

Science AMA Series: I'm Carl Safina, ecologist and writer focused on how humanity is changing the natural world and affecting the lives of non-human animals, especially in the ocean. AMA!

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How do you keep yourself motivated in your work when it seems like there is SO much wrong with our current societal paradigm?

Do you have any advice to students who struggle with seems like an impossibly immense uphill battle of conserving natural systems in the face of pollution/economics/industry?

Thank you for being such an inspiration and for your amazing ability to communicate the beauty of the natural world to such a diverse audience!

[Westcoastkat](#)

Yes it's often dis-spiriting. But you take one thing to focus your efforts on, and do your best. Knowing you are trying to be a little bit of positive force can be quite satisfying. And since on one can do everything, being satisfied with doing something, anything, is quite reasonable. Many people are so poor and have so few opportunities, and many species are suffering so much, that i don't allow myself the indulgence of feeling bad. I just try to add something positive.

Hello! How much of the apparent complexity of human emotion (versus other animals' emotion) do you think can be attributed to our use of language? Humans are ostensibly unique in their use of language but I seem to remember something about dolphins and so-called "signature whistles".

Also, why are the myriad of anthropogenic climate changes often regarded indifferently by humans? Since we are also animals, our imperative should be the preservation of the species. Why the disconnect, as such?

[JukeboxVoice](#)

The disconnect highlights the limits and imperfections of our collective human minds. Evolution hasn't equipped us to really care or deal with these problems, so few people do.

Contrary to the recent NPR piece (see below), all of the components of human speech can be seen in

some other animals. Humans appear to take grammar, syntax, and vocabulary much farther (with the possible exception of some dolphins who seem to communicate very complex details, though there's a lot of uncertainty about that).

There is a difference between communication and language. Communication is extremely widespread among animals and even plants. By definition it requires a sender and a receiver who responds appropriately to the message. It does not require language and doesn't even require consciousness (plants use lots of chemical cues that communicate, though plants are probably not aware of sensations in the way animals are). Language is more specific; it's a form of communication that has rules of syntax and grammar. A dog can wag or tuck their tail and communicate happiness or fear. Syntax is how we know the difference between a Venetian blind and a blind Venetian. There's a lot on this in *Beyond Words*.

Where is the cut-off line when considering animals to be identified as "non-human persons"? Especially with regard to captivity in zoos. I understand that some countries are moving to declare orangutans as non-human persons, for example here
<http://www.independent.co.uk/news/world/americas/sandra-the-orangutan-inside-argentina-zoo-granted-human-rights-in-landmark-ruling-9940202.html>

Or is the gradient of self-awareness (implying this is a factor) simply too big, making it impossible to draw such a line?

[ilostmyoldaccount](#)

There are no lines, because everything in the living world is on sliding scales. Even for humans, there is debate over personhood. But as we learn how much other species are aware and can suffer, our circle of compassion is spreading and this question reflects that.

Have we detrimentally overfished the oceans beyond repair?

[PM_ME_SHIHTZU_PICS](#)

Not beyond repair. Fish populations regenerate if left alone. But the warming and acidification and plastics--that will not be fixable in our lifetime. We owe morally it to the children of the future and all the other creatures to fix our mess.

If you were invited to an event filled with the most influential people on the planet, then what would you tell them?

[7563854748](#)

I'd want people to understand that other species are as much of this planet, with as much claim to this world, as humans. And that humans are the only species that creates global problems. And that we could easily make a much better deal with ourselves, people to come, and the rest of the living world. We need to leave room, in both geographical terms and in time for those who are not here yet. And that these are matters of justice, that the greatest injustice is the relationship between men and women, and that fixing women's rights is the one issue that solves the widest array of problems.

How do we eliminate dominionism and anti science rhetoric from American discourse? This seems to be at the core of the inaction on climate change and habitat/wildlife preservation in the United States.

[droidspectacular](#)

Stop subsidizing Big Oil.

Eliminate private money in politics; make elections only publicly funded.

Hi friend, thanks for doing this AMA. My question is: How can a particularly wealthy individual with use his monetary resources to help curb climate change? Toward what areas (how) should he expend his resources in order to see the greatest results - both in the long-term and short-term (e.g. should he spend \$50 million buying up parts of the Amazon forest to prevent deforestation, or should he use it for something else)? How much money would he need to accomplish such a feat?

[CatAct](#)

There are different lines of attack. The most basic is population, and the most basic fix is gender equality and womens' rights. There are various clean energy investment opportunities. And yes there is land and reforestation. Specifically regarding the Amazon, see the group Saving Species, which buys and reforests ruined land. Feel free to tell them I recommended you to inquire.

