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5 Simple Tips for Communicating Science

NewsWatch

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By Maddalena Bearzi

Many scientists have a bad tendency: they often speak in a way that is incomprehensible to the general public.

I know what I am talking about because I am one of them. In our defense, traditional scientific training doesn't typically prepare us to be effective communicators outside academic circles. Scientific peer-reviewed papers are frequently written in language that would require a translator to be grasped by a non-specialist and, even in everyday conversations, we can easily slip into speaking in technical terms as soon as the conversation turns anywhere toward our respective field of expertise. We often sound *boring*.

For a marine biologist like myself, the need to directly engage the public and effectively disseminate information is becoming imperative due to the critical and complex environmental issues our oceans now face. Traveling the world as a whale and dolphin field researcher, I've witnessed first-hand the loss of biodiversity and habitat degradation. I now believe that research is no longer enough and scientists increasingly need to engage in conservation efforts. The more I've learned, the more I feel compelled to tell as many people as I can about my experiences in company of animals and, most importantly, about the pressing need to protect them and the environment in which they live.



A bottlenose dolphin with skin lesions swims off the California coastline.

On a personal level, writing books and giving public talks was—and still is—the best way I've found to share this information and “communicate science.”

More than ever, scientists are called upon to provide assessments, often to non-scientists, on which management policies are built. Because of their scientific knowledge, experts should consider becoming more involved *and effective* in raising public awareness of the threats facing our oceans, as an educated citizenry might better shape the direction of political and policy decisions. How scientists communicate this information may have measurable conservation impacts on the future of our planet.

So, what should scientists do to change the status quo and help make complex scientific concepts accessible (and readable) to a non-technical public? I believe there are many interesting and innovative ways of communicating complicated concepts using diverse media, from popular science books to public talks, from twitter and Facebook to newspapers and documentaries.

Here are a few basic rules I've come up with that can be applied to both writing or speaking, to assure we are all talking the same language. This, I hope, will help promote a better understanding of issues facing our oceans, thereby stimulating wise and timely action to save what belongs to us all.

1. Be Simple and Straightforward

Many of the concepts scientists deal with on a daily basis are difficult to understand without technical training yet these same concepts are often the basis of policies that affect the population at large. It would, therefore, be helpful if scientists tried harder to find ways of communicating complex things in lay terms.

Following some of the great and successful science communicators in one's own field of expertise or, for that matter, other fields as well, and learning from them can help to improve both writing and speaking skills. Some notable greats are Albert Einstein, Carl Sagan, Stephen Hawking, Richard Feynman, Paul Ehrlich, and Stephen Schneider to name a few.

Another idea is to partner up with a "human translator," meaning someone working in an informal science institution such as an aquarium or a museum. These less formal science educators are more accustomed to dealing with the general public and might work as a bridge between a scientist and a layperson by helping to make hard concepts more digestible.

"Analogy" is yet another powerful tool when one needs to explain something complex. If we stop and think for a moment, many grueling scientific concepts can be clarified through the use of an analogy. Good teachers use analogies all the time to build "conceptual bridges" for students in need to visualize things like an atom or an ecosystem.

As Einstein said: "Most of the fundamental ideas of science are essentially simple, and may, as a rule, be expressed in a language comprehensible to everyone." Scientists should always try to keep this in mind!

2. Don't Be Condescending... or Pedantic

Scientists should assume that their readers or viewers are as smart and curious as they are. The public just doesn't know what a scientist knows. We scientists are there to "translate" to the public. Without question, experts and general audiences have different communication styles. So scientists need to know what they want to say and then say it clearly and concisely... without putting readers or viewers to sleep!

A popular science writer or a public speaker must be something of an entertainer. Scientists need to stick to the point and make it entertaining without meandering with incomprehensible terms, hard to grasp formulas and graphs! And remember that what we scientists think is entertaining might not be. If you're writing a speech or an article for a newspaper, give it to other people (not scientists) to read and watch carefully to see whether their eyes are glassing over as they read. If so, it's time for a re-write! That brings me to the next point...

