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# INTRODUCTION

A **CASCADE OF LIQUID NOTES** made me look up from the gray New York street to admire an iridescent, green and purple bird with tiny white arrowheads highlighting the tips of each glistening feather. The European starling is so widespread it can easily go unappreciated, but this bird exemplifies much of what this book is about—from why birds behave the way they do, to how their interactions with each other and with humans inspire and influence our view of life.

European starlings appear repeatedly in this book, partly because they feature so much in both art and science. Shakespeare’s only known reference to the species, in *Henry IV, Part I*, is to the starling’s ability to mimic almost anything. There are scholarly speculations, including a long essay by biologists who specialize in the study of birdsong, about how Mozart and his pet starling inspired each other musically. We do know that Mozart loved his little “joker,” going as far as to write an elegy to the bird when it died. European starlings are so tractable, adaptable, and social that they are a beloved species for biologists studying everything from language, to economic decision-making, and to collective animal motion.

## NATURE VIA NURTURE

When you watch a bird constructing an intricate nest or screaming in alarm at a hawk, you might well wonder how it “knows” what to do and when. In fact, most bird behavior is a combination of innate neural hardwiring, and constant adjustments and reprogramming in response to its environment. For instance, a young bird may be predisposed, through generations of natural selection, to emit a certain sound when alarmed. However, it must learn how to refine the alarm call and when to sound it by observing adults attacking a predator. A European starling has the capacity to produce a perfect rendition of a red-tailed hawk’s scream, or “I love you” in multiple human languages, but only if it is exposed to those sounds.



**Above**

I watched these lesser masked weavers constructing their nests every day on a friend's farm in Zambia. This male is putting the finishing touches to its nest.



**Above**

There are few sounds that so evocatively epitomize a particular landscape as the song of the western meadowlark, which speaks to me of Big Sky Country in the American West.

## **AESTHETICS, ANTHROPOMORPHISM, AND AMORALITY**

To what extent can humans and birds really identify with and understand each other? This depends rather a lot on the individuals in question, but birds have a lot to teach us in terms of how other species have evolved to perceive the world. European starlings often make more rational (as defined by economic theory) decisions than humans when foraging, as discussed in chapter 1.

As a gregarious species, they serve as a popular model for how songbirds and humans learn to communicate vocally—see chapter 2. In chapter 3, on courtship, we learn how the starling got its beautiful feathers and virtuosic vocabulary by selecting the most attractive mates. Chapter 4 deals with raising a family. Female starlings exposed to more predation can “program” their chicks to be better at eluding predators because eggs exposed to higher levels of stress hormone hatch into chicks with better-developed flight muscles. This also illustrates one of many ways birds deal with danger in chapter 5, where we also explore how and why starlings form such massive and coordinated flocks, called murmurations. In the last chapter, on climate, we see how highly flexible birds, such as European starlings, cope easily with a changing environment, expanding their range and often ceasing to migrate when settling down in a city all year round is the sensible thing to do.

The European starling came to the New World in the 1890s, when a well-intentioned member of the American Acclimatization Society decided to introduce all the birds mentioned in Shakespeare’s plays, and released about sixty starlings into New York’s Central Park. These highly adaptable birds now constitute a major introduced pest in North America, wending their way north and west as far as Alaska, especially as human development and climate change continue to make the frozen north ever more salubrious.

The starling’s success is the perfect example of how evolution is amoral. It would be unfair to blame these consummate opportunists for the fact that they cost the US about \$1 billion a year in crop damage, or that their success as immigrants may be threatening endangered natives such as the red-headed woodpecker.

If some of the language in this book smacks of anthropomorphism, that is because as a social species, it can be tricky, even for scientists, to remain completely objective. Some words, such as “divorce,” or “personality,” are widespread in the technical literature, whereas others, such as “extra-pair copulations” are more of a mouthful, and I will sometimes cut to the chase and use the human equivalent (extra-marital affairs).

## BIRDS AS INDIVIDUALS

Biologists are starting to appreciate how much individual birds differ within a species, as well as how flexible individuals can be over the course of a lifetime. Testosterone influences how males switch between having more matings, and being better fathers to fewer children. Junco males with higher testosterone levels attract more females and have more extra-pair offspring. More testosterone doesn't increase the number of affairs male house sparrows or blue tits have, but they do attract more social mates. These males provide less paternal care than males with lower testosterone levels.

One of the things I love about birds, that most birdwatchers have in common, is the fact that they are everywhere, and provide an extra channel by which to experience a new place. This book celebrates the sheer diversity of bird behavior from all over the world. By highlighting both classic and the most current scientific studies, it explores not just why birds behave the way they do, but how we know that. Ultimately, I hope to deepen your appreciation of the birds you encounter, wherever you are.



### Below

I saw this purple-crowned fairy  
(hummingbird) having its breakfast  
while I had mine, in a beautiful garden  
in Costa Rica.

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