Supplementary Information

Supplementary Discussion

3 To investigate the use of references written in different languages, we selected the most relevant report

4 in each country/territory based on pre-defined criteria (i.e., 37 reports in total). However, considering

5 the possibility that the selected report for each country/territory may not be representative of other

6 eligible reports in the country/territory in terms of English-language literature usage, we conducted a

7 sensitivity analysis, focusing on 11 countries/territories (Czech Republic, France, Guatemala,

8 Hungary, Japan, Paraguay, Romania, Russia, Senegal, Slovakia, and Taiwan) where we had also

9 recorded the number, type and language of references cited in other eligible reports that were not used

10 in the analysis (the number of such reports ranged from one to 40, with a median of four).

11 The proportion of non-English-language literature cited varied greatly among reports within each

12 country (Extended Data Fig. 7). However, in six out of 11 countries, the mean proportion of non-

13 English-language references (academic and grey literature combined) cited in other eligible reports

14 was higher than the proportion in the report used in the analysis (i.e., red diamonds are above the line

15 labelled "100%" in Extended Data Fig. 7a). In the remaining five countries, the mean proportion of

16 non-English-language references in other eligible reports was lower than that in the report used in the

17 analysis but only by up to 25% (i.e., red diamonds are above the line labelled "75%" in Extended Data

18 Fig. 7a).

19 Similarly, the mean proportion of non-English-language academic literature cited in other eligible

20 reports was higher than the proportion in the report used in the analysis in seven out of 11 countries,

21 lower but only by up to 25% in two countries, lower but by within 50% in a country, and lower by

22 more than 50% in one country (Extended Data Fig. 7b).

23 This result indicates that in most countries, the proportion of non-English-language literature cited in

24 the reports used in the analysis does not necessarily overestimate the proportions in other eligible

25 reports. In over half of the countries investigated here, the prevalence of non-English-language

26 literature was even higher in other eligible reports. In most of the other countries, the mean proportion

27 of non-English-language literature in other eligible reports was only slightly lower than, and within

28 25% of, the proportion in the report used in the analysis.

29 We thus believe that our main conclusion that the use of non-English-language literature in national

30 biodiversity assessments is widespread, is not sensitive to the choice of reports used in the analysis.

31   **Supplementary Text 1**. Questionnaire survey on the use of references in different languages in

32   national biodiversity assessment reports.

33

34   **Participant Information Sheet**

35   **Survey on the use of scientific literature in domestic reports on biodiversity and its conservation**

36

37   **The purpose of the study**

38   Our recent work showed that up to 35% of scientific literature on biodiversity conservation is

39   published in languages other than English (Amano et al 2016 PLOS Biology). Nevertheless, it is still

40   largely unknown how such non-English-language literature has been used in environmental

41   evidence syntheses at global (e.g., in assessments conducted by the Intergovernmental Science-

42   Policy Platform on Biodiversity and Ecosystem Services) and national levels (e.g., in domestic

43   reports).

44   This study aims to understand the use of English-language and non-English-language scientific

45   literature in domestic reports on biodiversity and its conservation, published in countries where

46   English is not widely spoken. We have already identified such domestic reports on biodiversity and

47   its conservation in various countries, including those that you authored/edited/published. We

48   would thus be grateful if you could fill in this survey to help us understand how and why references

49   in different languages were identified and cited in the report you authored/edited/published.

50

51   **What is involved?**

52   Participation in this study is entirely online and will take approximately 15 minutes and the survey

53   can be undertaken at a time and place that is convenient to you.

54

55   **Participation and withdrawal**

56   Participation in this study is completely voluntary and you are free to withdraw from this study at

57   any time without prejudice or penalty. If you wish to withdraw, simply stop completing the survey

58   and decide not to send it back to the person who contacted you. Feel free to ask any questions

59   about the research (contact the project coordinator).

60

61   **Risks**

62   Participation in this study should involve no physical or mental discomfort, and no risks beyond

63   those of everyday living. If, however, you should find any question to be invasive or offensive,

64   you are free to omit answering or participating in that aspect of the study.

65

66   **Confidentiality and security of data**

67   Your responses to the survey are anonymous; no identifying information will be collected. All other

68   data will be stored on password protected computers and only members of the research team will

69   have access to the data. Because all data is non-identifiable, it cannot be linked to individual

70   participants and data will only be presented as summaries of overall responses. The data you

71   provide will only be used for the specific research purposes of this study.

