

1. Introduction

This handbook is aimed at helping site managers to ensure the areas they look after are favourable for lizards and snakes. Managing sites to benefit reptiles is normally straightforward and uncontroversial. Practical management advice for most species has, however, been lacking up to now.

Reptiles suffered extensive declines in Britain during the twentieth century. There are several reasons for this but major factors were the destruction, degradation and fragmentation of habitats by humans, a fate shared by most British wildlife. Landscapes that once provided habitat for reptiles have changed radically in recent decades and, as a result, some species have been lost from whole counties. One species, the sand lizard, also had the dubious distinction of becoming extinct in an entire country (Wales) within the United Kingdom, the only part of its European range where this has happened.

Reptiles have relatively limited dispersal abilities, which make them particularly susceptible to the effects of habitat fragmentation. In general, they cannot cross large expanses of unsuitable terrain to move from one patch of habitat to another favourable, but distant, site. Prior to landscape modification by humans, habitats would change in suitability over time, and reptile populations themselves could shift and fluctuate considerably in both space and over time. Such dynamics are rarely possible in the modern British landscape. Many sites are now isolated so that reptile populations cannot function in this more 'natural' way, but rather must be managed *in situ*.

Reptiles have no means of sitting out long-term adverse conditions (as do plants, in a seed bank, for example), or of rapidly moving long distances to avoid poor conditions. Reptiles are therefore particularly vulnerable to declining habitat quality and inappropriate habitat management.

With some variation between species, reptiles prefer mid-successional habitats. They require both open areas, for warmth, and more vegetated areas, for shelter. Such conditions are met relatively easily, though some management objectives favour either extreme of the successional gradient.

Areas protected for their wildlife interest invariably require some kind of habitat management to retain their special value. Care is needed to ensure that this assists reptile interests on these sites and in the

wider environment. Whilst most nature conservation management is positive for reptiles this is not always the case.

The recommendations given in this handbook reflect observations from the collective experience of many reptile ecologists and site managers. They also draw on a modest, but growing, literature on habitat preferences and management. Undoubtedly, reptile habitat management recommendations will become more refined in future, as more thorough studies are carried out.

Fortunately, with some understanding of reptile ecology, the habitat requirements of these animals are relatively easy to meet. Reptiles require warm, relatively open habitats, which are also favoured by a range of other species, especially invertebrates. In fact, the habitat management requirements of invertebrates and reptiles are very similar, to the extent that adopting recommendations given in Kirby's (2001) excellent *Habitat Management for Invertebrates* would be greatly beneficial to reptiles. A common approach, important to both groups, is attention to the fine structure of habitat. Habitat suitable for invertebrates and reptiles contains a high degree of structural diversity, providing a wide range of microhabitats within a site. Hence, managing habitat to achieve such diversity greatly increases its ecological value.

Although aimed specifically at habitat managers, and primarily for nature conservation purposes, the guidance here may also prove useful for those advising on improving habitats for mitigation purposes. Consultants will hopefully use the guidance to improve areas retained, enhanced or created. The handbook should not, however, be used as a technical guide to standards for other aspects of mitigation, such as legislation, surveys or the amount of habitat to be retained.