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Atlantic Bluefin Tuna *Thunnus thynnus*, classified as Endangered in the IUCN Red List

Being a biologist in a wounded world

Text: **Giovanni Bearzi**

By the 1970s, we had been alerted repeatedly about the risks from unsustainable human impact on the planet, and the warnings of upcoming disaster were becoming ever more credible and worrying. However, we were also exposed to the cultural diversions of complaisant media and to the mystifications of industry-driven think tanks that, among other denials, had been deliberately concealing climate change. Under sanitized and distorted cultural scenarios, even the

most compelling evidence of rising greenhouse gases could be downplayed, and the risks could go unperceived. Apart from the climatologists and a few visionaries, not many could discern an immediate climate emergency of the ominous kind that has loomed over us in these last few years. In the face of warnings unmatched by proportionate reactions within our intellectual milieu, many biologists (including myself) went on behaving as if there was still plenty of time to solve the

environmental and climate crisis. Perhaps we just weren't ready to leave our comfort zone and venture into a complex realm of inconvenient truths. My own awakening to these truths happened gradually, then suddenly. And it came as a shock.

To my dismay, I was becoming aware that living systems and the physical environment had been depleted and disrupted, resulting in losses of biodiversity, mass extinctions, and catastrophic climate and ecological changes. In 1949, one of the fathers of the environmental movement, Aldo Leopold, wrote: "*One of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on land is quite invisible to laymen. An ecologist must either harden his shell and make believe that the consequences of science are none of his business, or he must be the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise.*" Today's world is, indeed, as wounded as ever, and some of the long-predicted calamities are happening with increasing intensity or frequency (e.g., extreme weather events, bushfires, droughts, floods, glacier melting, sea level rise, heatwaves).

Whether or not these facts are accurately reported by the media or acknowledged by present-day political leaders and their electorates, those who are familiar with the scientific literature know that little time is left to prevent irreversible warming

and avert the risk of a Hothouse Earth pathway. This inconvenient truth is emphasized in signs held by the young people attending global strikes for climate: *Normal is Over, There is No Planet B.*

Nobody should be fiddling while the planet is burning down, certainly not biologists and ecologists who know what is really at stake. As noted by Gary K. Meffe two decades ago, "*The time has long passed when we could merely pontificate in our journals, impress our colleagues, and proclaim that we are above the political fray.*" This rings even truer today. Continuing to live and work as if everything is fine makes change impossible and breakdown inevitable.

The time has come – and indeed passed – to consciously upgrade our values, methods, and behaviour. As our global leaders demonstrate their inability to respond to the crisis and ward off the drivers of self-destruction, it is becoming clear that the ideas needed to reshape our future must stretch beyond the confines of our current system. The question then is: How can we capitalize on our expertise as biologists and ecologists and contribute most effectively to the solutions that need to be taken? What does it take to bridge the gap between conservative scientific disciplines and the global conservation imperatives of our time? Below, I offer a few hints in a spirit of constructive self-criticism (I wish I had done all that is being preached here long ago).



Mediterranean Monk Seal *Monachus monachus*, classified as Endangered in the IUCN Red List

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A trio of Common Dolphinfish *Coryphaena hippurus* in the Mediterranean

1. Proclaiming that we care

To get out of this mess, we must first relinquish our belief in progress as everlasting and unconstrained growth, and replace it with value systems leading to environmental sustainability and social justice. As biologists, we can help envision a world where the role played by humans is consistent with the laws of nature and the reality of a finite planet. Paraphrasing Wendell Berry, we must not only suppose or imagine but loudly proclaim that “*the ultimate standard of our work is the health and durability of human and natural communities.*” We should take responsibility and become conservation stewards who are thoughtful of the consequences of their choices and actions. Such commitment must be placed at the core of our profession – to the point that everything we do truly does have the goal of benefiting the larger community of humans and life on Earth rather than ourselves, our circles or our nation.

2. Communicating effectively

For decades, we have been working in a scientific environment that discouraged individual researchers from expressing views that could be interpreted as green activism or have political connotations. However, not expressing one’s opinion and not engaging in activism also is a political choice, as it often implies supporting (or at least not challenging) the status quo and therefore implicitly endorsing it.

