

Contents

Foreword by Ian Newton	ix
Preface	x
Acknowledgements	xi
The authors	xiii
Editorial note	xiv
Part 1 Introduction	1
1. Introduction	2
1.1 Why monitor raptors?	2
1.2 The development of raptor monitoring in Britain and Ireland	3
1.2.1 Raptor Study Groups	3
1.2.2 The UK Raptor Working Group.	4
1.2.3 The Scottish Raptor Monitoring Scheme.	5
1.3 International perspectives on raptor monitoring.	6
1.4 The status of raptors in Britain and Ireland	6
1.5 A survey and monitoring guide for raptors.	7
2. Survey, surveillance and monitoring	10
2.1 Definitions.	10
2.2 Choice of survey methods	11
2.2.1 Counts of occupied home ranges and active nests	11
2.2.2 Alternative survey methods: transects and point counts	12
2.3 Surveys and monitoring in Britain and Ireland	14
3. Population estimates	16
3.1 Population sampling	16
3.2 Breeding birds	16
3.2.1 Occupied sites	17
3.2.2 Territorial pairs.	17
3.2.3 Breeding pairs	17
3.3 Non-breeding birds	17
4. Breeding season parameters	19
4.1 Home range and territory	19
4.2 Nest sites, nesting ranges and alternatives	19

4.3	Nests	20
4.4	Occupancy	20
4.5	Proof of breeding, breeding success and fledging	21
4.6	Productivity	22
4.7	Breeding failure	22
	4.7.1 Natural reasons for non-breeding or failure	22
	4.7.2 Persecution	23
5.	Identification and breeding behaviour of raptors	24
5.1	Identification of raptors	24
5.2	Identifying raptor signs	24
	5.2.1 Kills	24
	5.2.2 Pellets	25
	5.2.3 Droppings	25
	5.2.4 Feathers	25
5.3	Breeding behaviour of raptors	26
	5.3.1 Display	26
	5.3.2 Egg laying and incubation	27
	5.3.3 Hunting and feeding	27
	5.3.4 Interpretation of behaviour	28
5.4	Vocalisations	28
6.	Additional techniques for studying raptors	29
6.1	Ringing	29
6.2	Wing-tagging	30
6.3	Remote tracking	31
	6.3.1 Radio-tracking	31
	6.3.2 Satellite tracking	32
	6.3.3 PIT tags	33
6.4	Biological and chemical 'markers'	33
	6.4.1 Genetic markers	33
	6.4.2 Chemical markers	34
6.5	Nomograms	35
	6.5.1 Egg density	35
	6.5.2 Chick growth	36
6.6	Nest boxes	37
7.	Good practice for fieldwork	39
7.1	Legal considerations	39
	7.1.1 Licences	39
	7.1.2 Access	42
7.2	Minimising disturbance and good field craft	44

7.3	Weather	45
7.4	Time of day	45
7.5	Frequency of site visits	45
7.6	Observer effort	46
7.7	Recording observations and site features	46
	7.7.1 Recording sightings of birds, nests or other signs	47
	7.7.2 Recording details of survey visits	49
7.8	Handling and measuring eggs and young	50
	7.8.1 Wing length	51
	7.8.2 Tarsus (leg) length	51
	7.8.3 Tarsus width and depth	53
	7.8.4 Foot span and hind claw	54
	7.8.5 Bill (culmen) and total head length	54
	7.8.6 Mass	55
	7.8.7 Measuring and weighing eggs	56
	7.8.8 Other measurements	56
7.9	Wildlife crime	57
	7.9.1 Site confidentiality	59
7.10	Health and safety	59
	7.10.1 Diseases	60
	7.10.2 Health and safety legislation and responsibilities	62

Part 2 Species Accounts

65

Introduction to species accounts	66
Honey-buzzard (European honey buzzard) <i>Pernis apivorus</i>	70
Red kite <i>Milvus milvus</i>	77
White-tailed eagle <i>Haliaeetus albicilla</i>	85
Marsh harrier (western marsh harrier) <i>Circus aeruginosus</i>	92
Hen harrier <i>Circus cyaneus</i>	100
Montagu's harrier <i>Circus pygargus</i>	110
Goshawk (northern goshawk) <i>Accipiter gentilis</i>	117
Sparrowhawk (Eurasian sparrowhawk) <i>Accipiter nisus</i>	127
Buzzard (common buzzard) <i>Buteo buteo</i>	136
Golden eagle <i>Aquila chrysaetos</i>	143
Osprey (western osprey) <i>Pandion haliaetus</i>	150
Kestrel (common kestrel) <i>Falco tinnunculus</i>	157
Merlin <i>Falco columbarius</i>	165
Hobby (Eurasian hobby) <i>Falco subbuteo</i>	176
Peregrine (peregrine falcon) <i>Falco peregrinus</i>	184
Barn owl (western barn owl) <i>Tyto alba</i>	191
Snowy owl <i>Bubo scandiacus</i>	199
Little owl <i>Athene noctua</i>	204

Tawny owl <i>Strix aluco</i>	209
Long-eared owl <i>Asio otus</i>	217
Short-eared owl <i>Asio flammeus</i>	223
Raven (northern raven) <i>Corvus corax</i>	232
Species occurring irregularly in Britain and Ireland	239
Black kite <i>Milvus migrans</i>	239
Pallid harrier <i>Circus macrourus</i>	239
Rough-legged buzzard <i>Buteo lagopus</i>	239
Gyr falcon (gyrfalcon) <i>Falco rusticolus</i>	240
Eagle owl (Eurasian eagle-owl) <i>Bubo bubo</i>	240
Part 3 Feathers	243
Introduction	244
Wing and tail feathers.	244
Feather morphology	244
Moult.	245
Introduction to the feather plates	247
Identification of species.	247
Plates 1–57.	250–278
Part 4 The development of raptor chicks	281
Plates 58–80	283–293
Appendices	294
1 Status and trends of raptors in Britain and Ireland.	294
2 Contacts	299
3 Examples of raptor recording forms	305
4 Scientific names of species mentioned in the text	321
Glossary	323
References	329
Index	364

In addition to illustrations at the beginning of each species account, the following illustrations are embedded in the text: short-eared owl (page 1), white-tailed eagle (9), honey-buzzards (15), kestrel (18), hen harrier (23), sparrowhawk (38), goshawk (65), marsh harrier (243), tawny owl (275) and peregrine chicks (281).