmere represents the most important colony in the country. The host plants are gorse (Ulex europaeus) and broom (Sarothamnus scoparius). The use of sheep to crop the heathland would result in the disappearance of this small population, as a result of trophic competition for the young heath and heather shoots.
- (2) At the same time, consideration should be given to limiting the number of these species, if this is not already happening.

- Upkeep of reed beds and ditches (1); uprooting of willow (Salix sp.) which invades the marshes.
- Maintenance of the Scrape; excavation of the east Scrape and the digging of a ditch to keep out foxes and other predators; alterations to some islands.
- Repairs to the network of roads, tracks and paths; cutting back vegetation along these routes and clearance of fallen trees.
- Predator control (Myocastor coypus (2) and Vulpes vulpes). On one of the small islands in the Scrape, a fence erected alongside shallow water should prevent foxes from preying on nesting birds.
- Replacement and renovation of buildings: a new brick toilet block with a biological purification system; a new building to accommodate volunteer wardens; installation of the bird shop after refitting of the existing hut.
- Refurbishing of the car park (capacity 140 cars and 2 coaches). Restoration of a small cliff which suitable for nesting sand martins (Riparia riparia), a successful undertaking since 366 pairs raised 1,300 young in 1987.

- (1) The question of limiting the use of herbicides continues to be considered and discussed. It is now 3 years since Dalapon and Roundup were last used on the reeds and the vegetation in the Scrape. However, the clearance operations following the storm of October 1987 have taken first priority and the clearing of sectors threatened by reeds has suffered in consequence. As a result of the work delays and of the reduced level of staffing the senior warden foresees serious problems in keeping the water clear in ditches and pools. It appears that the use of auxiliary chemicals will have to be resumed. The appropriate quantities are 100 kg of Dalapon for every 400 acres of reeds.

Toxic substance in very small quantities are, however, placed in holes drilled in the stumps of birch (Betula sp.) in the heathland, as well as in the cut down stems and trunks of Rhododendron ponticum and alder (Alnus sp.) in the woodland.

- (2) The last coypu (Myocastor coypus) was eliminated in 1986 - 1987.

Work to be undertaken

- Commercial exploitation and removal of trees blown down in the storm of October 1987, in cases where such action is though necessary for public safety or the safety of access roads. There is also the psychological effect on visitors and RSPB members when they see the chaos which the fallen trees have caused.
- Improvement to the surface of Sheepwash Lane and of two sections of the lanes to East Bridge and Westleton. The roads are currently in a bad state and require major repairs.
- The opening of an education centre/visitor centre next to the bird shop.
- Continuation of improvements to the heathland to encourage the nightjar (Caprimulgus europaeus).
- Continued management and upkeep of the Scrape and its pools.
- There will be no increase in the number of observation towers. However if the little huts fall into disrepair they will be replaced by larger 2-level observation posts.
- Planting of oaks will continue, as will that of other broad-leaved species found on the site (financed by the "Family tree scheme").
- Construction of protective fencing to keep rabbits, hares and deer out of woodland which is being regenerated and newly planted areas.

1.5.4.d Public access

A few figures will serve to illustrate public interest in the reserve:

1978: 18,000 visitors
 1985: 31,860 (total 104,000 if visitors to the beach are included)
 1986: 38,976 (111,000)
 1987: 41,403

The constant increase in numbers has encouraged the wardens to reverse completely the former practice of permitting only limited visits by ornithologists. The reserve is now open every day, except Tuesday, from 9 am to 9 pm. Although the increased number of birdwatchers creates more work for the staff, visits are now spread more evenly throughout the day, including early evening. The bird life does not appear to have suffered from the new policy; in fact, the presence of visitors at the Scrape keeps predators away from the nesting places. The increased number of visits does entail more maintenance of paths. However, the costs are covered by the increased income (1).

The only two access roads, one from East Bridge and the other from Westleton, will probably be repaired once finance is available. On the other hand there will at no time be no improvements to pedestrian access along the beach.

