Foreword

For centuries, all across the world, humans and owls have had a continuous love–hate relationship. Owls are prominent in myth, superstition, and folklore. On the one hand, owls were an omen of bad news, of doom and gloom – in Central Europe locally Little Owls are still associated with death – on the other hand, the Greeks, for example, considered them wise, especially the Little Owl. Though the relationship between man and owls can be traced back to ancient Greece and beyond, our understanding of the basic biology of owls often is still rather poor compared to other bird species. Few scientists interested in basic ecological principles would choose to study a nocturnal species breeding in low density, often in remote and inaccessible places. The situation changed in the mid twentieth century, when ornithologists observed dramatic declines in several owl species over much of Europe. Throughout Europe, the decline of Little Owls is mainly caused by habitat destruction, especially from the intensification and mechanization of agriculture. Changes in agricultural practices led to a decline of suitable nest sites and hunting grounds, and the associated population decrease resulted in the increased isolation and fragmentation of the European breeding population. These pronounced declines have attracted the attention of many conservationists and researchers, especially in Western European countries.

A first milestone, not only for conservation of Little Owls but also for detailed studies of their breeding biology, was the development of an artificial nestbox by the late Ludwig Schwarzenberg (1970) at the end of the 1960s. The original nestbox designed by Mr. Schwarzenberg was a simple wooden tube built from meter-long laths, with a diameter of about 18 cm, waterproofed with roofing felt. The nestbox was quick and easy to construct, and was quite a success. These tubes were readily accepted by Little Owls, sometimes within two to three weeks after being set up. Thousands of these nestboxes have been established in Western Europe during the last decades, mainly in Germany. In several areas population numbers increased (rapidly) after the provision of nestboxes, especially during the first few years. Later, growth rates of populations supported by nestboxes often slowed from year to year as the population density stabilized. As well as detailed habitat analyses, the high occupation rate of nestboxes provided further evidence that the lack of suitable nesting cavities was an important factor limiting Little Owl populations. The number and distribution of nest sites seems to be an ultimate limiting factor determining population densities across much of the breeding range of Little Owls in Western Europe. However, the

Figure 0.1 Little Owl frontal view (François Génot).

reduced rate of population growth associated with increasing population density indicates there are other limiting factors. Nowadays, nestboxes are widely used as a conservation tool. But, I have to point out explicitly that the provision of artificial nesting sites is not an appropriate long-term conservation strategy. In the longer term, natural breeding sites have to be re-established, e.g., through the planting of orchards and willows.

The development of an appropriate nestbox also made it much easier to study the biology of this fascinating species in detail, which otherwise breeds mainly in inaccessible cavities. Nestboxes offer the possibility to study the breeding biology from egg-laying to fledging in detail, and moreover, to catch and ring adult as well as juvenile birds with ease. An advantage of the species is that the adults are mainly sedentary, most individuals use the same day-roost, or at most a handful of alternative roosts, throughout the year, often for their entire life. Once familiar with the species and the territory, individuals are often easy to discover. Thus, besides population numbers, a lot of important demographic parameters determining population density and population regulation can be determined. During the last 20 years many studies on population biology have been carried out. In addition, recent field techniques such as radio-tracking have been applied to analyze home-range sizes and habitat use throughout the year. DNA fingerprinting has been used to analyze genetic variation within, as well as between, populations.

Along with this, in the late 1990s Little Owl researchers realized the importance of standardized monitoring methodologies, and an international co-operation, named the International Little Owl Working Group (ILOWG), was founded. At the turn of the twentieth century, after three very fruitful international conferences organized by the ILOWG, time was ripe to summarize and synthesize our present knowledge on Little Owls for an international readership. The meetings in Champ-sur-Marne, France (2000), Geraardsbergen, Belgium (2001), and Cheshire, England (2002) helped to engender a common spirit of co-operation. The ILOWG as well as a flock of Little Owl enthusiasts made countless unpublished data, notes, and observations generously available, data that previously were not available or were written in languages with which most of us are not familiar.

