ENGLISH NATURE

Herptile sites

Volume 2: National common reptile survey

Final report

No. 39 - English Nature Research Reports

working today
for nature tomorrow

No. 39
HERPTILE SITES

Volume 2:
National Common Reptile Survey
Final Report

MJS Swan and RS Oldham

De Montfort University
under contract to
English Nature

Contract Number F72-15-04, Year 3

1993

English Nature Research Report No. 39

Further Copies of this report can be obtained from
Publicity and Marketing Branch, English Nature
Northminster House, Peterborough. PE1 1UA

ISSN 0967-876X
Copyright English Nature 1993

ABSTRACT

This report documents the development and preliminary results of the national common reptile survey coordinated from De Montfort University on behalf of English Nature between 1989 and 1992.

Initially, the survey was publicised through the amphibian recorder mailing list, the British Herpetological Society, and various wildlife and hobby magazines. Additional records and recorder contacts were provided by the Biological Records Centre at Monks Wood, in collaboration with whom the format of survey data was devised.

Records were obtained from virtually every county in mainland Britain, and some offshore islands. The median numbers of recorders responding and records received per county were eight and 28, respectively, and the median number of records supplied per recorder was two. Most reported sightings of reptiles occurred between May and August, and the month of peak sighting of each species varied. The median number of animals seen during individual sightings was one.

A total of 4,918 records of reptile sightings was received by the national survey. These comprised 1,571 records of the common lizard, 1,022 of the slow worm, 1,147 of the grass snake and 1,160 of the adder. Reptiles were recorded in 977 10 km squares, with aggregations of records occurring notably in coastal and heathland (upland and lowland) areas. Common lizards were widespread and were found in 65% of surveyed squares; slow worms were also widespread but were found in fewer recorded 10 km squares overall (46%); grass snakes were absent from Scotland but were found more frequently in lowland agricultural areas than the other species. This species was also reported in 46% of recorded 10 km squares. Adders had a wide distribution (found in 44% of squares) but were found infrequently in lowland areas.

Habitat information was provided in 4,065 records. Common lizards were recorded most often on heathland or moorland, but also relatively frequently on sand dunes. Slow worms were found most often in grassland, but also in significant numbers in gardens. Grass snake sightings were most frequently associated with wetland, grassland and woodland habitats. Adder records were mainly associated with woodland and heath or moorland.

CONTENTS Page

INTRODUCTION

Background

In response to increasing concern for Britain's common reptiles and their habitats, English Nature contracted De Montfort University to initiate a national survey of the four widespread species, *Lacerta vivipara*, *Anguis fragilis*, *Natrix natrix* and *Vipera berus*.

Habitats where reptiles were formally abundant have been recorded as declining for at last the last 200 years, (Webb and Haskins 1980). Lowland heath in particular has been reduced in extent. For example, Dorset heathland diminished at the rate of two percent per annum between 1960 and 1978 (Webb and Haskins 1980). Within the last two decades, heathland destruction and fragmentation have been caused principally by building development, afforestation and agricultural land reclamation (Prestt, Cooke and Corbett 1974; Ginn 1983). The situation has been exacerbated by poor management leading to encroachment by bracken, scrub and pine (Prestt et al 1974). Mature heaths have also been degraded by inappropriate burning, excessive trampling and droughts (Ginn 1983). In the north west of England, sand dune areas, also recognised as important reptile habitats, have been lost to building developments and erosion and additionally suffered vegetation degradation through innappropriate grazing management (Jackson 1979).

Reptiles and their habitats have been well studied in a few parts of Britain, but the distributions and status of the common species in the country as a whole remain largely unknown. The aims of this project were therefore to raise public awareness of reptiles, and to document as many sites as possible in order to map the species current distributions and to identify the habitats associated with each one.

Objectives

The specific objectives were:-

1) To review the data at the Biological Records Centre (BRC) at Monks Wood in order to assess current knowledge of the species in Britain.

2) To expand the herpetological recorder network to include reptile surveyors (see Volume 1, Chapter 1).

3) To collect data in order to investigate reptile distributions and habitat associations.

Approach

A three year strategy was followed in order to achieve the three objectives outlined above:

Year 1, 1989 to 1990

1) Potential recorders were informed of the survey.
2) Herpetofauna recorders not previously involved with NCC surveys were identified and contacted.
3) Pre-existing post-1970 records from BRC were collated.
4) The recording phase of the survey was launched at the Herpetofauna Recorders' Meeting in February 1990.

Year 2, 1990 to 1991

1) A recording strategy for the common reptile species was developed and "survey packs" issued to potential recorders.
2) Recording forms were distributed with the British Herpetological Society Bulletin during the spring of 1990, and the survey publicised in appropriate journals.
3) Detailed habitat recording forms were devised and circulated for comment.
4) A reptile site database was developed.

Year 3, 1991 to 1992

1) Detailed habitat survey forms (as well as the basic survey packs) were issued on request.
2) Incoming reptile site information was computerised and a site dossier compiled (Appendix 1).

CHAPTER 1

THE RECORDER NETWORK AND NATIONAL SURVEY COVERAGE

1.1 Publicity

During the first year of the contract, publicity notes (Appendix 2) were sent to amphibian recorders from the two previous surveys (Oldham and Nicholson 1986, Swan and Oldham 1989) and other individuals and organisations on the mailing list. Potential recorders were thus informed of the reptile initiative and also asked to inform the survey if they were aware of reptile localities, or had previously recorded them. Of the 175 individuals responding to this initial invitation, 81% reported that they had recorded or observed reptiles since 1970.

In the spring of 1990, reptile survey recording forms were inserted into the spring edition of the British Herpetological Society (BHS) Bulletin which is a circulated to over 800 addresses in Britain. Publicity notes also appeared in BBC Wildlife and other natural history, countryside and hobby magazines during the same year.

The data collection phase of the survey was launched at the 1990 Herpetofauna Recorders' Meeting (Appendix 3). Recorders new to the Leicester survey were also contacted through the Biological Records Centre (BRC).

