

DISCUSSIONS

INTERSPECIES

bioequality

ON

human supremacism

COMMUNICATION

Humam 1
10-10-2018
Biodynamic farmer

I've been a farmer for 6 years. I take care of a small farm and produce vegetables, cereals, fodder for the cow and the chickens, and I aim to get the ecosystem functioning locally. So that we can use the natural system to produce food without impacting the environment too much, by trying to maintain the balance between natural elements on the farm.

I mostly communicate with cows, and also with plants. [I do this] by observing the plants and they will tell me what they need. So basically just by visually observing the plants, one can tell a lot about the plant. There are studies on plant communication, for instance, in the soil, they send out messages to the soil microbiota. There is this symbiotic relationship and they get minerals, like phosphorus, from the soil, in exchange.

I think human interaction with plants is only up to us, to see how their leaves are formed, how the leaves are hanging, the colours they have. The physical appearance of a plant can tell us a lot about how the plant is feeling and what we need to give it, in order for it to become healthier.

I don't talk to my plants, but I think that plants can recognise when they are being looked after. Human patience plays a big role in improving the quality [of life] of plants. I believe that it [plant communication] exists. Plants have a kind of awareness of the things that happen around them. And I wouldn't call it 'telepathy'. It is just like 'Wi-Fi', people from the Stone Age would think Wi-Fi is telepathy, but it's not. With plants also, a signal is sent, a signal we cannot measure, and we don't yet know how it is produced.

As humans, we can make the plants feel more relaxed by taking care of them. By reducing the stress around them, for example the lack of nutrients and other extreme conditions. By making sure they are relaxed, we can help them grow better.

Humam 2
05-10-2018
Animal rescue centre
executive director

I most often communicate with my dog and my horse.

Horses, they communicate with their ears and their body. They kind of point their ears backwards, if they don't like something that you are doing, they may also try to bite you. They communicate quite a lot. So we should always listen, I mean that you [should] follow and [try to] understand what they are doing, because they're whispering to us what they want and how they feel. But if you don't react, and they have to "shout". They start to biting or kicking, if you don't see the facial micro expressions. And they will start acting stronger and stronger. For example, the horse, if you put the saddle and the belt on them, most of the horses don't like it, because it's creates a pressure on them. They know that you are going to put the saddle on them and they point their ears backwards to show their unwillingness, and if you do it roughly or too fast then they might bite you. But if you touch them gently to let them know, 'Okay I saw you and I will be gentle and slow', they will understand and let you put the saddle on them.

Like I said before if there isn't any verbal language it would [still] be alright, as I don't use language to communicate with them. I use different sounds with animals, with my horse, I just make a sound like 'hummmmmm'. For example, this evening when I went to the stables, and I walked up to my horse's stall, he made a sound like 'heehehehehe' to express that he recognised me. He doesn't do it for everyone, he does it for me and my daughter. So I don't need human language to communicate with animals because they don't understand the words. They are also watching what you're doing, and the body language plays a huge in interacting with them.

I would like to have some kind of a leaflet, that I could use to ask my horse about his likes and dislikes. Does he feel like having a rub today or not? Or does he like the food I give him or would he prefer another [type of food].

Unlike humans, I don't think dogs and horses try to teach humans their language. But they try to communicate by using their own methods. It is up to the person [receiving the signals] to [try and] understand it or not.

I don't think [horses and dogs] would actually need us at all [in their utopia]. Both of them have been here before us. They are animals, they have animal instincts. There are always those animals that will survive and continue the evolution.

Human 3

01-10-2018

Zoo keeper

If [animals] do something bad, like bite or something, it's mainly because of me not understanding [their communication], or doing the wrong thing. I have a ferret at home, and it's very difficult to explain how I feel about the ferret, it's very different from what I feel to any other animal or human being. There is some kind of non-language connection and I feel really privileged to work with animals and be with animals. When I see that the animal is trusting me, it feels very important. A part of me feels like I am a good person, if an animal trusts me, and I think animals sometimes have better senses, and they can sense who is a good person and who is a bad person. I used to have a wonderful dog. And if he liked someone, that person was [often] a true and honest person.

