**Table 1:** Details of the six specific questions of the review

|  |  |
| --- | --- |
| **Number** | **Details** |
| Question Q1 | Do LTI verge management practices increase, decrease or have no effect on tracheophyte biodiversity in LTI verges? |
| Question Q2 | Is tracheophyte biodiversity in LTI verges equal to, higher, or lower than in similar habitats away from LTIs? |
| Question Q3 | Do LTI verge management practices increase, decrease or have no effect on tracheophyte dispersal in LTI verges? |
| Question Q4 | Is tracheophyte dispersal in LTI verges equal to, higher, or lower than their movements in similar habitats away from LTIs? |
| Question Q5 | Is tracheophyte biodiversity in LTI verges dependent on the surrounding landscape? |
| Question Q6 | Is tracheophyte dispersal in LTI verges dependent on the surrounding landscape? |

**Table 2:** Sub-search strings selected and used in Web Of Science Core Collection and Zoological Records publications databases. The asterisk (\*) represents any group of characters, including no character. The dollar sign ($) represents zero or one character. The quotation marks (“”) allow to look for an exact phrase. Strategies 1 and 2 are explained in Additional file XXX.

|  |  |  |
| --- | --- | --- |
| **LTI** | **Strategy** | **Search string** |
| Roads, railways, pipelines and powerlines | 1 | *LTIs:* (“transport\* infrastructure\*” OR road\* OR highway$ OR motorway$ OR freeway$ OR rail\* OR pipeline$ OR powerline$ OR “power line” OR “power lines” OR “transmission line\*” OR “electric\* line” OR “electric\* lines” OR “electric\* pylon\*”)  AND  *Verges/outcomes:* (corridor$ OR dispersal$ OR habitat$ OR refuge$ OR “right\* of way\*” OR verge$ OR abundance OR richness OR composition$ OR \*diversity OR communit\*) |
|  | 2 | *LTIs:* (road\* OR highway\* OR motorway\* OR rail\* OR “transmission line\* corridor\*” OR powerline\* OR pipeline\* OR “electric\* pylon\*”)  AND  *Verges:* (corridor\* OR habitat\* OR verge\* OR right$-of-way\* OR proximity OR contiguous OR line$)  AND  *Outcomes:* (dispers\* OR population\* OR communit\* OR abundan\* OR distribution$ OR “species composition\*” OR attendance) |
| Waterways | 1 | *LTIs/verges:* (riparian OR riverside$ OR riverbank$ OR “river\* \*bank\*” OR ((waterway$ OR canal$ OR channel$)  AND \*bank\*))  AND  *Outcomes:* (corridor$ OR dispersal$ OR habitat$ OR refuge$ OR abundance OR richness OR \*diversity OR composition$ OR communit\*) |
|  | 2 | *LTIs:* (river\* OR channel$ OR stream$)  AND  *Verges:* (riparian$ OR \*bank\* OR proximity OR bridge$)  AND  *Outcomes:* (dispers\* OR communit\* OR richness OR diversity OR drowning OR roosting OR “alien plant\*”) |