1.2 Collaboration with BRC

At the beginning of the survey, in order to assess the current level of reptile recording in Britain, to become familiar with known distribution patterns of the species and to identify areas of data shortfall, post-1970 records were extracted from BRC, Monks Wood. These were computerised, analyzed and presented in the first interim report of the Herptile Sites Project (Swan and Oldham 1990). Overall, 1,066 (22%) of the

national survey data were collated from the Monks Wood record cards, and 28 "new" recorder names added to the mailing list.

During 1993, BRC aim to produce the new herpetological atlas of Britain, to which all of the national survey records will contribute. In order to facilitate data exchange, the national survey reptile records were collected in a format compatible with the BRC database.

1.3 Survey methodology

Common reptile "survey packs" were sent to potential recorders. These comprised an introductory letter, a "simple" recording form and the BHS booklet entitled "Save our Reptiles" (Appendix 4). Information requested for each sighting included species and number seen, date and location, and land-use at the place of sighting. The nature of the record (adult, juvenile, slough etc) and type of observation (incidental, memory etc) were also requested. The BRC booklet provided straightforward survey methods and also contained useful information on the ecology and life history of the species.

The habitat forms, only issued on request, were intended to provide detailed information on substrate and vegetation structure associated with reptile sightings. The landscape and habitats pertaining to each sighting were to be described in the two sections of the form (Appendix 5). Gross habitat characteristics were described in Part A; the habitat classifications were based upon the NCC/RSNC Phase 1 habitat mapping scheme (NCC unpublished). This section needed to be filled in only once in relation to several sightings within the same area. Part B on the other hand was to be completed for every sighting to describe the behaviour of each animal and weather conditions during the observation. Details of immediate (within 2.5 metres of the animal) vegetation and substrate structure were also requested. Vegetation data were collected in a format which involved an assessment of the

amount and distribution of vegetation cover at different heights above ground level, but which did not include any identification of plant species.

1.4 Recorder response

Overall, approximately 1,300 reptile survey packs were issued, resulting in the accumulation of 3,852 records of individual animal sightings. Including the BRC records, the total number received was 4,918, provided by 394 surveyors.

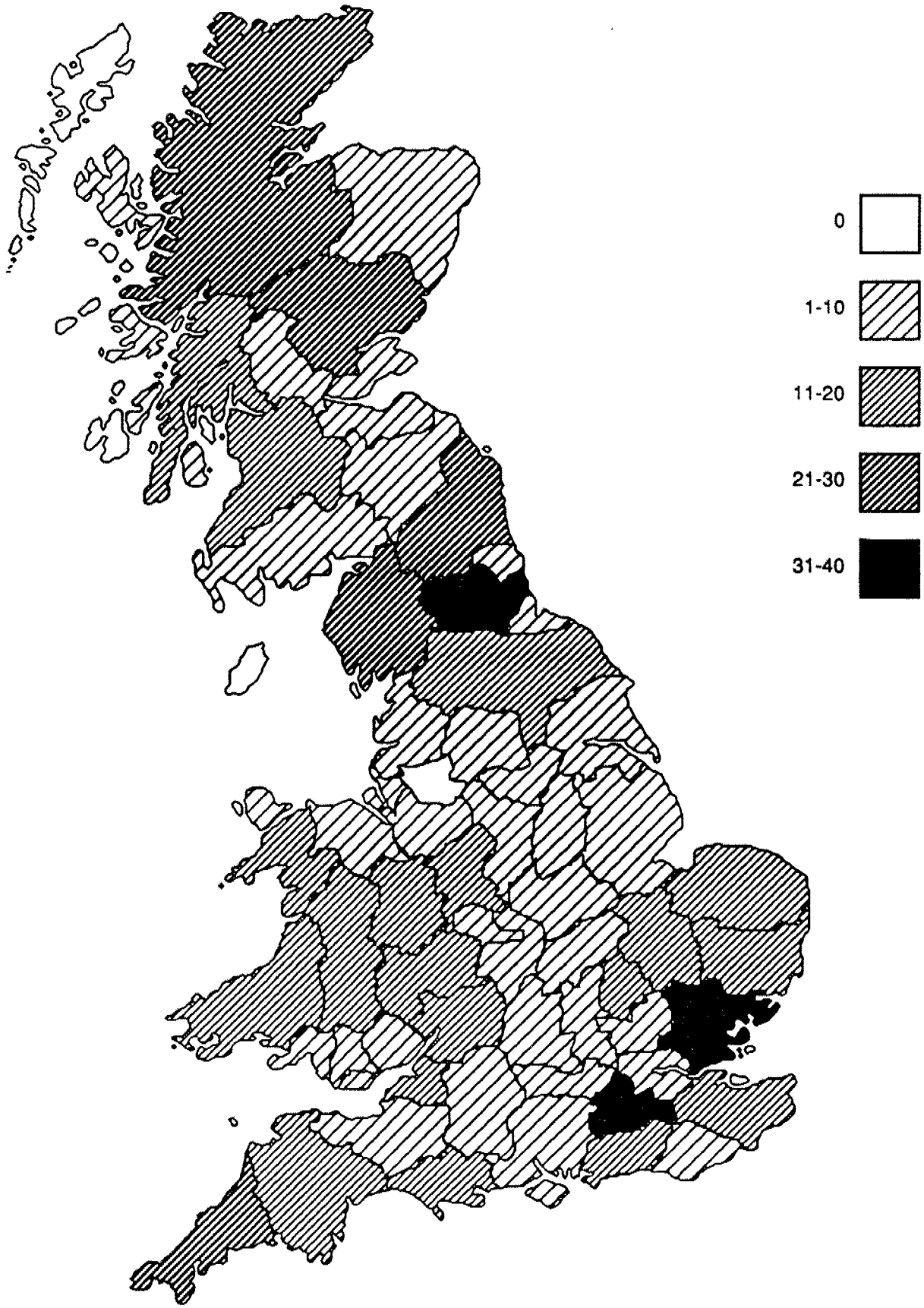
From the 3,298 records for which the information was available, most (72%) represented recent, incidental observations. Eighteen percent, however, had been the result of thorough systematic searching.

