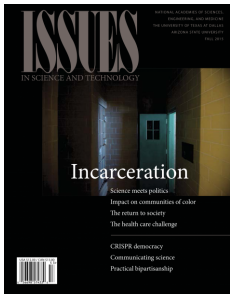

Forum

Protecting global diversity

In “Technologies for Conserving Biodiversity in the Anthropocene” (*Issues*, Fall 2015), John O’Brien provides an engaging overview of the technologies available to address global biodiversity loss.

Selecting appropriate technologies can overwhelm, particularly for those with little expertise in computational science or engineering. An article titled “Emerging Technologies to Conserve Biodiversity,” published in October 2015 in the journal *Trends in Ecology & Evolution*, which we coauthored with colleagues from the academic, commercial, and nonprofit sectors, recognizes this, and identifies key technological challenge areas that must be addressed.

Beyond our bedazzlement with new technologies, some difficult issues come into focus. For example, to what extent are the Sirens of technology distracting us from the voyage toward solutions for pressing conservation challenges?

Consider the on-going buzz around use of new genetic technologies to bring back extinct species from museum or other preserved specimens. This is, quite simply, an economic and academic dead-end. A few resurrected individuals from a tiny gene pool, in diminishing habitat, and under continued threat of re-extinction, would be, at best, expensive living museum specimens.

New technologies are often fragile, yet if we are to deploy them effectively they must work on a

demanding, usually rural and remote front line, often without power, parts or servicing back-up, or technical expertise. Drones have the potential to revolutionize data collection, as do smartphones, but perhaps the biggest challenge in their deployment is making them robust to local conditions and user-friendly for local stakeholders.

The race to engage technology also risks masking the nascent issue of ethics in conservation. For example, the rush to attach instrumentation to animals may cause neglect of ethical considerations. While tags are becoming ever smaller, adoption rates are increasing rapidly. Unfortunately, examination and reporting of negative impacts (including capture mortality, failed transmitters, injuries, reduced animal ranging, and behavioral and physiological changes) are given low priority. These impacts can also skew data and render new technologies unfit for purpose. Investment in noninvasive technologies will perhaps yield more "bang for the buck" for monitoring, and benefits will accrue to local communities that are better able to manage them.

Ultimately, communities and careful consideration will carry the day. At the development level, academia, nongovernmental organizations, technology corporations, and professional societies should forge symbiotic interdisciplinary groups. At the deployment level, professional conservationists must work with local stakeholders to design systems to jointly deploy accessible, cost-effective, and sustainable technologies.

Technology has huge potential to deliver tools that will help us to reduce the rates of biodiversity loss. While baseline ecological data will remain central to the development of effective conservation strategies, rapidly unfolding threats now demand immediate remediation. We must prioritize technologies to ameliorate human-wildlife conflict (3,000 incidents have been reported in Namibia alone in the past 24 months), the decimation of endangered species for products, and rampant habitat destruction, before there is nothing left to monitor.

Interdisciplinary collaboration is essential if we are to quell these growing fires. Let us select, develop, integrate, and deploy the brightest and best technologies for the job, but always keeping our hearts and minds on the pulse of the planet.

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