**Table 3**: List of inclusion/exclusion criteria at the stage of title screening

|  |  |
| --- | --- |
| **Include** | **Exclude** |
| *For all LTIs* | |
| - Articles dealing only partially with the role of habitat or corridor of the verges  - Articles regarding invasive species if the role of corridor or habitat of verges is mentioned  - Articles regarding soil biodiversity  - Articles dealing with the effects of chemical, noise or light pollution on verge biodiversity (even if the pollution comes from the infrastructure itself)  - Articles out of the temperate climatic zone (this criteria is assessed at the full-text reading stage)  - Articles regarding wildfires (they are assessed at the full-text reading  stage) | - Studies regarding green infrastructures in general without considering the specific case of LTIs  - Studies regarding overpasses/underpasses or fragmentation due to LTIs considered transversally, without considering the roles of habitat and corridor of verges  - Studies regarding paleontology, phylogenetics, phylogeography and taxonomy (including studies describing newly discovered species)  - Genetic studies without any relation to a natural habitat (in particular biodiversity meta-genomics studies)  - Pedological studies without any relation to biodiversity  - Studies regarding medicine, toxicology or chemical, noise or light pollution without any relation to biodiversity |
| *Specifically for fluvial LTIs (waterways)* | |
| - Articles whose title mentions the words floodplain, riparian, wetland, seasonal pond, intermittent stream or spawning (in which case the article is considered to deal with the semi-aquatic part of the river, that is to say the banks, emerged during the dry season and immersed during the wet season, which is part of the scope of the review)  - Articles regarding amphibious species  - Articles regarding seed dispersal through waterway flow (hydrochory)  - Articles recommending management actions to perform under bridges (hanging bat roosting boxes for instance)  - Articles regarding streams (they are assessed at the full-text reading stage) | - Articles regarding exclusively aquatic species, except if the title mentions the words floodplain, riparian, wetland, seasonal pond, intermittent stream or spawning (in which case the article is considered to deal with the lateral part of the river, that is to say the banks, sometimes immersed other times emerged, which is part of the scope of the review)  - Articles regarding lakes and islands or sand banks in the middle of rivers  - Articles regarding river debris (organic matter, tree trunks, underwater leaves decomposition, except if the article deals with the submerged part of the bank, etc.) |
| *Specifically for non-fluvial LTIs (roads, railways, power lines, pipelines)* | |
| - Articles regarding the role of verges in plant dispersal  - Articles recommending verge management actions to perform (including fencing to avoid collisions) | - Articles regarding plant dispersal without any relation with the role of habitat or corridor of the verges |

**Table 4**: List of inclusion criteria at the stage of abstract screening

|  |  |
| --- | --- |
| **Type of criteria** | **Description** |
| Relevant population(s) | All tracheophyte biodiversity (at the species, community and ecosystem level), including exotic invasive species |
| Types of exposure/intervention | Any article exposing biodiversity to a LTI verge (road, railway, power line or pipeline verges or waterway banks), to a LTI verge management (mowing, pesticide spreading, pruning, planting, fence laying, etc.) or to a LTI verge disturbance (chemical, air, noise and light pollution and wildfires) |
| Types of comparator | Unexposed/intervention-free control site or before-exposure/before-intervention control site |
| Types of outcome | All outcomes relating to corridor and habitat assessment or effects of verge management, such as dispersal (including species invasions, hydrochory and seed dispersal by vehicles), species richness, Shannon index, Simpson index, beta diversity, community composition and abundance of different taxonomic or functional groups of organisms |
| Types of study | All type of studies should be included apart from modelling (theoretical) articles, articles making recommendations without making experimentation and articles making experimentations in laboratory conditions |

**Table 5**: List of inclusion criteria at the stage of full-text screening

|  |  |
| --- | --- |
| **Type of criteria** | **Description** |
| Language | Full text written in English or French |
| Climate | Articles with study zone(s) of the temperate climate |
| Type of publication | Articles different from editorial material, meeting abstracts, news items and review |
| Comparator | Articles with control/compared site (not observational studies) |
| Road type | Articles with paved road (not unpaved road, path, gravel road, forest road) |
| Waterway type | Articles with stream order above three, canals or rivers |
| Specific questions | Articles that give relevant results for the six specific synthesis questions detailed in Table 1 |

**Table 6**: Coding tool for the database of included studies

|  |  |
| --- | --- |
| **Coding variable** | **Details/Examples** |
| ID | Unique identifier of the publication |
| Source | Source of the publication (e.g. WOS, ZR, grey literature) |
| Reference | Authors, year, title, publisher |
| DOI |  |
| Publication type | Book chapter, journal article, thesis, report, etc. |
| Article language | English/French |
| Specific question | Question Q1, Q2, Q3, Q4, Q5, or Q6 |
| Study design | Spatial/Temporal/Spatial and temporal comparisons |
| Risk of bias | Low/Medium |
| Study country |  |
| Study region(s) |  |
| GPS coordinates |  |
| Biological group(s) | Trees/herbs/shrubs, forbs, riparian flora, etc. |
| LTI | Roads/Railways/Powerlines/Pipelines/Waterways |
| LTI verge | Description of verge and its habitat (grassland, shrubland, hedge, forest, etc.) |
| Comparison | - Questions Q2 and Q4: type of habitat of the control site;  - Question Q1 and Q3: management practices (mowing, pesticide spreading, pruning, planting, fence laying, etc.);  - Questions Q5 and Q6: landscape metric(s) and spatial scale(s) |
| Outcomes | Abundance, species richness, Shannon index, etc. |
| Included in narrative synthesis |  |
| Included in meta-analyses |  |