Contrary to what we have been conditioned to think, supplying information is not enough. Even climate scientists, whose early warnings

went unheeded in part because of ineffective messaging, have realized that their science does not communicate itself and that high-quality outreach is essential. We, too, need to leave behind jargon and sectarian arguments and enhance our communication, lifting the antiquated taboo on “saving the planet” language and placing emphasis on defending what we love. Our care for the living world should not only be made explicit but also become the core of compelling narratives we use to engage human society. We must aim to tell heartfelt, captivating stories centred on our own experience, bringing to life a capacity to think outside the box and dream big. To reach people at a deeper emotional level, we may even team up with conservation non-governmental organizations and groups of environmental activists or collaborate with designers, art directors, artists, and celebrities, as well as fellow scientists in various disciplines.

3. Embracing real sustainability

Because economics and environmental conservation are largely intertwined, we cannot deal effectively with a crisis unless we confront the economic, social, and political reality that generated the crisis. As biologists, we should not only document the threats to life but also help clarify how the extraction, production, and consumption system can be steered away from damaging and unsustainable practices. On a more fundamental level, we should accurately characterize the decisions driven by industrial or

commercial interests and reject any system that sees nature merely as a resource to be pillaged in pursuit of perpetual growth and material wealth. Changing the status quo and tackling the causes, instead of merely mitigating the effects, requires judicious and imaginative planning, leading to thoughtful strategies for research, outreach, and management.

4. Fostering individual and systemic change

Many of us have attended conferences and workshops organized in fancy resorts located in exotic locations that require multiple flights. Conference attendees may even banquet on bottom-dwelling shrimp right after having learned about the damage caused by bottom trawls and shrimp aquaculture. No matter how effective such gatherings may seem to be in advancing conservation biology, they carry an embedded inconsistency, as if those responsible for environmental damage are invariably others, somewhere else. Such inconsistencies are increasingly debated, particularly with regard to restraint in flying (to reduce our carbon footprint) or switching to a plant-based diet (to reduce the environmental and climate impacts of meat and seafood production and consumption).

Biologists and other scientists who appear to overlook their own footprint often contend that individual behaviour does not matter and that it is the system that needs to be changed. That is correct. A change in the system (and a new breed of political leaders) is unquestionably needed to tackle the environmental and climate crises. It is also true that neoliberalism and corporate agendas have conned us into tackling the crisis as individuals, whereas most of the damage originates from the choices of a handful of giant companies and mighty executives. That, however, does not mean that individual and social behaviour is irrelevant.

First of all, the effects of individual behaviour are rarely experienced only by the individual. Our choices affect and influence those around us. This must be even truer for biology professionals, whose actions may be taken as a model by colleagues and students. Secondly, a change in the system can only be instigated through the coordinated efforts of a group of individuals, and more often than not, it is the initiative of a single individual that triggers

collective efforts. Third, one cannot truly choose between individual change and system change. Rather, one can choose to (1) become aware and develop a deeper understanding of a problem; (2) do something about it on a personal level, thus helping to drive market and policy choices; and (3) encourage change in others while pushing for transformation in the system. The latter can be done more effectively by directly influencing political decision-making, lobbying for greener and more responsible leaders, connecting with people and organizations that help us become empowered and engaging in coordinated action. Even if not all of us have the opportunities or the skills to succeed in each of the above-mentioned tasks, any of us can do his or her best, at all levels.

5. Supporting environmental activism

Steering humanity away from environmental and climate disasters requires committed activism, mobilization, and civil resistance. A well-planned environmental campaign can pave the way for significant change. Even the unwavering activism of a single individual sometimes results in an unpredictable uprising, setting in motion perception shifts and changes in collective behaviour. Within one year, the solitary strike for climate of young activist Greta Thunberg developed into a global protest by millions of people. While some may mock or dismiss these initiatives, research shows that non-violent mobilization has enormous potential. *In the past 100 years, non-violent campaigns have been twice as successful as violent uprisings, and the active and sustained participation of just 3.5% of a population can result in important political or societal change.* As biologists and knowledgeable scientists, there is much we can do to support, motivate, and inform non-violent activists who demand policies ensuring that our planet remains habitable. We may even join the protest ourselves.

