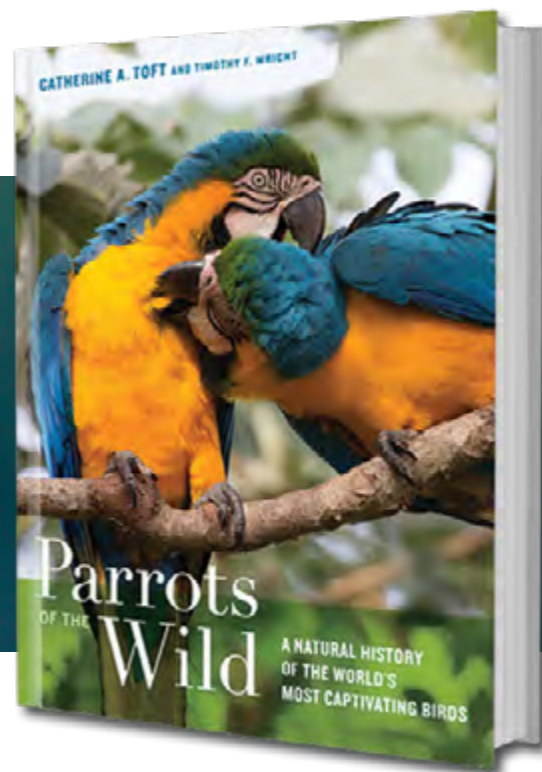


## Sneak Peek

# Parrots OF THE Wild



A pair of Orange-fronted Parakeets, *Eupsittula canicularis*, perch atop a tree.  
© Hans D. Dossenbach

*"My travels to the pristine rainforests deep inside the Amazon River Basin in the 1970s gave me a glimpse into what my native continent of North America must have been like before the arrival of European explorers in the fifteenth century... In another moment of insight in my career as a naturalist, I visited the old-growth hardwood forests of the Congaree River floodplain, in South Carolina, in the early 1970s, when its ownership was still in private hands.*

*With a reverence normally reserved for cathedrals, my doctoral advisor John Terborgh, his colleague and fellow plant ecologist Egbert Leigh Jr., and I found our way into the bottomland majesty of this forest. This never-logged tract was an exceedingly rare remnant of the forest that once covered vast areas of eastern North America... the moments of wonder and heartache that I experienced that day in the Congaree have never left me. My disquiet has continued because of the silence of the forest and the absence of animals that should have been there. Among other denizens, the environs of the Congaree River bottoms should have been filled with the chatter and flash of busy parakeets browsing, exploring, playing, and tousling."*

- Author Catherine A Toft, PhD

*Parrots of the Wild: A Natural History of the World's Most Captivating Birds*



This remarkable passage clearly reflects co-author Cathy Toft's grief at the loss of biodiversity in the world's forests. Her unease at these discoveries helped spark her resolve to fight for the natural world, and for parrots in particular. *Parrots of the Wild* was one way for her to reach people about the lives of wild parrots and to celebrate these wonderful birds. Please enjoy the following excerpt from her book - perhaps it'll spur you on to help them as well. - Ed.

### Chapter Excerpt: *Parrots as the Most Human of Birds* Pages 261 - 263

The research on wild parrots related in this book weaves a rich story of their biology, ecology, and evolution that resounds a common theme. Parrots represent a particular adaptive syndrome that they share with few other animals.

In the big scheme of life, parrots, regardless of their size, are relatively long-lived; reproduce slowly, raising only a few offspring every once in a while; care for their altricial young most often as life-long-monogamous parents; learn much of what they need to know from their parents and cohorts using their extra-large brains; engage in play, often beyond their youth; communicate using sounds that they invent and copy; live socially in small groups; and depend on locally abundant but widespread, variable, and unpredictable resources.

Parrots share this adaptive syndrome with some primates (monkeys, apes, and humans), cetaceans (whales and dolphins), elephants, and corvids (crows and ravens), to greater or lesser degrees[...] The match seems especially good between parrots and one particular species—our own. We humans converge on this suite of adaptive traits with parrots by a mixture of descent from a common ancestor (homology) and convergent evolution by natural selection (analogy).

Recall that natural selection is the process by which the traits of organisms are molded in response to a given environment, so that these organisms may

function as best they can. Thus one can say that parrots are the most human of birds, backed by strong support from science. Wait, you might say. Is not such a statement blatantly anthropomorphic? The label of anthropomorphism is thrown around quite a bit these days in many quarters. In this epilogue, it is fitting to put anthropomorphism in an appropriate context, as the bulk of scientific studies on parrots point to these evolutionary parallels with humans. Anthropomorphism may be defined as the error of incorrectly attributing human traits to other species.

