THE ART OF THE BIRD: THE HISTORY OF ORNITHOLOGICAL ART THROUGH FORTY ARTISTS

Lederer, R.J. 2019. University of Chicago Press, Chicago. 224 pp., 200 color plates. Hardcover: ISBN 978-0-226-67505-3, $35.00USD.

Our understanding of birds—from scientific knowledge to cultural perception—is thoroughly intertwined with art. So suggests *The Art of the Bird* by Roger Lederer, and while I have some reservations about the book, I endorse this message with enthusiasm. Admittedly, as someone who studies birds, sketches birds, and illustrates stories about birds, I may not be the most objective of reviewers.

These bird-bedazzled pages show us a narrow sliver of art history, dominated by detailed works of western artists since the 1600s. The text, though it includes many interesting historical tidbits, reads more as a fragmentary collection of notes than a unified analysis. But the power of art is potent. Every time I caught a glimpse of my copy, with its lush bird-of-paradise cover by William Cooper, I felt compelled to open the book and leaf through it.

The Table of Contents looked intriguing: 40 artist profiles outlined chronologically and grouped thematically into ten chapters. Chapters 3–7 cover a scientific progression from the late 17th through the early 20th century, with such titles as "Before Ecology" and "In the Age of Darwin." (At odds with this scheme are the first two chapters, rather specifically devoted to "Flemish Baroque Artists 1580–1700" and "Early English Artists 1626–1716." More on that soon.) The remaining chapters proceed to the present day with themes of culture and conservation, including "Bird Art Supports Birds" and "Ornithological Art Expands."

I found this promised narrative to be something of a mirage, as I read the book from start to finish. History is always messy, and I wasn't surprised when themes surfaced sporadically rather than in synchrony with the chapters. I appreciated the occasional use of page number references to link artists across different periods. However, I was disappointed by chapter overviews that clung to the ostensible structure without clear narrative evolution, and passages that wandered in a descriptive maze of "who, what, when" without keeping sight of the "why."

The book's nebulous tone is set in the introduction, which covers the first 40 000 years of bird art on one page under the heading "Myth and symbol"—perhaps not the most nuanced way to summarize many millennia of bird artists (including the likes of Huizong of 12th century China, to name a single prominent example). The second page launches abruptly into the topic of "Bird illustration in Europe" without articulating a reason. Eventually, we infer that we have landed here to explore advances in bird art connected with advances in western science. It was 1676, Lederer writes, when "ornithology came to be a science" with the publication of a textbook by Englishmen Francis Willughby and John Ray.

As for Chapters 1–2, we never get an explanation of why they examine early Flemish and English works rather than any other pre-ornithological art. Nevertheless, the elaborate depictions of dead game

