

Publication rejection among ecologists

Phillip Cassey¹ and Tim M. Blackburn²

¹Ecole Normale Supérieure, Laboratoire d'Ecologie, Paris, France

²School of Biosciences, University of Birmingham, Edgbaston, Birmingham, UK B15 2TT

Few people enjoy rejection under any circumstances, but if you are a scientist and you receive a rejection letter from a journal, then, is it time to abandon research, or do all scientists experience such rejection to some degree? Here, we quantify the extent to which a sample of ecologists with the most successful publication careers has experienced manuscript rejection. We show that publication success and manuscript rejection are not strangers, and we hope that this will encourage ecologists (particularly research students) to continue submitting their studies for publication.

It is widely recognized that anyone pursuing a career in the arts needs a thick skin to cope with the frequent rejection that they face on the path to career success. Less widely appreciated is that rejection is also a fact of life for scientists. Here, we report the results of a survey (Box 1) aimed at revealing the extent to which scientists successful in our particular field of ecology encounter rejection. As publication rate is a commonly used measure of scientific success, our metric of rejection was the frequency with which scientists had papers declined by journals. Respondents to our survey are in the very top few percent of ecologists in terms of publication success during the 1990s, yet all have experienced rejection, and almost one quarter of their papers were rejected at least once. Respondents considered it harder to publish now than a decade ago, but whether they considered rejection to have been fair depends on how frequently they encountered it: rejection, it seems, increases disaffection with the review process. Nevertheless, the survey shows that rejection does not seem to hamper career advancement, at least among successful ecologists.

Who gets rejected?

Everyone. Only one respondent claimed that none of the papers that they published in the 1990s was first rejected and then subsequently accepted, but this scientist does still have at least one paper that remains unpublished from that period. Respondents published a total of 2907 papers in all scientific journals in the 1990s, of which 450 (15.5%) were rejected by at least one journal, and 224 (7.71%) by at least two. On average, 22% of a respondent's papers were rejected at least once. Of respondents, 72% have at least one paper that they have not been able to publish anywhere.

Is publishing getting harder?

We asked respondents whether they thought it was easier or harder to get their own papers published in 2002 compared with 1990. Of respondents, 35% thought that it was harder, 15% thought it was easier, and 50% noted no

Box 1. A survey of publication rejection

The aim of the survey was to quantify failure rates among scientists with successful careers, rather than to provide an unbiased estimate of rejection rates across the entire discipline of ecology. To identify scientists to consult, we collated a list of all authors of papers in five leading North American and European ecological journals (*American Naturalist*, *Ecology*, *Journal of Animal Ecology*, *Journal of Ecology* and *Oikos*) for the decade 1990–1999. This showed that ecological research during this decade was dominated by a large number of scientists with few publications. We identified 155 authors (out of a total of 7863) who had at least ten publications in these five journals during the 1990s (these publications comprised 19% of the total number of papers), and sent them a simple questionnaire to quantify the rejection that they experienced (see <http://www.snv.jussieu.fr/minus/eem/papers/Questionnaire.pdf>). Our survey itself provided us with considerable experience of rejection, as we received valid responses from only 40.4% of the scientists contacted (Table I). However, these responses were unbiased with respect to sex or biogeographical region, and also with respect to the number of publications during the 1990s in the five journals surveyed. Therefore, as far as we can ascertain, our analyses are based on a representative sample of the ecologists whom we polled.

Table I. Characteristics of the ecologists who responded to the survey

	No. of questionnaires	No. of responses	%
Region of residence			
Australasia	6	5	83
USA and Canada	80	32	40
UK	26	10	38
Rest of Europe	39	14	36
			$\chi^2 = 4.97$, $P = 0.17$
Gender			
Male	142	59	42
Female	9	2	22
			$\chi^2 = 1.31$, $P = 0.25$
	Mean no. of 1990s papers in the five journals	Standard deviation	N
Productivity			
Respondents	15.96	7.81	61
Non-respondents	13.34	3.84	90
	Wilcoxon two-sample test, $Z = 1.51$, $P = 0.13$		

change. Similar (and statistically indistinguishable: $\chi^2 = 1.99$, $df = 2$, $P = 0.57$) proportions of respondents thought that publishing for ecologists in general had become either easier or harder. Nevertheless, a scientist's view is still related to their success. Publishing was more likely to be considered harder by respondents who had a smaller proportion of papers accepted without rejection ($\chi^2 = 19.12$, $df = 1$, $P < 0.001$), and a greater proportion of papers submitted multiple times before publication ($\chi^2 = 22.83$, $df = 1$, $P < 0.001$).

Is rejection fair?

We asked our respondents to comment on why they thought their papers were rejected: poor referee/editorial process, scientific grounds, insufficient importance, or inappropriate subject matter for the journal. Respondents with a higher proportion of papers accepted without rejection were of the opinion that the rejections that they did experience were on scientific grounds, whereas respondents with a lower proportion were more likely to blame poor refereeing or editorial processes ($\chi^2 = 25.07$, $df = 1$, $P < 0.001$). Thus, rejection is still not easily taken among even the most successfully publishing ecologists, and appears to be swallowed with sour grapes.

Is rejection a handicap?

Apparently not. Rejection does not seem to have deterred our respondents, or to have hampered their career advancement. Ecologists who published more papers had a lower proportion accepted without rejection ($\chi^2 = 50.09$, $df = 1$, $P < 0.001$). Those who are currently full professors have had a lower proportion of papers accepted without rejection than have current lecturers (77% versus 87%: $\chi^2 = 4.76$, $df = 1$, $P = 0.029$), and a higher proportion of

papers submitted multiple times before acceptance ($\chi^2 = 4.53$, $df = 1$, $P = 0.033$).

Although our respondents are undoubtedly successful in their field, the evidence suggests that a thick skin is as useful for a scientist as it is for an artist. We hope that this will be a source of solace for young ecologists experiencing rejection for the first time, or the more experienced researcher who is still having trouble coming to terms with it. Scientific peer review is a necessary and well established part of the publication process, but it can also be daunting and disheartening (and it is not free of criticism [1–5]). However, manuscript rejection is not indicative of scientific inadequacy. It is a fact of life for even the most successful of publishing ecologists. The moral seems to be that if at first you don't succeed, try try again.

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Not so quiet on the high frontier

Tomas Roslin

Metapopulation Research Group, Department of Ecology and Systematics, Division of Population Biology, PO Box 65, FIN-00014 University of Helsinki, Helsinki, Finland

In 1997, *TREE* announced the creation of the International Canopy Crane Network, which would link a set of large construction cranes, erected all over the globe and providing access to a previously poorly known part of terrestrial ecosystems: the forest canopy. What did it all result in? A new booklet published by UNEP summarizes recent findings from the 11 crane sites and draws up visions for future collaboration.

During the past few decades, ecologists have directed an

increasing number of questions towards the forest canopy [1]. Is this where the main part of biodiversity is hiding? What species can be found there, and what roles do they play in the forest? How do the treetops interact with the atmosphere, and how will this affect global climate change? Yet, solid answers have been hard to come by. A main obstacle to answering such questions is for researchers to get up to the forest roof without risking their lives in the process. There are several ingenious solutions, including hauling a construction crane into the forest and hitching a ride with the hook, a method that is now used at 11 sites across the globe.

Corresponding author: Tomas Roslin (tomas.roslin@helsinki.fi).