(1) Gross income of the reserve in 1987: £60,000

The bird shop represents the point of entry to the reserve. It acts as reception centre and can equip visitors with boots, binoculars and clothes, and provide them with ornithological literature, cassettes of birdsong and items relating to birds life. They can also become members of the RSPB here.

There are 7 woodland hides and one observation tower inside the reserve. Four hides have access for handicapped people. At the eastern end of the reserve, in the area open to the public, two hides enable walkers on the seashore to observe the bird life of the pools without disturbing the birds.

Inside the observation posts, new panels give very clear, precise information on the bird life of the marshes and pools.

Finally, part of the beach is closed during the nesting season of the little tern (Sterna albifrons). RSPB volunteers man a small information post on the edge of the dune and explain to the public the reasons for the restricted access.

Each year, many school classes visit Minsmere. The children take part in wildlife spotting competitions, learn to recognise the birds and their calls, and identify plants, mammal tracks and butterflies.

Around Minsmere, particularly in Westleton, the administration has put up five tourist road signs, the cost of which is met by the RSPB. They feature a white avocet on a brown background and signpost the reserve. The same is to be done for all areas management of the RSPB.

1.5.4.e Ownership title

This remains unaltered. Minsmere has belonged to the RSPB since 1977. The property has not increased in area and is still 607 ha. It is not threatened from any quarter.

To the south, in the old estuary which forms a valley, are the damp meadowlands of Minsmere level. These are breeding areas for the black-tailed godwit (Limosa limosa) and the ruff (Philomachus pugnax). The owner, although very co-operative with the RSPB, does not intend to sell. In the longer term, the RSPB might be interested in an area to the west of the reserve, comprising boggy patches criss-crossed with ditches.

Vault Hill, the privately owned enclave over which the Society has pre-emptive rights, and the Walkbarn Farm salient still exist, but have no adverse effects. The designation of Minsmere and the surrounding area as a Site of Special Scientific interest (SSSI) - category 1 - makes it possible for the Nature Conservancy Council (NCC) to employ compulsory purchase or other forms of acquisition, should the site be placed in danger (1).

(1) From north to south the reserves along this part of the North Sea coast, with the RSPB reserve in the centre, are as follows (see Appendix VI):

- . Walberswick National Nature Reserve (marshland)
- . Dunwich Forest - Forestry Commission
- . Dunwich Heath - National Trust (heathland)
- . Minsmere (RSPB)
- . North Warren - Nature Reserve, to the southwest of Thorpeness.

1.5.4.f Management

The reserve is managed wisely so as to ensure that existing habitats will be replaced and that a certain number of "young" biotopes are at the optimum stage of development for receiving large numbers of birds, particularly those referred to in Section 1.5.4.b.

There is no economic exploitation of the native woodland (deciduous broadleaved). Conservation of old trees is the rule, the aim being to achieve a diversified woodland ecosystem which will offer the birdlife the greatest possible number of ecological niches. The decision on the future of the trees snapped off or uprooted by the hurricane of 16 October 1987 was to be taken in the week following our visit. Most of the trees which were entirely or partly blown down will probably remain where they are, to decompose with time. Only a few sites which were particularly badly affected by the storm, where the quantity of wood makes natural regeneration difficult and the situation makes it easy to remove the timber, will be commercially exploited.

The daily and constant concern of the RSPB wardens is to manage the natural environment in the interests of the bird life. However, Minsmere offers examples of management directed at other species, such as the otter, orchids, butterflies such as Plebejus argus, and saprophyte insects.

Questions raised:

1 Do you have any contacts with The Suffolk Wildlife Trust?

Yes. The RSPB and the Trust use the same government-sponsored team of local unemployed people. The state takes responsibility for planning the work, training the workers and providing tools. Transport is provided by a small bus owned jointly by the RSPB and the Trust.