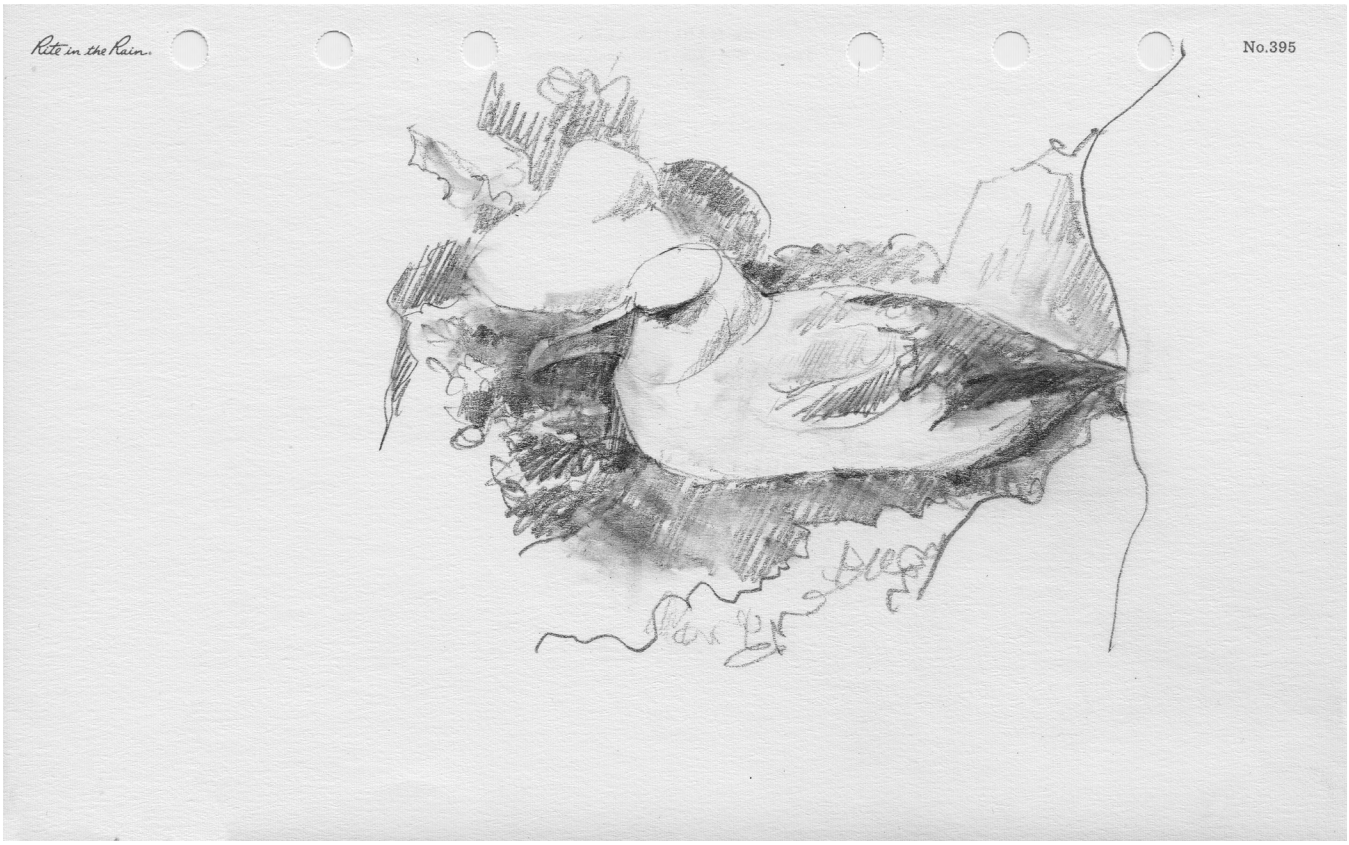

Image: White-capped mollymawk sketched on Auckland Island, 300 miles south of New Zealand (by Abby McBride).

and domestic fowl provide contrast for subsequent images of wild birds in the field. Amid these dark, Baroque paintings is Carel Fabritius's luminous portrait of a captive goldfinch (1654), looking alive and impressionistic, its style a couple centuries ahead of its time. For me, the little finch innocently undermines the next several chapters, in which bird renderings are supposed to become more accurate and lifelike through field studies and a growing knowledge of anatomy, behavior, and ecology. To be fair, an artistic evolution that spans centuries has many facets, and they can't all be conveyed in 200 illustrations.

It's still fun to look for trends in art style and content throughout the book. Marine birds, for example, are scarce in the early pages, where easily observed land birds rule the roost. Seabird artwork becomes more prominent later in the timeline, in correlation with shifts in culture, science, and technology that allowed artists to explore farther afield. By the 20th century, we see examples like Keith Shackleton's snow petrel in a remote Antarctic landscape.

More tangible than the trends over time are individual revelations along the way. We learn that Mark Catesby was a botanist who "set a new standard for avian art" in the 18th century by pairing birds with plants. Elizabeth Gwillim, the first of seven women featured, used field observations in India to paint life-size drawings of birds, a generation before John James Audubon. Strangely, the same page goes on to say that "Audubon produced the first full-length portraits of birds," one of several perplexing moments in the book.