Anthropomorphising animals is a huge taboo on biological sciences. On your opinion how much of this is valid methodology concerns and how much is simply anthropocentric bias? Are we de-mammalising (if that's word) humans?

[skv9384](#)

Many people are taught that other animals have no emotions and are not conscious. That's obviously wrong. All the evidence says that many other species think and feel. They don't have the same thoughts and feelings you do (neither do I). But an animal who seems happy is happy and one who seems scared is scared and one who is helping her baby feels a bond.

Dude, thank you immensely for your work. To my question, what can we do to help? What can your average suburban schmoe do to help fix the problem?

[darkzen15](#)

No one can do everything that's needed, but everyone can do something. There are tons of ways to pitch in and help. Maybe you could major in sustainability, change your career, or write a big check. YOU have to figure out what you can DO; I can't tell you because I don't know you. Maybe you can put solar panels on your home or buy a 50-mpg car. Or sort your cans and glass. Just do "something."

Do you feel the world is overpopulated with humans based on your observations of the decline of other species as the result of growing human populations?

[exotics](#)

If you look at the definition of invasive species, we are the main example. Emphatically, yes. There are twice as many people now than when I was born. The world is not twice as good, not twice as peaceful, not twice as compassionate, or twice as beautiful. We do, though, have many more problems.

Hello Dr. Safina. I would first like to thank you for taking time to do this as well as visiting one my classes at Stony Brook University.

My questions revolve more so around one of your other books, Eye of the Albatross. The images within the book are very thought provoking and made me realize the horrors polluting our oceans. Even though Nations take up various recycling/waste management strategies to reduced input of trash into waters, there still remains that large amalgamation of garbage in the Pacific.

My questions are, what would you suggest should be done to remove the garbage and who should take charge to make sure this happens?

[Shadowmill80](#)

I think we cannot remove all the garbage. We have to stop it from getting in. Mostly it goes into rivers. Plastic needs to be re-invented so it truly biodegrades and its life is scaled to its use. Why do we package yogurt which has a 2-week shelf life in an eternal material? We are not thinking.

I've been very curious about Orcas recently, could you elaborate on their cognitive abilities? Particularly their emotional attachment and self-awareness?

[she_sees_the_ghosts](#)

There is a lot on this too in Beyond Words. Orcas are exceptionally intelligent and super-aware. During the era of captures in the Northwest, when they'd learned that the helicopters would bring the catch boats, one family split with the mothers and little babies going one way and staying underwater a long time and the others staying on the surface to decoy the helicopter. Astonishing but that's them. The "resident" pods of the Northwest stay with their mothers their whole lives, unlike any other species. Their emotional bonds are deep and intense.

Through your research and study, have you found that human beings have destroyed at a rate faster than the recent boom in "green-technology" has been able to keep up with?

As in, the things that we make to stave off destruction of the planet, have they been made quickly and effectively enough to even the playing field between mans destruction of the planet (lets say the ocean and the massive amounts of reef that we destroy along with the seemingly infinite amounts of plastic that are now floating in it.) Are we advancing quickly enough to keep up with the problem (or will we within the next 5-10 years) or does most of your research point towards a future where we live on a destroyed planet?

[cortlong](#)

Not even close.

And most of my research points to a future where we die on a destroyed and toxified planet unless we change course.

Do you eat meat? Why or why not?

[Sadomaniqui](#)

As noted below I wrote about my food views and choices here: http://www.huffingtonpost.com/carl-safina/what-i-eat_b_9565402.html

I don't buy farmed animal meat. I eat fish and shellfish that I catch. If served meat I sometimes eat it.

But being vegan is not perfect because the effects of all agriculture are vast. So my choices are nuanced.

How has the ocean changed chemically in the last 50 years? Some fish are high in mercury. Was that true 50 years ago?

[hawkwings](#)

Virtually all modern pesticides, fertilizer runoff, plastics and other chemicals have entered the ocean since the 1950s and the rate is exploding. Most mercury comes from burning coal, an old problem but it's vastly accelerated in the last few years. The changing pH (acidification) is a truly gigantic problem, not really recognized until the 1990s and early '00s.

Hi Carl, for some time now, I've been of the mind that we need to switch to 100% farmed fish commercially, but still allow sport fishing. At the same time, there are still protests about negative environmental impact from fish farms. Which is the lesser evil in your opinion?

