**Additional File 1: Search string building process**

The scoping exercise to build the search string was conducted on the "Web of Science Core Collection" database (search date: 14 December 2018).

The search string was built in three steps (see the table below for details on keywords, numbers of publications and comprehensiveness):

1. First, we built a search string with generic keywords that relate to the PECO exposition. A search with these terms on topics (*search string A*) as well as on titles (*search string B*) retrieved several hundred thousand publications. Even if the level of comprehensiveness was high, these searches resulted in a very high number of publications that were not about the map issue (e.g. the term noise is used in statistics to mean an unwanted signal). Obviously, the two search strings could not be used.

2. We then decided to refine the search string with a second section of keywords that relate to the PECO population, used for a topical search (TS). Here, a difficulty arose because the map population includes practically all living wild animal species on the planet and it is not easy to find a set of words to reduce the number of irrelevant hits while not excluding any of the targeted species. To select the population terms, we decided to use general keywords (e.g. ecosystem$, species, etc.) and taxonomic keywords, but limited to classes and family names (mammals, birds, etc.) for vertebrates and invertebrates. This will produce an initial systematic map representing a first step in identifying current knowledge. It will subsequently be possible to refine the search, taxonomic class by taxonomic class, if necessary. The search string returned:
    - 34 246 articles when the exposition terms were searched by topic TS (*search string C*), with a comprehensiveness value of 92% (55 articles out of 60 indexed in the WOS CC). Even if this level of comprehensiveness was high, the number of publications retrieved remained too high for our map team;
    - 5 790 articles when the exposition terms were searched by title TI (*search string D*) with a comprehensiveness value of 78% (47 articles out of 60 indexed in the WOS CC). This number of retrieved publications was more acceptable, but the level of comprehensiveness was lower and an initial screening of the retrieved publications showed that some articles in which noise was not the main study object were not retrieved by this search string. For example, studies about road noise where noise was only a proxy to assess road traffic were not retrieved.

3. For this reason, the search string was completed with more precise terms about exposure (noise), searched by topic (TS). We added general phrases that are synonyms of "noise pollution" (e.g. "anthropogenic noise", "man-made sound", etc.). This search string (*search string E*) returned more articles (6 179), but did not significantly improve the level of comprehensiveness (82%, 49 articles out of 60 indexed in the WOS CC).

Consequently, we decided to add other phrases related to specific sources of noise (road noise, boat noise, industrial noise, etc.) searched by topic. Here we faced the same problem as that with the population terms regarding consistency and exhaustiveness. There are many sources of noise and the difficulty was to maintain consistency in the search string, but we tried to add the main sources of noise, based on the results of the first scoping exercises. We found that it was easier to list terms on the sources of noise rather than taxonomic/species terms in order to refine the search string without losing consistency.

We tried three ways to deal with the specific exposure phrases, ranging from the more restrictive approach to the broadest:

4. using quotes (e.g. “traffic noise”). This search string (*search string F*) retrieved 6 385 articles with a comprehensiveness value of 88% (53 articles out of 60 indexed in the WOS CC);
5. using the NEAR operator with “/5”, which is the maximum acceptable distance between two terms (e.g. traffic NEAR/5 noise). This search string (*search string G*) retrieved 6 636 articles with a comprehensiveness value of 90% (54 articles out of 60 indexed in the WOS CC);
6. using the AND operator (e.g. (traffic AND noise)). This search string (*search string H*) retrieved 7 859 articles with a comprehensiveness value of 92% (55 articles out of 60 indexed in the WOS CC).

We concluded that the search string H was the best configuration, providing the best balance between high comprehensiveness and an acceptable number of publications (given the available resources).

**Comments**

- We used the $ and * characters where justified to increase the number of retrieved articles.
- We decided not to add a third section of keywords related to the effects of noise pollution (outcomes) because our map deals with all effects without any exclusion and because we did not want to restrict the search string with a new section of keywords as we had already dealt with this problem with the population keywords.