2 Are there any co-ordinated activities with the neighbouring National Trust Reserve of Dunwich Heath? Does it have any interesting bird species?

The wardens know each other well but the NT and the RSPB are quite different organisations. However, unemployed people work for both reserves. Nightjar (Caprimulgus europaeus) are also breed on the NT land resulting in contacts at staff level, but the National Trust does not provide information spontaneously.

An attempt has been made to initiate a form of co-ordination between the various organisations responsible for protected areas (RSPB, NCC, Forestry Commission, NT, Countryside Commission) and the local authorities in Suffolk. So far this has not yielded results because of the different perceptions of what protection entails (eg the natural environment, the historic heritage etc).

The RSPB's ecological division has drawn up a standard model for management plants. This applies to all the society's properties and each reserve is required to follow the prescribed method. The practice makes it easy to compare projects and decisions about the finance available to each of them.

In addition, as the reserve is a category 1, SSSI, any modification to the Minsmere management plan must be approved by the NCC.

The very detailed management plan involves 58 management units, each of which corresponds to a specific habitat which is the subject of special improvement and maintenance measures.

D. CONCLUSIONS

1. Since 1960, the RSPB has completed the improvement of the "Scrape" and its surrounding area, and has managed the water resources in a way that has benefitted the bird life and safeguarded endangered species.

After it became the owner of 607 ha. in 1977 the society committed itself to a forestry policy consistent with the site and replanted woodland. Later it extended its action to phragmites and heathlands.

Over the whole period, the RSPB has done its utmost to emphasise the importance of education and public information about birdlife and nature conservation. Moreover, it has consistently carried out research and scientific studies on which to base its decisions.

2. The RSPB Minsmere Reserve therefore meets the appraisal criteria for the European Diploma as provided for in paragraph 4 of Appendix 1 of Resolution (73) 4. The five-year extension appears to be justified.

The standards of research, supervision and conservation in the reserve are exemplary. The surrounding area benefits at all times from a land use policy which is consistent with Minsmere's status. Statistical data indicate a gratifying increase in birdlife, resulting from the quality of the management. Finally, information for visitors, together with the efforts to increase awareness of ornithology among young people, add to the conservation activities and ensure that they are rooted firmly in the population as a whole.

3. The following are a few suggestions by way of conclusion to this report:

- Seek to limit, or even abandon, the use of herbicides and to acquire a mechanical means (1) of cutting back the reeds in the channels and pools.
- Provide a specific information office for visitors again.
- Review the reserve's visitor capacity; in the long term success in terms of numbers of visitors could cause management problems in the part open to the public.

(1) Reported cost of such a machine: £ 24,000.

As an example, we would like to mention a technique used in France for limiting the use of herbicides: a line impregnated with a plant chemical is dragged by a tractor over plants which are to be controlled. The method is economical in its use of chemical products.