To date, only 14 detailed habitat descriptions have been received (too few for analysis), suggesting that the forms were too complex for a volunteer-based survey; those completed were filled in by nature reserve personnel and Forestry Commission rangers.

1.5 National coverage

Records were received from almost every county in Britain, including some offshore islands - the Isle of Wight, Anglesey, Arran, Jura, Mull and Skye (Fig 1.1). No records were forthcoming from Greater Manchester. The county from which the maximum number of people responded was Durham, fielding 38 recorders; Surrey and Essex also supplied records from over 30 sources. Only one recorder supplied information on Lothian region, and six other counties produced only two productive individuals. The most productive parts of Britain were the north and west of Scotland, northern England, mid and west Wales, East Anglia, the south west peninsula and parts of south east England. The median number of recorders per county was eight and the mean, six.. Some of these individuals,

Fig 1.1
Number of recorders contributing to the common reptile survey between 1989 and 1992, by county.



however, collated information on behalf of organisations and the results may represent the efforts of several recorders.

The distribution of recorders was largely reflected in the national pattern of records received (Fig 1.2). The county maximum was 430, sent by Surrey mostly via the Surrey Amphibian and Reptile Group. Over 200 records were sent from Norfolk, East and West Sussex and Gloucestershire, and 14 other counties supplied over 100 records each. Fewer than 10 were forthcoming from 10 counties. The median number of records per county was 28 and the mean, 79. Lowest returns were from Lothian Region (one record), Tyne and Wear and Central Region (two records each).

A slightly different pattern emerged when individual recorder productivity between counties was compared (Fig 1.3). The median value nationally was two records per recorder, and the mean, 12. The maximum number sent from any single source was 479, received from the Sussex county recorder.

1.6 Nature of records

On the recording forms, surveyors were given six options to describe the nature of their reptile observation - adult, juvenile, hatchling, slough, dead animal or eggs (applicable only to grass snakes). The nature of the observation was indicated in 3,465 (70%) of the data. Most (87%) of the records received were of sightings of live adult animals, but a significant number (8%) related to juveniles. Dead animals were reported in only 3% of records and the other three categories amounted to just 2% between them (Table 1.1). A higher proportion of common lizards was recorded as juvenile (11%) than the other species (approximately 6% each), and sloughs were reported more frequently for grass snakes and adders than the others.

Fig 1.2
Total number of post 1970 reptile records received between 1989 and 1992, by county.

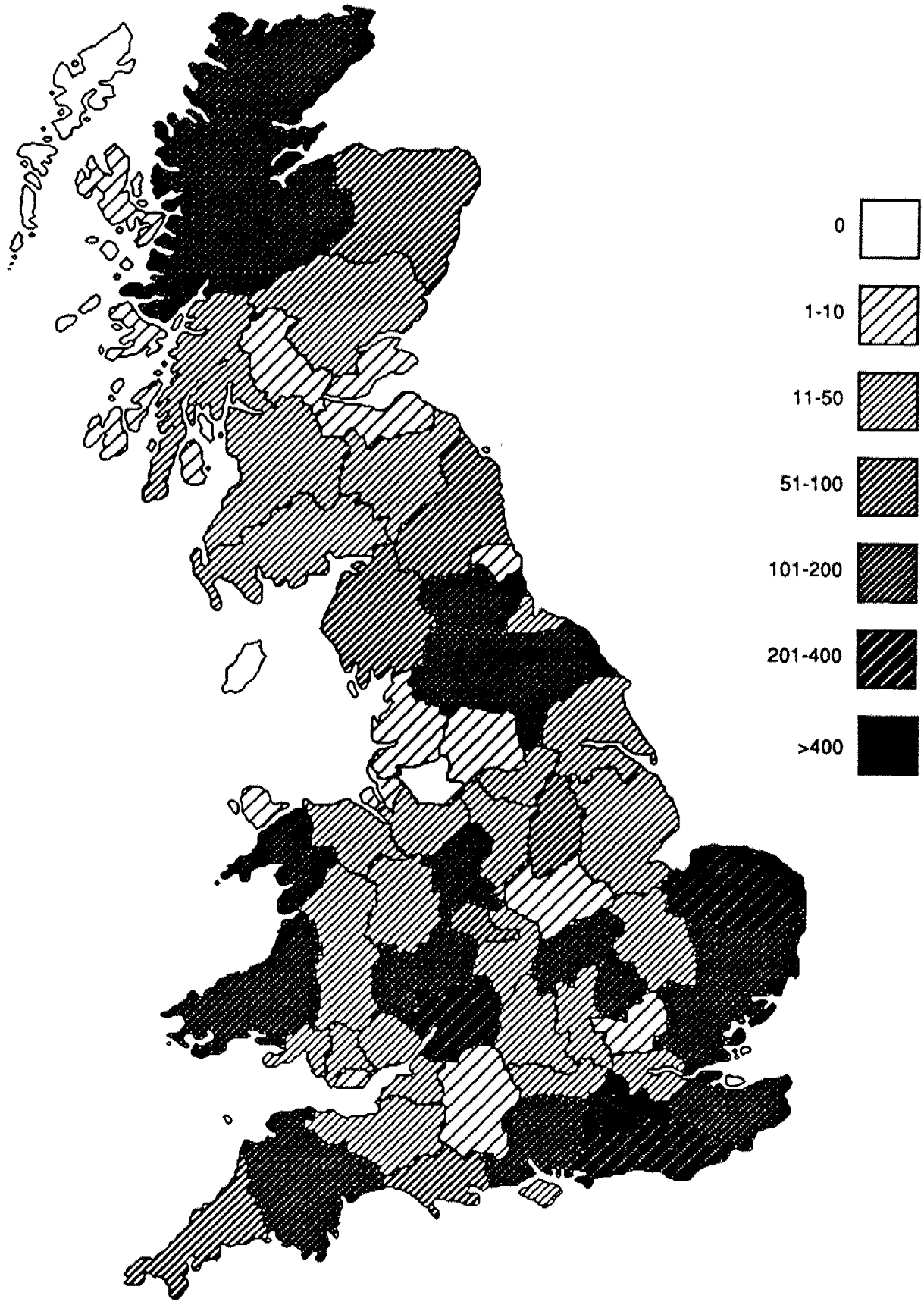


Fig 1.3
Number of common reptile records submitted per recorder, by county.

