When More Really Isn't Better: Aligning Policies and Outcomes in Ecology

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Recently, we and others have called attention to the fact that science policies should be structured to achieve our overall intellectual and social objectives (Holbrook 2012, Schekman 2013, Anderson et al. 2015). Using this rubric to test a policy's "theoretical adequacy" (*sensu* Holbrook 2010), there is a growing consensus regarding the insufficiency of measuring a publication's (or a scientist's) quality by inference from the Impact Factor of the journal where an article is published (see San Francisco Declaration on Research Assessment, ASCB 2012).

At the same time, though, another policy that has been widely disseminated is the promotion of publication quantity. On the one hand, the "publish or perish" culture has been implicated in affecting the quality of life of scientists themselves (Fischer et al. 2012). At the same time, this approach may also have negative effects on scientific quality (Sarewitz 2016). For example, it could lead researchers to reduce their publications to "least publishable units" or de-incentivize important synthesis or interdisciplinary approaches that require more time.

In particular, we have called upon Latin American ecologists and conservationists to question such proposals, rather than simply apply global models (Monjeau et al. 2013, 2015). Research paradigms clearly influence not just scientific studies, but also conservation outcomes (Mace 2014). To further explore the effects of existing "Northern" approaches to ecological research in our "Southern" countries, we measured the "productivity" (number of publications) and "impact" (measured as *h*-index) for the ecology articles produced in Argentina and Chile. The analysis was done for publications in the ISI Web of Science database from 1975 to 2015, dividing results per discrete 5-year periods (see also Rau et al. *in press*).

We found that policy incentives have produced an exponential increase in the quantity of publications, particularly since 2000, but during this same period their insertion into global science debates (in the English language) has dropped to 1990–1994 levels (Fig. 1). Plus, during the last period (2010–2015), review articles only constituted 3.2% and 4.6% of these articles in Argentina and Chile, respectively.

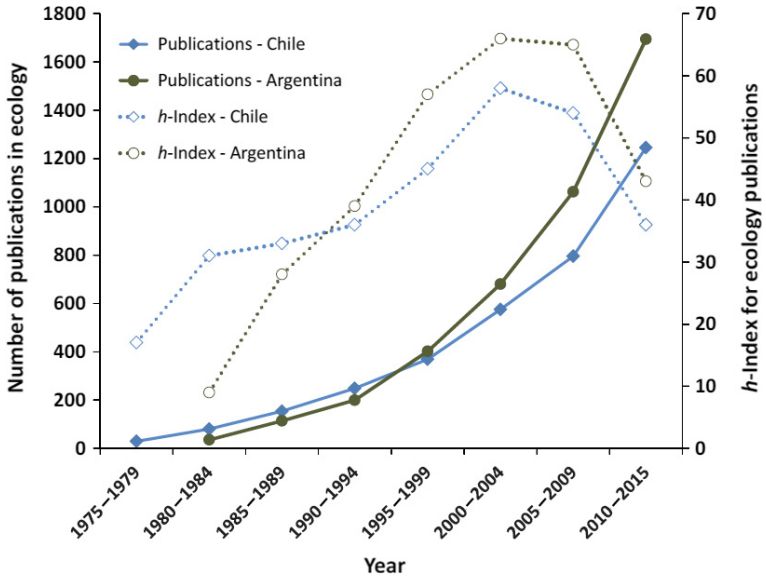

Fig. 1. Trends in the number of publications (solid lines) versus their *h*-index (dashed lines) for ecology-related articles in Argentina (circles) and Chile (diamonds). Data obtained from an analysis in the ISI Web of Science database in 5-year intervals.

Our findings support claims that the "publish or perish" culture in academia and the "brain circulation" model of science do not necessarily achieve their intended outcomes, even within the narrow confines of academic achievements, not-to-mention broader impacts. While both Argentina and Chile have prioritized increased publication by its scientists in high-"impact" journals, the opposite outcome has ensued, at least in the field of ecology. Therefore, even without considering the social outcomes of current science policies, there is a clear need to systematically re-evaluate how our policies and incentives align with the overall values we seek to achieve with our research community and as members of a broader society. We, therefore, invite greater dialogue between "Northern" and "Southern" ecologists and ecological societies, whereby the Global South not only appropriates specific science policies, like those mentioned above, but also broader efforts to achieve science–society integration, such as the Ecological Society of America's Sustainable Biosphere Initiative (Lubchenco 2012), Earth Stewardship Program (Chapin et al. 2011), and the SEEDS Program (Armstrong 2012). In turn, the Global North can engage better in true knowledge dialogue with the South and be better informed about both similarities and differences between our ecological systems, learn about national policies to ensure open source publication repositories, and engage in efforts to link science with national social and economic development initiatives (see Anderson et al. 2015).

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