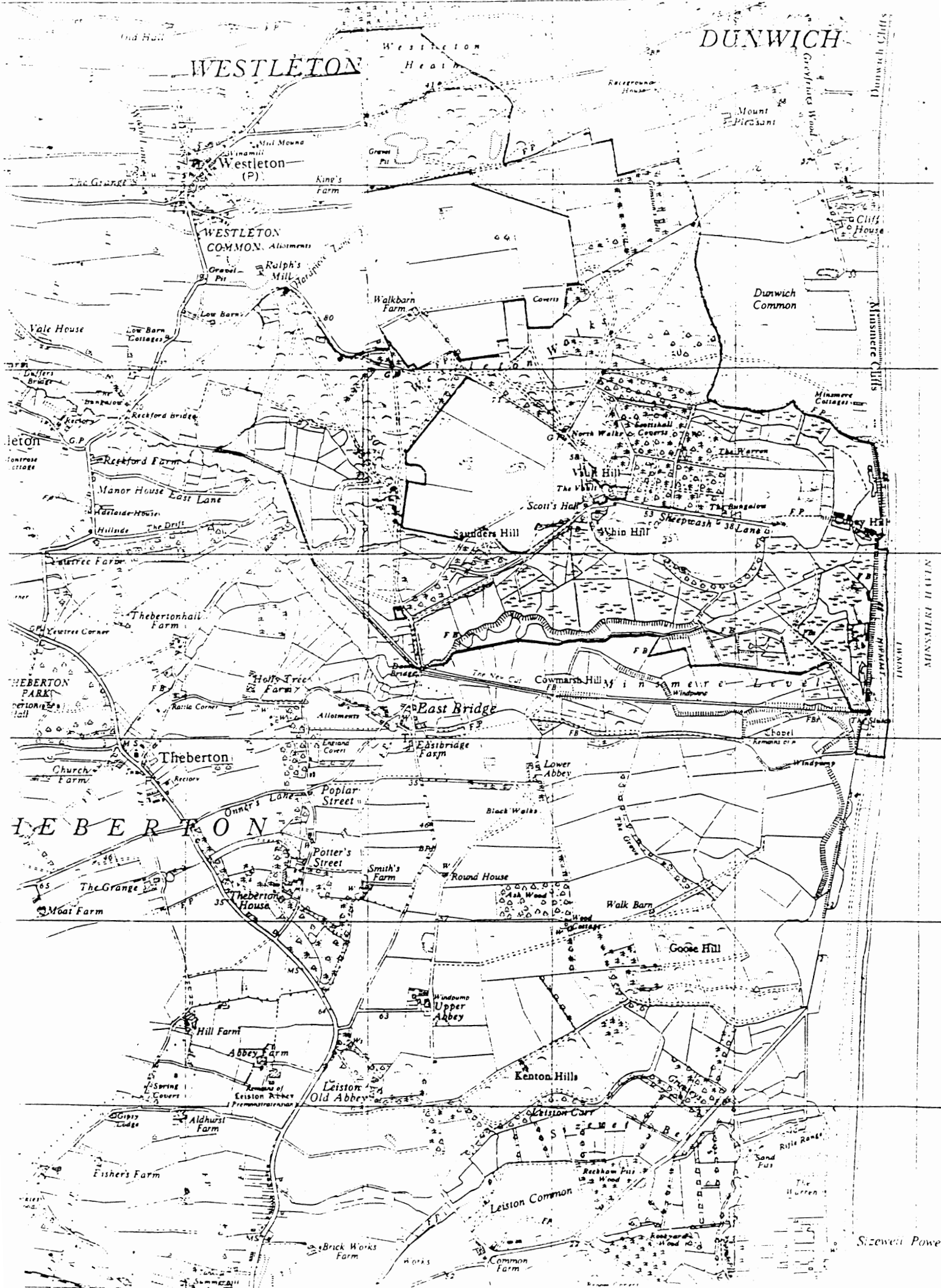
- Do not increase the number of paths or hides.
- Continue to control the spread of willows around the pools and the Scrape.
- Monitor the damage caused by red deer (Cervus elaphus) and, if necessary, limit their numbers by calling, since they could represent a problem in the future.
- Take steps to divert the flight path of Air Force training aircraft away from the pools and the reserve.

