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*Left:* Rooks are highly social birds, spending their foraging time together as well as nesting in colonies.

# INTRODUCTION

For humans, with our eye for color, appreciation of music, and envy of flight, birds are probably the most noticed and admired of all the many groups of animals that share our world. Those who build a life-long passion for birds will experience many moments to treasure; there is no doubt that a two-hour trek through dark and difficult terrain, eventually rewarded by a fleeting glimpse of some shy and very rare rainforest thrush as it slips out of sight into the undergrowth, will live long in the memory of a dedicated ornithologist.

Yet while many birds lead a relatively solitary life, often out of our sight, others are far more social. When these birds get together they provide a spectacular show for the senses, which will arrest the attention of even the most oblivious passer-by. Few people will forget the first time they see a sea cliff face busy with all kinds of seabirds, their screams and growls rising above the booming of the waves below; or a vast flock of starlings rippling in breathtaking synchrony across a twilight sky; or penguins trekking overland to their rookeries; or the comical dances of grouse at their lek. Once you start to notice communities of birds, you will find them everywhere. You may even become enthralled by something as everyday as the comings and goings of street pigeons, as they build their own cities in the forgotten corners of our own.

When birds live together, they can all benefit greatly from the presence of others—the old adage “safety in numbers” is certainly true. If a predator attacks a colony of nesting birds, then the larger the colony, the smaller each individual’s odds are of being the unlucky victim. More birds in the group also means more eyes and ears on the lookout for danger, giving the group a better chance of spotting an approaching predator early enough to take evasive action, or to launch a coordinated counter-attack that will again be more effective if there are more defenders to recruit. Other, subtler benefits of group living include the chance to build social bonds and the opportunity to learn from others about where the best places are to make a home and where to head when you set out in search of food.

Birds can exploit their neighbors too, whether that means stealing a bit of nesting material or laying an egg in another bird’s nest to avoid parental responsibility, while simultaneously increasing the

*Opposite:* The northern gannet takes its scientific name (*Morus bassanus*) from the Bass Rock, an island in the Firth of Forth, Scotland, which holds the world’s largest northern gannet colony.

odds that more of their chicks will successfully fledge. There is also the opportunity of mating with the neighbors. This gives females the chance to perhaps have some chicks fathered by a better-quality male than their own mate, while males can father more chicks than one nest would contain, without having to take care of them.

These less-than-neighborly behaviors are rife in bird colonies, and it is inevitable that there are losers as well as winners. The risk of being exploited—rather than being the exploiter—is just one of the costs of group living. Others include the stress of competing for the best nest sites and nearby resources; the chance that other birds will aggressively sabotage your nest or harm your chicks; and the risk that the noise, smell, and visibility of the colony will be magnetically attractive to predators, in a way that a lone nest in a well-hidden place is not.

## DAZZLING DIVERSITY

Although a relatively small minority (some 13 percent) of bird species habitually breed in colonies, they represent a great variety of bird types. Seabirds are well represented, as around 95 percent of seabird species are colony forming. This isn't overly surprising, as colony formation is encouraged when a bird's feeding grounds are distinctly separate to its breeding grounds, as is the case with seabirds (no bird has yet evolved a way to nest on open seawater!). It also means that birds that hunt freely moving prey in the open air, or find their food in freshwater, are also somewhat more inclined to form colonies than birds that forage on the land and feed in trees.

The most prominently represented species living in colonies include auks, gulls, terns, petrels, albatrosses, shearwaters, gannets, cormorants, herons, ibises, pelicans, frigatebirds, bee-eaters, swifts, weavers, and swallows. You will also find a few colony nesters among the vultures, falcons, cuckoos, sparrows, starlings, tanagers, and finches. Each of these species has its own unique ecology, which dictates the benefits and costs of living alone versus living in groups.

For many bird species, nesting in colonies is neither viable nor beneficial, although group living may be a positive move outside of the breeding season; for some other species it is the other way around. There are also many cases where a species has a flexible approach, and the proportion of its population that lives in colonies will vary across time and space. Birds will make different decisions about whether to form colonies or not, as well as how large and how dense those colonies should be, depending on a range of environmental factors.

*Opposite top:* Colonies of northern carmine bee-eaters can hold hundreds of pairs.

*Opposite bottom:* Atlantic puffins prefer to dig their nesting tunnels close to other occupied burrows.

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# THE NATURE OF HOME

The types of bird colonies that you will find in different parts of the world are governed somewhat by the habitat types that are available to them. For nesting seabirds, proximity to the sea is obviously important, as time spent traveling to the right places to feed is time that isn't being spent around the nest. Being within an easy leap of the sea also means there is less evolutionary pressure for the bird to become better adapted to moving around on land, which would work against its adaptations to life at sea. So cliffs and beaches are ideal, although beach colonies are more likely to form on islands where there are few or no predatory mammals.