72

73   **Benefits of your participation in the study:**

74   The data from the survey will shed light on the role of non-English-language literature in domestic

75   policy-making for biodiversity conservation, as well as consequences of language barriers to the use

76   of English-written scientific knowledge in domestic policy-making.

77

78   **Consent form**

79   Please take the time to read the project information that is provided on the previous page. Your

80   participation is voluntary, and you can choose to withdraw at any point. You will not be asked to

81   give your name so any information you provide is completely anonymous. Should you wish to clarify

82   any aspect of your potential participation or need more information you can also speak directly to

83   a lead researcher before agreeing or disagreeing to take part in the evaluation.

84

85   If you understand the purpose of the research project and the nature of your involvement, then

86   please complete the following:

87   ☐   I have read the information provided about the research project and understand the

88   nature of my involvement. I understand any information I provide is completely confidential.

89   I agree to take part and understand I can withdraw at any time.

90   ☐   I am over 18 years of age.

91

92   **Ethics Clearance and Contacts**

93   This study has been cleared in accordance with the ethical review guidelines and processes of the

94 University of Queensland. These guidelines are endorsed by the University's Human Ethics

95 Committee and registered with the Australian Health Ethics Committee as complying with the

96 National Statement. You are free to discuss your participation in this study with project staff

97 (contactable at t.amano@uq.edu.au). If you would like to speak to an officer of the University not

98 involved in the study, you may contact the University of Queensland Ethics Officer on 07 3365 3924.

99

100 If you would like to learn the outcome of the study in which you are participating, please feel free

101 to email t.amano@uq.edu.au and we can organise to send you a summary of the study once it is

102 complete. You can also obtain general information on the project at:

103 https://translatesciences.com/.

104

105 Thank you for your participation in this study.

106

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112

113

114 Questionnaire survey on the use of scientific literature in national reports on
115 biodiversity and its conservation

116

117 **Section A**

118 Q1. Which sector do you work in (please choose only one)?

119

120   National government   ☐

121   State/provincial/regional government   ☐

122   Local government   ☐

123   Government research institution   ☐

124	Not-for-profit organization	☐
125	Private business	☐
126	Academic institution or university	☐
127	Other (please describe):

128

129

130 Q2. Which aspect of biodiversity conservation does your role predominantly focus on (please choose
131 only one)?

132

133	Policy	☐
134	On-ground management	☐
135	Research	☐
136	Other (please describe, e.g., if your role spans across these aspects):

137

138

139

140 Q3. Please circle the (approximate) number of years you have been involved in conservation (either
141 in on-ground management, research, or policy advice, or any combination)

142

143 <1   1   2   3   4   5   6   7   8   9   10   11   12   13   14   15
144 16   17   18   19   20   21   22   23   24   25   26   27   28   29   30 >30

145

146 Q4. Please state your first language(s): here a first language is defined as "the language that you
147 spoke most at home when you were at age 3-18".

148

149

150 Q5. How easy is it for you to read and understand the full text of an English-language peer-reviewed
151 paper on biodiversity conservation?

152

153 Very easy   ☐

154	Easy	☐
155	Neutral	☐
156	Difficult	☐
157	Very difficult	☐

158

159

160 **Section B.**

161 Q6. If you cited **non-English-language peer-reviewed literature** (i.e., papers published in academic

162 peer-reviewed journals) in your report, please select reason(s) for citing it/them (select all that

163 apply to the majority of the non-English-language peer-reviewed literature cited).

164

165 It was easy to find when searching for relevant literature ☐

166 It was easy to access (e.g., open access, hard copies available, had a journal subscription) ☐

167 The content was easy to understand to you and/or other editors of the report ☐

168 It would be easy for the readers of the report to understand ☐

169 It was recommended by someone else (e.g., experts in a relevant field) ☐

170 You already knew about it before writing the report ☐

171 It was from a widely-recognised source (e.g., published in a well-known academic journal) ☐

172 It contained information you were specifically looking for ☐

173 (e.g., important information on particular species in the country)

174 Information provided in the literature was of high quality and thus reliable ☐

175 (e.g., based on a rigorous study)

176 I did not cite non-English-language peer-reviewed literature in my report ☐

177 Other (please describe): _____

178

179

180   Q7. If you cited **non-English-language grey literature** (e.g., governmental/NGO reports, databases,

181   websites, theses etc) in your report, please select reason(s) for citing it/them (select all that

182   apply to the majority of the non-English-language grey literature cited).