J - P Reitz

Lausanne 12 April 1988

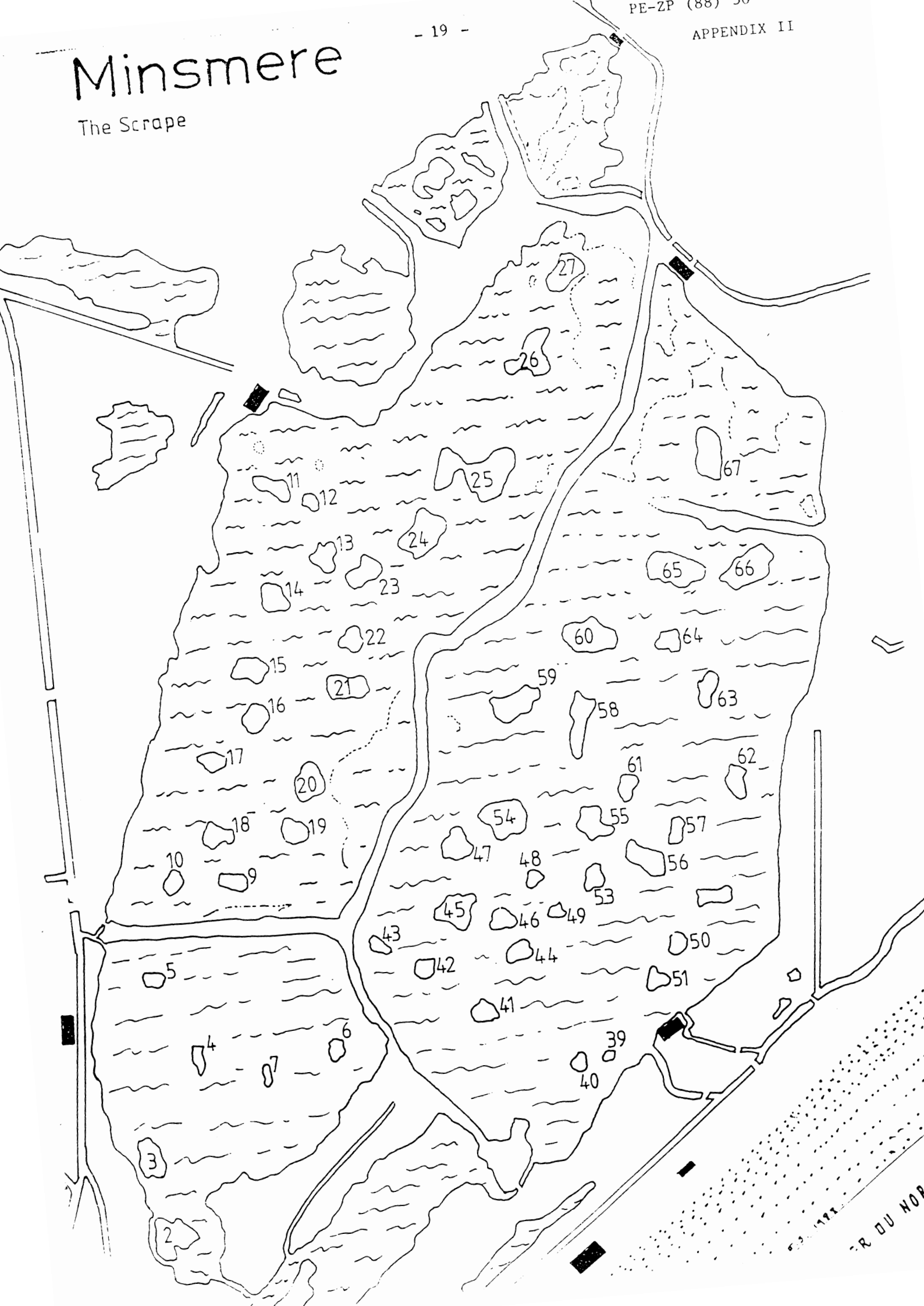
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Minsmere