[elkabongg](#)

Like farming on land, fish farming can be good or bad depending on how it's done. Farmed shellfish (mussels, oysters) suspended in the water is probably the best.

What is likely to happen to the world's ecosystem without the support of the great barrier reef?

[HaxtonCrafts](#)

The GBR is the world's largest coral system, with trillions of individuals of hundreds of thousands of species. That we are killing it with farm silt, dredge silt, and warming seas is a catastrophe.

What animal adaptation to humanity has surprised you the most?

[BiggerBangTheory](#)

That for tens of thousands of years, humans seem to have gone nowhere on Earth without dogs. That is quite a co-evolutionary phenomenon.

What are your experiences with marine protected areas, and what, if any impact have they had on the rest of the region?

[YouSmegHead](#)

It's pretty clear that the larger the reserve, and the longer it exists, the more it recovers and the more abundant all the species become. Many are too small or too new or too isolated, so results have varied. The new Hawaiian preserve isn't really new; it's a new declaration on a vast area that was made off-limits to fishing by GW Bush, around islands protected a century ago by Theodore Roosevelt. I see it as a small incremental change, not a big new step.

Hi, what is your take on urbanization? Living in the city is seen as perhaps being more efficient.

However, with the impact cities have on local and surrounding ecosystems, is it worth it? Do you think concentrating the ecological impact in one dense spot offsets more widespread impacts elsewhere? Does the fact that cities as we know them now blatantly contradict philosophies of conservation and ecological resilience mean that they are inherently dysfunctional?

[eeksy](#)

Far better cities can easily be imagined. More efficient, cleaner, lovelier, less polluting, with less land taken from other forms of life. That said, I'm not particularly a city person. But i do favor consolidation rather than sprawl, which is pretty disastrous in many ways.

Hello Dr. Safina,

Your book *Song for the Blue Ocean* helped me develop my master's thesis on sustainable coastal development. It was very informative, and I ended up writing quite a bit about what environmental managers can do to increase their chance for success because of what you wrote.

But your book came out about 20 years ago now. If you were to release an updated version of it, what would you say? How did tuna, salmon, and coral reefs change over that time?

[WalkingTurtleMan](#)

Thanks so much! The declines in tuna are now much more recognized. Atlantic bluefin tuna seem to be doing a little better. Other tunas, a bit worse. Salmon have not improved and warming waters aren't helping them. Corals, far worse than 20 years ago when we didn't even realize there was acidification, and we didn't understand that reefs need certain fish to graze off algae.

Hi Mr. Safina,

Fellow East Hampton resident here, in 'The View from Lazy Point', you discuss our economic systems and how they intersect with the environment. My question is, how on a local level can we start to solve issues of sea level rise and climate change? In 100 years a place like Lazy Point could very well be partially underwater if the models remain on track. How do we address the pervasive and increasing economic interests against protecting our ever changing environmental landscape?

[Beaun](#)

I don't think there is a local way to solve so global a problem as rising seas. In this case (contrary to my snarky comment above), we could adapt by raising houses, razing houses, eliminating incentives to build while counting on public flood insurance bailouts. The dirty water and toxic algal booms, though, could be fixed with density zoning and re-fitting of cesspools with shallow systems that get the nitrogen up into the soil and grass.

Thanks for all the work you've done! I've just read your HuffPost blog about eating consciously and that's what I've been working on for 3 years now!

My question is, I'm currently running to be a local township park commissioner and my greatest idea to help the parks ecologically is to use the budget to install bee hives and maybe plant wildflowers and milkweed and such. Any other ideas, the area is southeast Michigan.

[Boricua_Torres](#)

Great ideas. Also, rain gardens to slow runoff and clean water.

1. Have you seen any traits of "personhood" in fish? Obviously not to the degree of an elephant, but I imagine there has to be something there.
2. Do you eat fish or meat? If no, does your reasoning differ for different animals based on their degree of personhood?

thank you so much!

[panzerjohnson](#)

Some fish don't seem to act like or recognize individuals; others certainly do. Fish are even more diverse than mammals so everything about them is on a huge range. There's a pretty good new book called *What a Fish Knows*. See also an amazing book called *The Shark Sessions*, about a woman who got to know sharks individually. I am not sure how you think of personhood, but in some fishes there is certainly individuality and personality.

I do eat certain fish, very little meat. See here for my approach to food:

http://www.huffingtonpost.com/carl-safina/what-i-eat_b_9565402.html

Afternoon Dr. Safina,

Let me preface by saying that the work you do is admirable beyond measure, and one like myself can only dream of achieving the scope of practice that you've done thus far and may continue to do.

