



Editor's Note

Considering the Sea Turtle Umwelt

Coined by Jakob von Uexküll in 1909, the word *umwelt* derives from the German word for *environment*, but more specifically it means the unique perceptual world of any living thing, be it an amoeba, tree, bug, bird, human, or sea turtle. The human umwelt is our sensory window to the world around us, and we often mistakenly believe that our perception is reality. Yet we cannot experience the countless colors beyond our visible spectra, the sounds above and below our audible range, or the array of scents and tastes that are unknown to us, not to mention electric fields; magnetic forces; and tiny variations in temperature, pressure, vibration, and air and ocean currents that we are simply unable to detect. Humans are sensually blind to many of the stimuli that Earth has to offer.

Science has historically seen other species through the anthropomorphic lens of the human umwelt. So it is no surprise that most data on sea turtles come from observations of nesting females and hatchlings in places that are easily accessed by human eyes. Yet, to be good conservationists of turtles and their environments, we need to adopt a sort of “turtle empathy,” place ourselves in their flippers, and ask (as we do in the FAQ on p. 38) how their umwelt may diverge from ours. Sea turtle lives take place in nearly every ocean biome, from coasts to the open sea, and from the surface to perpetual darkness. As such, their sensory reception is drastically different from that of humans, and we ought to understand it better if we are to properly buffer turtles and their habitats from the hazards of man.

To be sure, our community is chipping away at this understanding, and technology is helping. Seeing a nesting beach from the air by night—not with human eyes, but using a heat-sensing aerial drone (see article pp. 6–9)—can reveal new truths. By synthesizing hundreds of leatherback telemetry tracks from dozens of researchers, even a new map projection (see p. 27) can challenge us to visualize global leatherback movements in an ocean-centric perspective for the first time.

Also lying outside the sea turtle umwelt are the innumerable boundaries that humans have drawn on Earth, ranging from national borders to exclusive economic zones, marine protected areas, and even the vast unbounded high seas of the world, frontiers that are entirely imperceptible to turtles. In this issue (pp. 12–15), we present the latest versions of regional management units, an ongoing effort to see the planet from a sea turtle perspective that uses the biogeographic limits that matter most to them.

Imagine if you could be a sea turtle for long enough to see, hear, feel, magneto-sense, and receive all the stimuli that drive their behaviors, determine their geography, and define their niches in the global biosphere. Now consider how humanity encroaches on that sea turtle umwelt with stimuli like artificial light, low-frequency noise, warming and acidifying seas containing manmade compounds, and more. We hope that the articles in this volume of *SWOT Report* will help you to indulge your imagination, consider new perspectives, think inside the sea turtle umwelt, and seek new ways to better understand and conserve the oceans.

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