



## Habitat Protection and Management: Conservation of Lowland Heaths

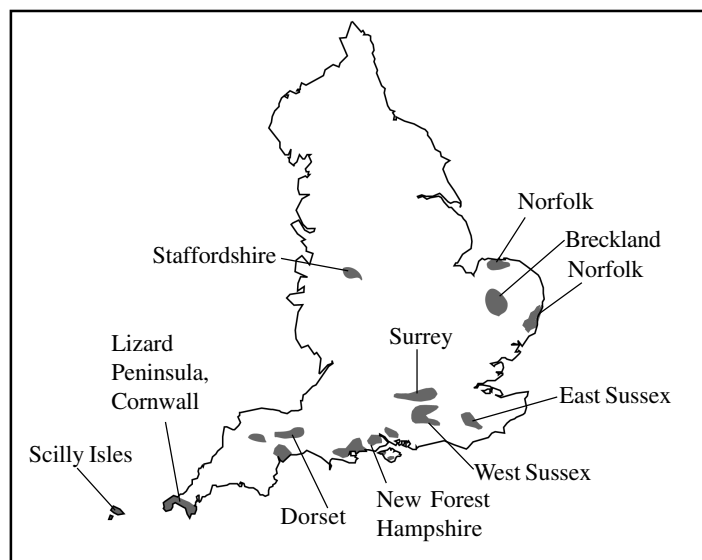
### What is heathland?

Heaths are open landscapes characterised by the presence of dwarf shrubs such as heather or ling at a cover of at least 25%. They are associated with sandy (therefore free-draining), acidic and nutrient-poor soils and peats. Because the soils are free-draining they do not retain water and are often subject to summer droughts. Fire is a constant hazard as the vegetation is resinous and inflammable. They are man-made habitats (plagioclimax), sub-seral communities that must be maintained by **intervention management** to arrest secondary succession. Heaths below 250m are described as lowland while those above are upland; they are further divided into wet or dry heaths. This Factsheet focuses on conservation issues surrounding dry lowland heaths.

### Distribution

The greatest concentration of lowland heaths is in southern England, south of a line from the Thames estuary to Bristol (Fig 1). This was a periglacial landscape during the last ice age, where meltwater streams and receding ice sheets deposited large quantities of sands and gravels, upon which lowland heaths evolved.

Fig 1. Distribution of lowland heaths in England



### Key species :

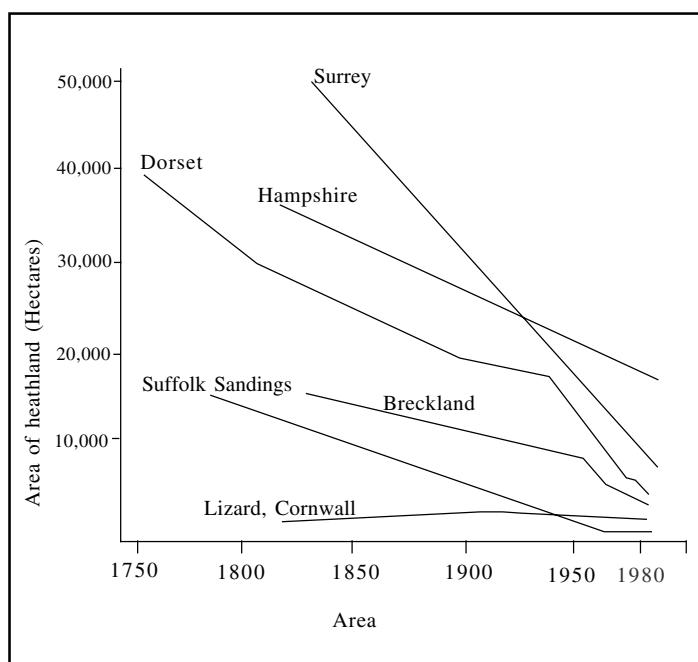
- ❖ plants – bell heather, bilberry, crowberry, gorse, heather and wavy hair grass
- ❖ birds – dartford warbler, hobby, nightjar, stone curlew and woodlark (all are in the RSPBs Red Data Book)
- ❖ reptiles – adder, natterjack toad, sand lizard, slowworm and smooth snake
- ❖ invertebrates – bog raft spider, bush cricket, forester moth, green hairstreak, golden ringed dragonfly and pearl-bordered fritillary