183   It was easy to find when searching for relevant literature   ☐

184   It was easy to access (e.g., open access, hard copies available, had a journal subscription) ☐

185   The content was easy to understand to you and/or other editors of the report ☐

186   It would be easy for the readers of the report to understand ☐

187   It was recommended by someone else (e.g., experts in a relevant field) ☐

188   You already knew about it before writing the report ☐

189   It was from a widely-recognised source (e.g., published in a well-known academic journal) ☐

190   It contained information you were specifically looking for ☐

191   (e.g., important information on particular species in the country)

192   Information provided in the literature was of high quality and thus reliable ☐

193   (e.g., based on a rigorous study)

194   I did not cite non-English-language grey literature in my report ☐

195   Other (please describe): _____

196

197

198   Q8. If you cited **English-language peer-reviewed literature** (i.e., papers published in academic peer-

199   reviewed journals) in your report, please select reason(s) for citing it/them (select all that apply

200   to the majority of the English-language peer-reviewed literature cited).

201   It was easy to find when searching for relevant literature ☐

202   It was easy to access (e.g., open access, hard copies available, had a journal subscription) ☐

203   The content was easy to understand to you and/or other editors of the report ☐

204	It would be easy for the readers of the report to understand	☐
205	It was recommended by someone else (e.g., experts in a relevant field)	☐
206	You already knew about it before writing the report	☐
207	It was from a widely-recognised source (e.g., published in a well-known academic journal)	☐
208	It contained information you were specifically looking for	☐
209	(e.g., important information on particular species in the country)	
210	Information provided in the literature was of high quality and thus reliable	☐
211	(e.g., based on a rigorous study)	
212	I did not cite English-language peer-reviewed literature in my report	☐
213	Other (please describe): _____	
214		
215		
216	Q9. If you cited **English-language grey literature** (e.g., governmental/NGO reports, databases,	
217	websites, theses etc) in your report, please select reason(s) for citing it/them (select all that	
218	apply to the majority of the English-language grey literature cited).	
219		
220	It was easy to find when searching for relevant literature	☐
221	It was easy to access (e.g., open access, hard copies available, had a journal subscription)	☐
222	The content was easy to understand to you and/or other editors of the report	☐
223	It would be easy for the readers of the report to understand	☐
224	It was recommended by someone else (e.g., experts in a relevant field)	☐
225	You already knew about it before writing the report	☐
226	It was from a widely-recognised source (e.g., published in a well-known academic journal)	☐
227	It contained information you were specifically looking for	☐

228   (e.g., important information on particular species in the country)

229   Information provided in the literature was of high quality and thus reliable   ☐

230   (e.g., based on a rigorous study)

231   I did not cite English-language grey literature in my report   ☐

232   Other (please describe): _____

233

234

235   Q10.   Did you encounter any difficulties when **searching for English-language literature** for your

236   report because the source was written in English? (e.g., difficult to understand how to use a

237   literature search engine)

238

239   Yes   ☐

240   No   ☐

241   If yes, please describe your difficulties:

242

243

244

245

246   Q11.   Did you encounter any difficulties when trying to **understand English-language literature** for

247   your report because it was written in English? (e.g., difficult to understand a paper written in

248   English)

249

250   Yes   ☐

251   No   ☐

252   If yes, please describe your difficulties:

253

254

255

256 Q12.   Was there any **English-language literature** that you found or knew already that looked

257   relevant to your report but you decided not to cite because you found it difficult to understand

258   the content written in English?

259

260   Yes   ☐

261   No   ☐

262   Unsure   ☐

263

264

265 Q13.   Do you think that your report could be improved (i.e., more detailed, more accurate, better

266   quality, or better coverage) if you had used more **English-language references**?

267

268   Yes   ☐

269   No   ☐

270   Unsure   ☐

271

272

273 Q14.   Do you think that your report could be improved (i.e., more detailed, more accurate, better

274   quality, or better coverage) if you had used more **non-English-language references**?