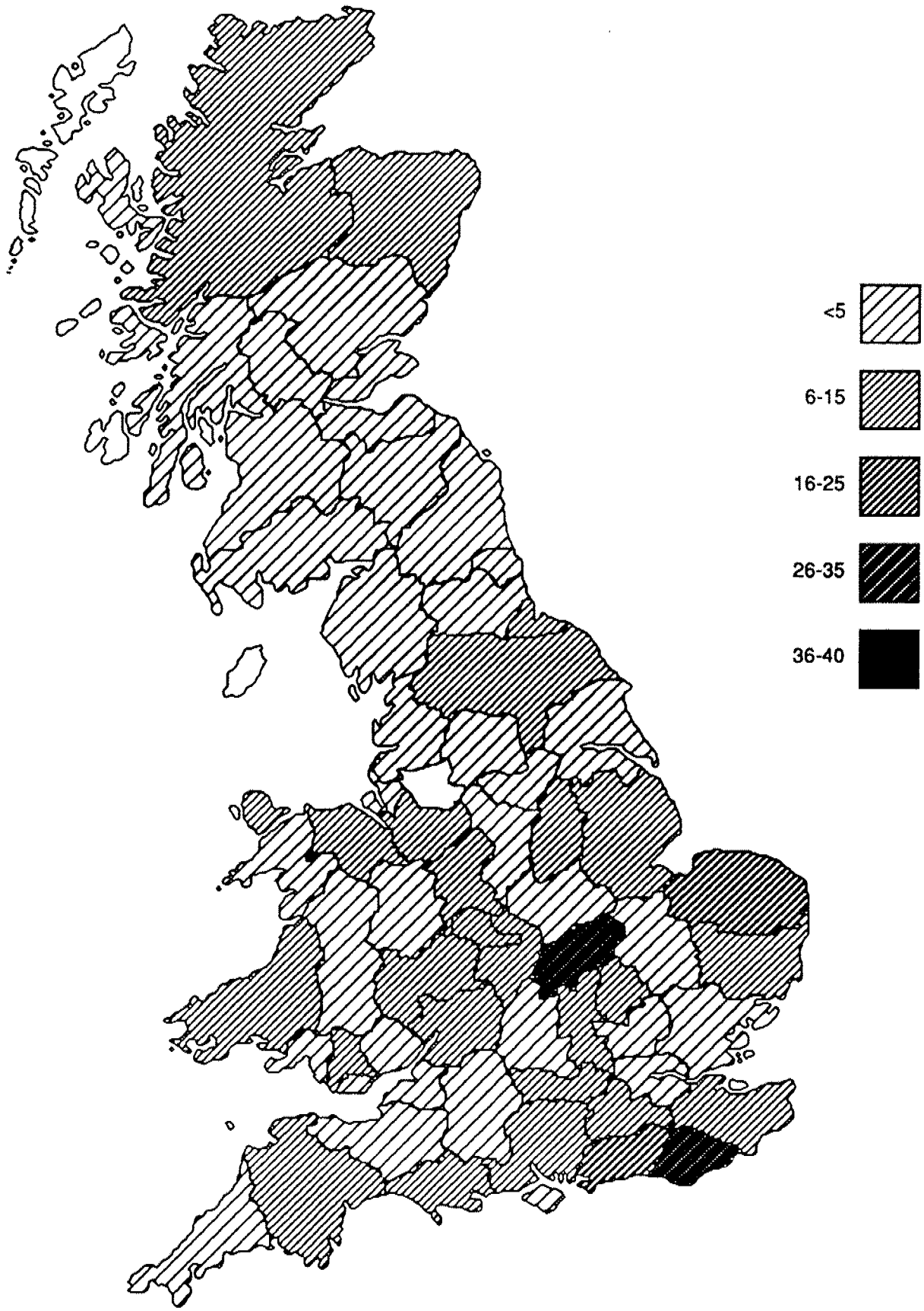


Table 1.1

The nature of 3,465 reptile records received by the national survey between 1989 and 1992.

	PERCENTAGE OF RECORDS					
	Species					
nature of record	common lizard	slow worm	grass snake	adder	total	N
ADULT	87.0	87.6	87.0	87.0	87.0	3,025
JUVENILE	10.7	6.8	5.7	6.1	8.0	264
HATCHLING	0.3	0.1	0.6	0.1	0.3	10
SLOUGH	0.2	0.7	1.4	3.2	1.3	45
DEAD ANIMAL	1.7	4.7	4.1	3.3	3.0	114
EGGS	-	-	0.8	-	0.2	7
n	1,083	742	823	817		3,465

1.7 Timing of sightings

Survey dates were recorded for 3,009 sightings, and showed that reptiles had been observed in every month of the year. However, less than 1.5% of the total was reported in the months of January, February, November and December combined. The main data collection period was between May and August; between 17 and 18% of the total observations were made in each of the four months (Fig 1.4). It should be noted that periods of frequent sightings were probably influenced by the tendency of recorders to undertake outdoor recreation during the summer and thus be more likely to encounter reptiles.

The above general pattern was exhibited by the common lizard (Fig 1.4) but there were variations between the other three species. The number of observations of slow worms and adders peaked during May and subsequently decreased (Fig 1.4). Conversely, significant numbers of grass snake sightings were not made until May, and did not reach a maximum until August (Fig 1.4).

1.8 Count data

Counts of animals seen were available for 3,252 (67%) records. For each of the four species, the median number seen during single observations was one (Table 1.2). The only species for which over 20 animals were observed at once on significant numbers of occasions (11 and 10 sightings respectively) were the common lizard and the adder. For each of the species, less than 10% of records referred to more than one animal seen at a time.

