Honor Thy Science: Advocate

By Carl Safina

Suppose Rome is burning, and Roman scientists limit their response to studying combustion. Unlike the firefighters, they avoid getting singed, but when the smoke clears they must live with the knowledge that they did not try to avert the bleakness confronting them.

Fisheries science is a discipline designed to achieve sustainable yields, but the roster of overfished species shows that we often have not met those goals. Why? Partly because too many scientists limit their roles to studying rather than solving problems. As one researcher recently said, "Our science does not effectively influence policy. We have to increase the encounter rate between science and policy makers; there have to be more interactions, more particles colliding."

Enlightened policies do not simply flow from research publications. Decisions by nonscientists affect public resources. Government responds to vocal constituencies, and the most vocal usually push their short-term-profit interests. Scientific findings and public interests often are underrepresented in hearings and legislative offices. Let's face this fact: A dearth of scientists willing to insist that policy makers use scientific information has helped cause many natural resource problems.

Of all people, scientists can most authoritatively present facts in the public interest. Academicians are best poised to speak honestly. Their employers are distant from political pressures facing scientists in regulatory agencies, and they enjoy societal trust as truth seekers and information builders. Further, the remarkable institution of tenure is "truth insurance" that protects professionals of proven value from those who would silence such informed opinions.

For these reasons, it is critical that scientists be science advocates. By *scientific advocacy* I mean keeping science prominent in policy processes, preventing politically oriented managers from downplaying scientific findings, and insisting that painstakingly developed information be used.

To be scientific, advocacy must be constrained by best current knowledge, must never use facts selectively, and must clearly distinguish facts from opinions. The following hypothetical positions range from nonscientific to scientific:

- "Sharks are so beautiful we shouldn't catch them." subjective—nonscientific
- "Killing sharks for fins and dumping their carcasses should be illegal because law requires that waste in fisheries be minimized." position based solely in law—nonscientific
- "Our model indicates that a 60% mortality reduction gives this overfished shark population approximately a 51% chance of being higher in 10 years than today, and a 49% chance of being lower. To move toward recovery, a 60% mortality reduction must, in our opinion, be considered the minimum measure." scientific conclusions clearly explained and applied to policy issue—scientific advocacy

Representing science to others in society takes time, and political processes often frustrate. But if scientists avoid such actions, who will step in instead? Can we castigate scientific illiteracy if scientists eschew processes by which society decides and the public understands?

Scientific advocacy can mean attending hearings, meeting officials, writing to elected representatives, composing a newspaper opinion or editorial, sending reprints and an explanatory cover memo to an activist, or privately chatting with an environmental attorney who needs help understanding prediction probabilities. Decide what feels comfortable and how much time you want to allot (e.g., 10% of your time on public service related to your specialty).

Carl Safina believes scientists must be science advocates.

Be forewarned that being involved in important decisions means being involved in controversial issues (anyone who has survived peer reviews can handle criticism). It also means participating in political processes (scientists are skillful politicians inside their departments and can apply those skills toward the public good). And it means striving for clarity in public communication, stating conclusions first to maximize comprehension, reserving uncertainties and exceptions until after the main point is clearly and unequivocally made. (Recently, Britain's House of Lords faulted scientists for facilitating the current fisheries crisis, saying scientists' cautiously worded advice lets fisheries managers continue allowing overfishing; Nature 1997 [386]:105–106).

Some industry people will accuse you of being "biased" or "not objective." They really mean "GO AWAY so we can continue controlling these decisions." These same people hire Ph.D. consultants to "interpret" (distort) science for policy makers. Such people invariably apply no scientific objectivity standard to their own hired guns. Ignore them. Keep publishing, and you keep your credibility among your peers. Stand for something and don't fall for anything.

Science must be free to seek truth, never politicized for predetermined spin—at least not without a fight. But resource agencies are often pressured to manage by demand rather than by data. Thus, scientists must get involved in political processes precisely to avoid seeing science politicized by being distorted, used selectively, or ignored.

Get involved in how society views science—help people understand it; don't let them ignore it; make them use it; honor it.

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