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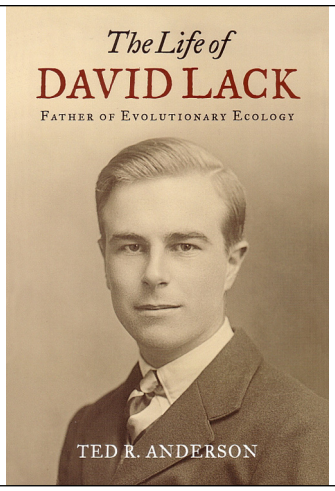
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Anderson T.R. 2013. The life of David Lack: father of evolutionary ecology. Oxford University Press, Oxford. ISBN 978-0-19-992264-2. Hardcover with dust jacket, XII + 246 pp. Some figures and photographs. Euro 46.99.



The early 20th century saw the birth of ecology as we know it, perhaps best illustrated by the founding of the Bureau of Animal Population (singular) in 1932 by Charles Elton, a small research bureau that ceased to exist in 1967 when Elton retired. The BAP coexisted with the Edward Grey Institute for Field Ornithology (EGI), David Lack's baby, for some time, even in the same building (although the door between both institutes remained locked, incompatible characters). The Bureau was a research institute where ecological problems were tested with experiments, whereas the EGI then was – *nomen est omen* – designed around field ornithology. In his incomparably funny and illuminating history of the BAP (*Elton's Ecologists*, published in 1991), Peter Crowcroft even went so far as to suggest that David Lack ran the EGI as a schoolmaster who had "no interest or faith in the usefulness of experiments in elucidating ecological problems". Crowcroft may have had a slightly biased opinion (having worked for Elton's BAP after all, and fiercely loyal to Elton), but after reading the present biography, and having reread Lack's books, I can see the point. Especially in the later books, the lack of basic mathematics ("failure to properly consider mathematical models and absence of appropriate descriptive and inferential statistics", in the words of J.B.S. Haldane in Ibis when reviewing *The natural regulation of animal numbers*, but who otherwise thought the book indispensable for students of animal ecology) and the selective shopping in the available literature are all too evident. On the other hand, the absence of statistical sophistry made the books thoroughly readable and effective (for me, and not for me alone, they were eye-openers in the 1970s, and I still use them again and again, unlike today's students, I am afraid).

Anderson's biography is less critical, or should I say outright positive, about Lack's legacy (see subtitle). The biography is chronologically centred on the books that Lack published during his lifetime, with some attention paid to his formative years and life as an adult with a family, and short biographies of students and contemporaries interspersed where relevant. But first and foremost, it is about the work and the ideas behind the work. David Lack started as a birdwatcher (and in fact remained one throughout his life, still "happy as a schoolboy" in the 1960s after seeing a Whiskered Tern). His first book, fittingly, was *The Birds of Cambridgeshire*. Although published in 1934, a time when records of rare and scarce birds were highlighted in avifaunas, he focused on habitats, migration, historical changes and status of regularly occurring species, a "significant departure of the typical emphases of birdwatchers at the time". How different a birdwatcher he was is evident from his description of post-copulatory behaviour and double brooding in the Nightjar (1930–32, British Birds 23: 242–244; 24: 130–131; Ibis 13(2): 266–284), detailed descriptions written with great clarity, very different from birder's talk and miles away from the convoluted wording of the same phenomena by Edmund Selous. This clarity, and depth of fieldwork, was repeated in his wonderful studies of Robin and Swift, jewels of narrative and good fieldwork. In fact, that Lack published a book titled *Enjoying ornithology* (in 1965) was to be expected with this background. However, Lack's legacy lies mainly in the books that he published in 1954, 1966 and 1968, i.e. *The natural regulation of animal numbers*, *Population studies of birds* and *Ecological adaptations for breeding in birds* preceded by the seminal 1947–48 paper in Ibis 89: 302–352, 90: 25–45: *The significance of clutch-size*. Anderson regards Lack's *Darwin's Finches* (1947) as another milestone ("arguably his most significant book"), but as it is based on just four months of fieldwork in Galápagos (supplemented with measuring skins in museums), it fell short of the real stuff. In fact, it took Peter and Rosemary Grant more than a decade of hard-core fieldwork and