1.9 Conclusions

Response to the survey has been drawn from throughout the country. Unlike the situation in the amphibian survey, the reptile recorders were not clustered around areas of high

Fig 1.4

Month of observation for 3,009 reptile records received by the national survey between 1989 and 1992.

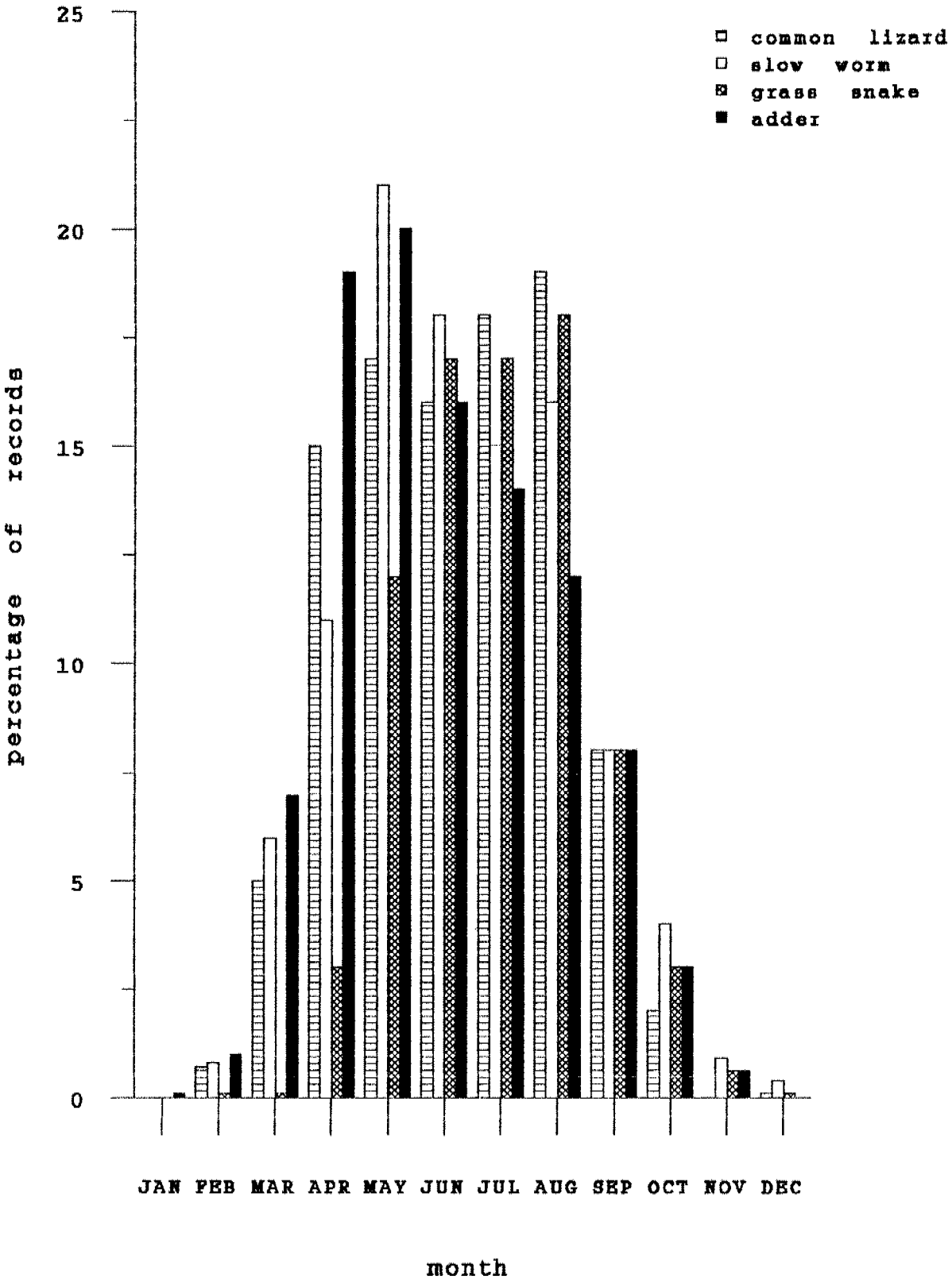


Table 1.2

Percentage of reptile observations relating to multiple sightings.

number of animals seen	percentage of records				total N
	common lizard	slow worm	grass snake	adder	
1 - 4	89	94	96	92	2,998
5 - 20	10	5	4	7	221
21 - 50	1	0.6	0.3	1	27
>50	0.3	0.0	0.1	0.1	5
total	1,001	661	778	812	3,252

human population density. The relatively large responses from Scotland, Wales, the south west and East Anglia may therefore either reflect the abundance of animals in these areas or the tendency for herpetologists to take holidays in parts of the country where they are likely to encounter reptiles.

CHAPTER 2

SPECIES DISTRIBUTIONS

2.1 National distributions

Figures 2.1(a) to (d) illustrate the species distributions by 10km squares. Overall, 977 10km squares, 44% of the total number covering Britain were recorded as containing reptiles. Negative records were not collected. From the maps it is apparent that large areas in northern central and southern central Scotland, much of northern England and the south of England are under-surveyed. Combining the species' data, coastal areas appear important to the widespread species, aggregations of occupied 10km squares occurring for example in west Wales, the south west peninsula, the East Anglian coast and the west coast of Scotland. The maps also indicate upland areas to contain species concentrations, such as the Peak District, the North York Moors and the Scottish Highlands.