In order to communicate with animals, I [would] have to find out what are the typical signs [that they use]. If it's a dog, so what does it mean to the dog if I show my teeth. And things like that. I work mainly with reptiles, and with snakes I have to be very calm and trustworthy. If I am going to take a snake into my hands I have to go and take it, but not by force or anything like that, but with huge respect. So that the animal senses that alright, there is nothing to be afraid of, and like with my ferret, she makes tiny noises, so I can try to speak in that way to her. You have to look at the animals and try to get to know their behaviour. That's the way to define the language.

We already have some [tools to improve the communication between humans and animals], like the snake hook. It sounds weird. It's a tool that you use when you are going to grab the snake, but it helps you to communicate, because snakes have moving eyelids, so you cannot tell whether it's sleeping or not, and if you go straight away and just grab it, it can get scared and bite you. So when I am going in to see the snake, I first take the hook and gently scratch the snake with the hook, then it wakes up, and sees that there is something happening. I can then take it with my hands, I don't need to use the hook for touching the animal. And of course there are some whistles that you can use that make a similar noise to what is familiar to the animal.

If I could imagine any kind of tool for human-animal communication, it would be interesting to use this VR system, so you could meet the animal in a kind of a hyperspace, so you could "be" the animal and the animal could see a human turn into their kind of animal.

So snakes don't have ears so they don't hear me, of course I speak to them, because I am a human, but they don't hear it so I have to find [another] way. I observe them in order to find the best ways of communicating with them or the things that make the animals feel safe.

I see phytoplankton as autotrophs and I study their interactions, not with humans but between species. Phytoplankton photosynthesise and they need nutrients and light to reproduce. Basically I see phytoplankton or phytoplankton cultivation as having a plant in the room, a plant to take care of. Taking care [of them] by watering them, putting them by the window, making sure they have enough light, fertilising them so that they grow better and so on.

How I see the communication [in terms of stress for phytoplankton], is the physiological stress phytoplankton experience. Another [factor] is light. If you change the conditions, like increase their temperature very rapidly, phytoplankton, and also zooplankton, will kind of grow very fast at first and then the mobility will also be very rapid because the density and the biomass are both too high. And phytoplankton are autotrophs, so I can imagine communicating with them through light. Different phytoplankton species and different types of light supplement shape them in different ways. There are different types of phytoplankton experiments that focus on the intensity and the spectrum of light.

In terms of ethics, I don't think that [the emotional stress of phytoplankton] is possible, to be honest. Phytoplankton are very simple organisms, they don't have a brain or special organs, so basically if I want them to grow well, then I just provide them with enough nutrients and light and grow them at an optimal temperature. Physiological stress is something phytoplankton will experience, but from an ethical point of view I don't see how it [the emotional stress] would work.

[When talking about cultivation of phytoplankton in captivity] there is a kind of a dilution effect. If you think about nutrients and light again, it's all about the ratio. For phytoplankton cells to grow, they need a certain proportion of nutrients. In nature, these proportions are different, so there is more variety in the conditions. There are possibilities to escape from the conditions that are not perfect. They can also survive conditions that are not optimal. In captivity, the phytoplankton still have their internal clock and they do still respond in similar ways than they do in nature for several generations, but at some point they become "lab rats", they do not exactly respond in similar ways like in nature. For example, in nature phytoplankton have both sexual and asexual reproduction, but in cultures [in captivity] they only have asexual reproduction.

I don't think that cultivating phytoplankton on a massive scale will cause any harm to them, it will probably cause much more harm to the environment if the [cultivation] facility doesn't operate [responsibly]. But I don't think for phytoplankton it's such a big deal, some of them will die at some point, well, we'll all die at some point, but I don't think it matters a lot, maybe it is different for zooplankton, but for phytoplankton I don't think so.