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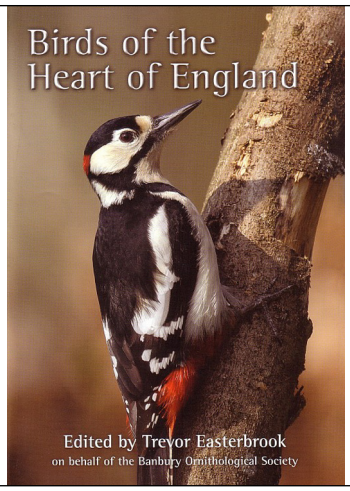
some experimentation (but very limited, with good reason) to decipher the genetic variation in quantitative characters and their effects on the dynamics of the finch populations living in this climatically variable environment. No, it is mainly via the application of the ideas of the Modern Synthesis (Neo-Darwinism, the gene-centred view of evolution) to population regulation that he became famous and triggered an avalanche of field studies. These ideas boil down to (1) the reproductive rate (in particular, the number of eggs in the clutch) evolved through natural selection and corresponds with the greatest number of surviving offspring per pair, and (2) population density is regulated by density-dependent mortality (often food shortage outside the breeding season). According to Ian Newton, student of David Lack and staunch advocate of Lack's views (see foreword in *Bird Populations*, published in 2013), these ideas mostly hold true today. Other ideas turned out to be wrong, as for example pair bonds in birds (Lack in favour of monogamy, expressed in *Ecological adaptations for breeding in birds*, whereas the majority of bird species use mixed-mating strategies) and island biogeography (illustrated by fieldwork during short stays on Jamaica, but disregarding the hugely influential mathematical theory of MacArthur & Wilson). In the latter case, Lack stated that habitats on islands determine the number of species, much less so distance to mainlands (MacArthur & Wilson's proposition), and that populations – once established – were stable; neither is supported by evidence (see review by Ricklefs in Auk 94: 795–797). In hindsight it is easy to point out caveats in theories. But it would have been even more surprising when ideas never had changed over time, given the relentless search of scientists for better, and testable, ideas to explain the world. In this regard, the legacy of David Lack is enormous indeed. The list of his students, and their performance as a scientist in later life, is impressive (for example Ashmole, Hinde, Snow, Safriel, Lockie, Stonehouse, Perrins, Newton and Evans, although John Krebs decided to work with Niko Tinbergen). Lack was a contemporary of, and in contact with, Julian Huxley, Ernst Mayr, Reg Moreau, George Varley, W.H. Thorpe, Mick Southern and V.C. Wynne-Edwards. The latter was an advocate of group selection, and played an important role in the rather intense debate about population regulation in the 1960s and 1970s, prompting Lack to devote *Population studies on birds* to the issue, with an appendix spelling the differences with Andrewartha & Birch (entomologists, hence their disregard of density-dependence in population regulation) and Wynne-Edwards (group selection and animal dispersion) in favour of his own ideas. For today's students it is difficult to imagine how fierce this debate was fought (especially by Lack), although today's exchange between proponents of selfish genes and epigenetics, rocking the foundations of the Modern Synthesis, comes close.

When David Lack assumed directorship of the Edward Grey Institute, a position he held for 28 years, he made an inventory of research priorities: evolutionary biology, ethology and population ecology. He chose the latter for the EGI to pursue, as the other fields were already covered by respectively Ernst Mayr and Niko Tinbergen. His first idea was to continue his population study on Robins, but despite having an extraordinary gifted nestfinder in his wife, he realised that sample sizes would be too small. After a visit to The Netherlands in 1946, where he met H.N. Kluyver and was introduced to the nestbox study on tits started by Gerrit Wolda in Oranje Nassau's Oord in 1911, he decided to emulate the Dutch tit study. As study area, Wytham Woods was chosen, already the playing ground of the BAP, and many decades later justly famous for its ecological studies (see Wytham Woods: Oxford's ecological laboratory, published in 2010). These must have been exciting times. This biography gives a feel of the science, but also of the controversies and snake pits involved. Curiously, at the very end of the book, two pages are added, almost as an afterthought, with the title: Who was David Lack? And yes, indeed, the book offers little in this regard, perhaps because Lack himself was a rather reticent character whose life was cut short at 62 years of age. Peter Crowcroft, though, in his History of the Bureau of Animal Population (pp. 137–139, see above), gives some fine examples.