The Scrape



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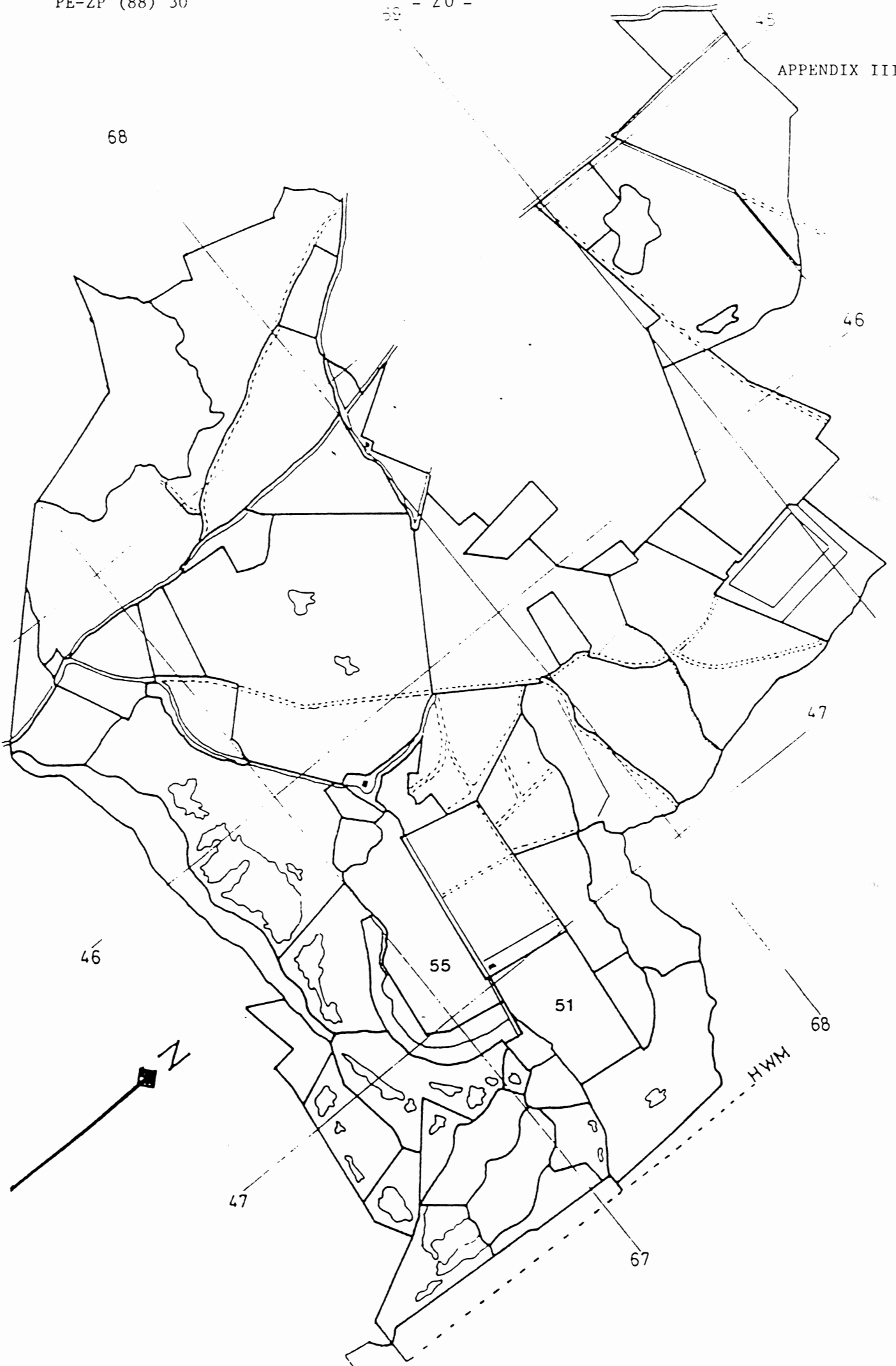
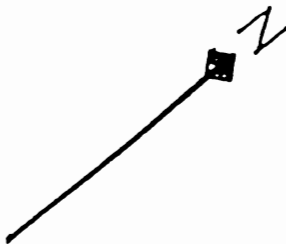
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HWM



A P P E N D I X I V

NIGHTJAR (*Caprimulgus europaeus*) At Minsmere

Brief History

Minsmere has been a bird reserve, leased since 1948, however, we only had bird watching rights on the woodland and heathland habitats under the terms of the lease. In 1977 we were able to purchase outright the land on whole of the reserve. This meant we were able to manage the habitats from 1977 onwards. During this time the nightjar *Caprimulgus europaeus* population on the reserve was slowly dropping, as was the national trend. We were sure we could reverse this trend on the reserve so I gave Rob Berry one of the wardens here the job of researching the nightjar *Caprimulgus europaeus* requirements between 1975 and 1977 (see attached paper: "Nightjar habitats and breeding in East Anglis. British Birds 72: 207-218.)

