translatE
Transcending language barriers to environmental sciences

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
CREATE CHANGE

December 2020 update on the progress of translatE project

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This is the last update of the year showing you the progress of our project. Thank you for all of your support over the last (rather unprecedented!) 12 months and we look forward to continuing to work with you all into 2021.

1. Searches for non-English-language literature on the effectiveness of conservation interventions

This component of translatE aims to identify non-English-language papers that tested the effectiveness of conservation interventions, using the same selection criteria used by the Conservation Evidence project, and compare scientific knowledge published in different languages.

1.1. Progress so far

We are glad to announce that we have finally COMPLETED the relevant literature screening stage, including the validation of species names recorded, for all 16 languages **(Arabic, French, German, Hungarian, Italian, Japanese, Korean, Traditional Chinese, Persian, Polish, Portuguese, Russian, Simplified Chinese, Spanish, Turkish, and Ukrainian)**.

In the end we identified a total of **365 journals** related to ecology and conservation for the **16 languages** (see the list of the journals identified here), screened **423,840 papers** published in **330 journals** spanning **30 countries**. We identified a total of **1,198 relevant papers**.

This was only possible thanks to all the help from collaborators who through extensive systematic literature review found relevant studies to the project. Huge THANKS for your help! We are very excited to now move onto the next stage!! In the next sections, you will see some more preliminary results.

1.2. Preliminary results

In the paper we have just started writing, we are planning to test four common assumptions on non-English-language literature: (i) only a negligible amount of scientific evidence is now published in non-English languages; (ii) the number of non-English-language studies providing relevant evidence has been decreasing over years; (iii) non-English-language studies are based on less robust study designs than corresponding English-language studies; (iv) there is no bias in scientific evidence provided between English-language studies and non-English-language studies. We have already shown some preliminary results on (ii) and

(iv) in earlier updates (i.e., relevant non-English-language studies have actually been increasing in many languages; there is a clear difference in study locations between languages; see our October update for more detail). Please find below some more results on (iii) and (iv).

Are non-English-language studies based on less robust study designs than English-language studies?

We compared the proportion of different study designs (After, Before-After, Control-Impact, Before-After-Control-Impact, Randomised Controlled Trial) between English-langauge studies (grouped into two: those conducted in countries where English is an official language (*English - official*) and all others (*English - others*)) and non-English-language studies (Fig. 1). Compaed to *English – others* group, seven out of the 11 languages tested (German, Italian, Japanese, Korean, Polish, Russian, and simplified Chinese) showed a significantly higher proportion of less robust designs ($p < 0.05$ in cumultiave link models) while Portuguese showed a significantly higher proportion of more robust designs. This seems to largely support the assumption that non-English-langauge studies are generally based on less robust study designs, compared to English-language studies.