My question focuses mainly on wolves, which, passing over the comments, seems to be rather lackluster in variety. You mentioned in your above post that wolves cope with personal tragedy and I was curious as to what extent you've witnessed coping mechanisms in play? I know orcas and other whales carry the dead with them for a certain amount of time (ie, mums with calves) but do wolves abandon their dead or do they mourn in their own way?

I know that wolves are rapidly losing ground and are plummeting rapidly towards extinction; do you believe that they are aware of their own plummeting numbers ?

I'm a fourth year zoological student and I've worked with wolves for the past two years across multiple rehab sites in New York State. I want to do more to help, but it is a steep slope and I hope to do more once I graduate.

Thank you for all that you do.

[Arakkoa_Sympathizer](#)

When i was a student I felt almost hopeless that I could ever help anything or even find a job. Don't worry; keep working at it.

Regarding wolf grief, here's a piece about a wolf that was in *Beyond Words* and has since survived against all odds: <http://thewildlife.wbur.org/2016/07/12/male-755-the-wolf-with-nine-lives/>

Hi! Thanks for offering to answer a few questions.

I live in San Diego and I've been hearing anecdotal stories about radical changes in the marine life in the ocean here.

I've heard sea horses have appeared when none were here before, the kelp forests have disappeared

and even up the entire California coast I see or hear news about certain marine animals being seen that have never been seen before.

In your professional experience, how radically and quickly is our ecology changing and what is the biggest impact the average citizen can do to help the situation?

[Joeyjojojunior1794](#)

Too radically, too quickly. Biggest impact: small family. Clean tech. No fertilizing of lawns, no poisoning of gardens. fuel efficient car. You know--the usual.

How would you teach children to be concerned?

[oorr23](#)

I wouldn't. I would teach them to love the living world. I would show them how we act when we love and care for the world. I would let them get wet, dirty, sandy, and happy.

I'm have an electrical engineering degree and work in RF, but I would much rather help the environment or non-human animals in some way. I know you may not know but any tips on agencies or getting into such a field as an electrical engineer? I've been having a hard time finding a viable path to switch.

[Sparkxx1](#)

MiniMalt has a terrific answer, below.

Where do you believe our moral considerations should lie in regards to animals? More importantly, should our moral and political landscapes change accordingly? If so, how and how much should they change?

[ctant1221](#)

Most humans believe we are superior, perfected, destined to "rule." In truth other living things are as much of the world and have as much claim to the Earth as do we. And they cause far less trouble. Humans are by far the most compassionate and creative and violent and destructive species in the history of our planet. And because we have put the whole living world into accelerating decline (forests, waters, air, oceans, species), with zero consideration for other species and for people who will come after us, our moral landscape (is there one?) needs a total makeover.

There are some very interesting and more importantly, effective ideas and technologies to cleanup the oceans, such as the Seabin Project, why do you think they aren't spreading faster around the World? In your opinion, what would be the solution for this?

[zeroReiZero](#)

The scale of the problem vastly outscales and outpaces those inventions. The ocean it far too big and too powerful.

In the upcoming years what would be your greatest concern?

What is your suggestion for helping reverse the damage?

[PunkRwkRay](#)

The human swarm. Women's rights.

I'm your opinion is humanity causing a collapse of the ocean biomes?

Is a collapse of the ocean biomes something that would bring a collapse of land based biology as well?

Do you believe that there is anything that can be done to remedy this crisis short of complete dismantling of industrial civilization? If so what?

[Duliticolaparadoxa](#)

Well; seagrass meadows, big fish, turtles, corals, even plankton--all doing poor to very poor with the exception of some recoveries of turtles, whales, some fish in a few places. A collapse of sea life would crash oxygen, big-time. I don't dislike civilization; in fact I think it would be a good idea. But civilization based on fossil fuels, and 7 to 10 billion people—that can't work. Clean energy and one billion people; that could work. If you look at what countries have flat population growth or slight declines, it's where women now have full citizenship. And the biggest secret of rich people is: small families go hand-in-hand with big, rich lives. The biggest slices of pie get cut at the least crowded tables. We share one world pie.

What are your thoughts on large-scale fish farms far offshore?

[j0wc0](#)

I'd prefer scaling down the whole human venture and leaving room for the recovery of other life to great abundance and diversity. But i think it's possible for those farms to be less damaging to habitats than current coastal fish and shrimp farms. I would not want to be a fish in any of them, though. That's no life.