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Easterbrook T. (ed.) 2013. Birds of the Heart of England. Liverpool University Press, Liverpool. ISBN 978-1- 84631-885-6. Hardcover with dust jacket, X + 202 pp. Many photographs and figures. Euro 30.99.

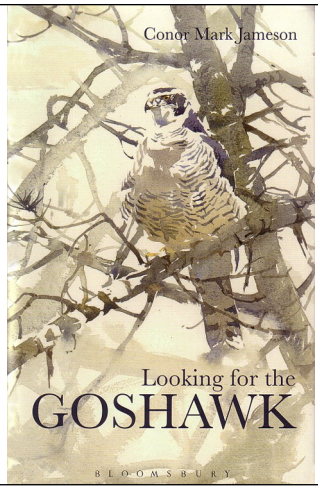


Any book claiming a 60-year study is worth examining, as very few studies of such length are available. Systematic bird monitoring started in the late 1960s (in Britain, in other European countries often as late as the 1980s, or even later). Imagine my eagerness when – beguiled by the announced time series of 1952–2011 – this book came along. Finally breeding bird data from the 1950s and 1960s, the very wet years in the Sahel preceding *La Grande Sécheresse*, which might shed some light on bird abundance before the drought-related crash in the 1970s and 1980s. Alas, it was not to be. This avifauna describes the birds centred on Banbury (eventually covering twelve 10 km-squares, mainly farmland), as recorded by members of the Banbury Ornithological Society (BOS) between 1952 and 2011. At first, a few observers were involved in recording and ringing birds. This changed gradually into systematic counts of single species and – eventually – into a systematic survey of all species from 1991 onwards. Hence, time scales in the figures depicting abundance, distribution, records (250,000 computerised) or flock size variously start in the mid-1970s, 1982 or early 1990s, depending on the scheme. Such time scales are exactly what other monitoring schemes in Europe have to offer, wonderful in itself, but not nearly in the league of 50- or 60-year long series covering the enigmatic mid-20th century.

The major part of the book consists of species accounts, varying from single records of rare species to full page descriptions of distribution and abundance including graphs, tables and photographs (the latter, unfortunately, portraits without documentation). Graphs are small with various time scales, hence difficult to interpret and to compare within and between species. The accompanying text offers detailed information about dates and numbers, but trends are rarely explained (nor relevant scientific literature used). Where country-wide data from the Breeding Bird Survey (BTO) are used as a comparison, similarities are hinted at but differences not explained (which would have been much more interesting). The local data show pronounced ups and downs, especially compared to the smooth BBS data. Trends are often similar between local and British trends, but for an understanding of what is going on, local data are probably better suited to provide insight in the why's of shifting numbers. For some species, data are sufficiently detailed to put the mind into orbit, as in Pheasant (imagine the numbers released every year, the feeding involved, the "hungry gap" from February to April, when feeding stops), Sparrowhawk (more often in gardens nowadays), Buzzard (tremendous upsurge, a reminder of the extent and intensity of persecution in past decades), Hobby (apparently increase, in contrast with the poor performance in mainland western Europe), Turtle Dove (going down forever, it seems), woodpeckers and cardueline finches (garden feeding has become huge in UK, with large impact on many species), and so on. The book ends with chapters detailing conservation efforts (small scale, reserves managed by members of the BOS, a dedicated and long-term commitment, an example for the larger institutionalised conservation bodies), ringing (1962–2011), and tables with basic data. A nice example of making a societies' legacy available for the public. (RGB)

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Jameson C.M. 2013. Looking for the goshawk. Bloomsbury, London. ISBN 978-1-4081-6487-7 (also available as e-PDF and ePub).
Hardcover with dust jacket, 368 pp.
Euro 23.99