6. Relinquishing contempt for spirituality

For centuries, humanity's mandate to subdue nature and have dominion over its living resources, as expressed in the Bible (Genesis 1: 26–28), provided a theological and moral justification for exploiting the natural world. This right to dominion and sovereignty over nature has become part of the cognitive foundation of the western

world, as epitomized by Francis Bacon when he wrote, “*Man, if we look to final causes, may be regarded as the centre of the world (...) For the whole world works together in the service of man; and there is nothing from which he does not derive use and fruit (...) insomuch that all things seem to be going about man’s business and not their own.*” These deeply rooted ideas, combined with René Descartes’ portrait of nature as a machine, culminated in the 19th century western vision of humankind engaged heroically in conquering nature, which provided a further justification for reckless exploitation. Such conceptual frameworks are ingrained into modern science and into our culture, which still sees progress as an increased dominion over nature and regards the whole of nature as a commodity.

Acknowledging this theological bias of science or the subtle influence of some religious thinking, however, does not imply that the entire corpus of religion and spirituality should be opposed or discarded within the context of environmental science and conservation. The void of spiritual and ethical values produced by materialism and neoliberalism clearly cannot be filled by science alone. Conversely, values consistent with equality, self-restraint, non-harming, respect for all living beings and environmental sustainability are at the

core of spiritual wisdom dating back thousands of years. Some of the non-theistic and non-dualistic spiritual traditions from the East are often considered closer to the holistic approach needed to divert humanity from self destruction. However, a different interpretation of Christianity also can be envisaged, consistent with the message of the greatest spiritual revolutionary in western history, Saint Francis of Assisi. Francis (born 1181) proposed an alternative Christian view of nature and humans’ relationship to it: the idea of the equality of all creatures, including humans. His message has been ignored for centuries but is as modern as ever – to the point that a different Francis has recently revived this vision in his encyclical *LAUDATO SI’: ON CARE FOR OUR COMMON HOME* (2015).

Though few modern scientists have expressed interest in pursuing a dialogue between science and religion of the kind advocated by E.O. Wilson (2006) in his book *THE CREATION: AN APPEAL TO SAVE LIFE ON EARTH*, religious leaders and scholars have increasingly embraced environmental conservation (including the Ecumenical Patriarch Bartholomew, Pope Francis, and the Dalai Lama). One religious leader (the Dalai Lama) has even exhibited openness to the idea of modifying



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A Striped Dolphin rides the bow of a yacht in the Gulf of Corinth, Greece



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Common Bottlenose Dolphin *Tursiops truncatus* near Itea, Greece

obsolete dogma based on scientific evidence. Whereas the approaches, conceptual frameworks and competences of science and religion will remain different, a challenge as great as saving the Creation requires unity and consilience rather than division. In science circles, relinquishing contempt for spiritual teachings that recognize the interconnectedness of all forms of life, and endorsing a more ecocentric and holistic vision, would help advance the biosphere-saving synergies advocated by E.O. Wilson.

HOPE IS OPTIONAL, ACTION IS NOT

It is almost impossible to grasp, let alone fully accept, the bleak reality of what humans have collectively done to our only home. Being aware of the impending climate and ecological breakdown – and the reckless policies of limitless capitalism – may cause legitimate ecological grief, which includes sadness, hopelessness, fear, and despair. However, nihilism and inaction won't help, and those of us who do not react, or indulge in negativity, risk becoming ourselves a part of the

problem. As Alexandria Ocasio-Cortez put it, “*Hope is not something that you have: hope is something that you create, with your actions.*” In other words, hope is neither blind optimism nor a matter of estimating the odds. It is a choice and a state of mind inspired by the recognition that change is non-linear and often unpredictable.

Even if we cannot avert catastrophes that are beyond our control, as biology and conservation experts we certainly can prevent some of the damage or contribute to environmental healing, thus leaving a better heritage to future generations and sparing some of the suffering to fellow humans and animals. This is and will remain possible – with or without hope. ■



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