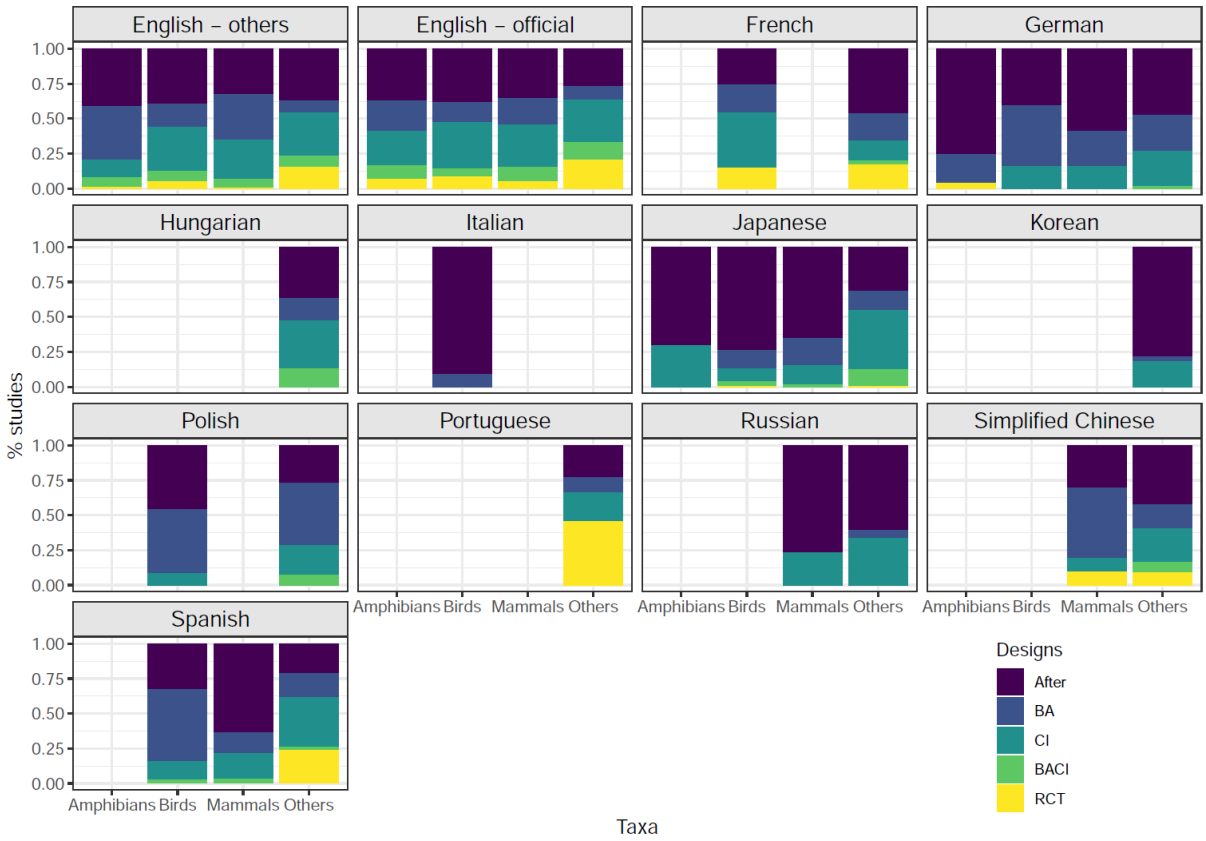

Figure 1. Proportion of different study designs in each language. Only categories with ten or more studies are shown.

Is there any bias in scientific evidence provided between English-language studies and non-English-language studies?

The identified non-English-language studies cover a total of 1,962 unique species recognised by the IUCN (40 amphibian, 564 bird, and 194 mammal species). See Fig. 2 below for the number of species by taxa and by languages.