What's going on

What's happening?: natural succession is taking place. The heath wants to turn itself slowly into woodland, we wish the natural succession to slow down.

So because the silver birch (*Betula pendula*) and the Scots pine (*Pinus sylvestris*) by natural regeneration is pushing into the ling (*Calluna vulgaris*) areas we contain it. Likewise the ling (*Calluna vulgaris*) spreads and grows; we recognise for good habitat variety we need a complete age structure throughout the ling (*Calluna vulgaris*); there is a need for bare patches. So to achieve this we create bare patches, the seed taken is used in other places to try and start other heaths in the county. There are also gorse (*Ulex europaeus*) and bracken (*Pteridium aquilinum*) problems to contain. Its about containment not removal of everything, thus there will always be a volume of work because of seeds produced and root systems remaining.

The heaths in this area used to be huge and continuous, but now they are relatively small and self contained. They were self managing by fire, accident or design. Nowadays because the heaths are small and isolated fire is not a good idea; thus the development of other management systems. It is not a good idea to use fire because the wildlife has nowhere to return from after the fire (in big heaths there was always a big slice a fire missed to re-stock).

Our methods work if nightjar *Caprimulgus europaeus* populations are anything to go by. But there is always a mass of seedling silver birch (*Betula pendula*) and Scots pine (*Pinus sylvestris*) to clear every year and also bracken (*Pteridium aquilimun*) and gorse (*Ulex europaeus*) to contain.

Management

We started management on a small scale in 1978, this increased to larger scale work in the Autumn of 1982 with a work party specially working of the heathland habitats.

Our research showed the need to have a number of well spaced silver birch (*Betula pendula*) trees of 2 to 3 metres in height on the open heath, and at the side of these 0.5 to 1.0 sq metre bare areas in the ling (*Calluna vulgaris*). These being the popular nest site selected by the nightjar *Caprimulgus europaeus* here.

Also our research showed that on our Western heath the nightjar *Caprimulgus europaeus* were experiencing a high rate of predation when compared to the nightjar *Caprimulgus europaeus* on our Northern heath. This we discovered, was because both red fox (*Vulpes vulpes*) and adder (*Vipera berus*), looking for bare patches to sun themselves, were accidentally finding the nightjar *Caprimulgus europaeus*, so by putting in a lot of new bare patch "options" we found we could overcome this predation problem.

Another need highlighted was to contain the natural succession of silver birch (*Betula pendula*) and Scots pine (*Pinus sylvestris*) invading into the ling (*Calluna vulgaris*) heath. This we tackled in two ways.

To go into a thick silver birch (*Betula pendula*) plantation under which the denial of light had caused the ling (*Calluna vulgaris*) to disappear, and almost clear fell. Keeping the stumps of a few well spaced silver birch (*Betula pendula*) to coppice into 2 or 3 metre trees. These to be the 'nest site' trees later. After three years the ling (*Calluna vulgaris*) had returned and after four years the nightjar *Caprimulgus europaeus* were nesting on the site. It must be stressed that there is a requirement to return each Autumn to the site to pull out silver birch (*Betula pendula*) and Scots pine (*Pinus sylvestris*) seedlings. Also some gorse (*Ulex europaeus*) tending to come in had to be contained.