The word heath derives from Anglo-Saxon times and refers to vegetation composed of heathers, gorse and broom. Rackham (1986) claimed that heaths derived from human activities and require management to stop them naturally changing back into woodland. It is thought that they developed via the grazing of woodland, thereby preventing regeneration of trees. In medieval times, heaths were a valued resource and protected as common grazing land for sheep, cattle and rabbits. Bracken was harvested for animal bedding, roofing and fuel. In the 18<sup>th</sup> and 19<sup>th</sup> centuries it was burnt to produce potash for glass, soap and detergent. Fuel and building materials were also collected by peat cutting and tree felling. The management of heaths for so long in different ways created the mosaic of habitats and stages of succession seen today.

### Current status

One fifth of the world's total area of lowland heath occurs in the British Isles. Since 1940, over half of Britain's lowland heaths have been lost (Fig 2) and much that remains has been reduced to small fragments. Lowland heath is a priority for nature conservation because it is a rare and threatened habitat. It been afforded priority status in the UK's **Biodiversity Action Plan (BAP)**. The international importance of British lowland heaths is recognised in European legislation such as the Berne Convention and the EU's Habitat Directive.

Fig 2. The loss of lowland heathlands in England



### Threats to lowland heaths

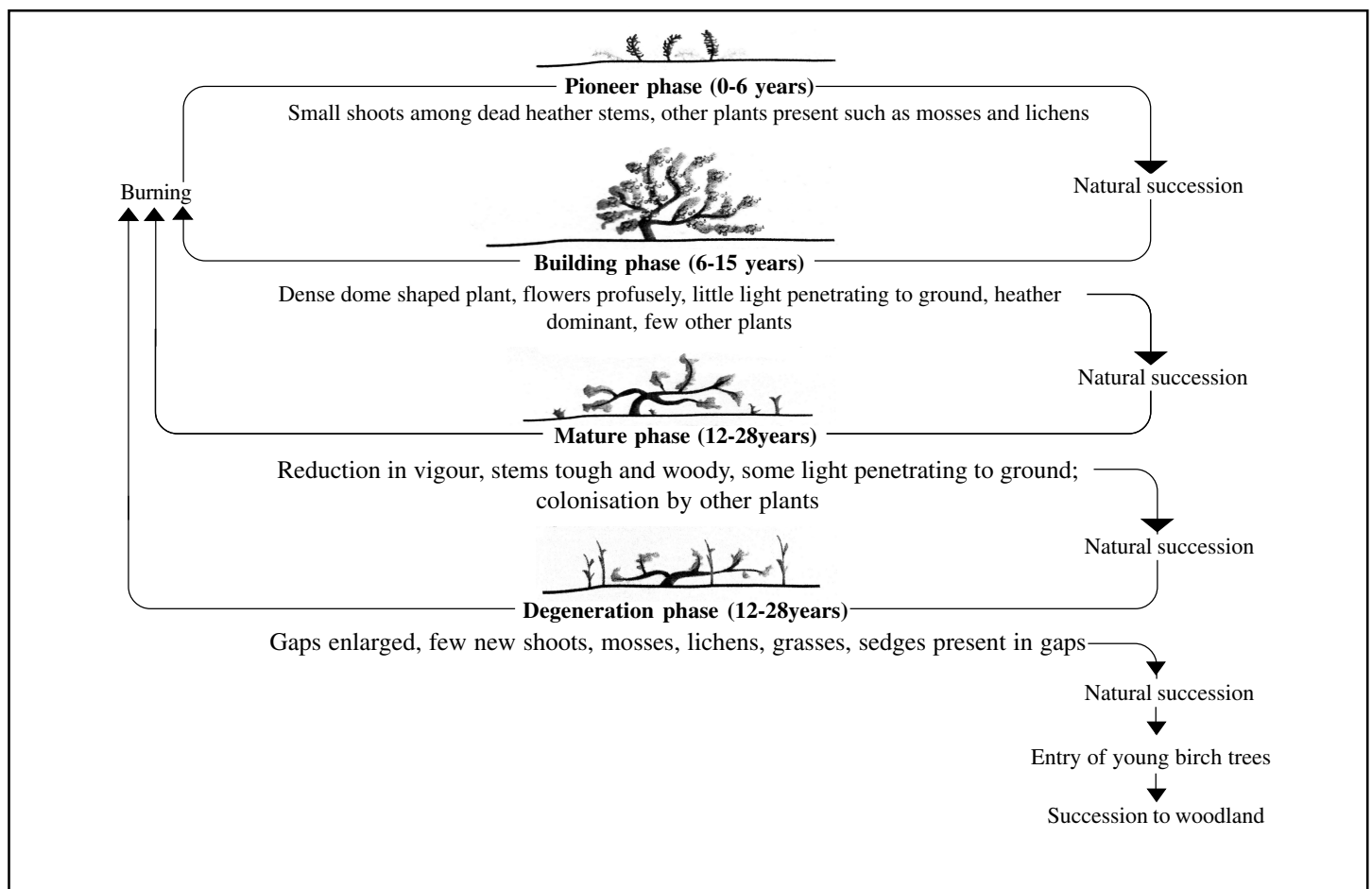
1. Lack of management (traditional practices) - pine, silver birch and bracken shade out underlying heath vegetation = secondary succession to acid deciduous woodland
2. Agricultural 'improvement' leads to overgrazing and deflection to grassland
3. Some heaths are common land – difficult to conserve
4. Fragmentation due to road building, mineral extraction and house building = islandisation of heaths and reduced breeding opportunities for key species
5. Recreational pressures e.g. off-road vehicles causing habitat damage
6. Fly tipping
7. Malicious burning
8. Acid precipitation lowering the pH of the podsol soils underlying heaths