275

276   Yes   ☐

277   No   ☐

278   Unsure   ☐

279

280

281 Q15.   What type of review did you use to search for **non-English-language references** cited in your

282   report? (select all that apply)

283

284   Personal knowledge   ☐

285   (e.g., only cited references that you and/or other editors of the report knew)

286   Expert opinion   ☐

287   (e.g., most references recommended by a limited number of experts

288   other than those who authored/edited the report)

289   Formal consultation process   ☐

290   (e.g., widely asked for the identification of relevant literature

291   from a wider expert community)

292   Casual or narrative review   ☐

293   (e.g., looked at several relevant studies and used literature cited in those studies)

294   Systematic review   ☐

295   (e.g., systematically screened all relevant literature

296   with certain keywords in one or more literature search engine)

297   Other (please describe):

298   [   ]

299

300

301   Q16.   What type of review did you use to search for **English-language references** cited in your

302   report? (select all that apply)

303

304   Personal knowledge   ☐

305   (e.g., only cited references that you and/or other editors of the report knew)

306   Expert opinion   ☐

307   (e.g., most references recommended by a limited number of experts

308   other than those who authored/edited the report)

309   Formal consultation process   ☐

310   (e.g., widely asked for the identification of relevant literature

311   from a wider expert community)

312   Casual or narrative review   ☐

313   (e.g., looked at several relevant studies and used literature cited in those studies)

314 Systematic review ☐

315 (e.g., systematically screened all relevant literature

316 with certain keywords in one or more literature search engine)

317 Other (please describe):

318

319

320

321 **Section C.**

322 Q17.   If all English-language scientific literature (e.g., papers published in English-language academic

323 journals) had **the title and abstract also available in your first language**, do you think that would

324 have made it easier and quicker to **search and identify** relevant literature for your report?

325

326 Yes ☐

327 No ☐

328 Unsure ☐

329

330

331 Q18.   If all English-language scientific literature (e.g., papers published in English-language

332 academic journals) had the **title, abstract and full text also available in your first language**, do

333 you think that would have made it easier and quicker to **search and identify** relevant literature

334 for your report?

335

336 Yes ☐

337 No ☐

338 Unsure ☐

339

340

341 Q19.   If all English-language scientific literature (e.g., papers published in English-language

342 academic journals) had the **title and abstract also available in your first language**, do you think

343 that would have made it easier and quicker to **understand** relevant literature for your report?

344

345	Yes	☐
346	No	☐
347	Unsure	☐

348

349

350 Q20.   If all English-language scientific literature (e.g., papers published in English-language

351 academic journals) had the **title, abstract and full text also available in your first language**, do

352 you think that would have made it easier and quicker to **understand** relevant literature for your

353 report?

354

355	Yes	☐
356	No	☐
357	Unsure	☐

358

359

360 Q21.   Did you use machine translation (e.g., Google Translate) when searching and/or reading

361 English-language literature for your report?

362

363	Always (~100%)	☐
364	Often (~75%)	☐
365	Sometimes (~50%)	☐
366	Rarely (~25%)	☐
367	Never (~0%)	☐

368

369

370 Q22.   If you used machine translation when searching and/or reading English-language literature

371 for your report, please state the translation service you used.

372 ```

```

373

374

375  Q23.  Do you think that machine translation (e.g., Google Translate) helps you **search** relevant

376  English-language literature for your report?

377

378  Yes  ☐

379  No  ☐

380  Unsure  ☐

381

382

383  Q24.  If you do **NOT** think that machine translation helps you **search** relevant English-language

384  literature, please select reason(s) for why you think so (select all that apply):

385

386  Machine translation is not high quality enough (e.g., it doesn't translate well)  ☐

387  It is time-consuming to use  ☐

388  (e.g., need to copy and paste relevant sentences into the service)

389  It cannot be effectively used for searching literature  ☐

390  (e.g., not integrated into literature search engines)

391  I don't know how to use it  ☐

392  Other (please describe):

393

394

395  Q25.  Does machine translation (e.g., Google Translate) help you **understand** relevant English-

396  language literature

397

398  Yes  ☐

399  No  ☐

400  Unsure  ☐

401

402

403  Q26.    If you do **NOT** think that machine translation helps you **understand** relevant English-language

404       literature, please select reason(s) for why you think so (select all that apply):

405

406       Machine translation is not high quality enough (e.g., it doesn't translate well)      ☐

407       It is time-consuming to use                                                          ☐
408       (e.g., need to copy and paste relevant sentences into the service)

409       It cannot be effectively used for reading literature                                 ☐
410       (e.g., it cannot be used for hard copies)

411       I don't know how to use it                                                           ☐

412       Other (please describe):

413

414

415  Do you have any other comments about the use of English- or non-English-language literature for your

416  work in biodiversity conservation and management?

422

423  Thank you very much for your time!

424

425  Please visit our website (https://translatesciences.com/) for the detail of our translatE project.