

Topic	Description	Further explanation	Checklist/Meta-data	Author response	Comments
Title	The title must indicate that it is a systematic review protocol, and must indicate if it is an update/amendment: e.g. "A systematic review update protocol...".	The title should normally be the same or very similar to the review question.	Meta-data	Do empirical observations support commonly-held climate change range shift hypotheses? A systematic review protocol.	
Type of review	Select one of the following types of review: systematic review, systematic	See CEE Guidance on amendments and updates [1]	Meta-data	systematic review	
Authors contacts	The full names, institutional addresses, and email addresses for all authors		Checklist	Yes	
Structured summary	Abstract must not exceed 350 words and must include two sections 1)		Checklist	Yes	
Background	Describe the rationale for the review in the context of what is already	A theory of change and/or conceptual model can be presented that links	Checklist	Yes	
Stakeholder engagement	The planned/actual role of stakeholders throughout the review process		Checklist	Yes	
Objective	Describe the primary question and secondary questions (when applicable).	The primary question is the main question of the review. Secondary	Checklist	Yes	
Definitions of the question components	Break down and summarise question key elements e.g. population, intervention(s)/exposure(s), comparator(s), and outcome(s).	For other question types see [3,4]	Meta-data	Table 1 outlines all elements of the PECO framework for our study.	
Search strategy	Detail the planned search strategy to be used, including: database names	Details regarding search strategy testing should be provided.	Checklist	Yes	
Search string	Provide Boolean-style full search string and state the platform for which the string is formatted (e.g. Web of Science format)		Meta-data	Listed in our methods section [TS=((“climate” OR “global warming” OR "temperature" OR "precipitation") AND (“range” OR “distribution” OR “habitat extent” OR “occupancy”) AND (“species”)))]	
Languages – bibliographic databases	List languages to be used in bibliographic database searches.		Meta-data	Included in our "search engine" section. We are only conducted English language searches.	
Languages – grey literature	List languages to be used in organizational websites searches and web-based search engines.		Meta-data	Included in our "search engine" section. We are only including English language publications.	
Bibliographic databases	Provide the number of bibliographic databases to be searched.		Meta-data	Included in our "search engine" section. We are using 2 bibliographic databse - Web of Science and Scopus.	
Web – based search engines	Provide the number of web – based search engines to be searched.		Meta-data	Included in our "search engine" section. We are using 1 web based search engine - Google Scholar	
Organisational websites	Provide the number of organisational websites to be searched.		Meta-data	Not performed	
Estimating the comprehensiveness	Describe the process by which the comprehensiveness of the search		Checklist	Yes	
Search update	Describe any plans to update the searches during the conduct of the	Optional. A search update is good practice if original searches were	Checklist	Yes	
Screening strategy	Describe the methodology for screening articles/studies for		Checklist	Yes	
Consistency checking	Describe clearly the process for checking consistency of decisions		Checklist	Yes	
Inclusion criteria	Describe the inclusion criteria used to assess relevance of identified		Checklist	Yes	
Reasons for exclusion	State that you will provide a list of articles excluded at full text with		Checklist	Yes	

Critical appraisal strategy	Describe here the method you propose for critical appraisal of study		Checklist	Yes	
Critical appraisal used in synthesis	Describe how the information from critical appraisal will be used in		Checklist	Yes	
Consistency checking	Describe how repeatability of critical appraisal of study validity will be		Checklist	Yes	
Meta-data extraction and coding	Describe the method for meta-data extraction and coding for studies		Checklist	Yes	
Data extraction strategy	Describe the method for extraction of qualitative and/or quantitative		Checklist	Yes	
Approaches to missing data	Describe any processes for obtaining and confirming missing or unclear		Checklist	Yes	
Consistency checking	Describe how repeatability of the meta-data/data extraction process will		Checklist	Yes	
Potential effect modifiers/reasons	Provide a list of and justification for the effect modifiers /reasons for	The list should not be exhaustive but a short list of those variables thought	Checklist	Yes	
Type of synthesis	State the type of synthesis conducted as part of the systematic review (narrative only, narrative and quantitative, narrative and qualitative, narrative, qualitative and quantitative, narrative and mixed-methods)		Meta-data	We will conduct a quantitative meta- analysis for the subset of data in our table which allows for this kind of analysis; this will include only data expressed as shift in distance per unit time. Categorical assessments of range shifts from all studies will be included in multinomial logistic regression models.	
Narrative synthesis strategy	Describe methods to be used for narratively synthesising the evidence	Vote-counting (tallying of studies based on the direction or significance of	Checklist	Yes	
Quantitative synthesis strategy	If data are appropriate for quantitative synthesis, describe planned	Compulsory if appropriate for data	Checklist	Yes	
Qualitative synthesis strategy	Describe methods to be used for synthesising qualitative data and justify	Compulsory if appropriate for data	Checklist	Yes	
Other synthesis strategies	Describe any other approaches to be used for synthesising data or	Compulsory if appropriate for data	Checklist	n/a	
Assessment of risk of publication	Describe planned methods for examining the possible influence of	For quantitative syntheses this may be done using diagnostic plots or	Checklist	yes	
Knowledge gap identification	Describe the methods to be used to identify and/or prioritise key	Optional	Checklist	n/a	
Demonstrating procedural independence	Describe the role of systematic reviewers (who have also authored articles to be considered within the review) in decisions regarding inclusion or critical appraisal of their own work.	Reviewers who have authored articles to be considered within the review should be prevented from unduly influencing inclusion decisions, for example by delegating tasks appropriately.	Checklist	Yes	The subset of authors who are reviewing articles for inclusion do not have any published studies included in the review.
Competing interests	Describe of any financial or non-financial competing interests that the		Checklist	Yes	