Why are we focused on conservation rather than adaptation?

[DirtySmithy](#)

Because I don't want us to adapt to a world with no elephants, no apes, no forests, and water too toxic to swim in.

Do you think there is any way to save the ocean and remaining life in it? Or it's pretty much in its last death throes?

[ethaddict](#)

Thinking there isn't is a cop-out to avoid getting involved. I think there are many ways, and many lifetimes of work to be done. You're help is needed!

You mention killer whales finding importance in family above all things. Can you talk about this more?

How big do these family groups get? Are there behaviors or other indicators that are specific to certain family groups?

[gbdallin](#)

There is a lot on this too in Beyond Words. Orcas are exceptionally intelligent and super-aware. The families socialize with others in clans, clans form pods, pods form communities that all share vocal patterns--but communities don't go near each other. The only other species that seems to have cultural segregation is ours. There is a lot on this too in Beyond Words. Orcas are exceptionally intelligent and super-aware. During the era of captures in the Northwest, when they'd learned that the helicopters would bring the catch boats, one family split with the mothers and little babies going one way and staying underwater a long time and the others staying on the surface to decoy the helicopter. Astonishing but that's them. The "resident" pods of the Northwest stay with their mothers their whole lives, unlike any other species. Their emotional bonds are deep and intense.

1. What do you think is the number one thing people can do to help preserve our oceans? Ive taken an environmental psychology class where we learned many ways to help but what one thing would you say has the most impact?
2. What is the current state of our oceans and what do you project for the future given the path we are on?
3. What was the one thing that surprised you the most in your studies and travels?

[Echo1334](#)

1. Have no more than 2 children.
2. Some fish and whales are recovering, some turtles too, but decline, depletion, and pollution are more prevalent.
3. How numb most people are. How little thought goes into life for many.

Hello Mr. Safina, Firstly thank you for the work you do. I'm looking forward to reading the new book. I read Song for the Blue Ocean a few years ago and to be honest it brought me to tears. Which brings me to my question - are there any positive news stories/study results coming out of oceanography at the moment? It seems I only ever hear about negative issues - overfishing, rising SST, acidification, plastic, mass die offs, etc. The state of the worlds oceans seems heartbreaking, I'd love to know of any good news!

[el_canelo](#)

When i was a kid, we had no ospreys, no falcons, no eagles, and most fish were at very low levels. Now, all those things are greatly improved.

After a short time with dogs, watching them apparently dreaming, playing games with me and each other, apparently *empathizing* with me and each other, (i.e., licking a wound or appearing to comfort me or my wife when we aren't feeling well), it's clear as day that they possess the abilities of complex emoto-cognition and problem-solving skills.

The standard response from cognitive science says "well, we can't read their minds, and until we do, we must assume they are following basic survival algorithms..." or some such cop out.

Can we please push back on the skepticism regarding an animal's ability to think and feel? Can we build (or are you already building) explanatory models based on the premise that their thoughts are likely very similar to the ones we experience?

Thanks!

[jay_howard](#)

This is what the entire book *Beyond Words* is about. There are also very good books out by Barbara J. King, Bernd Heinrich, Frans DeWaal, and others. It's a very substantial critique of the "we can't read their minds" cop-out. I can't read your mind, but your actions show that you have one.

in oceanography i remember learning how phytoplankton were essential to the oceans ecosystem and if what 99% of what scientists say is true that global warming is causing drastically rising sea levels, how much could the increase in freshwater damage this microorganism, in what timeframe, and is it preventable, and could a mass extinction happen if this microorganism is significantly harmed?

[iamatrollifyousayiam](#)

Phytoplankton is many kinds of organisms. The changes in temperature (and perhaps some freshening) are already causing major poleward moves of many kinds of plankton, and overall declines in abundance.

Humans seems to do a lot of trial and error guesswork on what makes animal tick, will we ever bridge the divide with a common language?

[auflyne](#)

I don't know. Their communication capacity might be in a non-language form, so I kinda doubt it.

How do you find balance between actively anthropomorphizing animals and observational Biology? We know Humans impact animals, but why anthropomorphize them and not just observe the transition of the new ecosystems?

[RainWhistler](#)

Observing provides all the evidence that humans are not the only animals who are aware of life and themselves and who feel emotions, and who want to stay alive.

Hi! It's fairly well accepted that on this planet, over the course of ages and eons and epochs, various things - both mundane and extraordinary - have killed off something like 99.99% of all species that have ever existed. (And don't even get me started on human-caused climate change, compared to the same planetary time frame.) And yet we (first-world) humans seem to feel like the planet should now suddenly stop and remain the same, no temperature variations, no extinctions allowed, for any reason. Your thoughts?