For the environment, it depends on what kind of species you cultivate, what kind of trait do they have. But if much amount of algal would be released into the environment just like that, that will affect other phytoplankton, the ones which is in natural water. On one side it will cause competition, but on for the other side these massive cultures at times include they did toxic species and that may cause problems.

Human 4

08-10-2018

Plankton ecologist

Human 5

10-10-2018

Artist and researcher

Plants detect sounds, music maybe the wrong term, as it is again something that is very human. Sounds are another channel of communication for plants. How do you think the plant would respond if you started emulating the same frequency [220 hz]? Do you know why plants respond to this frequency? It is because of water and that is why the roots pick up this frequency.

I mostly communicate with a cat and with my microbes in my body. I look and observe myself, but also try read the research. I don't know if you know this, but there is this channel, a nerve channel called vagus, which is a nerve channel that connects our second brain, which is the gut, directly to our brain. So, we have nerve cells, neurones, and [tissue] layers on top of the gut, which is full of microbiome entities. It would be interesting to interpret what is happening in their world and to signal in a bio-electrical way to the brain that [would] then respond. For example, when you travel a lot, what is clear is that you start having a dialogue with your gut about when they want to eat and what is disturbing. It's a simple but clear idea. Another very simple example is when I eat a particular type of fat, within 3-4 seconds I get a signal back saying, 'stop eating that'. So, this is a very, very basic dialogue that you have with your microbiome.

Secondly, with other species like the cat, I smell the cat, in the sense that I smell the cat's microbiome. There are things that I see a bit differently because of having worked with bacteria. For example, I asked my students to harvest some bacteria in their shower, in their house. Because I was interested in having some petri-dishes with red colour, and we know that in shower corners there tends to be a bacterium, a microbe that produces a red pigment. Once you know what the biotopes of various pigment producing various microorganisms are, even if you don't see the colours with normal vision, you "see" the colours. When I look into the corner of the shower I "see" the bacteria even if I can't see the colour red, this is because my brain knows [that it is there]. So, there is another type of sensitivity that is happening. So, by working with these entities you sensitise yourself.

In a talk I was giving my students in Germany yesterday, I mentioned 'the more you work with non-human entities, completely different questions start to emerge'. Because in Western societies they are just plants or bacteria. But in other societies these entities have some power.

For example, when my father was dying, he sensitised himself to the 90 % non-human part of his being [made up of bacteria and fungi]. What we do not consider is that when we die, not only 10 % of human cells die but also 90 % of non-human cells go with us. I think this is an ethical question we should consider.

If you work along with scientists, they talk about extracting things from bacteria or yeast or using them for human use. So, they make very big chambers, almost like bacterial factories. This presents a huge ethical issue. I am working on a project where the bacteria can make a biotope pigment that they either excrete when they die or when they are near death so that we know, and we only use them after they are dead.

We are creating new species, not only by preserving and modifying the genome but also the environment we put them in [in the context of zoo animals]. Cats choose humans, rather than humans choosing cats, street cats at least. We moved a lot, so when we decided to take in the cat or when the cat decided to move in, since it was a street cat it still went out to the street to hunt and came back when it wanted. We decided the cat would have the same rights as us. And we would have to consider his needs as much as ours.

I find how pets are treated and regarded to be very dark. They are confined to either the house or fenced parks or are attached to a leash all the time. It's very similar to growing phytoplankton in a reactor. And when you take your dog for a walk in the park, they have to be first socialised. They have to go to school and learn to behave and not go near other people. The dogs that I see here in Helsinki are becoming generation after generation of degenerates just like the animals in the zoo. So basically, this [Helsinki] is just a big zoo.