9. General lack of public awareness of the importance of heaths

### Management and reclamation

Heaths are a seral stage in plant succession towards acid deciduous woodland. The aim of managing is to prevent areas from passing too far along succession and becoming dominated by trees. A mosaic of habitats is necessary because different animal species have different requirements. The Dartford warbler prefers gorse bushes approximately 1.5 metres in height; many reptiles require areas of bare ground.

At the **RSPB's Arne reserve in Dorset** a five-year programme of rhododendron clearance (an acid-loving garden escapee) has just ended. Burning occurs in early spring before birds start to nest and reptiles become active above ground. The 500 hectare reserve has 120 hectares of gorse which must be reduced and fragmented; Dartford warblers do not use solid areas of gorse, they need open rides with more edge, and are at capacity of 37 – 38 breeding pairs. Nightjars are also at capacity of 26 – 27 pairs. Bracken – a vigorous invasive weed – must sometimes be controlled using foliar spray. Ponds must be cleaned and dredged in a five-year sequence to improve them for plants and invertebrates, especially dragonflies. Areas grazed heavily by sheep can easily be kept at an early seral stage (Fig 3).

**Fig 3. The heather cycle**



To this end the RSPB has bought adjacent Arne Farm to provide the grazing animals so important in the management of heaths. Education programmes inform the public why heaths are so ecologically important and how they can only be maintained by human intervention.

**Case study : RSPB's UK headquarters, The Lodge, Sandy, Bedfordshire**

The reserve's existing heath and acid grassland amounted to 11 hectares in 2003 when Sandy Warren was bought to expand this to 100 hectares (1km<sup>2</sup>). Its location between the Suffolk Sandlings, the Surrey heaths and the Brecks, its free-draining, sandy soils and its historical low-intensity land-use made it favourable for reclamation. It was mostly conifer plantation, a mixture of Scots pine, Douglas fir and sitka spruce, first planted between 1835 and 1861.