[pxpdoo](#)

The idea is that humans should stop destroying the world and what lives here just so more people can sell more cheap stuff to one another. Not that nothing should ever go extinct, but that getting back to one one-thousandth the current rate of extinction that we are causing, as well as lessening the poisoning of lands and waters and the destruction of reefs and oceans would be, y'know, nice. Death and destruction is not what makes this planet extraordinary. Life is.

What can we do, as individuals, to help promote change? Sometimes I feel it's difficult to imagine that i'm really making a difference as one person cutting down on plastics or sharing a link on FB about the dangers of pollution on the animal world.

[evilqueenmarceline](#)

I don't know you so what you can do is something you have to figure out. Do as much as you can, that's all you can do. But do something.

Are you a vegetarian/vegan? Why/why not? What do you think are the ecological/other effects of a majority of people adopting a vegetarian/vegan diet? Do you think people should adopt a vegetarian/vegan lifestyle (assuming it doesn't negatively effect their health)?

On another note, what is your favourite animal?

Thanks for all your work, looking forward to buying and reading this book :)

[BeeJAsh](#)

about my eating, see here: http://www.huffingtonpost.com/carl-safina/what-i-eat_b_9565402.html

favourite? Oh there are soo many!

Hi Dr Safina!

Given that evolution is, fundamentally, about survival of the fittest, do you think it's possible for a species to advance intellectually, technologically and culturally without irreversibly harming the rest of the planet on its way there? If so, how?

[VitalP](#)

Fit means "the best fit" to the environment. It does not mean strongest or meanest. We are proving to be a very poor fit, so our success might be the world's biggest bubble. Advances could be many... more: Peace, compassion, education, health, justice... But not more of the same.

If we stopped all fishing now, how long would it take for most species to recover by let's say 80%?

Or is it beyond repairing to that degree?

Which is currently a bigger threat to the oceans, over-fishing, climate change or increased carbon in the water?

Thanks!

[Thread_water](#)

Ten years. That's all. Overfishing has made the most damage. Climate's the bigger future threat.

Do intelligent, long-living creatures like elephants or blue whales have any sense of climate change? Do any of their behaviors go above and beyond simply adapting to change, instead worrying about it or taking steps to fight it?

[deepteeth](#)

I doubt they can know about that, though they certainly feel the effects. Past climate changes caused many extinctions, so that's a cautionary tale.

Do you believe animals share the same level of consciousness as humans, or to varying degrees? How do you think consciousness arose neurologically/evolutionarily?

[sidgang324](#)

Varying degrees, not the same. Not even you and I share the same level of consciousness. No one knows how consciousness arose but it must have to do with neural networks because destroying the brain destroys consciousness.

How's the job market for an ecologist? What specifically would you say got you the success you have today? You have my dream job!

[blackamnesias](#)

Thanks. Someone just today told me there are a lot of jobs around and I went to hear a candidate for an ecologist job just this morning. My success always comes when I think outside the box and work really hard. And--when I don't get distracted. Distraction is major.

What is psychologically the hardest part of your job?

[factczech](#)

That we are generally not winning. Though we do have some big wins.

What is your view on farmed salmon? I saw the blog post about what you eat, and it seems like you don't eat farmed animals and only wild salmon occasionally, but I'm curious about what you think of that industry.

I've just read a book touching upon the farmed salmon industry in Norway, and to me it seems almost like a fake version of proper salmon, missing a lot of nutrients (omega 3 etc) and containing way more "toxins" than their natural counterparts. There is also a lot of talk about escaped farm salmon mixing with wild salmon which local fishermen have noticed.

I would really appreciate if you would answer, thanks!

[nammi-k](#)

Lots of problems with farmed salmon. I don't buy farmed. I buy wild to help the fishermen fight for the rivers.

What are your thoughts about symmetry in nature? The more I observe the natural world, I find myself comparing it to concepts and behaviors that typically shun association with "nature". Do you find that learning more about animals and how "their world" works help you understand concepts in completely different disciplines?

Also, I loved The View From Lazy Point. It was actually one of the first books I read that got me interested in symmetry (specifically the interconnectedness of nature and humanity). Thanks!

[theavla96](#)

Thanks; yes i think most of my thoughts about the interlacing beauties of the natural living world are in The View From Lazy Point.