Having worked with plants a lot, it is getting clear that plants are in fact sentient beings, with complex hormonal signals. Michael Marder is someone who writes about this, he questions whether it is ethically correct to eat plants but not animals. I have worked with a synthetic biologist and had strong discussions about this. Her solution is to create synthetic alternatives, and I feel like I am opening up to the idea of making synthetic food. But then I don't know enough about the material consequences of this. Maybe synthetic [food] combined with some animals, maybe the ones that are at the end of their life is the solution. But then we also have to consider how taking in synthetic food will react with our gut microbiome. Maybe that will change it forever. I work mostly in a laboratory and I understand the incredibly unsustainable practices that are going on in there in the name of safety.

We are 90% non-human cells. This is the big problem, that we see ourselves as not being part of nature, but we are fundamentally nature, so taking care of nature is basically taking care of ourselves. And this is what is always forgotten.

For quite a while now, I have been an advocate of granting certain legal rights to partially-sentient animal species members (individuals, not species-wide) who demonstrate an awareness of themselves as individuals.

I think that first among these rights should be the right to live; none of these individuals should be subject to being killed for any reason but reasons which would incur the death penalty for humans. (And, of course, without such a right, no other rights are meaningful.)

A right to a fair trial and to representation at trial is also important. If such an animal individual is accused of a crime, their ability to defend themselves is obviously limited; they may not even be able to comprehend the allegation.

A right to decent care while captive should, in my opinion, be formally extended to any animal held in captivity, without regard to level of sentience. If a human being asserts rights of captivity over any animal, the responsibility to care for that animal is the flip side of that right.

For those animals capable of communication, a right to assert self-interest should be recognised; if there is a decision to be made concerning that animal, and the animal understands the issue well enough to have an opinion, they should at the very least be granted a hearing of their opinion.

There are undoubtedly other rights, but these are what come to mind off the bat.

I don't want to project humanness, I want to project dog-ness. I try to forget that I am human. Last night, on the plane, I was watching the new Star Wars movie and it's about Han Solo, right. He encounters Chewbacca and can speak Shyriiwook and I thought that was great. I always try to speak the language of the foreign country I am visiting. I try to do the language lessons on the plane. And therefore, to talk to [phyto]plankton, you [would] need to learn 'Planktonese'. I really do believe that. I really do believe in trying to talk to animals or not talk at all, and communicate with whatever it takes.

I think it is important to assign rights to other creatures. Absolutely! And to [phyto]plankton I will assign the right to be well. I always say that for me what is important, is for life to be used well. And the role of [phyto]plankton is to be eaten by fish, like in the food chain. So I wish it could be eaten well as opposed to be killed by algae or phosphorous et cetera. So, the right to be [phyto]plankton. Assigning rights to different species is a good design act. And to just be able to display this act on a video would do wonders. This already is a surprising act of empathy and might prompt viewers to see different species in different ways. Because you never think about legislations from other species' viewpoints. We think we have the right to do whatever we want.

Bioequality? But we are not equal because we have more destructive tools. I don't think [humans] realise the cycle they have going on, with the detergent, the phosphorous, the algae, the cutting of the sunlight, the dying down of the plankton population. It's a vicious circle. It would be useful to let people know of the alternatives. What they can do to change the cycle. It's a long list of things that you should do for change to happen.

Human is our species. And I will say that I recognise someone as human when I see them or someone as the same as me.

Human 6
19-09-2018
Catholic Christian,
dad of 5, husband of 1
for 38 years

Human 7
20-09-2018
Senior curator

I most often communicate with my two sheep dogs by talking to them, petting them, and with gestures. They listen to me, they know the moves, key phrases and so on. And I have a chicken as well, actually it was quite surprising that they are easy to teach. I think food is a good motivator for the chicken, not so much for the dog. Dogs, they value the companionship, but chickens are straightforward, greedy creatures, they learn faster if there is food involved. I also communicate with fish. Fish are a bit similar in that sense, with food, even if you are not trying to teach them, if you walk around with a feeding tray, they will notice and come to you. They [the fish] know it is always a good idea to go for the food even if it's not feeding time.