3. Tell Compelling Stories...

... Possibly based on your own experiences, so you can make a connection with the readers or an audience. We scientists often deal with really "cool stuff" and compelling stories but we barely notice them because we are hard-wired into our *science*. For instance, in one of my books, I recount a story of a school of dolphins that, by leading our research boat offshore, enabled my research crew and I to save a young girl from drowning. That story opened the possibility to engage readers not only in the story itself but also served as an excellent introduction into more complex and seemingly unrelated subjects like brain and social complexity. Not all of us have such stories of dolphins saving young girls at sea but even a microbiologist can share his or her adventures in the lab with some engaging and inspiring plots, odd characters or a mystery.

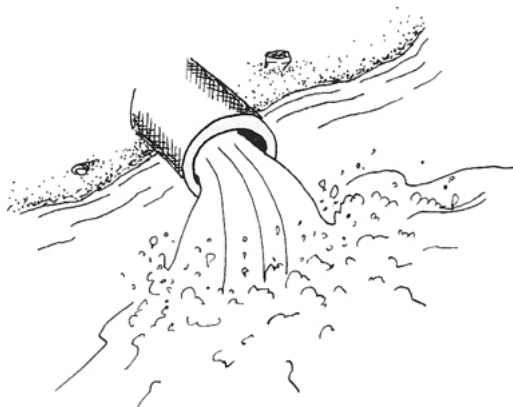
True stories can easily be written more like "fiction" to gain some popular appeal. Science writers can learn a lot from fiction writers! The title of my last book *Dolphin Confidential: Confessions of a Field Biologist* is kind of a fictional title for a science book. In the book, I talk about my life with dolphins and other creatures, but I also talk about my personal life. Scientists shouldn't be afraid to talk about things personally because personal stories are better for making a connection with the public. After all, being social and curious creatures as we are, we all love some good gossip once in a while...

Obviously, one can't always be cute and tell appealing stories. Sometimes, as scientists concerned about the future of our Planet, we need to communicate things that are not so sexy to make people aware of important issues. For instance, I wrote (and talked) about dolphins suffering from skin lesions and physical deformities because of our human impact. Now, how does one engross a reader or a viewer in dolphins with bad skin and humps? Possibly by incorporating the "ugly" details as a sort of sub-plot within engaging stories taken from one's own experiences.

4. (When and if you can) Use Illustrations

Basically, "visualize science." It's not always easy, for instance, to get publishers to accept color photos due to high printing costs, but black and white sketches were my way of bringing some visual life to my latest book. In giving a talk, a similar rule applies. Don't use graphs and tables if you can possibly avoid it and, even better, restrain yourself from using text in a PowerPoint presentation. There is nothing worse than looking at a speaker talking while twenty sentences appear on a blue screen; even if blue reminds us of oceans.

Engage your audience with exciting images and, why not, a few cartoon strips to lighten up your talk and make the public laugh instead of looking for a pillow.



Sketch of water discharge by M. Bearzi from her book *Dolphin Confidential*



Sketch of a dead dolphin by M. Bearzi from her book *Dolphin Confidential*

5. Be Apolitical

Let's say you want to write or talk about ocean acidification and you feel the urge to include your political view. Resist the urge! The goal of a scientist—as either writer or speaker—is to be accessible to everyone regardless of whether the audience is Democrat or Republican, religious or atheist. Now, more than ever, we need to recognize these gaps in our society by writing or speaking in a way that bridges them.

Maddalena Bearzi has a Ph.D. in biology and she has studied the ecology and conservation of marine mammals and other species for over twenty-five years. Maddalena is co-founder and President of the Ocean Conservation Society (www.oceanconservation.org), and coauthor of [Beautiful Minds: The Parallel Lives of Great Apes and Dolphins](#) (Harvard University Press, 2008). Her most recent book is called [Dolphin Confidential: Confessions of a Field Biologist](#) (Chicago University Press, 2012). In addition to giving many public talks, Maddalena has recently led a panel on “The Art of Communicating Science” aimed at marine biologists working in California.

Keywords: [communication](#), [dolphins](#), [Ecology](#), [marine biology](#), [oceans](#), [science](#)

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Comments

1. Karen Dove
Sacramento, CA
October 17, 12:30 pm

I recently led a panel discussion on this very topic. Plus, I am thinking of doing a PhD on the subject. I would love to talk to you about this if possible.