As part of an **Environmental Impact Assessment** local people and the Forestry Commission were consulted before any plantations were removed – people liked seeing trees on the hills and were concerned about loss of privacy. Artist's impressions showed what the area would look like after felling and that important landscape features would be maintained – the plans were passed.

5,000 tonnes of timber was felled in the 2005-2006 winter, revealing 40 hectares of open ground, interspersed with fringes and blocks of trees.

No heather plants had been seen on Sandy Warren since the 1950s and few seeds would have survived under the 150 - year accumulation of pine litter. 7,000 tonnes of acid mulch was scooped into low banks (later incorporated into the soil of nearby fields) to expose the underlying sand.

Volunteers collected 80 kg of heather pods, which gave 4 kg of dried and treated pure seed (40 million seeds), enough to sow 20 ha of land. Money from English Nature's\* Aggregates Levy Sustainability Fund (a tax on sand and gravel extraction) allowed a further 43 ha to be purchased in 2005.

Other areas, having been fertilised, will take longer. Adding sulphur and pine mulch to lower the pH of the soil and intensive grazing by Manx Loghtan sheep to reduce fertility will encourage deflected succession towards lowland heath.

Imagine the final outcome, a square kilometre of sun-warmed heather and gorse, interspersed with old oaks and Scots pine. Stonechats 'clinking' from the tops of yellow gorse. A quiet summer's evening interrupted by the resonant buzz of nightjars, a chorus of natterjack toads from a nearby pond, and the song of a nightingale among the broadleaved thickets.

\*Now subsumed into Natural England with the Countryside Agency and the Rural Development Service.

**Conclusion**

So important are lowland heaths that they have been made a priority for conservation under the UK Government's BAP. The existing 58,000 ha are to be "appropriately maintained, improved and monitored, whilst a further 6,000 ha are to be re-established by 2010". Furthermore, several old colliery spoil heaps have developed heathland habitat and these are to be investigated.

Heaths can be protected under the Wildlife and Countryside Act 1981 and many have been notified as SSSIs. Landowners can also enter into agreements with Natural England to manage heaths as SINC or SBIs. Other designations that protect heaths include NNRs, ESAs, SACs along with Countryside Stewardship and Environmental Stewardship. Conservation groups such as the RSPB are also important.

Habitat conservation for wildlife involves much more than just **preservation** i.e. purchasing some land or habitat and fencing it off. It is almost always **proactive** and usually involves **arresting or deflecting succession** i.e. sand dunes, lowland heaths and chalk downlands.

**Fieldwork**

With appropriate access permission from the landowner lowland heaths are excellent fieldwork environments. A wide range of primary data collection techniques can be practised: soil sampling; water sampling via physical, chemical and biological criteria; EIAs; population estimates (Lincoln Index and Simpson's Diversity Index); vegetation sampling for zonation and succession; habitat conservation; visitor management and zoning.

To learn more about heathlands and how to carry out practical fieldwork on them visit [www.countrysideinfo.co.uk](http://www.countrysideinfo.co.uk)

Most of the best known and most accessible heaths have excellent web sites : Arne in Dorset, Breckland in Suffolk, New Forest in Hampshire, Studland in Dorset, Thursley Common in Surrey and Weeting Heath in Suffolk.

See also: <http://www.ukbap.org.uk/>

**Practice Questions**

- Describe an example of arrested succession in the Factsheet.
- Describe an example of deflected succession in the Factsheet.
- Why does secondary succession proceed faster than primary succession?

**Answers**

- Burning of bracken/degenerate heather, cutting out of silver birch/gorse.
- Sheep grazing/addition of sulphur to soils.
- Presence of soil, seed bank in soil, suitable microclimate.

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