If [fish] do [have a sense of humour], it doesn't show. I know some dogs have a sense of humour. [Colleague: It depends on how you define sense humour. Fish do things to amuse themselves].

We do know that cultivating animals can affect their behaviour and appearance, talking about the fish, there are several species you can farm generation after generation. And it's being done at huge farms in South Asia, where most of the aquarium fish come from. Even though their origin is in South America, today they are being farmed in South Asia. As these fresh water fish have been living in the pond or in the tank for dozens of generations, they are certainly different from their wild cousins. Most of the aquarium fish tend to be fatter than their wild relatives, and less muscular because they don't need to swim so much. Most of the marine fish at the moment come from the wild, they are caught as juvenile and sold to the public aquariums. But certain species, such as clownfish at the moment, are more commonly farmed than caught from the wild.

If I could develop tools for interspecies communication, it would be certain simple patterns, visual signs, or light. As far as I know, sharks can be taught how to concentrate on certain signs, we can also teach them certain sound patterns. Hundreds of fish can sense the environment around them and create electricity [when] looking for prey. Sharks and ray fish are a very good example of this. Sharks have a special sense unit called Lorenzini ampullae. They are electric sensing organs, which can find the prey, for example cuttlefish or octopus, hiding under the sand. There are other types of electricity that certain fish, like the electric eel or electric rays, use that can create strong electric currents. They use electric impulses to sense the environment and also to stun the prey.

The idea of using the lateral line for communication with fish is interesting, because we have some experience in doing this with our electric eel. Somebody once dropped a piece of metal into the tank and the electric eel is very interested in that. The piece of metal raised her curiosity because any metal will be highly visible in her electric field. Most electric eels are blind, especially the adults. They create an electric field around them and they can feel the disturbances caused by all objects within that field. It is similar to the visual interpretation we use with light and auditory signals. Ions are charged particles, so can be translated as very weak electric current and certain fish have learned to use them. So maybe these sensory tactics can be used as a communication channel between humans and fish.

Fish, they "yawn" as well. Usually, they have nothing to do. They have an inner need to do stuff, but [sometimes] there is nothing to be done, so they "yawn". They open their mouth really, really wide, just like humans do.

Fish also can be really shy. When I was younger, I had a pair of African catfish, and they were really shy. They spent almost a half a year in hiding. Sometimes fish need [a little] time to trust a new environment, but after that, they start to venture further, little by little.

Fish can learn complex things, I know that for sure, but how to communicate with them, [that] is a tough one.

One of the species I interact with the most is my gut bacteria. Is that answer allowed? Jokes apart, the animal I interact with the most is my dog, Rosa and then my cat, Paaro. The other species I interact with the most, would be the ones from the zoo. I don't have many favourite animals. One of most frequent favourite animals that I have is the mongoose, but it varies. There are animals in the quarantine that need special attention, so communication wise you have to signal them that you are giving them food or for instance, that you are going to change the water flow in the aquarium or something like that. I don't know if you include that as communication, but I guess it is about communicating something.

One of the most recent species requiring special attention are the rubber eels. They are not eels, that is only the common English name for them. They are actually amphibians. They are like frogs but without legs and mostly live exclusively in water. They were in the quarantine for a long period of time and I just now put them in the exhibition display tank. There are a big risks of them not adjusting. The tanks are new but the filters are old and used, so the bacterial function should work the same. You have to monitor closely that everything is fine, and make it clear to them that it is going quite alright. The rubber eels want to hide all the time, so you have to communicate, tell them "woohoo I haven't seen you in a while and I would like to know that you are alright". One of the best ways to do that is to give them food, they smell the food and usually come out of hiding. But there are times when I have to pick them all out to know they are alright.