| Step | PECO | Search on | Search string | Search string name | Number of publications retrieved in WOS CC | Comprehensiveness | Comments |
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| 1 | Exposition | TS | TS=(noise OR sound$) | A | 855 758 | 97% (58/60) | High comprehensiveness for string A, but number of retrieved publications very high with many publications that do not deal with the issue (biodiversity). |
| | | TI | TI=(noise OR sound$) | B | 219 377 | 82% (49/60) | |
| 2 | Exposition + Population | TS<br>AND<br>TS | TS=(noise OR sound$)<br>**AND**<br>**TS=(wildlife OR ecolog* OR biodiversity OR ecosystem$ OR "natural habitat$" OR species OR vertebrate$ OR mammal$ OR reptile$ OR amphibian$ OR bird$ OR fish* OR invertebrate$ OR arthropod$ OR insect$ OR arachnid$ OR crustacean$ OR centipede$)** | C | 34 246 | 92% (55/60) | Comprehensiveness is high, but the number of retrieved publications is excessive. |
| | | TI<br>AND<br>TS | TI=(noise OR sound$)<br>**AND**<br>**TS=(wildlife OR ecolog* OR biodiversity OR ecosystem$ OR "natural habitat$" OR species OR vertebrate$ OR mammal$ OR reptile$ OR amphibian$ OR bird$ OR fish* OR invertebrate$ OR arthropod$ OR insect$ OR arachnid$ OR crustacean$ OR centipede$)** | D | 5 790 | 78% (47/60) | Number of retrieved publications is acceptable, but the level of comprehensiveness is lower. |
| 3 | Exposition + Population | (TI OR TS)<br>AND<br>TS | (TI=(noise OR sound$) **OR TS=("noise pollution" OR "masking auditory" OR "man-made noise" OR "anthropogenic noise" OR "man-made sound$")**)<br>AND<br>TS=(wildlife OR ecolog* OR biodiversity OR ecosystem$ OR "natural habitat$" OR species OR vertebrate$ OR mammal$ OR reptile$ OR amphibian$ OR bird$ OR fish* OR invertebrate$ OR arthropod$ OR insect$ OR arachnid$ OR crustacean$ OR centipede$) | E | 6 179 | 82% (49/60) | Somewhat better comprehensiveness, but can still be improved. |
| 4 | Exposition more detailed + Population | (TI OR TS)<br>AND<br>TS | (TI=(noise OR sound$) OR TS=("noise pollution" OR "masking auditory" OR "man-made noise" OR "anthropogenic noise" OR "man-made sound$" **OR "transportation noise" OR "road$ noise" OR "highway$ noise" OR "motorway$ noise" OR "railway$ noise" OR "traffic noise" OR "traffic-induced noise" OR "urban noise" OR "city noise" OR "cities noise" OR "construction noise" OR "ship$ noise" OR "boat$ noise" OR "port$ noise" OR "aircraft$ noise" OR "airplane$ noise" OR "airport$ noise" OR "industr* noise" OR "machinery noise" OR "gas extraction noise" OR "mining noise" OR "drilling noise" OR "pile-driving noise" OR "communication network$ noise" OR "wind farm$ noise" OR "agric* noise" OR "farming noise" OR "military noise" OR "gun$ noise" OR "visitor$ noise" OR "music festival$"**))<br>AND<br>TS=(wildlife OR ecolog* OR biodiversity OR ecosystem$ OR "natural habitat$" OR species OR vertebrate$ OR mammal$ OR reptile$ OR amphibian$ OR bird$ OR fish* OR invertebrate$ OR arthropod$ OR insect$ OR arachnid$ OR crustacean$ OR centipede$) | F | 6 385 | 88% (53/60) | Still better comprehensiveness, but still room for improvement. |

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| 5 | Exposition detailed with "NEAR" use + Population | (TI OR TS) AND TS | (TI=(noise OR sound$) OR TS=(**(noise NEAR/5 pollution)** OR "masking auditory" OR "man-made noise" OR "anthropogenic noise" OR "man-made sound$ OR **(transportation NEAR/5 noise) OR (road$ NEAR/5 noise) OR (highway$ NEAR/5 noise) OR (motorway$ NEAR/5 noise) OR (railway$ NEAR/5 noise) OR (traffic NEAR/5 noise) OR (urban NEAR/5 noise) OR (city NEAR/5 noise) OR (cities NEAR/5 noise) OR (construction NEAR/5 noise) OR (ship$ NEAR/5 noise) OR (boat$ NEAR/5 noise) OR (port$ NEAR/5 noise) OR (aircraft$ NEAR/5 noise) OR (airplane$ NEAR/5 noise) OR (airport$ NEAR/5 noise) OR (industr* NEAR/5 noise) OR (machinery NEAR/5 noise) OR ("gas extraction" NEAR/5 noise) OR (mining NEAR/5 noise) OR (drilling NEAR/5 noise) OR (pile-driving NEAR/5 noise) OR ("communication network$" NEAR/5 noise) OR ("wind farm$" NEAR/5 noise) OR (agric* NEAR/5 noise) OR (farming NEAR/5 noise) OR (military NEAR/5 noise) OR (gun$ NEAR/5 noise) OR (visitor$ NEAR/5 noise)** OR "music festival$"))<br>AND<br>TS=(wildlife OR ecolog* OR biodiversity OR ecosystem$ OR "natural habitat$" OR species OR vertebrate$ OR mammal$ OR reptile$ OR amphibian$ OR bird$ OR fish* OR invertebrate$ OR arthropod$ OR insect$ OR arachnid$ OR crustacean$ OR centipede$) | G | 6 636 | 90% (54/60) | Better comprehensiveness. |
| 6 | Exposition detailed with "AND" use + Population | (TI OR TS) AND TS | (TI=(noise OR sound$) OR TS=(**(noise AND pollution)** OR "masking auditory" OR "man-made noise" OR "anthropogenic noise" OR "man-made sound$ OR **((transportation OR road$ OR highway$ OR motorway$ OR railway$ OR traffic OR urban OR city OR cities OR construction OR ship$ OR boat$ OR port$ OR aircraft$ OR airplane$ OR airport$ OR industr* OR machinery OR "gas extraction" OR mining OR drilling OR pile-driving OR "communication network$" OR "wind farm$" OR agric* OR farming OR military OR gun$ OR visitor$ ) AND noise)** OR "music festival$"))<br>AND<br>TS=(wildlife OR ecolog* OR biodiversity OR ecosystem$ OR "natural habitat$" OR species OR vertebrate$ OR mammal$ OR reptile$ OR amphibian$ OR bird$ OR fish* OR invertebrate$ OR arthropod$ OR insect$ OR arachnid$ OR crustacean$ OR centipede$) | H | 7 859 | 92% (55/60) | Better comprehensiveness. We concluded that this search string was the best configuration. |