For birds such as swallows, swifts, and bee-eaters, which feed on flying insects, good hunting grounds are very often grasslands, marshes, and fresh water—areas where there are emergences flying insects that live aquatically as larvae. However, these habitats tend not to be overflowing with safe, sheltered places for nesting. This pushes the birds toward a colony nesting habit at whatever good nest-sites exist, be it inland crags and caves or earthy banks where tunnels can be dug.

Many songbirds living in temperate climates feed on insects in spring and summer, and on seeds and fruits in winter. These species often form flocks in winter, but tend to split off into separate pairs and defend a feeding territory around their nest, for their own use only. Some other birds are seedeaters all year round, though, and these species are more likely to be colony forming. The reason for this comes down to the distribution of their food. Insects feed on all kinds of plants, or other insects, and in general they are relatively evenly distributed. However, seed-bearing plants tend to occur in patches, and there may be large spaces between those patches. So, while a bird may “want” to defend a food patch from others, if the patch is very large and rich there is little chance of the bird being able to defend it successfully. A more energy efficient tactic is to spend time collecting food, while ignoring other birds doing the same. Consequently, year-round seed-eaters such as weavers and form breeding colonies and travel in flocks to locate food patches.

Many other birds have evolved their colony nesting way of life through a complex and individually unique set of environmental pressures. The presence of a powerful defender can encourage the formation of a colony of other species, such as the ducks and geese that nest close to snowy owls in the Arctic. At the same time, the long-established colony nesting habit in some bird families may be fading away, as some species—such as the forest-nesting marbled murrelets of the north Pacific—adapt to a different way of life.

*Opposite:* The world's most abundant bird species, the red-billed quelea thrives when it can live in dense social groups.

# NATURAL LESSONS

Community is about competition as much as it is about cooperation, and in a close-knit colony the competition can be intense. It begins with competition over the best places to nest. Every pair wants to secure as good and safe a nest site within the colony as possible, and having achieved this, they have to defend that site against other pairs with exactly the same ambition. For this reason, birds that nest in colonies often form closer and more lasting pair bonds than non-colonial species. Each bird has to rely on its partner to not only be a good parent, but also a good guardian of the homestead against the near-constant encroachment from others (at least until most pairs have begun to incubate their eggs).

Many seabirds are very long-lived, and so their pair bonds can potentially last for decades. The female of a bonded pair will often leave the colony altogether for several days before she lays her first egg, spending time out at sea, eating as much as she can to improve her body condition, while the male stays home and defends the nest site. These stay-at-home males also take advantage of the chance to copulate with any willing female neighbor, but they must be careful when doing so—if they are not in attendance at their nest site they leave it open to a usurper, and may find themselves having to fight fiercely to win it back. His returning partner will be less concerned by her mate's infidelity than by his failure to keep secure possession of the nest that she needs, or his becoming injured in a territorial fight and therefore less likely to be able to do his share of the parenting. Breeding failure—for whatever reason—tends to lead to “divorce” in these otherwise strongly bond-forming species.

As coloniality tends to evolve in species for which the best place to nest is often a long way away from the best place to feed, these birds are often great travelers. The swallow family, for example, includes some of the longest-distance migrants among all songbirds. This bird family originated in central Africa, where there are still many non-migratory species to be found today. This perhaps infers that it was the ability to travel long distances between feeding and nesting sites that came before a migratory habit. If this is the case, preexisting adaptations to long flights would have placed these birds in a good position as some of their lineages started to evolve a seasonal migratory habit over longer and longer distances, to make the most of the large numbers of insects found in temperate climates in spring and summer. Their sociality also benefits them beyond the nesting colony; as they migrate in groups, experienced adults serve as guides to younger birds, and when they roost in perhaps less-than-hospitable terrain during their journeys they all benefit from group vigilance.

In this book, we will explore bird colonies and gatherings in all their forms. We will learn how a complex balance of rewards and costs comes into play in shaping these communities, and how each individual within the group strives to maximize its own benefits and those of its offspring, while remaining an accepted member of a group that may—from time to time—have to set individual interests aside and function as a single unit for the salvation of all.

The complex dynamics in a bird colony give rise to some of the most fascinating and dramatic natural behaviors, making a bird colony endlessly engaging to watch. Sociality in nature fascinates us because we humans are such social animals ourselves, and we instinctively understand how group living works, from small-scale to vast. Through the power of teamwork we have established sophisticated, colossal societies that harvest and distribute the world's resources so efficiently that we are truly becoming victims of our own success. Indeed, we are now placing all life on Earth in jeopardy. But perhaps through a greater understanding and appreciation of how wild bird societies develop and function we can learn some better ways of living, or at least find the inspiration to drive us to take care of the world we have so successfully colonized.

*Below:* When visiting their chicks on land, it is standing room only for king penguins.







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*Above:* The sole interest of a Bohemian waxwing is the finding and eating of berries, and its group size varies according to the abundance and distribution of this vital resource.

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