Smell is a strong communicator for a lot of animals that don't have sufficient vision. Some species have senses that we don't have. If you think of fish for instance, they have these lateral lines, that look like stitches on their sides. There are small holes that have sensitive hair and when water goes through these holes they can sense the minute pressure change, for example, if somebody is moving in the water. They can feel this in total darkness. We use scent as a method to communicate with snakes. We feed them frozen mice but thaw the mice to body temperature, around 37 °C, and move them around the enclosure and hide them somewhere so that the snakes can follow the scent and find them.

If I couldn't use spoken language, like words from the mouth, I would use sign languages to communicate with other [non-human] species. If you think about gorillas and parrots for instance, they learn different signs and symbols with which they can indicate what they want.

One way in which animals communicate with one another, that I am interested in and would like to use, are these electrical impulses. For instance, there are these fish called the elephant fish, they live in Africa, in rivers and dark waters. These fish communicate by sending electrical signals at different frequencies, they are like Morse code. A lot of [different] species recognise one another's mating calls through electrical impulses. There are theories how different species have special signals that only they can understand, and other species don't recognise, so they don't pair. If you think about it, it's a linguistic barrier that divides them [instead of a] geographical barrier. It would be interesting to be able to communicate with [fish] if we could find a way to interpret these electrical signals. I don't know how intelligent discussions [are that] they have.

Another thing that interests me, is fungi, different mushrooms. They have these chemical signals [that they use] to communicate with one another. It would be interesting to find out how they navigate. They can sense their surroundings very well and for instance, some of these fungi, they can hunt with these root-like things called mycelium. [Mycelia] can form loops and they hunt earthworms. When an earthworm crawls through the loop they constrict and little by little devour the worm. It would be interesting to understand these chemicals signals and know how [mushrooms] know what and when to do something. Another interesting species that use chemical signals are ants. They leave these chemical trails, not like the ones from airplanes, but they form these paths so that other ants can follow the same paths.

If I had to imagine a utopia for my dog? I don't know what it would be like, maybe, black and white. But the most important thing for them would be for somebody to fill their bowl and give them food and play with them all the time and be present.

