Illegalfishing on the Galápagos high seas

The Galápagos Islands and surrounding Galápagos Marine Reserve harbor the largest global shark biomass in the world’s oceans (1) and unique marine biodiversity (2). The loss of high–trophic level fish and marine predators can cause grave trophic cascade effects in the marine ecosystem (1, 2), with drastic consequences to the socio-economic well-being of the Galápagos and Ecuador’s coastal artisanal fishing communities. Yet, despite their status as a UNESCO World Heritage Site (3), the Galápagos Islands’ waters are susceptible to assaults by industrial fishing fleets (4).

Under the 1982 United Nations Convention on Law of the Sea (UNCLOS) (5), other nations have the right to fish in the international waters between the Galápagos and continental Ecuador. Ships have little incentive to stay away from the Galápagos Marine Reserve borders or prevent fishing lines from extending into the reserve because enforcement of the restrictions is weak (4). Ecuador’s government lacks the technological and financial resources to implement a monitoring system capable of deterring foreign vessels in the Galápagos Islands’ protected waters (2, 4).

In the summer of 2017, a Chinese fishing fleet comprising 300 boats posed an immediate threat to marine species near the Galápagos (6, 7). On 13 August, Ecuador’s Armada in the Galápagos Marine Reserve confiscated a Chinese ship carrying 300 tons of fish, including illegally caught tuna, and 6000 sharks, including threatened thresher sharks (Alopias pelagicus) and silky sharks (Carcharhinus falciformis) as well as endangered scalloped hammerhead sharks (Sphyrna lewini) (6–8).

Ecuador is not the only victim of illegal fishing by foreign nations. Because the Chinese government has expanded subsidies for fishing vessels to harvest in distant waters, China’s fishing efforts have increased in many regions, including Asia, Africa, and Central and South America (9, 10). In the waters off the coast of Senegal and other countries in western Africa, where UNCLOS also applies, government corruption and fishing access agreements with China and the European Union are driving overfishing that is devastating marine resources (9–11).

Ecuador must be vigilant by implementing proactive and mitigation measures with the support of the international community and entities such as UNESCO, UNCLOS, the UN Food and Agriculture Organization, and the Inter-American Tropical Tuna Commission to prevent foreign fleets from fishing in their waters. China and other countries fishing in international waters must consider the long-term effects of exploiting marine resources.

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Social media: More scientists needed

In their Letter “Scientists need social media influencers” (1 September, p. 880), M. Galetti and R. Costa-Pereira write that “communicating with the public through social media is time-consuming, and most scientists are not trained for it” and that “social media influencers...can help to spread important messages of science.” Celebrities have an undeniable power over the public, especially when it comes to social media. However, leveraging the online influence of a rock star, model, or actress to shift the public’s interest in science is dangerous. What social media need is more scientists—not celebrity influencers.

There are countless examples of what can go wrong when celebrities and science mix. Kim Kardashian has provided misleading information about the morning sickness medication Diclegis on her social media accounts. The FDA had to step in to ensure the medication’s safety information was correctly listed in her posts (7). Gwyneth Paltrow is frequently under fire for promoting pseudoscience on her lifestyle website, Goop (2). Robert De Niro and Jenny McCarthy believe that vaccinations are dangerous (3). What do these cases have in common? None of these celebrities have the expertise or background to have informed opinions about the topics they are discussing or products they are pushing. The dangers and risks associated with celebrities speaking out about science issues on social media are high. These ill-informed discourses can push science policy and the public’s understanding of science in the wrong direction.
through oversimplification and hype. Social media need more practicing scientists to learn how to properly engage online and to then spread accurate, informative, scientific messages. The training of scientists on the proper use of social media for the purpose of outreach is in its infancy, but progress is being made (4). There are now courses available to students in science and engineering disciplines (undergraduate and graduate) on the issues and opportunities in social media as an avenue for meaningful scientific discourse with experts and non-experts (5). Scientists must first prioritize online outreach and crafting a good message; over time, the audience will grow in size. It is time for us to acknowledge that the job of a scientist in the social media age includes not only researching and teaching but championing the messages of science.

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Social media: Actions speak louder than likes
I agree with M. Galetti and R. Costa-Pereira (“Scientists need social media influencers,” Letters, 1 September, p. 880) that science needs great communicators. However, I question whether the number of “likes” on Facebook or “retweets” on Twitter is a true measure of the influence of comments made by celebrities. They may simply reflect “fandom” rather than signal any real intent for a person to change behavior or beliefs.

Consider Angelina Jolie. Following the loss of her mother from ovarian cancer and her own positive test for the inheritable BRCA1 gene, Angelina’s chance of developing breast cancer was estimated as 87% (1). She opted to undergo a double mastectomy and to have her ovaries removed. Social media were on fire. Everyone had an opinion and the likes and retweets piled up. But how influential was her decision?

Angelina deserves credit for raising awareness about BRCA1, but the real question is: How many of the BRCA1-positive women (already aware of the risks associated with the gene) who liked or retweeted Angelina’s decision were influenced sufficiently to follow suit? Until we know the answer, we can’t assume that the publicity effected change.

On the surface, vast numbers of celebrity likes and retweets may seem attractive and influential, but they don’t validate science or indicate significance. Changing behavior requires credible, scientific insight from an expert communicator whose message is compelling and inspirational. Social media influencers do have a role to play, but let’s not overrate them.

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