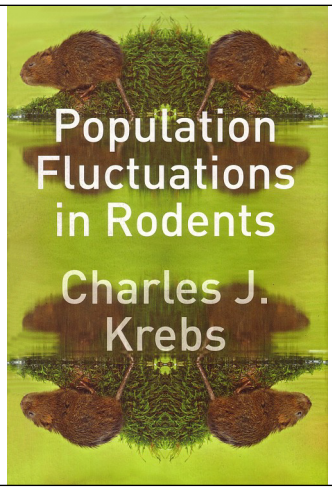
A long long time ago, Goshawks used to be scarce, rare even. Seeing one produced a red-letter day. Reading Jameson's book brings back memories of those long gone days. The excitement of seeing a possible Goshawk, the doubt afterwards, the lack of a search image, how to interpret other people's observations. In Britain, Goshawks are on the winning side, despite heavy persecution. In the words of Mick Marquiss, one of the Goshawk researchers frequently approached by Jameson for feedback: reproductive output nowadays surpasses (probably substantial) losses due to persecution, hence the inevitable increase and range expansion. This formidable predator, in Jameson's words the "most raptorial of raptors", has regained its foothold in the British Isles, after having been lost to persecution somewhere in the late 19th or early 20th century. Not because birds from mainland Europe made the crossing and recolonized Britain (although some may have done just that), but because escapees from falconers settled and successfully reproduced. Nevertheless, at the end of the book, after a J.A. Baker-like search across the country and Europe at large, his local patch with suitable habitat is still devoid of Goshawks. His search image may have improved, but is not yet sufficiently developed to identify Goshawks at a glance, as evident from his final report, at the end of the book: "We have found the Goshawk, nearly definitely". It reminded me of my own ramblings in the Goshawk-scarce 1960s, when it took some time to become acquainted with Goshawks and to learn to identify them at a glance.

This book is much more than a monomaniacal search for Goshawks. It is a perception of the world as a place for man and beasts, embedded in history, arts and culture. The spirit of J.A. Baker, whose search for the Peregrine in a depleted countryside in the 1960s has become legendary, hovers above the present book. No wonder, also, that W.H. Hudson gets pride of place, born and raised in beloved Argentina but living much of his adult life in Britain (with a pang that "I probably made choice of the wrong road of the two then open to me", as expressed in 1920 in the introduction of *Birds of La Plata*). Despite this pang, he was exceptionally qualified to write about Britain's countryside, looking through the eyes of a foreigner and with the passion and compassion.of a conservationist avant la lettre. T.H. White, author of *The Goshawk*, is another character that receives a lot of attention, not least because he lived at a time when wild Goshawks were absent. Instead, he imported a Gos from Germany, trained the bird and wrote about it in the form of a diary, a "saga strewn with error, frustration and mishap" in the words of Jameson. Hardly the place to look for information on wild birds, but evidently the kind of prose that rings a bell in readers with a more literary state of mind. White's ride in Goshawk land is a nice leg to ponder about man and birds. On the other hand, real biology is not entirely lacking. Conor Jameson visited Rainer Altenkamp in Berlin, where Goshawks breed in the inner city, Dave Anderson in Aberfoyle, Paul Marten in Sussex, Malcolm Henderson in the Borders, Brian Little in Kielder and, of course, Mick Marquiss in his Scottish haunts. All these people have stories to tell and statistics to share, based on first-hand experience. The author uses this information to better understand past and present distribution, to check data, to get a feel for the Goshawk's jizz and as a side-show for another story. In an appendix, historic records are listed and critically assessed per county. Some of the past Goshawk claims thread their way through the present book, as the author tries to verify the whereabouts of a mounted bird or skin.

This multi-faceted book is a tribute to a bird that is successfully making its comeback. Whilst written in the tradition of nature writing for which Britain is justly famous – think J.A. Baker, W.H. Hudson, Frank Fraser Darling, Roger Deakin, Richard Mabey, Robert Macfarlene – it transcends the typical monograph (in terms of Robert Kenward's *The Goshawk*, where the hard-core information can be found on its ecology) and takes flight in the world of the imagination (but without the inflated 'wilderness' talk so popular these days). A real treat. (RGB)

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Krebs C.J. 2013. Population fluctuations in rodents. University of Chicago Press, Chicago. Hardcover, X + 306 pp. ISBN-13: 978-0-226-0135-9 (also available as e-book, ISBN 978-0-226-01049-6). Euro 45.99.

