Table 1. Cost estimates for cataloguing animal diversity

	World animal species catalogued [3]	Brazilian animal species catalogued [5]	Cost per species catalogued in Brazil	Costs for cataloguing unknown Brazilian animal species	Total cost for cataloguing known world animal species	Estimated unknown world animal species [3]	World total cost for cataloguing unknown world animal species
	No. species	No. species	US$ 1,000/species	US$ Billion	US$ Billion	No. species	US$ Billion
Vertebrates	61,995	4,000	122	2.3	7.6	18,505	22.6
Insects	~1,000,000	62,000	39	16.1	39.0	4,000,000	156.0
Other invertebrates	~362,158	11,000	61	8.7	22.1	1,407,570	84.5
Total	~1,424,153	77,000	–	27.1	68.7	5,426,075	263.1

publications were not related to taxonomy, and these professionals had other duties such as teaching and supervising students, participating in community outreach projects, and bureaucratic commitments. The remaining 35% of the costs was for project expenses.

Although this budget is huge, the main immediate obstacle to cataloguing animal diversity is undoubtedly the small and inadequate number of proficient taxonomists (the 'taxonomic impediment'). At the current rate (average of 16,000 species per year, see [3]), the present generation of trained taxonomists would take ~360 years to fully catalogue world animal diversity. Increasing the number of working taxonomists would take a significant amount of time because it takes a long time to train and develop taxonomists.

A complete inventory of the animal diversity of the world might remain an elusive goal [10]. Even this considerable achievement would provide only the 'leftovers' of biological diversity after the effects of evolution and human intervention on natural habitats have been considered. However, some crucial future actions should be considered for cataloguing biodiversity other than those related purely to funding for conservation and sustainable use of living organisms. The most essential action now would be a concerted effort to raise the image of taxonomy from being seen merely as an 'old' and 'simple' task of biologists that is unfashionable and horribly constricted to low-impact-factor journals to being viewed instead as a fundamental, indispensable, and vibrant branch of the life sciences.

Acknowledgements

We thank the respondents to the survey. We also thank Richard Wightwick and Rodrigo H. Willemart for offering a *critique* of a previous version of the manuscript, Jim Hesson for a review of the English, and an anonymous reviewer for valuable suggestions. FC was funded by FAPESP and ACM by FAPESP and CNPq.

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0169-5347/$ – see front matter
doi:10.1016/j.tree.2011.01.004 Trends in Ecology and Evolution, April 2011, Vol. 26, No. 4

Letters

Why research on traits of invasive plants tells us very little

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Human impacts on the planet have never been greater; agriculture is now the major global land use, with correspondingly large increases in disturbance and changes to the global nitrogen and water cycles [1]. Effects on floras have been predictable, with robust, fast-growing, short-lived, fecund and effectively dispersed species characteristic of disturbed, nutrient-rich habitats doing well, whereas slow-growing, long-lived and poorly dispersed species characteristic of nutrient-poor habitats are generally in retreat [2,3].

Paralleling the research documenting the traits of plants exploiting these disturbed and nutrient-rich environments has been an effort to determine the characteristic traits of invasive alien plants. This research has revealed

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that, when compared with natives or non-invasive aliens, invasive aliens grow faster, have higher leaf nutrients, higher specific leaf areas, shorter life cycles, devote more resources to reproduction and produce more seeds that are better dispersed and germinate faster [4–6]. In other words, invasive alien plants usually have the same general suite of traits exhibited by most successful plants in the world today, irrespective of their alien or native status. This conclusion is consistent with studies that showed that invasive aliens exhibited the same set of traits as did expanding, successful natives [7], that aliens and natives exhibit similar successional dynamics [8] and that natives of disturbed, fertile habitats are indistinguishable from aliens of similar habitats [9].

The simplest interpretation of these findings is that, in the modern, human-dominated landscape, there is an increasingly sharp distinction between plant 'winners' and 'losers', and that this distinction often owes rather little to native or alien status. It is certainly true that some introduced plant species benefit from leaving behind enemies, such as herbivores and pathogens [10], but being enemy free is never a permanent condition because natural selection inevitably favours the evolution of new enemies that can exploit this new resource [11,12]. We think that plant success in the world today is less a function of geography of origin but more basically, one of which species have the good fortune to have the suite of traits that will enable them to exploit the increasingly disturbed and eutrophic 21st-century landscape. These winners have included, and will continue to include, both native and non-native species.

Traditionally, ecologists have tended to view the encounter between non-native species and new environments as unique to the invasion process. However, with global changes in nutrient, climate and disturbance regimes, all species can be considered to be inhabiting novel environments, suggesting that the distinction between native and non-native species is becoming less ecologically meaningful. Looking ahead, a more ecologically sensible approach might be to try to identify traits and life histories that are proving to be advantageous (or disadvantageous) in the rapidly changing world for all species. Similarly, given that species that are threatening human health, or causing economic or ecological harm, include both native and non-native species, a more economically sound and, ultimately, more effective approach to managing these species, and their undesirable effects, might be for society to develop and implement a more unified legislative and enforcement infrastructure to deal with harmful species in general.

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0169-5347/$ – see front matter
doi:10.1016/j.tree.2011.01.007 Trends in Ecology and Evolution, April 2011, Vol. 26, No. 4

Letters Response

Unfortunately, linguistic injustice matters

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In a previous letter [1] I argued that the absolute dominance of the English language in scientific communication has led to linguistic injustice, arising for two main reasons: (i) non-native English-speaking scientists (NoNES) support all the costs of having a English as a common scientific language; and (ii) while native English-speaking scientists (NES) benefit for free from having a common language, they are in an advantaged position in any scientific discussion due to linguistic skills. Guariguata *et al.* [2] replied that there is no sharp difference between NoNES and NES, basically because the more one studies and practices English, the better his or her English will become. Of course, I agree with this, although I think there is no relationship between this statement and the linguistic injustice problem. The fact that some NoNES, with a lot of work and great merit, are able to overcome linguistic barriers does

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