Many scholars now take the position that the past focus on avoiding anthropomorphism creates an unacceptable barrier to study, thought, and discussion that harms progress in many fields. We are all the poorer in our understanding of both human and nonhuman animals for this past bias[...]

Turning back to parrots, we are therefore not being anthropomorphic when we recognize that parrots share certain traits with humans. Although a few of these traits, such as basic brain structure (chapter 4), follow from our common vertebrate heritage, most have arisen by convergent evolution, as discussed throughout this book. Natural selection has molded parrots and people in response to the environments in which our ancestors lived. We share large brains and dependence on learning because we are social animals, adapted to solving problems in groups of individuals rather than striking out on our own.



A small flock of Blue-headed Parrots (*Pionus menstruus*) in southern Pará, Brazil.  
© Carlos Yamashita

Parrots and humans (and other primates, and cetaceans, corvids, and elephants) are social and intelligent because the resources on which they depend are locally abundant but scarce and unpredictable on larger spatial and temporal scales. Harvesting such resources efficiently is aided by a good memory, flexible social interactions, and perhaps the sharing of information about resources. Corollaries to sociality and dependence on learning are long lives and infrequent reproduction. In this way, a few offspring can be carefully attended so that they acquire sufficient skills and knowledge before they become independent.

Parrots also happen to share our inventive use of vocalizations, presumably as a more flexible way to communicate in this social environment. After thinking long and hard about why parrots evolved vocal learning, I have arrived at the hypothesis that humans first evolved vocal learning for similar reasons. I doubt that humans evolved vocal learning in anticipation of building great civilizations and libraries—evolution does not work that way. Rather, I believe that humans evolved vocal learning to enhance their use of song, and therefore some aspects of music, for the same reasons that parrots added vocal learning to enhance their communications.

Because of the many evolutionary parallels between humans and parrots, I hypothesize that human songs and music were first used to woo mates and establish group identity and cohesion. Copied sounds are used primarily for these purposes in other animals with vocal learning, and human songs still fulfill these functions to this day. Recent studies establish that parrots are able to synchronize with a beat, that is, entrain their

movement to music, as reported in several articles cited in the notes. In these publications, the authors support the hypothesis that musical ability and vocal learning are intimately tied in both parrots and humans.

Thus, vocal learning may well have evolved and had the same original functions in humans as we know it to have in parrots. Once vocal learning was in place in humans, it could then be co-opted for flexible communication among group members to solve problems. This same process I hypothesize to be in play in parrots, albeit to a vastly simplified degree compared to this trait in humans. Parrots of some species in particular seem capable of using copied sounds as labels and connecting these labels syntactically, as best exemplified in Grey Parrots.

A lesson I therefore hope to share from the threads woven through this book is that one group of birds, the parrots, shares much in common with our own species. This conclusion arises from a solid body of rigorous scientific study. It is not anthropomorphism to so conclude but rather poses an insightful instance of evolutionary convergence. To say that humans are the most parrot-like of mammals would be equally correct. We humans love parrots and are fascinated by them because they are like us, and we are like them. My final hope is that this love and fascination can be transformed into providing better lives for them both in captivity and in the wild. □

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Excerpted from *Parrots of the Wild*,  
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## CO-AUTHOR INTERVIEW

Recently we had a chance to chat with Dr. Tim Wright, co-author with Dr. Cathy Toft of *Parrots of the Wild: A Natural History of the World's Most Captivating Birds*. Both took on the mammoth task of consolidating research data on wild parrots for the book. Sadly, Cathy was stricken by illness just as she was completing the final draft and did not live to see the book go to print. Fortunately Dr. Wright, her colleague, research associate, and friend took up the cause for Cathy and was able to finish. Below we present an excerpt from the interview with Dr. Wright.



**Q** The book presents a great deal of information about what is known now, but also poses many questions. For example, there is a lovely line that ends a discussion on parrots eating fruit - which are carbohydrate rich but low in proteins - that confronts an unsolved mystery of how fruit-eating parrots can be so large. Where do you think we are in terms of what we know about parrots?

We still have more to learn, and part of it is developing new tools and new ways of thinking about how and why animals in the natural world work. To answer the question directly, I think we are sort of scratching the surface. I think what the book does is a nice job of sketching the basic outline of a parrot: intelligence, communication, cognitive abilities, mating systems. We go through and talk about the general patterns we already know, but those are based on relatively few of the 350+ species of parrots.

Parrots have evolved on all four corners of the earth and in a wide range of habitats, so we should expect that there's going to be a diversity

of evolutionary responses to these different habitats over millions of years. That's going to lead to a lot of interesting differences between species. I think the next generation of work on parrots will be to try to take these topics and start comparing them between closely related species in different habitats, how is that evolutionary time impacted, and how they respond to the environment.