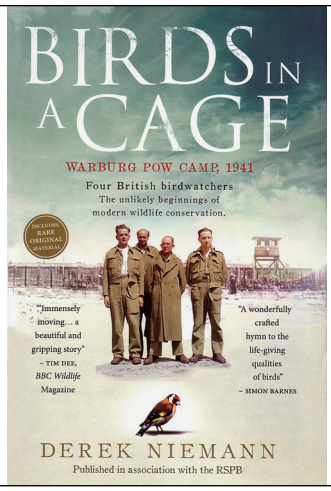


In 1996, Dennis Chitty published his *Do lemmings commit suicide? Beautiful hypotheses and ugly facts*. A must read for students of population dynamics, funny, informative and with an outspoken view on how to do science. That book was written for three kinds of readers, i.e. his successors in the pursuit of an ecological Holy Grail (which was not found by Chitty himself, despite a lifetime's input), unconventional scientists (like he was) and anyone interested in mysteries. Charles Krebs embodies all three of them, and better even, he succeeds where Chitty was left in despair: there is now a general understanding of large- and small-mammal population changes (but a lot to tackle yet). This understanding is laid out in crisp prose, key points, alternatives, conclusions and clear figures. Krebs doesn't suffer poor science gladly, or, as he says in the preface: "we have to state our ideas in a clear manner with clear predictions, and then conduct rigorous experiments to find out whether they are correct. The rodent literature is rife with papers that do not follow this approach, and I will not speak highly of such work." Krebs is eminently suited for the task to unravel the mechanisms behind populations fluctuations in rodents. He worked a lifetime with rodents and is well acquainted with the work of the other Holy Grailers. The focus is kept narrow by concentrating on the voles and lemmings of the Northern Hemisphere (rats and mice only when specific questions arise). No birds therefore, although these may have similar cyclic fluctuations (think of raptors).

Rodent populations vary from relatively stable to highly cyclic, within and between populations of the same species. The time scale of rodent dynamics is monthly or even weekly, rendering annual census estimates of limited use (oops). Also, relative abundance (index) is something else entirely than absolute densities. Only the latter can be used in trying to understand population dynamics. Krebs makes a strong point not to use the dichotomy of cyclic and non-cyclic populations, especially not when the implicit conclusion is that two different sets of limiting factors must be involved. Rather, "it is more useful to investigate the general problem of what causes instability in rodent populations, to suggest general explanations and alternative hypotheses, and to apply these ideas widely to small rodents or wider assemblages of species." The supposed latitudinal gradient in cyclicity (high in northern, less so at temperate latitudes) is evident in the *Myodes* species (Bank Voles, formerly *Clethrionomys*) but not in *Microtus* in either Europe or America. About the tropics: no data available. Peak densities could refer to primary productivity of habitats, or abundance of predators. Population growth rates are affected by a multitude of factors (making the study of single factors obsolete), with predation and social behaviour probably being the dominant mechanisms of regulation based on direct and delayed density-dependent effects. Experimentation, however, is fraud with problems, notably where enclosures are involved. Strong effects in enclosures are difficult to replicate in field populations, not to mention problems related to the restricted time frame used in experiments and the small scale. The conclusion is that, although generality in explanations of why small-mammal populations fluctuate and differ in abundance should be a main focus, time- and place-specific studies of one or few species are still badly needed. And methodology is even more important than replication in developing and testing evidence-based hypotheses, something that was lacking in many classical studies. With the ideas propagated in this book, the "cycle problem" (Chitty's expression) is more or less solved, methodologies have chrystalised, ideas and models have been rejected and proposed, key studies yet to be done outlined. Science at its best. And no gobbledygook whatsoever, completely in line with Chitty's book. (RGB)

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Niemann D. 2012. Birds in a cage. Short Books, London. Hardback with dust jacket.
312 pp. ISBN 978-1-78072-093-7. Euro 25.99.

