RED SQUIRRELS ON THE ISLE OF WIGHT

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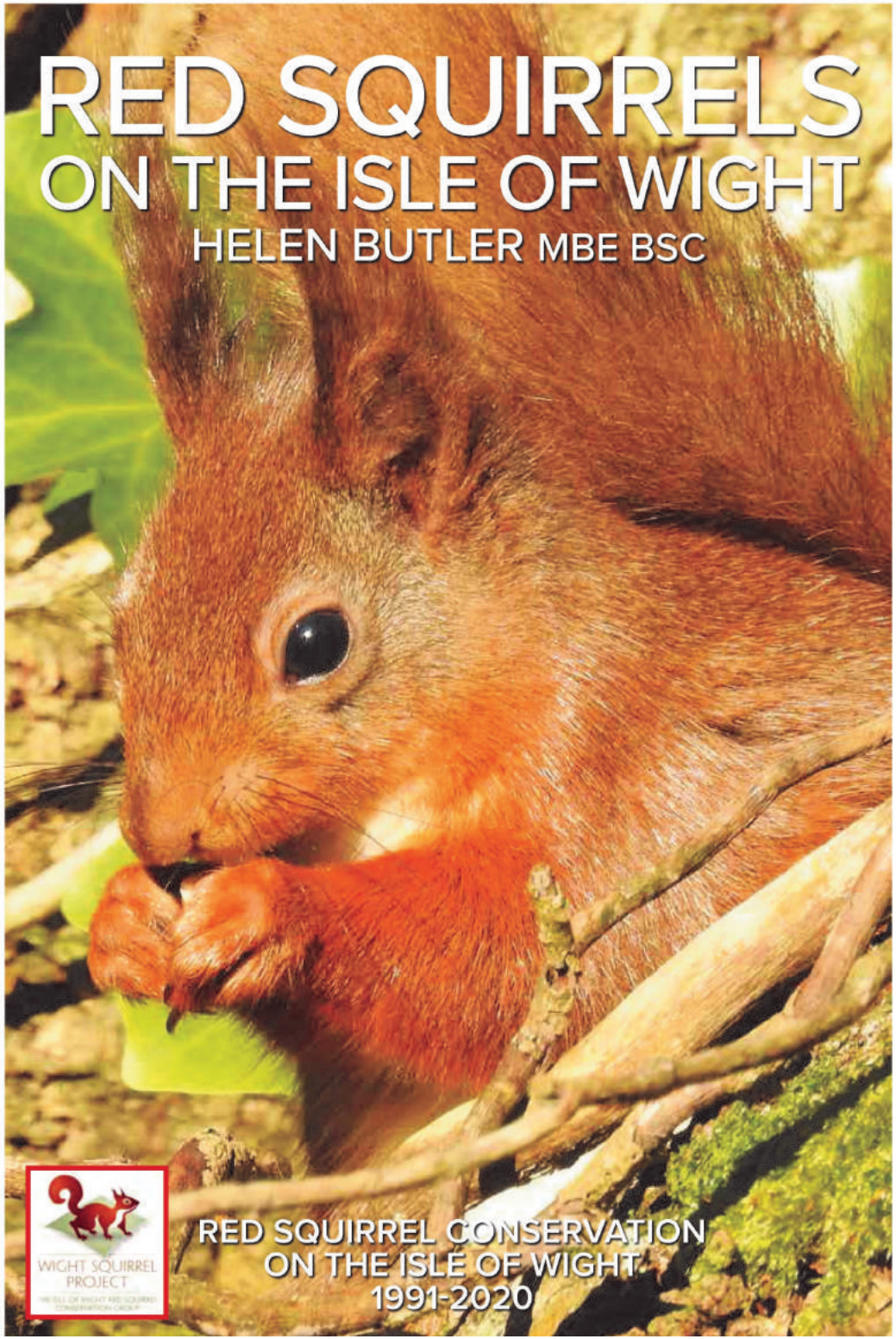

WIGHT SQUIRREL PROJECT

RED SQUIRREL CONSERVATION ON THE ISLE OF WIGHT 1991-2020

CONTENTS

for Part 1

PREFACE

Why should we save our native red squirrels? Why spend 30 years working for them? Apart from having it all in the 'cute and charismatic' stakes, they are our only native squirrel and therefore fit well into our ecosystem.