2.1.1 Common lizard

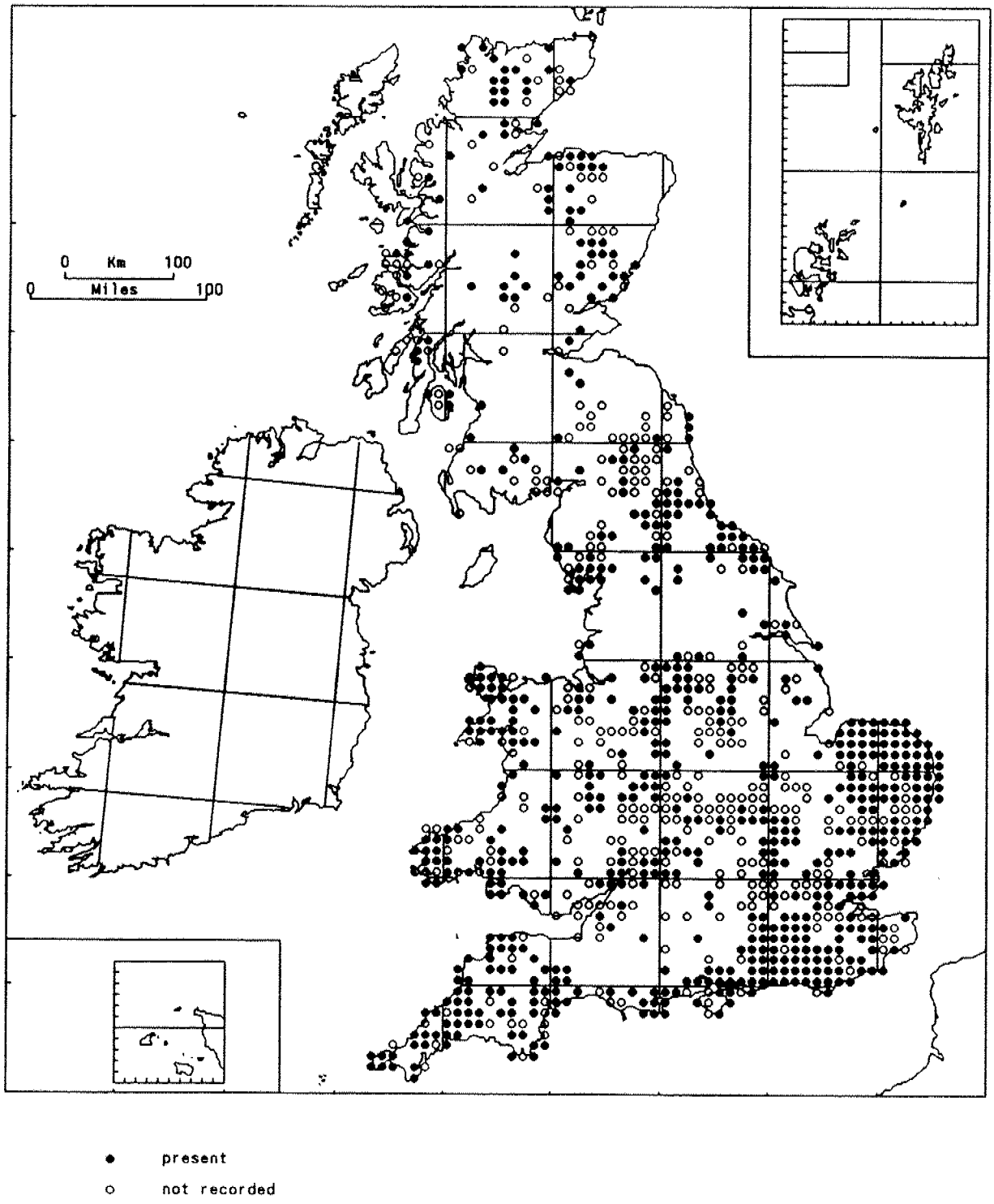
The national distribution of common lizard sightings by 10km square is illustrated in Fig 2.1(a). Apart from areas in the English Midlands and just south of the Scottish border, lizards were found in most (65%) of the surveyed squares. The species' range encompassed the whole of mainland Britain and it was also recorded on the Isle of Wight and several Scottish islands.

2.1.2 Slow worm

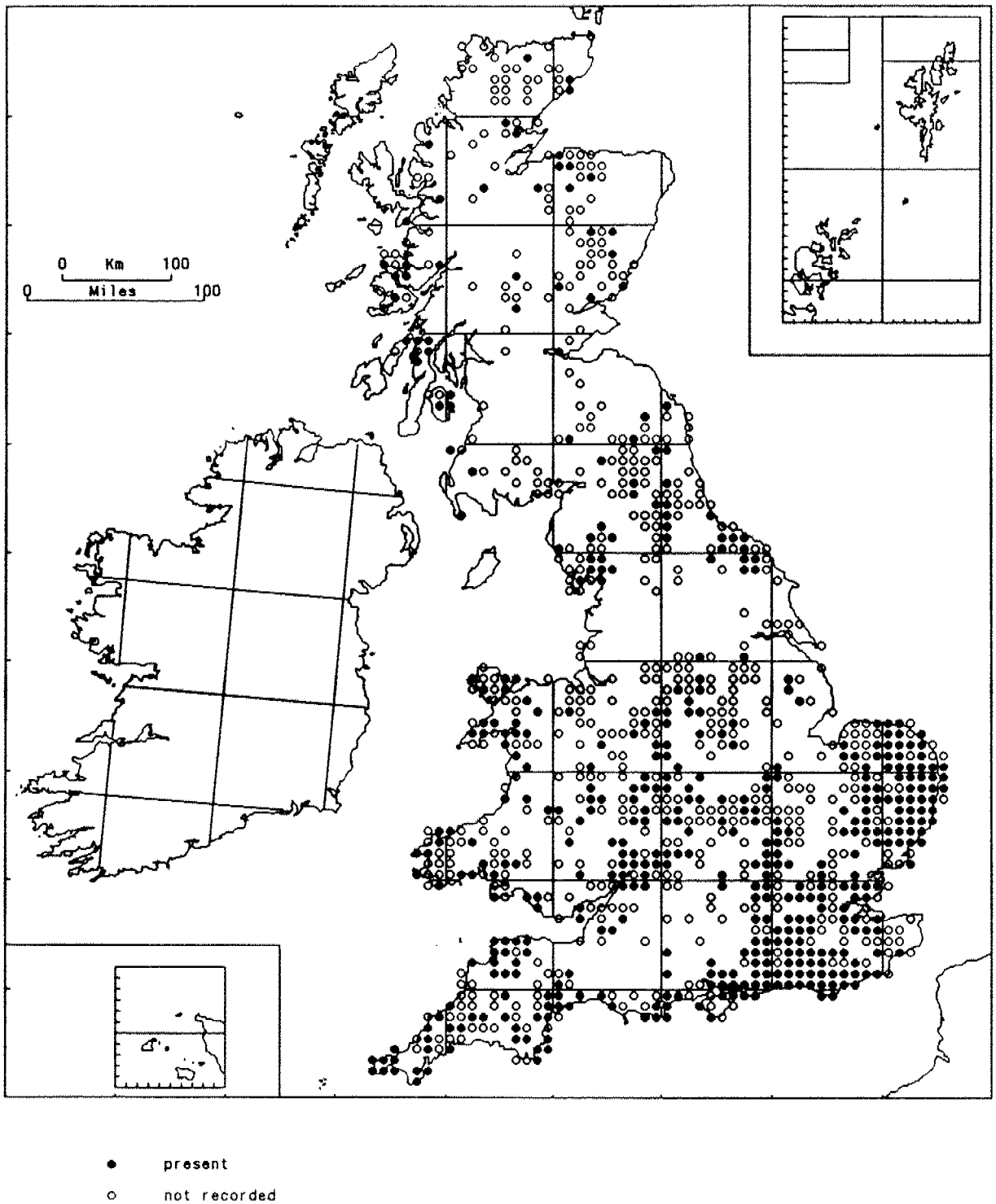
The slow worm, found in 46% of recorded squares apparently had a more restricted distribution than the common lizard (Fig 2.1.(b)). It was recorded as absent from much of the south west peninsula and the far west of Wales, but indicated to be widespread in south and east of England. A south easterly

