

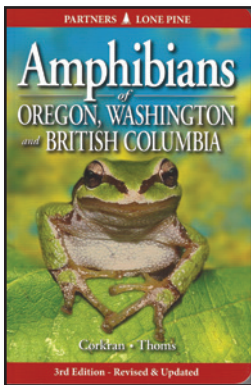
*Herpetological Review*, 2021, 52(3), 681–682.  
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## Amphibians of Oregon, Washington and British Columbia, 3<sup>rd</sup> Edition

Charlotte C. Corkran and Christina R. Thoms. 2020. Partners Publishing. Lone Pine Publishers, Tukwila, Washington (<https://lonepinebooks.com/product/amphibians-of-oregon-washington-and-british-columbia-5/>). 176 pp. Paperback. US \$19.95. ISBN: 978-1-77213-080-5.

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North America's Pacific Northwest is an amphibian biodiversity hotspot, largely coincident with the iconic cathedral forests of the wetter 'west side' of the region, but also resulting from the juxtaposition of numerous distinct ecoregions. The northwest amphibian fauna is unique, including frogs and toads that do not have audible mating calls, the primitive tailed frogs with their closest relative in New Zealand, and the stream-breeding giant and torrent salamanders which stand apart with distinct Northwest families.

Nine of 39 amphibian species are endemic to the jurisdictions of Oregon and Washington, USA, and British Columbia, Canada (a vast area: ca. 1.4 million km<sup>2</sup>). To identify Northwest amphibians, a field guide is necessary.

No matter where you sit on the spectrum of amphibian expertise, the revised and updated *Amphibians of Oregon, Washington, and British Columbia* by Corkran and Thoms (2020) contains essential information, but this book is especially written for the professional wildlife biologist. In the early 1990s, Char Corkran and Chris Thoms were heavily engaged in "inreach" education: field trainings on amphibian identification and survey methods for wildlife professionals with limited herpetology training, including environmental consultants and agency biologists. Global amphibian declines were becoming recognized and there were few monitoring efforts for amphibian populations to detect whether losses were occurring regionally; a flurry of amphibian trainings and surveys were launched. Corkran and Thoms coauthored the basic survey methods for pond-breeding amphibians (Thoms et al. 1997) to help standardize procedures, and the 1<sup>st</sup> Edition of this book focused on how to identify species. The 2020 book is the 3<sup>rd</sup> Edition and retains those key lessons, with updated information such as a statement about disinfecting your field gear to forestall disease transmission.

For the amphibian-savvy biologist, the new Corkran and Thoms book retains the "must-have" sections in the back matter, especially the Identification Keys and Confusing Species sections (pp. 126–154). How many times have I used that dog-eared page 152 in the 1996 edition (p. 154 now) to double-check who's who among our trio of native and possibly overlapping Pacific Northwest pond-breeding *Rana*? I have also routinely rechecked the northwest state and province conservation status tables (pp.

167–169), and I was glad to see those updated with 2018 data.

At the other end of the spectrum of amphibian expertise, this book is an excellent choice for those seeking a first-ever introduction to Northwest amphibians. The 2020 version is vastly improved in format, with color-coded sections for easy reading and navigation. It lays out an easy path for a novice to explore Earth's iconic denizens of the water-land interface, whether that starts with a wet immersion viewing a million tadpoles at once or on a quest for that elusive rarity of the forest slope. Enlarged photographs draw your eye throughout the book. For anyone with a smartphone, the book describes how to take your own photographs of animals you discover, especially to see species' distinguishing features. For those learning their amphibians or teachers involved in outreach education, this book is well formatted for a quick understanding of the different amphibian species groups, and it offers more for the inquisitive student. It is a handy educational tool.

For the nature enthusiast and naturalist with an interest in amphibians among other aspects of our diverse forests, montane landscapes, arid inlands, and interlaced wetlands, this book has special features of note. To make your observations count, the use of standardized data forms, what specific data elements to collect, and where to send those data, are referenced on page 165. If you are on the cusp of becoming more serious about amphibians, such as initiating your own site-specific monitoring efforts that might involve handling of sensitive species, page 166 gives information about Scientific Taking Permits. Read my last two sentences again. This year was my 40<sup>th</sup> anniversary returning to sites I started visiting annually in 1982. Few data like these exist for amphibians—your efforts could be vastly important, but standardized approaches are needed. Your 40-year record is needed in the 2060s! Really, I'm not kidding, start now but do it right. Do you want to contribute, but don't have time for a long-term project? We still have a very poor understanding of species occurrences, and you could upload your photographs and geographic coordinates to an application like iNaturalist, as those data are being harvested to advance understanding of species distributions, and future status assessments may include such citizen-science input.

Although this book has many upsides, some readers may note a few drawbacks. First, species range maps are truncated by the three state and province boundaries of focus. As most species' distributions follow ecoregional and not political boundaries, species ranges overlap into unmapped areas, but the text does not provide clarification in the species accounts.