With their bushy tails, inquisitive faces and naughty ways they are irresistible to most people. They are also the hard done by underdogs, pushed out of their territory by an introduced species, another reason to love them and fight their corner.

Life is never simple for any species and for our native red squirrel – the only species of British squirrel – fate has not been kind. After the introduction of the American grey squirrel in 1876, our native squirrels have suffered a severe decline due to competition and disease.

To the majority of people living in the British Isles today, the mention of squirrels conjures up an image of the American grey squirrel. But for those privileged few who live in a 'red squirrel only' area, there is no more gratifying experience than watching our native species. The red squirrel's elusive and timid nature adds to their appeal – and the thrill – on seeing this most charismatic of our native woodland mammals.

This publication has been a long time in the writing. The aim of parts 1 and 2 is to be informative but at a level where adults and older students will find the statistics useful. The majority of the data is drawn from science and the rest from citizen science plus the author's experience. Part 3 is a bit more challenging.

Red squirrel work is so intense and incoming phone calls can easily change the planned week. Time and time again this publication was started and then life intervened. On a more positive note, at least over a long timescale there is more information relating to our Isle of Wight red squirrels. It is the culmination of the author's work since 1991, plus all the loyal volunteers and supporters who have made it possible and not forgetting the general public providing 'citizen science'.

With so much data to write up, it was hard to decide how to present it. Breaking it down into manageable parts was the answer. Past reports, not published previously, are included in their entirety. Parts 1 and 2 of this publication are suitable for anyone, or agencies, to use as reference or just for interest. Part 3 is not for the faint-hearted as it shows graphic pictures of autopsies and uses medical language.

Part 1 is an introduction to the Isle of Wight and red squirrels. It's aimed at anyone looking for information but is not conversant with red squirrels, or the Isle of Wight, but also provides a useful summary for anyone who has an interest in red squirrels. The rest of this publication looks at data collated on the Island since 1991. There are many other publications that delve into deeper detail relating to red squirrel physiology and behaviour but a brief overview is relevant here to better understand data and discussions in the following chapters.

INTRODUCTION TO PART 2

The Isle of Wight is unique in having red squirrels *(Sciurus vulgaris)* living in deciduous woodlands without a direct threat from grey squirrels *(Sciurus carolinensis)*. The Solent has, so far, proved an effective barrier against grey squirrel colonisation.

Monitoring the Island's red squirrel population and surveying its woodland has been a large part of Wight Squirrel Project's work over the last 30 years. In 1997 it was decided to adopt the national methodology for monthly monitoring walks. This method was later updated to the bi-annual walks still used today. In this way, the Island can contribute to the national red squirrel conservation programme.

Continuous monitoring provides data which can aid decisions on where to direct conservation work on the Island. This is mainly aimed at habitat management and reinstating corridor links but may also encompass commenting on planning applications.

Ongoing vigilance for sightings of possible grey squirrel incursion is also paramount in the effort to maintain a 'red only' area on the Isle of Wight.

Part 2 is in four sections and focuses on habitat, monitoring and population trends. Wight Squirrel Project actively opposes intrusive monitoring methods unless there is a vital need and the outcome will result in a benefit for the squirrels. Not only is trapping and radio collaring stressful for the animals, it is expensive and time-consuming. It also requires a licence.

When I started red squirrel work, it was not long after the devastating storm of 1987, which destroyed many trees on the island. The data collected over the years plots the 'return of the reds' since the hurricanes, although there were a few downturns in squirrel numbers along the way when the weather and other factors dealt a temporary setback to recovery. Data is set out as individual reports and drawn together in section 4.

A detailed study of red squirrel habitat, including parks and gardens, began in 2017 and is ongoing. Extending woodland and planting corridor links through the JIGSAW (Joining and Increasing Grant Scheme for Ancient Woodland) project has improved red squirrel habitat. Conversely, development and the cutting down of trees that act as a corridor, so that homeowners can have a sea view, for example, is ongoing and detrimental to red squirrel survival.

Strategies to conserve remaining populations recognise offshore islands with extant populations of red squirrels as important for the long-term survival of the species in the United Kingdom (JNCC Red SquirrelStrategy 1995).

Chapter 2 in section 1 is an abridged copy of a study undertaken in 1994, before I had a computer. Text was retyped and graphs and tables, originally hand drawn, digitised to match the rest of this publication.