Do you think deforestation and ocean contamination should be discussed as two sides of the same coin, or should we be approaching each as a unique phenomenon? Which do you think is at a more critical juncture?

[I_AM_IGNIGNOTK](#)

Same coin: too many of us.

What is the most astonishing human like animal behavior that you have witnessed?

[The-Big-Giant-Head](#)

The way elephants are so good to one another, know each other so well, and are so much more peaceful than are we. They seemed superior in that way.

Also, I love elephants. After reading about them, their emotions and how they show them are truly awe inspiring. Its sad to think they were and still are killed for the ivory. Such amazing creatures that have enormous depth to them, killed for money. I would have killed to go with you and watch them. Do you think their family connections are as strong as humans? And what dangers do you think humans still face them with? Are they still hunted for ivory like they were in the past or has there been good steps to ensure their safety from poachers?

[Pope_Industries](#)

There is a poaching catastrophe going on now. Their connections are in many ways as strong, in some ways stronger, than many human families.

Hey thanks for making this AMA. How do you feel about the sentient dolphin society that is going to take over the world? What do you think we can do to stop it?

[iHappyTurtle](#)

We are on a good track to prevent dolphins from taking over. That is a great shame because a million years ago they had the biggest brains on the planet and there were no wars, no pollution, no cheating on tests.

Which animals have actually benefited from humans (excluding domesticated animals)?

[Lost4468](#)

rats, mice, house sparrows, rock doves, a few gulls.

How can we sustainably utilize the ocean's resources without negatively impacting marine life?

[TheLaugh](#)

Changing the question from "How much can we take?" to "How much must we leave?"

How long before our oceans are filled with nothing but jellyfish due to the acidity changes? Can we still save the reefs from bleaching or is it too late?

[RaiThioS](#)

It's not too late but it is, well, late. Fixes would have been easier if they'd started 50 years ago.

Do you know of any interesting information where they believe that animals may be trying to communicate with us somehow regarding the change in environment?

[Wagamaga](#)

No I don't; I doubt they are. We can't even communicate that among ourselves very well.

I've kept reef tanks for years and have always been interested in coral reefs... To me it seems like there's so much damage done to our reefs that it isn't reversible and they're going fast. Since we aren't going to reverse these changes immediately, how long do you think it will be until we have no reefs left?

[Rookvrouw_Joke](#)

I think we will have smaller, highly degraded reefs for a long time, and some evolutionary adaptation will aid the persistence of a few corals.

No questions, but your book sounds phenomenal and I hadn't heard of it before. Looking forward to reading it!

[creep-o-rama-lama](#)

Yay! thank you.

Do you think there is a 'tipping point' of ocean acidification? How will ocean acidification affect the earth?

[johnaldmilligan](#)

I don't believe in tipping points. But things sure are getting worse for coral reefs as it is going now. Acidification will be bad for everything that currently lives in the sea, and catastrophic for hard corals and shellfishes.

Hello ! I have a few questions and a lot of remarks on the way we are trying to deal with today's environmental issues. I see a lot of people that believe what all NGOs (about farming and fishing

essentially, i work in the fishing sector) tend to say without thinking of the economical impact on the people who survive thanks to these ressources. I agree we need change our ways of eating and consuming, but I feel like we are not taking into account the social sustainability...

[lordfobizer](#)

If the activity is ecologically sustainable it will be socially sustainable. If not, it won't be. When a fishery collapses, the social fabric is caught in that same net.

In your opinion- What is the likelihood that we are headed towards disaster?

[redditor9000](#)

We are in multiple disasters now. So, say 100%. Are we headed towards solutions? 50-50.

In your many travels, what is one of the most surprising aspects you have learned about animal relationships?

[scoreleven](#)

The general peacefulness of animals who live in structured social groups is quite striking. Should not be surprising.

Will we ever be able to recover the diversity and abundance of large vertebrates that existed before humans started colonising the planet?

[Isovenator](#)

Ever is a long time. Current trends, foreseeable future, no. Longer term, maybe yes.

Do humans posses the chance and ability to one day inhabit underwater territories in the near future? (>125 years)

[JayKiller98](#)

I don't think so. I certainly hope not.

What (if any) impact has the Fukushima nuclear disaster had on the oceans? What about future impact?

[Kyario](#)

The radiation is very low level but could build up over time. It is not an ocean game-changer compared to the other problems.

Your book sounds very interesting! Do you think we only have a chance to save habitat or improve lives for animals who the masses can relate to on a "who" level? For example, it seems that the more "human-like" an animal is (or the cuter), the more we care. But, all animals are individuals with the

innate desire/drive to survive and pass along their genes, whether or not they meet our language's definition of intelligence, communication, family, etc.