Second, did Shakespeare have it right for amphibians when he wrote "*What's in a name? that which we call a rose By any other name would smell as sweet*"? If you know what animal is being referenced, does the name matter? In the Pacific Northwest as elsewhere, a better understanding of amphibian phylogenetics is emerging as new genetic tools are applied, and taxonomic revisions are ongoing. To their credit, Corkran and Thoms include a section on changing amphibian names (page 11). In this light, there were two species that could have had additional names referenced, given the 2020 publication date. In 2019, the Black Salamander (*Aneides flavipunctatus*) was split into four species, with the Klamath Black Salamander (*Aneides klamathensis*; Reilly and Wake 2019) occurring in the Applegate River basin in Jackson County, Oregon. Similarly, the 2016 update of Pacific Treefrogs (Chorus Frogs), *Pseudacris regilla* to *Hylliola regilla* (Duellman et al. 2016) warranted inclusion as *Hylliola regilla* has been adopted in some recent literature. Out

of curiosity, I noted that the American Bullfrog was listed as *Lithobates catesbeianus*, following Frost (2021). Yuan et al. (2016) reported *Lithobates* to be problematic and reverted to the *Rana catesbeiana* nomenclature (<https://amphibiaweb.org>; accessed 9 August 2021); today, both names are found in the literature and this book lists both as well, covering all bases. Crother (2017) is a reliable taxonomic authority, as cited by Corkran and Thoms, but online databases keep up with emerging literature on taxonomy more readily (Frost 2021; <https://amphibiaweb.org>). As noted above, today's field-goer often has their smartphone available; referencing online tools to augment field guides is increasingly useful in a region like the Pacific Northwest on a variety of topics such as taxonomy but also gear disinfection procedures, species threats, and resources for reporting disease die-offs.

Overall, this 3<sup>rd</sup> Edition marks the lasting imprint that Char Corkran and Chris Thoms have had on amphibian conservation in the Pacific Northwest. Chris, an emerging conservation leader, passed in 2002, and she has been missed. Char was recognized with NW PARC's Unsung Hero Award in 2017 (NW PARC 2017) for her continuing endeavors with broad impact. Both Char and Chris acted as needed links to a broad natural-resource community in the Northwest, and this continues with their revised and updated 3<sup>rd</sup> Edition.

**Acknowledgments.**—The use of trade or firm names is for reader information and does not imply endorsement by the U.S. Department of Agriculture of any product or service.

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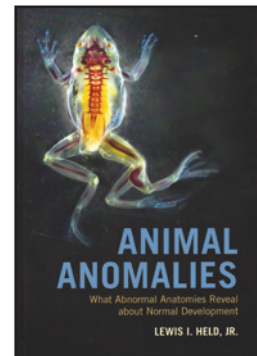
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## Animal Anomalies: What Abnormal Anatomies Reveal about Normal Development

Lewis I. Held, Jr. 2021. Cambridge University Press, Cambridge, United Kingdom ([www.cambridge.org](http://www.cambridge.org)). xxi + 272 pp. Hardcover, US \$105.00. ISBN: 978-1-108-83470-4. Paperback, US \$39.99. ISBN: 978-1-108-81974-9.

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Lewis Held is a talented educator who has taught human embryology at the university level for three and a half decades. *Animal Anomalies* is his sixth book; many readers of this review will know his fourth, *How the Snake Lost its Legs* (Cambridge University Press, 2014).

His most recent book, *Animal Anomalies* is, as one blurber wrote, “a ramble.” Held covers the genetic, molecular, and cellular mechanisms underlying developmental malformations in amphibians (oral, eyes, multiple hindlimbs, spadefoot toad morphs), *Drosophila*, and domestic dogs and cats, often extending these phenomena to humans to bring his concepts home. He uses a historical perspective and employs 24 general principles (GPs) of developmental biology, including “cells obey local rules with no global blueprint,” “organs assign cellular positions along axes,” “patterns can emerge from physical forces,” and “uneven growth rates can foster shape changes,” which are informative and instructive. With one unfortunate exception (see below) the examples he chooses to illustrate these principles are solid and vetted.

Held is an academic, not a clinician, so despite his comfortable and entertaining writing style, his approach borders on the aseptic. Most of us exhibit no empathy when we see a malformed fly but Held extends many of his animal models to humans. Look at these human malformations and you cannot help but question the effect of the defect on that person, or if the anomaly is fatal (alobar holoprosencephaly, for example), ask about the effect of this tragedy on the family. We read (p. 26): “... it is remarkable that human twins can merge together at so many odd angles and still manage to live for years in many cases.” Yes, but what effect does it have on those twins? Humans who exhibit nonfatal congenital anomalies and must live with the stigma of deformity don't think of faulty development as an academic exercise. They are the ones who must, their whole lives, be answering Frost's (1916) question: “What to make of a diminished thing?” Had Held included in each case a sentence or two on the effects of malformations on the humans who exhibit them, he would have counterbalanced his airy, approachable writing style with a gravitas that would have made for an extraordinarily powerful presentation. The emotion would have been natural, not conjured through enthusiasm. This is a minor, quibbling, criticism.

*Animal Anomalies* does, however, contain one large, non-quibbling error, which I introduce through my own teaching responsibility—a clinically based neuro-psych course. Human minds function using a combination of cognition and emotion.