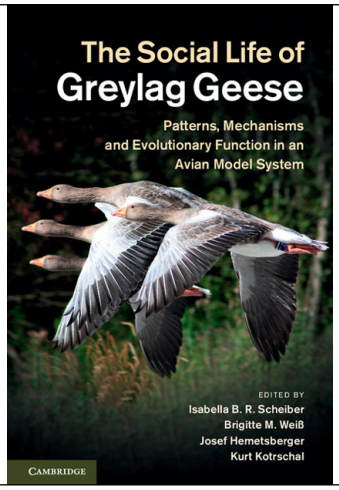


Imagine you are in your twenties, war breaks out, and within weeks/year you are a prisoner of war (POW) and will spend the next four to five years behind barbed wire. What to do to survive? This book tells the story of four of these unfortunates, John Barrett, John Buxton, Peter Conder and George Waterston. All four survived the war, all four became household names in the UK as director of the Royal Society for the Protection of Birds, poet, writer of natural history books or nature guide. Throughout 1940–45 they shifted from one camp to another, not always together but driven by the same passion for birds. Camp life in general was much less devastating than in the destruction camps (in Lübeck, of Russian POWs held in the adjoining enclosure, more than half died within a year), although – except for several relatively lax periods, medical care and a library – nothing like a vacation. Perhaps they also profited from being officers, resulting in a privileged treatment. Whereas in some camps POWs found an outlet in scheming about and effecting escapes, the four naturalists found a joint passion in watching birds and other wildlife, inspiring many more POWs along the way. In fact, not just watching but carrying out basic research on species that offered opportunities to collect systematic notes on nest building, courtship, incubation, foraging, breeding biology and migration. In various camps, they undertook detailed studies of Goldfinches (P.J. Conder, *Ibis* 90, 948: 493–525), Chaffinches (J.H. Barrett, *Ibis* 89, 1947: 439–450), Wrynecks, Redstarts and Barn Swallows, among others. These observations were planned and often involved innovative use of scrap and scarce materials. Teams were employed and instructed to detail behaviour throughout the day, followed in the evening by extensive writing up. To give an idea of the intensity of fieldwork: in Eichstätt in 1943, Waterston and his team observed a Wryneck pair throughout the first failed breeding attempt and the successful repeat laying for 1200 h (incidentally, one of the few prolonged bird studies in camp that remained unpublished; Waterston "said little and wrote less"). In his monograph *The Redstart*, published in 1950 in the New Naturalist series, John Buxton made extensive use of the notes he had taken whilst imprisoned in Eichstätt, explicitly mentioning the 850 h spent in watching a single pair in the summer of 1943. To attract Redstarts, they even produced and put up nestboxes and persuaded the camp authorities to put some of newly acquired land aside in the crowded camp as a 'nature reserve'! At the same time, contacts with people outside were maintained and nurtured via the Red Cross, not only with loved ones at home and the repatriated George Waterston (who had a kidney problem, and was included in an exchange of prisoners), but also with Erwin Stresemann in Berlin. Stresemann, spider in the web of European ornithology and long-time editor of *Journal für Ornithologie* and *Ornithologische Monatsberichte*, was in a position, though not without personal risk, to provide the POWs with recently published ornithological journals and a complete set of Niethammer's *Handbuch der deutschen Vogelkunde*, of which the third and last volume had been published in 1942. Stresemann even sent bird rings and colour rings, with which the POWs banded more than 60 birds. Earlier on, ringing had been attempted by John Buxton and Richard Purchon (a mollusc specialist who had studied the behaviour of crickets in camp, later published in *Field Studies*) with home-made rings; successfully, for seven juveniles returned the next year. These studies resulted in a paper about the nesting activities of Barn Swallows in the *Proceeding of the Zoological Society* 118 (1948, 146–170), based on >600 hours of observation in 1943 and 1944. Erwin Stresemann was even bold enough to use observations made by George Waterston, when fighting the Germans on Crete in the early war years, for a publication on Crete's birds (*Journal für Ornithologie* 91, 1943: 448–514). Clearly, birds were more important to these men than politics. In fact, many POWs with a focus seemed to survive better than those without a goal, notably when conditions deteriorated towards the end of the war. Eventually, all four 'birdies' made it home, where accomodation to post-war life was not easy. After-effects of POW life remained visible. This didn't detract from creating

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successful careers, with birds as a sidetrack (Buxton, who was probably the most traumatized) or as a prominent part of daily life (the others). All four refrained from talking or writing about their experiences, except where birds were involved. The present book fills therefore a gap, with lots of first-hand information obtained via personal notebooks and correspondence (some of it reproduced), memories of family and 'messmates', and background information. An extraordinary story, one of many emanating from those crazy years when at least some people found meaning among squalor. (RGB)

The social life of Greylag Geese. Patterns, mechanisms and evolutionary function in an avian model system. I.B.R. Scheiber, B.M. Weiß, J. Hemetsberger & K. Kotrschal (eds) 2013. Cambridge University Press, Cambridge. ISBN: 978-05-2182-2701. Hardback, 249 pp. Price EUR 64.99.