[clairdelynn](#)

One limitation of the human mind is that unless it looks human or was made by a human we collectively as a species don't care too much about it.

I've read about micro-plastic in the ocean food-chain. How bad for the ecosystem is this?

[j0wc0](#)

It seems pretty bad. It can have a lot of little effects. It's being closely studied now.

Hi how are you doing? First of all even if you don't get to my question thank you for doing this. Okay so here is my question: as each Sumer gets hotter and hotter, as the ocean water levels rise, water pH levels drop, and as overfishing continues; what do you expect will happen in the next 10-15 or even 20 years from now. Will there be mass extinction of marine life? How will all of this effect the ecological balance of the oceans? I'm a marine science student and what I've been taught is that what is happening to our atmosphere and our oceans cannot be stopped but only slowed down at this point, if you could head a international progeny to attack this problem what would you do to help our planet? Sorry that was long but thank you in advance

[scubasteve528](#)

Hi. As mentioned above, We'd work on clean energy, connected wildlands, degradable plastic, organic farming, women's rights.

I don't expect mass extinctions in 20 years. Plenty for you to do!

With the way that the world is changing as of late, is it possible for ocean acidification to be negated? If so, how long will it take before the world is able to work through all of the pollution in the atmosphere and the oceans and start to balance back out?

[Kijuun](#)

Not in our lifetimes, but we can prevent it from getting drastically worse.

How likely are we to completely kill ourselves as a species?

[deepsoulfunk](#)

No one knows but it's more likely that after some terrible time humans will improve things quite a lot.

How long do we have before it's over ?

[blade1982](#)

Two billion, three billion years. Ballpark. But see below from cfrey.

What is likely to happen to sealife as water levels rise?

[alexnedea](#)

I don't think levels will affect sea life but the warming that is driving it sure will, as will the acidification that comes from burning carbon fuels.

I think this book should be required reading in all high schools. How can we get more people to understand that animals are "who's", not "what's"?

[salziger](#)

thanks!

How bad is it, really? Because I'm getting worried.

[clam_chips](#)

Don't get worried. Get working instead. The fewer the number working on solutions, the more worried we should be.

Greetings Dr. Safina. I am currently an undergraduate at Washington State University working for a bachelor's in Wildlife Ecology. With increasing temperatures over the earth's surface, it is easy to hypothesize that earth's surface winds will change dramatically. My question is, how will this affect the migratory pattern of both inland and ocean birds. Thanks.

[wazzusean](#)

A few birds, especially albatrosses, depend on high winds. Inland, strong fronts have major effects on birds, some helpful and some lethal.

Hi, I'm actually studying marine biology in the UK, and I was wondering if you believe that exclusive Marine Protection Zones provide any considerable benefit to marine biodiversity or does integrated methods that vary between periods of fishing and non fishing have a more positive effect on populations, such as those present around Papua New Guinea.

Thank you for the AMA also.

[Sapphire_Oceans](#)

I like protected areas. Think of them as factories.

What are your favourite authors/books/films that you think really encapsulate the human/non-human animal interaction in an authentic way, or that have inspired you?

[smokeyhawthorne](#)

Bernd Heinrich, Frans DeWaal, Barbara J. King, Elizabeth Marshall Thomas, Aldo Leopold, Rachel

Carson

If you had a million dollars and 100 million human minions, how would you apply them to the problem of ocean recovery?

[brianfit](#)

We'd work on clean energy, connected wildlands, degradable plastic, organic farming, women's rights

Thank you. I would like to ask you what impact recycling has on the environment. Daily I encounter people (I work with) who are just as quick to throw recyclable plastic into a garbage as they are to recycle it, and often their reasoning is that recycling creates more carbon. I despise the dismissive attitudes people have towards the problems our world faces, but do not know how to confront it.

[Quankers](#)

I despise it too. Just do your best; that's what I do and that's the best we can do.

How should these new findings influence the way we regard animals? How have they influenced you?

[theuberwensch](#)

We need to leave room on Earth for others, forever.

The is the largest positive effect that humanity has had on the natural world?

[Itsamadmadmworld](#)

We have not had a positive effect on the non-human world.

My daughter is heading to college in a couple of years and she's considering environmental sciences as her field of study. Can you offer a list of 5 to 10 great colleges for that major?

[pantsmeplz](#)

Stanford, Duke, U Wisconsin Madison, Boston Univ, Rutgers are a few.