Not only has scientific inquiry influenced art, Lederer argues, but the reverse is true as well. "Most naturalists were not innate artists but took up art as a way to expand their study of nature," he writes—something we might all keep in mind. Meanwhile, art has played a vital role in transmitting information among scientists. Artist George Edwards (described variously as "a proficient" and "not a gifted" artist) provided observations from which Linnaeus named about 350 bird species. Artist and avian taxonomist Robert Ridgway developed a standard ornithological nomenclature for colors.

Finally, importantly, Lederer contends that art brings information to the public and helps protect birds. This idea traces back centuries to practitioners like Thomas Bewick, who pioneered wood engraving to create natural history books that were affordable for the masses. It continues today, as artists and ornithologists kindle appreciation of birds by illustrating field guides, exhibiting art in galleries, and designing postal stamps.

Seabirders, take note! Most people will never see the birds that you study. You're in a unique position to bring visibility to the world's fastest-declining group of birds, along with the environmental challenges they embody. If drawing isn't your cup of tea, I know of at least one artist who would love to go into the field with you.

So first, use *The Art of the Bird* as a visual feast: it will whet your appetite for a broader perspective on bird artists around the globe and through the ages. Second, use it as inspiration: how can we each harness the power of art for the benefit of birds?

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VANISHING FISH: SHIFTING BASELINES AND THE FUTURE OF GLOBAL FISHERIES

Pauly, D. 2019. Greystone Books, Vancouver. 288 pp., Hardcover: ISBN 978-1-77164-398-6, $34.95 CDN.

Dr. Daniel Pauly is among the most influential scientists in the world, and *Vanishing Fish* describes his career shaping contemporary fisheries science. In this compilation of 22 essays written from 1995–2017, readers will learn why and how Dr. Pauly took fisheries management from a regional to a global level. The trends he observed illustrated the severity of fisheries impacts on global marine ecosystems and have informed ways to improve fisheries management. I am quite familiar with Pauly's work, having done my MSc research in his lab, quantifying the decline in global seabird populations and the impacts of forage fish depletion due to fisheries (Cury *et al.* 2011; Paleczny *et al*. 2015). Reading *Vanishing Fish* gave me a greater appreciation for the changes that Pauly led in fisheries science.

The essays tell the story of global fisheries in the modern industrial era, in which Pauly observed and investigated patterns from a new perspective. He began his career performing fish stock assessments in various countries, where he observed that the biological data used by fisheries scientists to estimate quotas were lacking. He addressed this problem by creating a global open-source database for biological data on all fish species (fishbase.org). He also observed that fish stocks were collapsing in many regions of the world, with climate change as the widely accepted cause alongside poor fisheries management, which couldn't be detected at the smaller spatial scales of conventional fisheries management. He investigated the role of fisheries management in fish stock collapses from a global perspective, compiling and analyzing the first global fisheries catch database (seaaroundus.org). He undertook the immense task of leading a team to construct the database, augmenting available annual catch data per country (reported to the United Nations Food and Agriculture Association, 1950 onward) with reconstructed estimates of the unreported catch (mainly small-scale subsistence fisheries).

Many key findings emerged from Pauly's global perspective on fisheries catch. Quantifying small scale subsistence fisheries for the first time highlighted their large but previously overlooked contribution to global catch (one-third to one-half of catch in maritime countries of Africa and small island states of the Pacific). A global view showed that these subsistence fisheries are a potential

source of high-quality protein for the developing countries where they are caught, yet instead are increasingly shipped to developed nations and often used as feed in agriculture and aquaculture industries.

Pauly coined the term "shifting baselines", a concept that fundamentally shaped the perspectives of conservation biologists. The concept is that each generation of scientist strives to conserve the baseline that occurred at the beginning of their career, thereby underestimating long-term changes in ecosystems.

Within the global catch data, Pauly identified signals of fisheries collapse at the global scale. Global annual catch levelled off and declined despite increasing effort. As high trophic-level fish stocks were serially depleted, the average trophic level of the global catch declined, which he termed "fishing down" marine food webs. Mapping the catch through time showed that the serial collapses spread around the world and further offshore.