At last, with *The social life of Greylag Geese* the research that started with the study by Konrad Lorenz in 1973 is now available in a single volume. Lorenz and his group had published several papers and books like 'The year of the Greylag Goose'(1978) and 'Here I am: where are you?'(1988). After Lorenz had passed away, his group continued the study on the social structure of their Greylag population. Part of this population is hand-raised, the other birds are mainly raised in close contact to humans. The birds can freely roam around and disperse frequently beyond the sight of researchers. On the other hand, the local population has been augmented with immigrants. This makes the population more or less wild.

The Social life of Greylag Geese is divided in four parts with eleven chapters. The background of the research is presented with an introduction about (Greylag) geese. The flock of 'Konrad Lorenz-geese' is described with special attention to the daily and seasonal behaviour. The advantages and disadvantages of studying a semi-wild flock are discussed. Big advantage is that the birds can be studied at close range without disturbance. Past observations are critically reassessed in the light of current debate.

The second part of the book describes the mechanisms behind the switch from individual to flock. How do hormones like corticosterone and testosterone influence the behaviour of the birds? More specifically, is individual stress influenced by corticosterone metabolites? Aggressive (high-ranking/dominant) males, for instance, produce a higher corticosterone metabolites response during high-density feeding, possibly because high-ranking individuals lead a socially more demanding life when densities are high. For maintenance of monogamous bonds, it is important that male and female have seasonal testosterone compatibility. Higher compatibility is associated with larger clutches, bigger eggs and better lifetime reproductive output.

Interesting is the social life in Greylag Geese. The maintenance of a long-lasting monogamous band is a principal mechanism for optimising reproductive output, but the researchers are puzzled why some pairs remain paired even if reproductive success is poor, especially because Greylags are known to have various mating strategies. Some birds form male-male relations or trios. In general, such bonds are used to climb the social ladder. Birds with a social bond are placed higher in the hierarchy than birds which remain solitary. Pairs with a high reproductive output are placed highest, perhaps the main reason for gosling adoption. In pairs without young of the year, last year's young often join their parents to achieve a higher social position. Especially females benefit from these bonds, as they have a better condition than unpaired females. In males this effect is almost absent, which may suggest that females are the driving force in structuring goose societies.

The next section provides insight in the costs and benefits of social life. Within a flock of geese dominance and aggression are omnipresent. The birds' position in a group depends on its genetic predisposition, personality and history, but also on season and social environment. High dominance of the parents spills over in higher survival, earlier pair formation and earlier

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successful reproduction for goslings. On the other hand, too much aggression may have an opposite effect: lower reproduction and lower survival. Geese have to deal with changing costs and benefits to remain a high-ranking individual. Studies on heart rate modulation reveal that social life causes a lot of stress. The costs are prodigious, but in the end often profitable even when permanent stress can be lethal. So it is important to deal with stress in an adequate way. When fighting, it is utmost important to have a supportive social environment (partner, brother, sister). Birds with support have a slower pulse and a lower level of corticosterone metabolites compared to solitary birds. In general birds that are solitary do not start a social bond. The importance of recognizing allies in a complex social society is born out with experiments which show that Greylag Geese readily learn which flock-members better not to attack. They can link different events and then know if an opponent is stronger without resorting to conflict with a specific bird. One of the profits of being a high-ranking individual are having a high reproductive output without much fighting; every member of the flock knows which birds are the strongest in the flock.

In the final section, the editors pose the question whether the Greylag Goose is an ideal model species in the study of social complexity in vertebrates. And lo and behold: their answer is yes (as is mine). The species has a complex social structure comparable to that of anthropoid apes and other social mammals. They are grouped as *brainy* birds, like parrots and corvids. Specialised parts of the brain indicate that Greylag Geese also have the equipment to store and cultivate social information. The term 'silly goose' certainly needs revision after reading this book. As W. Rost once said to Konrad Lorenz: "*Gänse sind auch nur Menschen*". Everyone who wants to know more about this interesting species has to read this book, it is an absolute must!

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