Correspondence

Count cryptic species in biodiversity tally

The race to describe and archive the planet's dwindling biodiversity (see K.-D. B. Dijkstra *Nature* **533,** 172–174; 2016) becomes even more urgent with the realization that the task's scale may be an order of magnitude greater than estimated.

Dijkstra notes that we have so far named only about 1.2 million of Earth's estimated 8.7 million or so eukaryotic species. Such estimates are based largely on counts of invertebrate 'species' that are visually distinguishable ('morphospecies'). However, genetic analysis has revealed that many supposedly uniform morphospecies are complexes of multiple, reproductively isolated lineages, each of which constitutes a separate but cryptic species (D. Bickford *et al. Trends Ecol. Evol.* **22,** 148–155; 2007).

These discoveries boost the biodiversity of even the largest vertebrates, such as elephants. The effect is greater in small vertebrates (such as lizards and frogs) and in invertebrates, which are often complexes of ten or even more species (P. M. Oliver *et al. BMC Evol. Biol.* **10,** 386; 2010). The quoted estimate of the number of (morpho)species on Earth could therefore be just 10% of the true species number.

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Fewer papers would scotch early careers

Daniel Sarewitz argues that the pressure to publish is fuelling irreproducibility, but we disagree that the solution is to publish fewer papers (*Nature* **533,** 147; 2016). In today's competitive arena, asking this of scientists — particularly junior ones — is to ask them to fall on their swords.

Investing more effort in fewer but 'more complete' publications could hold back early-career researchers, who already face fierce competition. To generate a first-author publication, graduate students on average take more than a year longer than they did in the 1980s (R. D. Vale *Proc. Natl Acad. Sci. USA* **112,** 13439–13446; 2015). Introducing further delays for junior scientists is not an option as long as performance is rated by publication metrics.

In our view, publishing less is not a feasible or responsible way to improve data quality. This would be better achieved by increasing the transparency of peer review and by introducing alternative metrics as indicators of reproducibility. Science's goal is to share as much information as possible — not to withhold it.

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Pre-emptive action against EU invasives

As appointed representatives of the European Union's Scientific Forum on Invasive Alien Species, we wish to point out that the EU regulation states priority should be given to the listing of invasive species "that are not yet present in the Union or are at an early stage of invasion" (see M. Lehtiniemi *et al. Nature* **533,** 321; 2016).

The risk assessments needed to include species on the EU list of concern were already available for most of the 37 species (see go.nature.com/gigftz) and were a natural starting point. Moreover, listing is a political process: actions to protect biodiversity are weighed against factors such as socio-economic interests. Adequate evidence is necessary to ensure that proper action is taken.

Notably, none of the targeted 37 species is established in all EU member states, and all have potential for future spread (see go.nature.com/28vtjpk).

Any member state, including those where Lehtiniemi and colleagues are based, can develop and submit risk assessments for candidate species. The scientific forum assesses these according to regulation criteria. Member states and the European Commission then decide whether to regulate species at the EU level.

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Supporting women postdocs in Israel

Israel's Weizmann Institute of Science is ranked among the world's top research institutions, but only 16.5% of its faculty members are women. Although this is still too low for a multidisciplinary institution, a series of initiatives are gradually redressing the balance.

In Israel, common hurdles for women scientists are magnified because there are only eight major universities and posts are few. These appointments carry an unwritten prerequisite for postdoctoral research experience overseas. But most Israeli PhD graduates are older than their peers abroad — military service is compulsory for women and men, so they often have families and relocation can be a problem.

To encourage more women to stay in academia, the Weizmann Institute launched the Israel National Postdoctoral Program for Advancing Women in Science in 2007. This awards US$40,000 over two years to supplement the fellowships of ten women graduates selected annually to pursue research overseas. So far, 38 of the 96 recipients have returned to academic positions in Israel; 6 have academic posts abroad; and 5 returned to non-faculty appointments (47 are still overseas).

This year, the Weizmann Institute set up an annual award of $20,000 over two years for female postdocs intending to split their research between the institute and a foreign lab. Several Israeli universities and the country's Council for Higher Education now run similar programmes.

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Limit uncertainties in land emissions

Launching satellites to measure carbon dioxide emissions is only part of a more integrated solution to achieving the goals of the Paris climate agreement (*Nature* **533,** 446–447; 2016). In our view, the biggest hurdle is to reduce the high uncertainty in CO_2 emission estimates — particularly from land use.

Land-use emissions are harder to quantify accurately than are those from, say, fossil fuels. To reduce uncertainties in tracking carbon from land use, it is crucial to monitor other data sources such as biomass. This can be done by remote sensing, for example with NASA's GEDI LIDAR sensor or the European Space Agency's proposed BIOMASS (P-band radar) sensor.

We also need many more ground-based measurements of biomass and CO_2 exchange with the atmosphere. However, space agencies' budgets for calibrating and validating satellite products are limited, and there is inadequate coordination and data sharing between the remote-sensing and ground-based measurement communities (see A. K. Skidmore *et al. Nature* **523,** 403–405; 2015).

We suggest that crowdsourced data from mobile-phone apps and more extensive sharing of ground-based measurements could have the greatest potential for improving the monitoring of biomass and CO_2 exchange — at a fraction of the cost of satellites.

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