How welcome, therefore, is the monograph by three leading owl enthusiasts – *Owlologists* – distilling all that is known about Little Owls and providing up-to-the-minute information on current research. The authors solved the difficult task of bringing together and synthesizing often contrasting material from different sources. They address more or less all aspects of the biology of Little Owls. However, besides presenting an impressive overview of the worldwide distribution and population numbers, for example, they concentrate on two fascinating and fast-developing fields: habitat selection and factors affecting habitat selection, and population regulation. Insights from habitat analyses and population studies have proven crucial in conservation. To understand habitat suitability and habitat preferences the authors used – in contrast to most former studies – a new multi-scale approach, they analyzed a multiplicity of biotic and abiotic parameters within grids of a few hectares to several square kilometers in size. Analyzing habitat parameters at different spatial scales provides a much better insight into habitat preferences and thus environmental factors limiting population density, in particular for species that inhabit a great diversity of natural and anthropogenic landscapes. A geographic information system-based multi-scale approach enables us not only to identify limiting and important environmental habitat parameters, moreover, it allows us to select representative sampling points for large-scale surveys, a significant advance in cost-efficient monitoring.

The Little Owl monograph you hold at hand provides examples on how to use data about bird distributions, relative abundance, and habitat associations to set conservation priorities. Based on the presented data, a working structure for an owl species conservation plan has been developed to standardize research and monitoring methods across the range of the Little Owl. A harmonized monitoring program is essential for effective conservation and management, e.g., to evaluate the effectiveness of policy and mitigation measures. Though the aim of a monitoring program is also to elucidate reasons for population changes, causal factors will not necessarily be obvious from the monitoring data alone. In order to overcome these shortcomings, an indispensable tool, concomitant research, should supplement the monitoring program. More cost-efficient monitoring will save time and money. At least some of the limited resources can be redirected to other work, such as to identify the causes of declines.

Along with this, the monograph on Little Owls exemplifies in an excellent way (a) the close link between amateur and professional ornithologists, and (b) the overall importance of detailed large-scale and long-term studies by volunteers and their contributions to applied as well as to basic scientific research. The increase in knowledge during the last decades is largely through the efforts of non-professional ornithologists and non-governmental organizations (NGOs). Most of the long-term studies on Little Owls as well as large-scale surveys of their distribution were carried out by volunteers. Modern software and modeling techniques provide the theoretical framework. In addition to their role as tools for describing distribution and patterns affecting them, for example, models can also provide the means for examining and generating hypotheses about causes and consequences of habitat changes. Models can show us which parameters are important and therefore should be recorded in the future, and hence make monitoring and conservation programs more effective. To accomplish this, the integration of comprehensive empirical studies, technological advances to study the behavior of nocturnal animals, and mathematical modeling promises many new insights. The understanding of population regulation and the spatial distribution, including the understanding of dispersal patterns, will not only prove to be an interesting challenge for the future, it is also essential in constructing an effective conservation plan. Generalization of all available local insights and models across the entire geographical range of the species is another main point of attention for the future. The ILOWG provides a fertile ground and delivers the necessary platform for co-ordinated studies across Europe.

Through international co-operation and research, our knowledge has increased during the last decades. The authors have organized the existing knowledge into a coherent whole. Nevertheless gaps in our understanding of owl biology and behavior remain. In my opinion, one of the major issues is that all quantitative data available are from anthropogenic, agricultural habitats in Europe. Only qualitative descriptions are available from the primary steppe and semi-desert habitats in the core area of the species' range. To understand the decision rules that guide Little Owls in responding to their biotic and abiotic environment, and thus for a thorough understanding of the ecological and evolutionary processes, go there! I hope this monograph will stimulate ornithologists all over the world to study this fascinating

species. Dries, Jean-Claude and David provide an excellent basis for sound research and conservation strategies.

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