Pauly also discusses some key challenges that he faced. For example, a major challenge in fisheries science was the misuse of uncertainty by industry-oriented "scientists" to hold off on intervening with overfishing until too late. Pauly overcame this challenge by providing global datasets and observations that could be applied in data-poor situations for a science-based precautionary approach. Another major challenge that he faced was influencing fisheries managers who were previously influenced only by industry stakeholders. He addressed this by working with NGOs to apply pressure to governments on behalf of a more diverse set of stakeholders of marine environments.

As a scientist who studies marine ecosystems and seabirds, I was particularly interested in learning more about the wasteful use of forage fish to feed agriculture and aquaculture. I laughed when I read his account of science debunking a politician's resource overlap justification for a whale fishery in a region where whales did not feed. I was inspired by Pauly's discussion on the importance of consilience (where evidence from independent, unrelated sources converge on conclusions) to solve environmental problems.

The book concludes with an observation that humans must drastically alter the way that we interact with fisheries. Pauly encourages the reader by emphasizing that much of the damage to fisheries is reversible without negative economic impact. His fisheries economics chapter explains how this could be achieved by reallocating subsidies from enhancing capacity to protecting ecosystems. Pauly provides a vision for the future of fisheries, which includes small-scale fisheries that are managed and consumed locally, no-take zones, redirecting fuel subsidies to ecosystem protection, and inclusion of non-industry stakeholders.

I recommend this book as required readying for anyone contributing to marine ecosystem science and/or management. Given the essay compilation format of the book, there is repetition, which is not ideal if a reader is looking for a concise summary of Pauly's work. However, this format effectively illustrates a major theme in the book, which is the evolution of knowledge in a vast and complex field of science. There are no figures in the book, so readers are encouraged to visit seaaroundus.org for freely available data and figures. *Vanishing Fish* is also valuable for a wider audience. As Pauly points out, everyone is a marine fisheries stakeholder because we all do at least one of the following: eat or wish to eat fish, eat animals that are fed fish, pay taxes that subsidize fisheries, and/or consume ecosystem services generated by marine ecosystems. Moreover, despite the potentially discouraging subject, the book is actually quite enjoyable thanks to Pauly's exceptional story-telling, humour, and connections to history, sociology, economics, and other disciplines.

In addition to a greater understanding of fisheries science, this book left me with great optimism about the evolution and impact of scientific knowledge. There is a role for all of us to play in fisheries management, and *Vanishing Fish* is an excellent way to get informed and apply pressure to our elected governments to implement evidence-based fisheries management.

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A LIFE ON OUR PLANET: MY WITNESS STATEMENT AND A VISION FOR THE FUTURE

Attenborough, D. 2020. Ebury Publishing, London, UK. 252pp. Hardcover: ISBN-9781529108279 £10.99

To my mind at least, Sir David Attenborough is the greatest environmental communicator of our time. Through his films and TV series he has engaged millions in the detailed stories of natural life on our planet and has explained the human-caused problems that are leading to its destruction, such as a polar bear searching for food in the unfrozen Arctic, or a sperm whale calf choking on a plastic bag. His gentle way has inspired a love for the natural world in many generations. He engages the public in something conservation scientists are lucky enough to call work. A friend of mine who works in conservation was set on her career path when,

aged six, she and her siblings wrote to him inviting him to join their nature club—he wrote back accepting. He is the Stephen Hawking of habitats, he is our Bard of biodiversity.

However, I must admit that in recent years I have been avoiding him. This has not been his own fault, I get the impression that many corporations lean on Sir David to give an environmental sheen to their goals or rely on him to legitimise themselves and their work. Meanwhile, as we all know, the condition of our natural world continues to spiral into decline. That was not the case with this book. I did not avoid it. The reason is set out by the author himself, *"I am 93. I have had the most extraordinary life… This book is my witness statement."* I spend a lot of time thinking about what the natural world will look like at the end of my career in seabird conservation, whether my work will change things for the better for seabird populations, perhaps even slow down their declines. I am a second generation conservationist, and I find the work I do today not all that dissimilar to the work my father did when I was growing up (only now with Twitter...). And through this lens, *A Life on Our Planet* is a must read—both to understand what the great author concludes when he reflects back, and to hear what he proposes as a way forward with his many years' experience.