Permission was granted to reproduce the hazel regrowth report from the Hampshire & Isle of Wight Wildlife Trust, conditional upon not naming woodland or landowners. Wight Wildlife is no longer running.

CONTENTS

Part 2 Section 1

Acknowledgements and references for Part 2 Section 1

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Rushton, S.P., Lurz, P.W.W., South, A.B., Mitchell-Jones, A. 1999. Modelling the distribution of red squirrels *(Sciurus vulgaris)* on the Isle of Wight. *Animal Conservation* 2: 111–120.

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Forestry Commission website: Forest Research website www.forestresearch.gov.uk

The Isle of Wight Red Squirrel Strategy 1996

Isle of Wight BAP

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Part 2 Section 2

SCIENCE-BASED MONITORING

This section detailing science-based monitoring reproduces past reports. These give an insight into how red squirrels on the Isle of Wight have increased and spread over the years

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Part 2 Section 3

INTRODUCTION

This section contains small-scale studies carried out by the general public, results from garden questionnaires and individual sightings submitted by members of the general public. Studies range from visitors reporting sightings on an estate, which is also a tourist attraction, to squirrels visiting gardens and daily dog walks in Firestone Copse. Although not strictly a scientific project, any snapshot of a location will always reveal an interesting insight and provide baseline data for a future study.

Citizen science is the catchy title used where individuals with no formal scientific training contribute to data collection or other research. Relating to red squirrels on the Isle of Wight, so many eyes spotting squirrels and reporting them has added a huge amount of data, which would otherwise be missed. It also may flag up problem areas that require further investigation. The people who submitted data for these studies did them without any prompting. This is rare.

Over the years, citizen science has rarely been contradicted by studies using scientific methodology. The majority of people sending in information have no specific scientific training but nevertheless are able to produce detailed studies. The Firestone Copse study in chapter 2 is an example of meticulous recording.

Chapter 8 in this section looks at single sightings sent in from the general public over 30 years from 1990. In section 4, all data, scientific and citizen science, is drawn together to build an overall picture of how red squirrels have spread across the island between 1990 and 2021. Anthropogenic influences are also discussed.

Judging how many squirrels are seen in a garden is subjective. Some people are very adept at distinguishing squirrels with different markings and behaviour, whilst others have difficulty. Time spent watching is also a factor influencing the results. The pros and cons of citizen science are discussed in chapter 9.

Road kills in particular rely heavily on people reporting the time and place a dead squirrel is seen. Equally, sick squirrels will visit gardens or a cat will kill a squirrel. Without the public reporting these incidents, knowledge would be far poorer. Red squirrels in attics and finding their way into houses and commercial buildings are also reported and indicate dispersal routes, albeit a flawed decision by the squirrel.

Apps are common nowadays, but 30 years ago it was telephone records or paper records collected at shows. The older generation are less keen on technology and still use the phone or tell us about their garden squirrels at shows. There is an online form on the Wight Squirrel Project website plus a downloadable app. However the entries come in, they are all entered into an Excel spreadsheet. A 1km grid reference is assigned to each sighting. Descriptions of where the squirrel was spotted are sometimes vague, so a best estimate is recorded, using information from the observer and local knowledge.

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Part 2 Section 4

INTRODUCTION

This section on population dynamics describes the way the metapopulation of red squirrels on the Isle of Wight, between 1991 and 2021, has fluctuated and moved around the landscape. The results are stochastic and the aim is to show how the population has changed over time and gauge how successful our native red squirrels on the Isle of Wight have been. Factors that may contribute to the increase, decrease and stability, including human influences, positive and negative, which shape red squirrel welfare and distribution are also discussed. One question is whether supplementary food influences the natural balance and if the negative anthropogenic influences counter extra food supplies.

Section 4 draws together surveys from the previous chapters which cover a 30-year period and include some post-mortem results. Mortality is detailed in part 3. Methodology for the various datasets are described in previous chapters and not repeated here.

Although the Isle of Wight is unique in having an isolated population of red squirrels, the same ecological processes apply regarding carrying capacity for woodland. Recruitment into the red squirrel population depends on food availability and other factors such as the weather, which will influence success or failure of the seed crop. On the Isle of Wight, the fate of the red squirrel population is not driven by the presence of grey squirrels, as it is in most of the UK.