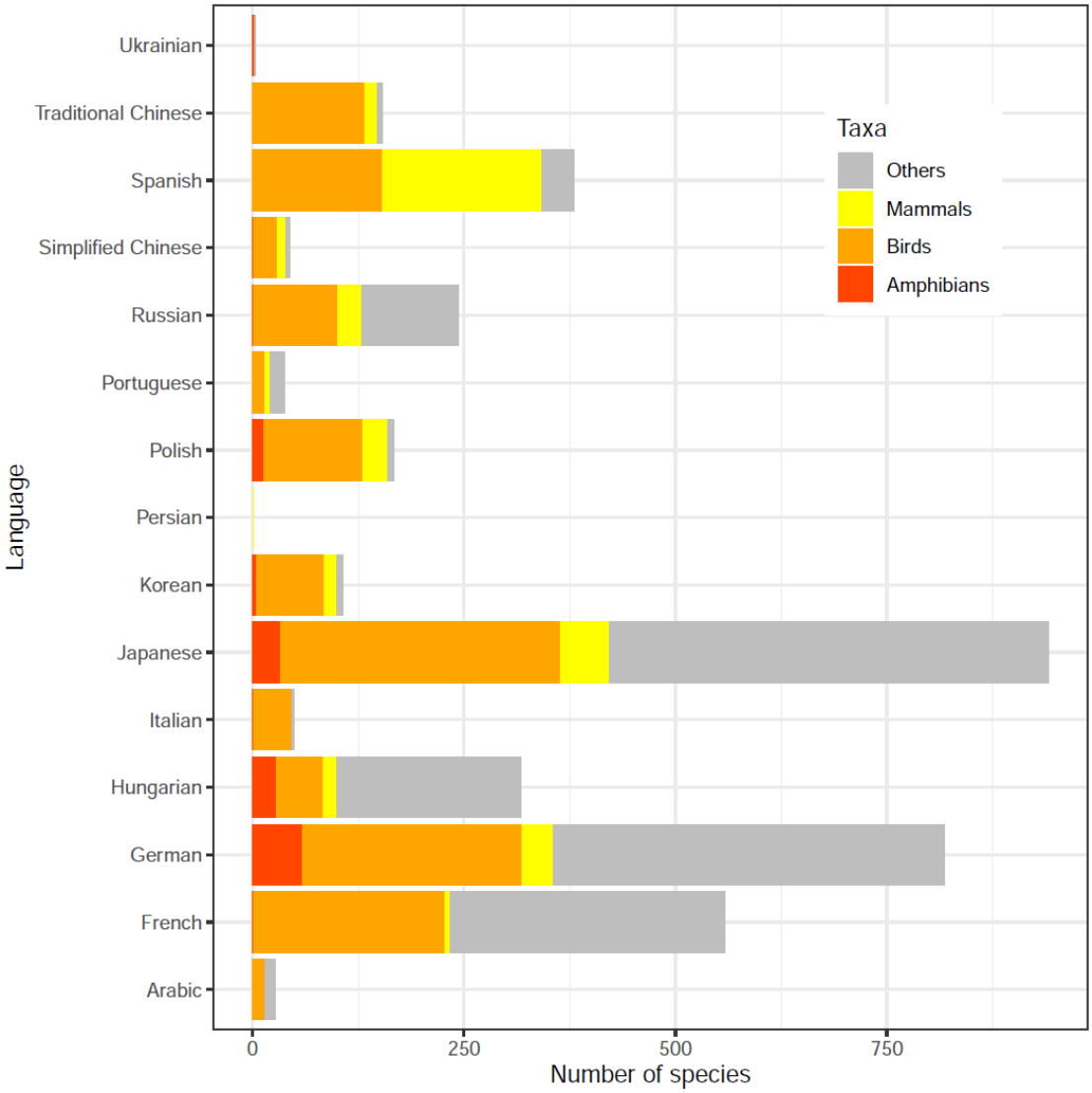

Figure 2. Number of species covered by the identified 1,198 non-English-language studies, for each taxon and language

When focusing on birds as an example taxon, 361 of the 564 bird species covered by non-English-language-studies was not covered by English-language studies stored in the Conservation Evidence database, indicating a clear difference in species covered between languages (Fig. 3). This means that searching non-English-langauge literature increased bird species coverage by 47%. Together with the result on the geographical coverage shown in our Oct update, this indicates that non-English-langauge studies could, at least partly, fill

gaps in the geographical AND taxonomic coverage of English-langauge scientific evidence for conservation.