The other method is to push the silver birch (*Betula pendula*) and Scots pine (*Pinus sylvestris*) edge by felling and thus open up more open ling (*Calluna vulgaris*) areas. Again well spaced trees are coppiced to become 2 to 3 metre high trees. But important is the need for us to leave behind lines of shelter-belt; a narrow row of trees extending from the start of the cut edge back to the end of the new cut edge. These shelter belts extending out into the heath some 30 metres and arranging to have these shelter belts jutting out every 50 metres or so. As in the last method, each year there is the need to return to remove the seedling silver birch (*Betula pendula*) and Scots pine (*Pinus sylvestris*). These areas prove popular territories for the nightjar *Caprimulgus europaeus*. The shelter belts are very important feeding areas when there are cold winds or it is otherwise a poor night for moths.

Bracken (*Pteridium aquilinum*) is a plant that will grow to such an extent here that it will swamp out the ling (*Calluna vulgaris*). Thus in areas where there has been a monoculture we have sprayed out the bracken (*Pteridium aquilinum*) with asulox (asulam). This has proved a very successful method of bracken (*Pteridium aquilinum*) containment. Although at present we have no spray policy on the reserve so are not using it (but not because we have discovered any harmful effects because we have not).

Our heathland is about 200 ha. in size, however this figure includes areas of Scots pine (*Pinus sylvestris*) and silver birch (*Betula pendula*) as well as the open or more or less open areas of ling (*Calluna vulgaris*), very approximately we have about 160 ha. of open heath, next door to us there is Nature Conservancy heathland.

Populations:

1987 = 13 terr (very cold and wet summer)		
1986 = 20 terr	1985 = 18 terr	1984 = 15 terr
1983 = 14 terr	1982 = 5 terr	1981 = 7 terr
1980 = 6 terr	1979 = 7 terr	1978 = 8 terr
1977 = 8 terr	1976 = 13 terr	1975 = 10 terr
1974 = 20 terr	1973 = 20 terr	1972 = 20 terr
1971 = 20 terr	1970 = 20 territories.	

Our methods work if nightjar *Caprimulgus europaeus* populations are anything to go by. The national trend is a steady decline but our population has risen in the last 5 years. The future in the short term is a question of continued management, the longer term; who knows. Conservation will work at succeeding one way or another as long as it exists.

Jeremy Sorensen 1988.

A P P E N D I X V

Birds observed in the RSPB Minsmere reserve and surrounding area:
10-13 March 1988 (Suffolk-GB).

- Great crested grebe	- Lesser black-backed gull
- Cormorant	- Herring gull
- Bittern	* Kittiwake
* Grey heron	- Feral pigeon
- Mute swan	- Wood pigeon
- Greylag goose	- Collared dove
- Canada goose	- Green woodpecker
* Barnacle goose	- Skylark
- Shelduck	- Sand martin (roosts)
- Wigeon	* Swallow (nests in a ruined chapel)
- Gadwall	* Meadow pipit
- Teal	- Pied wagtail
- Mallard	- Wren
* Pintail	- Dunnock
- Shoveler	- Robin
- Pochard	- Blackbird
- Tufted duck	- Song thrush
* Eider	- Redwing
- Marsh harrier	- Mistle thrush
- Sparrowhawk	- Long-tailed tit
* Buzzard	- Marsh tit
- Pheasant	- Blue tit
- Moor hen	- Great tit
- Coot	- Nuthatch
- Oystercatcher	- Jay
- Avocet	- Magpie
- Pinger plover	- Jackdaw
- Lapwing	- Rook
* Dunlin	- Starling
- Ruff	- House sparrow
- Snipe	- Chaffinch
- Woodcock	- Greenfinch
- Curlew	* Snow bunting
* Spotted red shank	- Yellowhammer
- Red shank	- Reed bunting
- Black-headed gull	

Other observations

- European mole (molehills)
- Small mammals (tracks, holes)
- Wild rabbit
- Squirrel (gnawed pine cones)
- Fox (tracks, scent marks)
- ** Otter (spraints, slides)
- * Red deer (tracks, rubbed and chewed bark in the reserve; one herd seen in the fields)
- Common toad

- * Species observed outside the boundaries of Minsmere reserve within a radius of 10 kilometres

- ** Reintroduced species