Fig 2.1
Distribution of each species by 10km squares. In total, 977 10km squares were surveyed overall.

(a) Common lizard



(b) Slow worm



distribution is suggested for this species, but it was nevertheless found in the far north of Scotland and some Scottish Islands.

2.1.3 Grass snake

The grass snake has the most restricted distribution of the four species, being virtually absent from Scotland and much of the north of England (Fig 2.1.(c)). The species distribution was also limited throughout the south west peninsula. However, it was found in more 10km squares within the English Midlands than any of the other species, suggesting a relatively more lowland distribution. Despite its nationally restricted distribution, the grass snake was also found in 46% of surveyed 10km squares.

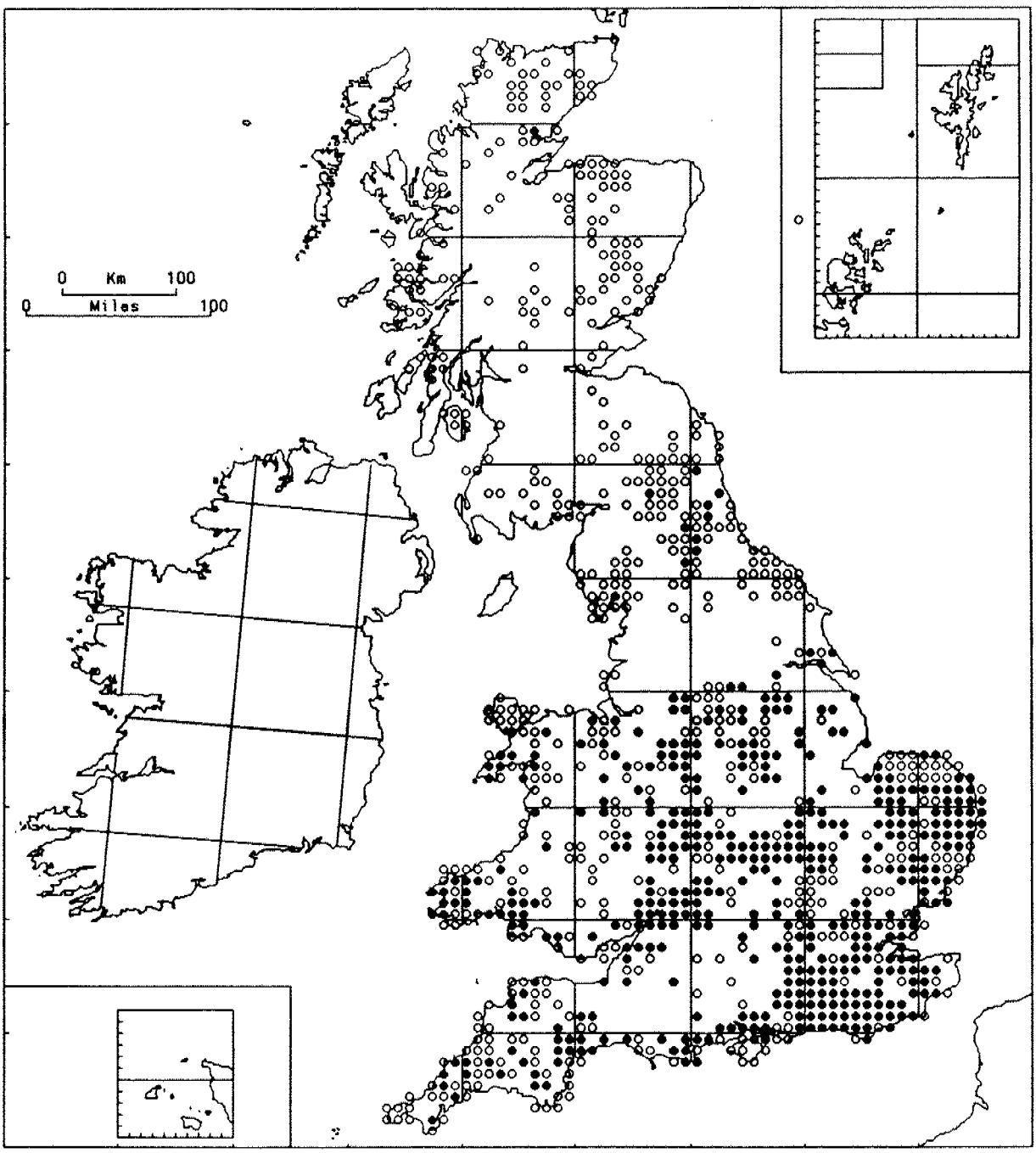
2.1.4 Adder

The adder was found in 44% of recorded 10km squares. The species range was countrywide, extending from Cornwall to the north coast of Highland Region, and including west Wales and the east coast of East Anglia (Fig 2.1 (d)). Its distribution within the English Midlands was however sparse. In general, except for areas on the south coast of England, the species was recorded mainly in areas of low human density.

