



A Field Guide to Deep-Sea Light

JARAI Studio

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Chapter One — The Midnight Zone

A thousand metres beneath the surface, the last of the sunlight gives up. What remains is not darkness, exactly. It is a different kind of light — one the ocean makes for itself.

Marine biologists call this the midnight zone: the vast, cold middle of the sea where no sunbeam has ever reached and no plant has ever grown. For most of human history we assumed it was empty. We were wrong by an almost comic margin. The midnight zone is, by volume, the largest living space on Earth, and a great many of its residents glow.

The trick is called *bioluminescence* — light made by life. A small set of chemicals, a pulse of oxygen, and an animal can switch itself on like a lantern. Down here it is not a rare party trick but the ordinary language of the deep. Some creatures glow to find a mate in the black. Some glow to lure dinner closer. A few, startled, throw out a cloud of cold blue sparks and vanish while a predator blinks.

This book is a guide to that light: who makes it, how, and what it is for. We begin where the sun ends — and where, against every expectation, the dark begins to shine.