The book is available in paper, read by the author as an audiobook and in an abridged form, as part of a Netflix film. I tried all three and would recommend the audiobook. The book is broken into three parts. The first is classic Attenborough. He starts in Pripyat (Chernobyl) as a metaphor for humans losing control of natural processes, then he moves into a semi-biographical story of his adventures with the natural world. This is what he does best: the thrill of his famous encounter with the mountain gorillas is still raw and exciting in his narrative. He talks of ecology, habitats, and ecosystems, but with fun and without getting lost in the blanket of obscure scientific terms, as perhaps many of us scientists are guilty of. The chronology of his life is followed by a ticking clock of wilderness remaining, increasing numbers of humans on the planet, and carbon in the atmosphere. These have all changed in ways we all know too well. However, hearing it through the lens of someone's life is a stark reminder of how rapid and revolutionary these changes have been—I suppose we are all being chased by similar ticker tapes.

The second part is the bleak recital of the problems we humans have created and the challenges we face in the near future. He focuses on 'tipping points'. Again this works well with the Chernobyl metaphor, but he also seeks to explain this to the layperson through the example of bacteria over-running a petri dish. This is tough stuff—it is tough to accept these possibilities and I have previously put down books by Naomi Klein and David Wallace-Wells because this bleakness becomes a barrier. However, I think Sir David has got the balance about right here. This section is the shortest and it is not so doom-and-gloom to flush the reader away. It does not vilify the *"great acceleration curve"*; he even acknowledges it was the digital revolution that has allowed him to achieve his work, *"measures of human development have risen remarkably… yet we must acknowledge that in addition to the benefits, there are costs,"* he says. There is a balance between not dwelling on the problem for the sake of maintaining an audience and telling them what they need to hear. This is something a friend who worked in sustainability at the BBC used to tell me was a challenge with the production of Sir David's shows.

Then comes the vision "*how to rewild the world*", the section I was most excited to read. It is welcome that he does not fixate on climate change, but on wilderness and biodiversity as means to rebalancing all natural processes, including climate. *"To create a healthy and stable world, we must increase biodiversity."* This is notable at a time when global climate change action is inadequate but still surpassing actions to safeguard biodiversity. However, I sadly feel somewhat deflated by the ideas proposed here. They are good, welcome arguments for smarter use of our natural world and the protection of it—selective logging practices, ending subsidies for fishing companies that overfish, creating value for wild areas through ecotourism or carbon credits, etc—but they are not revolutionary or ground-breaking. In fairness, Sir David admits this himself, "*Our journey must be guided by a new philosophy, or rather a return to an old philosophy."*

His proposed approach to reach this Gaia-centric philosophy is one which many have been working on for a long time but which remains an uphill battle: redefining 'growth' or becoming 'growth-agnostic', achieving the goals of UN treaties such as Convention on Biological Diversity, and engaging with the work of the World Trade Organisation (WTO) seeking to ban overfishing subsidies (underway at the time of writing). He cites examples where this approach has worked, including the International Whaling Commission and the cross border agreements which saved the Mountain Gorillas, saying that "*now we must make agreements that apply to the whole world.*" However, he skims past the fact these agreements often fail, as with the said WTO discussions; even Scotland, where I live, has recently handed out public money to prop up unsustainable practices like scallop dredging.

He ends by reminding us that we are the ones at risk, *"with or without us the wilds will return… we have the (perhaps unique) ability to imagine a future… all we require is the will."* But perhaps the most complex thing about this natural world is just that, a human's will. This book does a great job of describing how human's will and the natural world have clashed and drifted apart throughout the past 90 years, and in his unique and wondrous way Sir David Attenborough helps rekindle our love for it. He explains how things are slowly being reknit together again and suggests a pathway to come together once more. It is a great and inspiring book, but it does not answer all our problems—solving them all depends on the next generation, and the author has spent a lifetime preparing them for the task.

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