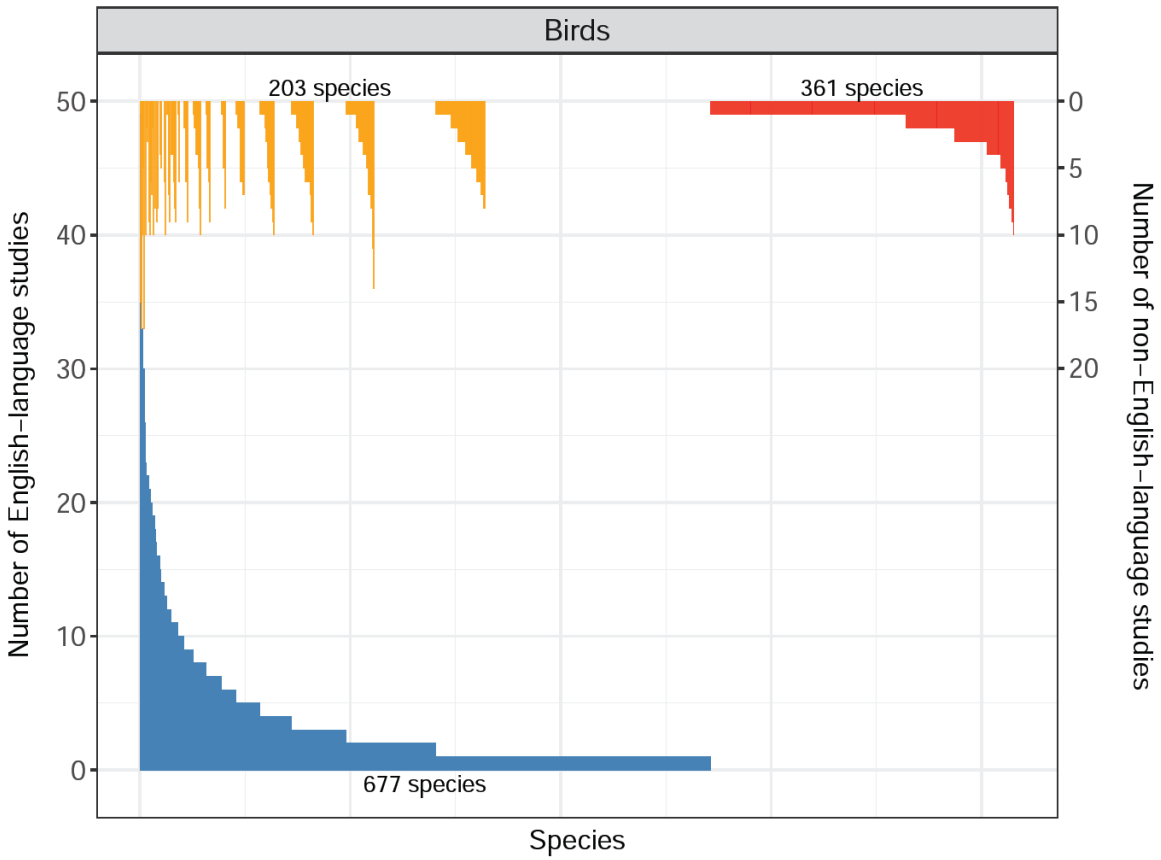

Figure 3. The number of English-language studies for each of the bird species covered by English-langauge studies (blue), and the number of non-English-language studies for each of the species covered by both English- and non-English-language studies (yellow), and those covered only by non-English-langauge studies (red).

1.3. What's next?

As you have seen in our recent updates, we have almost completed necessary statistical analyses and visualisation of the results, and have also started writing a manuscript based on these results. We look forward to sharing the draft with relevant collaborators as soon as it is ready in the new year.

2. Use of English-language and non-English-language references in domestic reports on biodiversity and its conservation

The translatE project also aims to understand language barriers to the application of English-language knowledge on biodiversity conservation. This second component thus tries to understand how decision-makers perceive language as a barrier to the use of science in

their conservation decision making, by investigating the use of English- vs non-English-language literature in domestic reports on biodiversity conservation. Table 1 shows the progress in this component so far.

Table 1. List of countries/regions covered and their progress so far.