2.2 Numbers of species observations, by county

The previous section described species distributions, but with no information on abundance. This section reveals the numbers of records of each species returned, by county. Overall, these data tended to reflect the distribution of recorders described in Chapter 1, with a few exceptions.

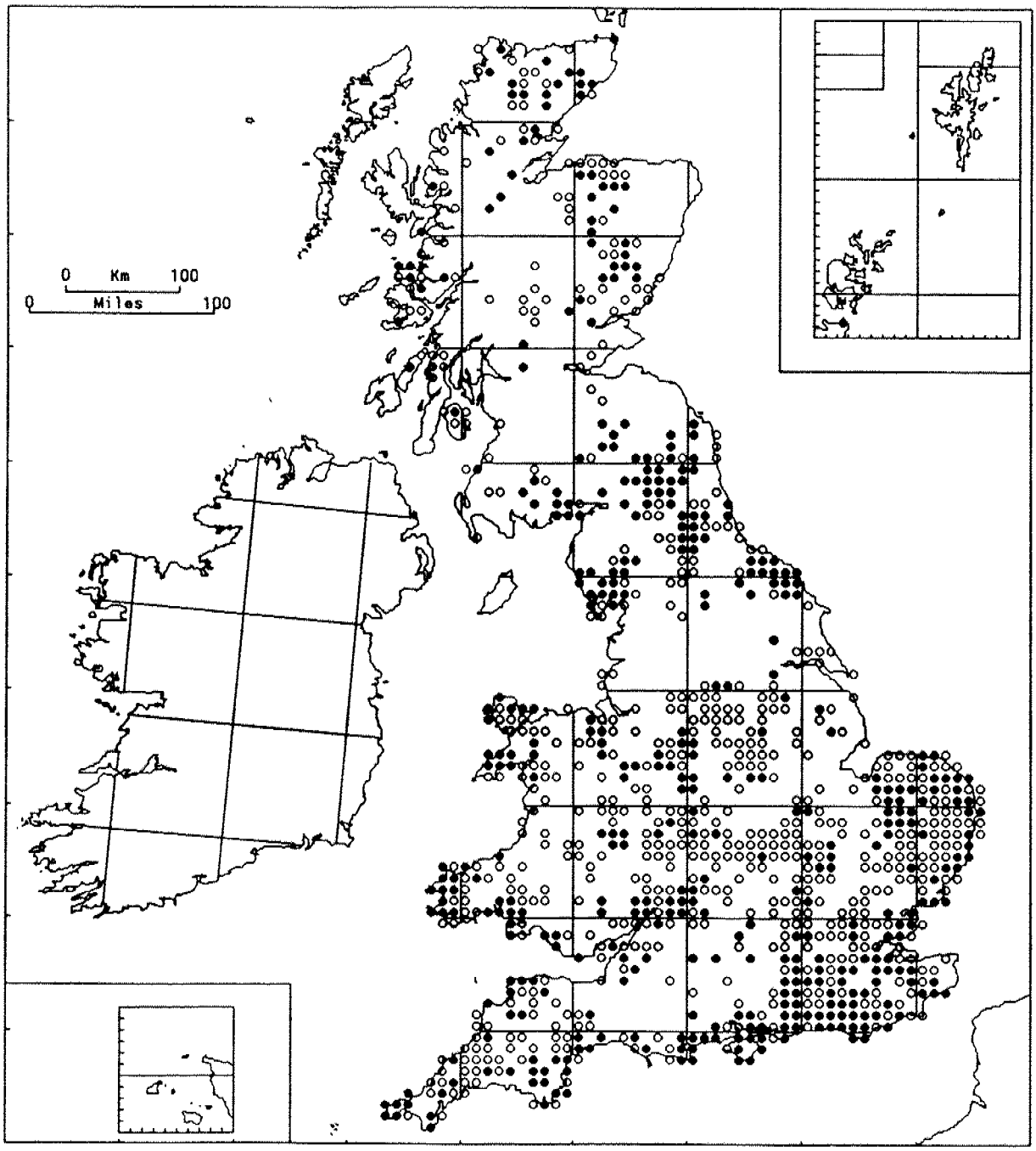
(c) Grass snake



● present

○ not recorded

(d) Adder



● present

○ not recorded

2.2.1 Common lizard

The county distribution of common lizards reflects the county distribution of recorders (Fig 2.2 (a)); i.e. wherever reptile observations have been made, common lizards have been part of the species complement. Only one county returned over 100 common lizard records (Greater London) but over 50 were forthcoming from nine counties. Despite the low number of recorded 10km squares in Highland Region, a relatively high number of records was returned for the region, suggesting local abundance. The survey received 1,571 records of common lizards.

2.2.2 Slow worm

In well recorded areas, the slow worm was reported to have a relatively even distribution between counties. Slow worm records totalled 1,022 overall. Over 100 records were returned from one county (W Sussex) and only five others returned over 50 (Fig 2.2(b)). The species was not found in 10 recorded counties.

2.2.3 Grass snake

The grass snake, of which 1,147 records were returned, was found most frequently in south eastern England, over 50 records having been returned from East and West Sussex and Kent, and over 100 from Greater London (Fig 2.2(c)). It was also relatively frequently recorded in the west Midlands and west Wales.

2.2.4 Adder

The adder was recorded in all but nine counties in a total of 1,160 records. Counties returning most records were generally those containing upland or heathland habitats (the North York