

The Ecology and Evolution of Color

From Photons to Phylogenies

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Preface

This book grew out of EEB 187, Ecology and Evolution of Color, at UCLA. It is being drafted in the open during the Fall 2026 offering: each chapter is posted the week its lecture is taught, and student reflections shape the revisions. What this book is, and is not, and how to use it, will be written here once the first part is complete.

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I

Light

The illuminant and the object. Endler's triangle is the spine of the book.

What Color Is (and Isn't)

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- Draft: not yet written.
- Sources: see drafts/source-packs/.
- Target: Fall 2026 lockstep drafting.

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Where Light Comes From, and Where It Goes

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Scattering

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Interference and Reflection

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II

Seeing

The receiver, bottom-up: molecule, organ, circuit, experience.

Photoreceptors and Opsins

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The Evolution of Eyes

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Building a Color Percept

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Umwelten: Color Vision Across Life, and the Psychology of the Receiver

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III

Measuring and Modeling Color

The bridge from physics and vision to everything that follows.

Measuring Color

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Modeling the Receiver

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IV

Making Color

Pigments

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Structural Color

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Mixed Mechanisms

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Color Change

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V

Patterning

How Patterns Form

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The Genetics of Color and Pattern

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VI

What Color Does

Crypsis

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Warning and Deceit: Aposematism and Mimicry

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Color Beyond Animals

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VII

Color Across the Tree of Life

How We Study the Evolution of Color

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How Life Became Colorful

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Epilogue: The Human Eye on Color

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Bibliography