Region		Language	Listing reports	Questionnaire
Latin America	Argentina	Spanish	Done	Shared
Latin America	Paraguay	Spanish	Done	Completed
Latin America	Brazil	Portuguese	Done	Completed
Latin America	Chile	Spanish	Done	Shared
Latin America	Mexico	Spanish	Done	Completed
Latin America	Costa Rica	Spanish	Done	Shared
Latin America	Guatemala	Spanish	Done	Completed
Latin America	Bolivia	Spanish	Done	
E Asia	Mongolia	Mongolian	Asked	
E Asia	China	Simplified Chinese	Done	Completed
E Asia	Japan	Japanese	Done	
E Asia	South Korea	Korean	Done	Shared
E Asia	Taiwan	traditional Chinese	Done	Completed
SE Asia	Indonesia	Indonesian	Asked	
SE Asia	Myanmar	Burmese	Accepted	
SE Asia	Nepal	Nepalese	Accepted	
Western Asia	Lebanon	French/Arabic	Done	Shared
Western Asia	Turkey	Turkish	Accepted	
W Europe	Germany	German	Done	Shared
W Europe	Switzerland		Done	Completed
W Europe	France	French	Done	Shared
S Europe	Italy	Italian	Done	Shared
S Europe	Spain	Spanish	Done	Shared
E Europe	Romania	Romanian	Done	Completed
E Europe	Ukraine	Ukrainian	Done	Completed
E Europe	Hungary	Hungarian	Done	Completed
E Europe	Poland	Polish	Accepted	
N Europe	Norway	Norwegian	Accepted	
Russia	Russia	Russian	Done	Completed
Africa	Mozambique	Portuguese	Done	Shared
Africa	Cote d'Ivoire	French	Started	
Africa	Burundi	French	Started	
Africa	Senegal	French	Done	Shared

When based only on already-completed datasets, the proportion of non-English language references cited (including both academic journal papers and grey literature) overweights that of English-language references in domestic conservation reports excepting Taiwan and

Italy (Fig. 4). This result demonstrates that non-English-language scientific knowledge plays a crucial role in domestic policy documents on conservation, which is in sharp contrast with a current underuse of non-English-language literature at the international level (e.g., only 3.4% of the references cited in six IPBES assessments was in languages other than English: Lynch et al. unpublished).