A natural carrying capacity for red squirrels living in a healthy broadleaved woodland is one red squirrel per hectare (Holm 1991). Influences on carrying capacity, such as supplementary feeding, may disrupt this balance. On the other hand, the question is 'do unnatural influences such as traffic, garden hazards, pets, traps and rat poison create a balance?' Using data collected over 30 years, this question is explored here. Future studies are planned to look into this question further.

The maps relating to corridors, outlined in section 3, show how and where the squirrels moved around the landscape in 1991 and again in 2021, so are not repeated here. Core habitat is more likely to maintain a stable population regardless of natural fluctuations in food supply or weather events such as the storms in the late 1980s. Satellite populations are more likely to falter if recruitment is difficult due to poor corridor links or a small wooded area doesn't have a sufficient number of suitable tree species to provide a good food supply for red squirrels.

INTRODUCTION

As part of Wight Squirrel Project monitoring and research, the general public not only report live or dead red squirrels but pick up sick, injured, orphaned or dead red squirrels. Live squirrels are treated and released if they recover. Those that die or are euthanised are subject to a basic post mortem examination and if pathology is found, tissue samples are kept and photographs taken. Initially, bodies were posted to Zoological Society of London.

The author is not a trained vet but did receive training and a lot of help early on from qualified vets Mike Lewis, Dr Ian Keymer and Vic Simpson. From 2001 advice and collaboration from newly retired vet Vic Simpson meant that investigating causes of death for red squirrels on the Isle of Wight escalated. Vic formed the Veterinary Investigation Centre in Truro, Cornwall and until his sad death in 2018, samples and selected bodies, were sent to him.

The statistics are based on the histological findings, observation, experience and also reports from the general public. Road traffic accidents are by far the most common cause of reported human-related mortality as they are the most likely way to find a dead squirrel. Sick squirrels also come into gardens and very occasionally a squirrel needing help is found in a woodland or park.

Apart from road kills, other human-related causes are cat or dog predation, rat poison and drowning in a water butt. Natural causes of death and disease are varied. In some cases the cause of death is undetermined, either because the post mortem was inconclusive, the body autolysed or too badly damaged to make a meaningful diagnosis. More often than not, bodies are reported and not recovered. These are generally road traffic kills. This is citizen science and included in some statistical analysis.

CONTENTS

Chapter 1

TREATING SICK, INJURED AND ORPHANED RED SQUIRRELS

Introduction

Wight Squirrel Project takes in sick, injured and orphaned red squirrels with the aim of releasing them back to the wild. Given their sensitive nature and propensity to stress, the success rate is low. If a red squirrel is ill enough to capture, then more often than not, it does die. That said, there are some successes and much has been learned over the years. We are fortunate in having support from local vets, although visits are not always necessary but obviously we need a vet to euthanise animals, take x-rays or prescribe medication. Training is given and volunteers work as part of a team.

The number of animals taken in has increased as the population has risen and expanded. The early animals are not in the database as this wasn't set up until 2007. Jacquie Wilson has been a stalwart volunteer picking up and treating squirrels, for which I am grateful, and Jacquie did record three animals prior to 2007, which are included in the analysis. Jacquie recorded treatment details of animals that died within hours but the author was not so diligent and, other than recording the animals on the general database, did not record treatment details until 2015. Even then, treatment of animals that died within hours is not recorded, although post mortem examinations are carried out and details are in the necropsy database. We work on the premise that whoever takes the call and collects the squirrel looks after it.

Methodology

The general public pick squirrels up, either in their garden or when they are out and about. Animals are collected in carriers made by a volunteer. The carrier is made of plywood and measures 23cm wide, 25cm deep and 22cm high. The ventilation hole is 7cm in diameter and covered in 1cm square mesh. The handle is made of webbing. Fleece or hay is used as bedding.

We do not have a purpose-built hospital, so a spare bedroom is turned into a hospital room for the squirrels in our homes. An outside aviary houses squirrels that recover enough to go outside but are not ready for release.

Cages of varying sizes accommodate the squirrels in the early stages of illness, from bird cages to a very large rodent cage which is on two levels. This will take either two sick squirrels or one lively squirrel. The levels may be used separately or opened up as one cage. Given the sensitive nature of the patients, foliage in the cage and natural bedding materials are used to provide familiar smells and textures.

Indoor cage with two levels