Hummam 9
08-10-2018
Zoo keeper

Human 10

24-09-2018

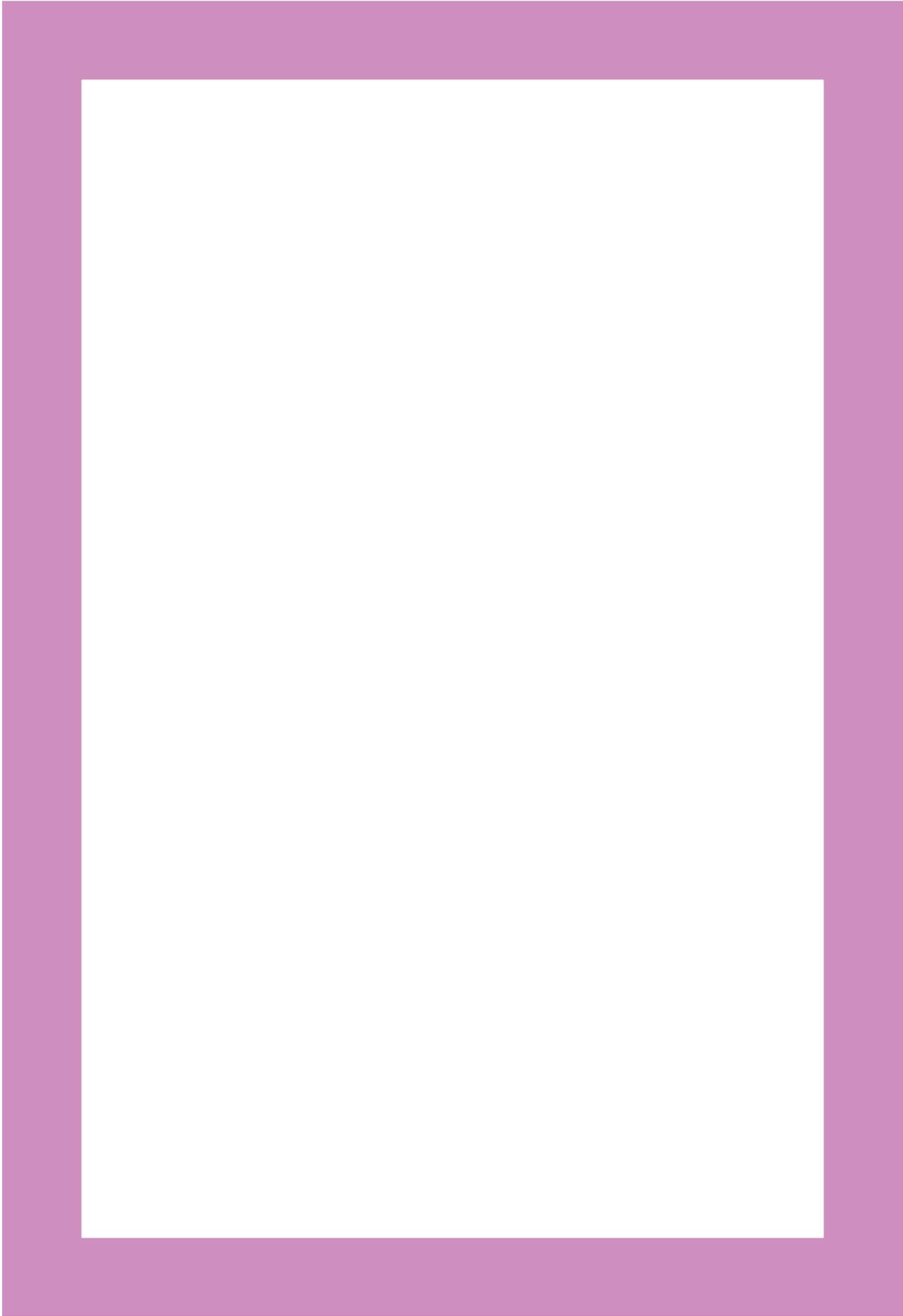
Marine biologist

As a biologist I would say “human” describes all individuals that belong to the human species, while non-human refers to everything, be it plant or animal, not belonging to this species. To live and grow, phytoplankton need in general water, nutrients and light. [These are the] most important, but apart from that they also need certain environmental conditions, (like temperature, salinity and pH) which can differ a lot among different phytoplankton species.

[If referring to communication as] a general way of how humans and phytoplankton may be linked to each other, then I would say we “communicate” with phytoplankton by changing the environmental conditions they live in, for example due the increase in temperature and pH, as well as changes in nutrient concentrations (due to intensified run-offs from agriculture). And to learn from phytoplankton how they respond to these changes in environmental conditions, we can perform experiments with them in the laboratory.

Apart from agriculture runoff also increasing CO₂ levels affect phytoplankton. When there is more CO₂ in the air, there will also be more CO₂ that is taken up by the water and leads to ocean acidification. One phytoplankton group called coccolithophores have shells made of calcite and these shells may dissolve when there is more CO₂ in the water (similar to what also happens with corals). And since phytoplankton organisms cannot regulate their temperature as us warm-blooded creatures, they are more affected by temperature changes and global warming as well. I think these together with the higher nutrient input are the main factors how we influence phytoplankton.

Communication with phytoplankton maybe also possible in another way, by hormonal signatures. Hormones are not only present in animals and in humans, but also in plants and phytoplankton and they can regulate certain biorhythms, for example, the time point of as year when phytoplankton cells form resting stages, which sink to the bottom of the water column, where they remain for the rest of the year, before in the next year a new phytoplankton growth season starts. Not all of the phytoplankton groups form such resting stages, and the formation of them may have different triggers (like temperature changes) for different species, but they may also be triggered by hormones. Putting some phytoplankton hormones into the water, in which you grow your phytoplankton samples, may therefore lead to a reaction of phytoplankton.



Tzuyu Chen Mithila Mohan Aino Tuovinen Zuzana Zmatekova