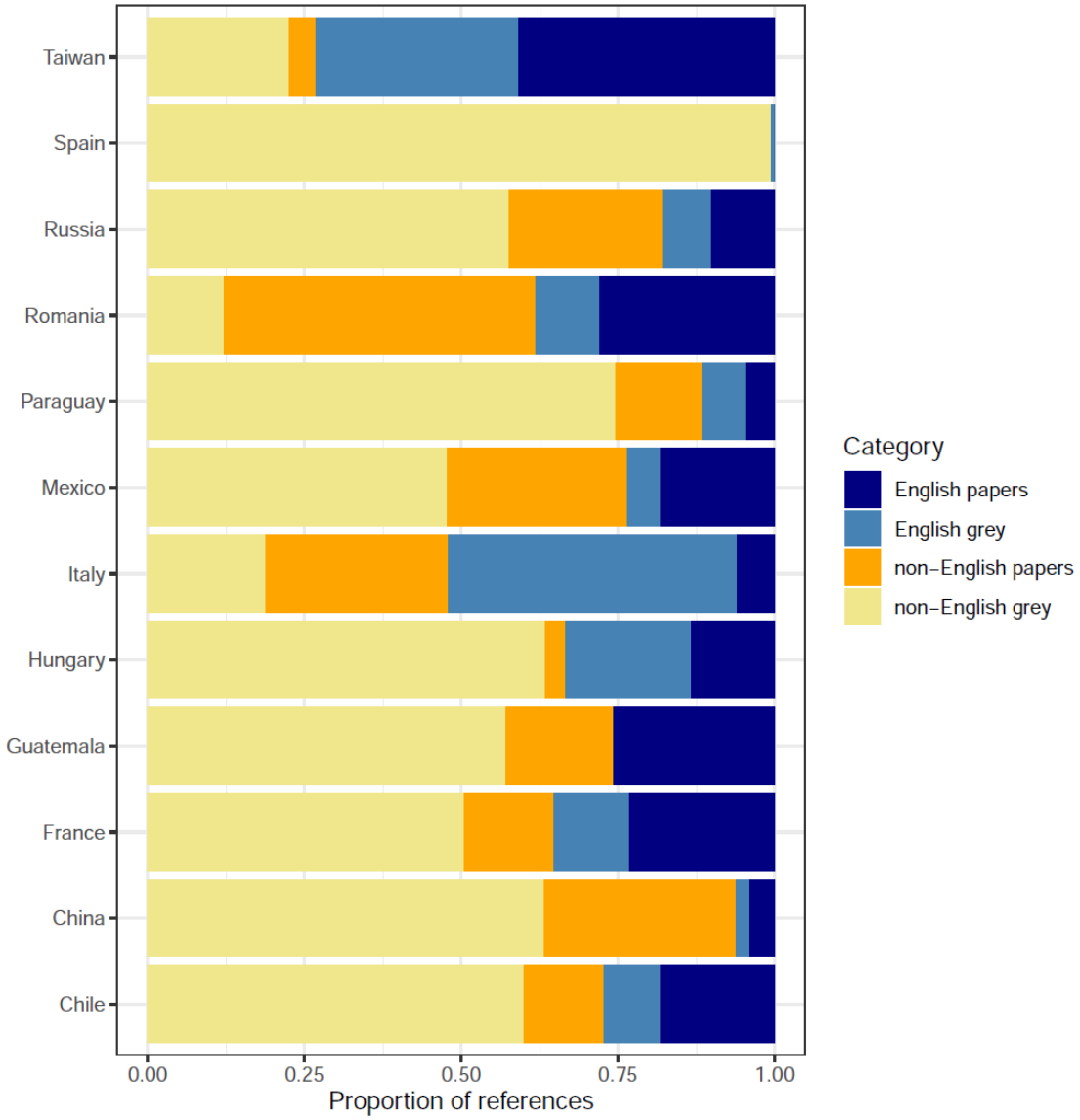

Figure 4. Proportion of different types of references cited in domestic reports on biodiversity conservation.

We have been receiving answers to the questionnaire on how these references were searched and identified in each report, so in the near future should be able to investigate more about the processes underlying these patterns.

We are still recruiting collaborators to help us list domestic reports on biodiversity and its conservation mainly for countries in **Africa and West Asia, and South-East Asia** to

investigate the number of references cited there, and do a questionnaire survey with the authors of the reports. If you know of people from any of these countries working on conservation, please share our website or reach out for further details (t.amano@uq.edu.au / v.berdejoespinola@uq.edu.au).

3. Other news

translatE featured in the journal Science

translatE's lead researcher, Tatsuya Amano was interviewed and some of the work by translatE is featured in a new careers article published in the journal Science. The article explains how language barriers hinder diversity in science, excluding a wide variety of opinions and perspectives, and discusses potential solutions.

List of non-English-language journals in ecology and conservation is available online!

We have uploaded a list of non-English-language journals in ecology and conservation to our website. This list of journals has been compiled by the translatE project with a huge help from our collaborators (please see Collaborators sheet in the file for detail), as a part of our comprehensive searches for non-English-language papers that test the effectiveness of conservation interventions. The list includes 466 academic journals in 19 languages in 38 countries/regions around the world. We hope that this list will be useful for making a better use of scientific knowledge published in non-English languages.

Keynote presentation at AIMOS 2020

Tatsuya gave a keynote presentation "*Is non-English-language literature important in science?*" at the second annual meeting of the Association for Interdisciplinary Meta-research and Open Science (AIMOS).

The under-use of non-English-language literature in today's scientific activities is often based on the three common assumptions: (i) most scientific knowledge is available in English, (ii) non-English-language literature is diminishing, and (iii) English-language science represents a random subset of non-English-language science. In this presentation, he talked about the progress of the translatE project, showing that none of the three common assumptions is supported by evidence, at least in ecology and conservation

That's all for this year. We can't express our gratitude to those who contributed to this project!

Have a wonderful and safe festive season and let's hope that the coming year will be much better than 2020 for us all!