**Q** Does that mean that there's going to be the need for much more study in the field or can this be done with laboratory birds?

I think the two styles of study can be very complementary, particularly when we are getting new tools to study. One of the reasons why we are a little bit behind with parrots compared to some other types of birds is that they are challenging animals to study. They are often very strong flyers, so they move long distances, they may live in big flocks, and so following individuals around and understanding how they are relating to other individuals can be difficult and requires technology like

radio collars or GPS telemetry units. Because of this I think there can be a lot learned from working with captive populations as long as that work is done within the context of trying to understand how it relates to the wild animals. For example, we do work with captive Budgerigars, trying to recreate social context that we might see in the wild and understand how that impacts their learning of vocalizations.

**Q** You mentioned Budgerigars, they are an interesting species, aren't they? They are extremely well known in captivity, but actually very little is known about how they live and behave in the wild.

Budgerigars are a huge challenge in the wild because they are nomadic, they are living in parts of central Australia, where it's very dry and so they are following rainfall and they are doing so in flocks of a million; you can find these magnificent pictures on the Web of superflocks of Budgerigars. Trying to follow an individual around in that sort of setting is well beyond the tools we have at our disposal now.

**Q** I am going to pull another line out - a fascinating summary of the book as a whole and it arrives at the conclusion that humans are the most parrot-like of mammals. I thought that was a wonderful inversion of the usual anthropocentric view that animals are like us rather than the other way round. It's a very big question, but if we were to think of wild parrots in those terms - that we are the most parrot-like of mammals - do you think we might treat them a little better?

I would certainly hope so. I think this has been an underlying motivation for me as a teacher in general is that if we can help people come to a better understanding of the natural world around us, we can have more empathy for that world and treat it better, and in a way that's more sustainable. Thinking about humans perhaps as more parrot-like can really teach us a little bit about what we are and how we came to be. I think some of my work on vocal learning is really trying to understand what it is about parrots that led to the evolution of this relatively rare ability, and to what extent similar circumstances were present in our own ancestors, and drove the evolution of vocal learning that underlies our own language.


**Q** That's something you studied with Yellow-naped Amazons in Costa Rica; can you tell us a little bit about that?

So now we are onto my own special passion, understanding why parrots are such incredible mimics - why parrots have evolved the ability to learn vocalization. Parrots have formed a relatively rare phylogenetic ability, meaning they have evolved multiple times in different lineages. And these lineages are not each other's closest relatives, suggesting that this ability to modify vocalizations based on social experience has evolved multiple times and the neural capacity - the brain machinery that underlies this ability - has evolved multiple times. For me, that's been a really interesting puzzle throughout my career.

**Q** I thought that was an absolutely fascinating section of the book, though I have to admit I found them all fascinating! I was approaching this book as someone who loves parrots anyway, but my personal background is as a general birder, and I realize how much I was getting from it as a birder; I think anyone interested in birds *per se* will take a lot away from this book.

Thank you, I would certainly like to think so. I think any scientist likes to believe their work is broadly interesting beyond their narrow circle of people who might be interested just in parrots or in vocal learning in parrots. Parrots really are extraordinary in many ways, so I think they have a lot to teach us about the natural world and about how evolution has worked to solve problems of making our way in this world.

**Q** A percentage of sales from the book is going to support the work of the World Parrot Trust; that's a very generous gesture. Was that something that Cathy decided right from the start?

Yes, that was Cathy's wish. She first started discussing this book with Jamie Gilardi, the Executive Director of the WPT who was her graduate student many years ago. It was always conceived of as a partnership, and it was Cathy's wish from the outset that her portion of the sale profits would go directly to support conservation efforts of the World Parrot Trust. It's a very fitting way for her work to live on. 

## About the Authors

Dr. Catherine Toft was a professor at the University of California, Davis. She was an evolutionary biologist and lover of parrots, both wild and companion. Writing *'Parrots of the Wild'* was a labour of love for Cathy. It was her final wish to use the proceeds of this book to help conserve parrots worldwide.

Dr. Tim Wright is an Associate Professor at New Mexico State University. Research in the Wright lab focuses on the function and evolution of vocal communication in parrots.

## Hear the Interview ↻

Go online to hear the full interview with Dr. Tim Wright: [www.parrots.org/potw](http://www.parrots.org/potw)

## Get the Book ↻

*Parrots of the Wild, A Natural History of the World's Most Captivating Birds* is published by University of California Press and is available for purchase through the WPT online at: [www.parrots.org/potw](http://www.parrots.org/potw)