

Appendix S8 Classification of habitat types into ‘museum’, ‘cradle’ and both ‘museum and ‘cradle’ categories

We classified habitat types into ‘museum’, ‘cradle’, and both ‘museum’ and ‘cradle’ categories as follows. ‘Museums’ significantly over-represent (significantly positive *epoch-specific lineage diversities*) either of the three ancient, Mesozoic epochs: root to end of Jurassic, JUR: 164 – 126 Ma; the Early Cretaceous, ECR: 126 – 100 Ma; the Late Cretaceous, LCR: 100 – 66 Ma. ‘Cradles’ significantly over-represent either of the two comparatively recent, Neogene and Quaternary epochs: the Miocene, MIO: 23 – 5.3 Ma; the Pliocene, the Pleistocene, and the Holocene, PPH: 5.3 Ma – present.

Table S8 Dutch habitat types, the geological epochs over-represented in their habitat species pools, and the concluding categorization into ‘museum’, ‘cradle’, both, or neither.

| Habitat type | | Mesozoic epochs | Neogene epochs | Category |
|--------------|---|-----------------|----------------|----------|
| 01 | Free floating duckweeds | no | MIO | cradle |
| 02 | Submerged communities in brackish waters | JUR | MIO | both |
| 03 | Sublittoral and eulittoral zones of temperate seas | no | MIO | cradle |
| 04 | Submerged stonewort swards | no | MIO | cradle |
| 05 | Floating or submerged rooted plants in fresh waters | no | MIO | cradle |
| 06 | Soakways and shallow, fluctuating standing waters | no | no | neither |
| 07 | Spring vegetation of weakly basic waters | no | PPH | cradle |
| 08 | Swamps and fens | no | MIO/PPH | cradle |
| 09 | Small sedges on wet to moist soils | no | PPH | cradle |
| 10 | Mires developing on mesotrophic peats | LCR | no | museum |
| 11 | Bog vegetation of deep, wet peats | no | PPH | cradle |
| 12 | Strongly trampled vegetation in moist places | ECR | MIO/PPH | both |
| 13 | Stonecrop communities of weathered calcareous rocks | ECR | MIO/PPH | both |
| 14 | Swards on sandy soils | ECR | MIO/PPH | both |
| 15 | Chalk grasslands | ECR | MIO/PPH | both |
| 16 | Meadows and pastures of well-drained soils | ECR | MIO/PPH | both |
| 17 | Fringe communities | no | MIO/PPH | cradle |
| 18 | Woodland margin and ride vegetation in drier situations | ECR | MIO | both |

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|----|---|-----|---------|---------|
| 19 | Unfertilized mat-grass pastures at lower elevations | no | MIO/PPH | cradle |
| 20 | Heathlands | ECR | PPH | both |
| 21 | Communities of crevices of sunny wells | ECR | MIO | both |
| 22 | Salt-marsh and strandlines sometimes mixed with sand | no | MIO/PPH | cradle |
| 23 | Pioneer vegetation of coastal foredunes | ECR | MIO/PPH | both |
| 24 | Perennial cord grasses on intertidal mud and sand | ECR | MIO/PPH | both |
| 25 | Annual succulent halophytes, periodically flooded | no | MIO/PPH | cradle |
| 26 | Inundated and inland salt marsh ephemerals | no | MIO/PPH | cradle |
| 27 | Ephemerals on bare or disturbed salt-marsh mud and sand | no | MIO/PPH | cradle |
| 28 | Therophytes on bare, periodically flooded ground | no | PPH | cradle |
| 29 | Heavily nutrient-loaded ruderal habitats | no | MIO/PPH | cradle |
| 30 | Arable weed communities | ECR | MIO/PPH | both |
| 31 | Xero-mesophilous ruderals on nutrient-rich soils | ECR | MIO/PPH | both |
| 32 | Tall-herb vegetation on moist fertile soils and peats | no | MIO/ | cradle |
| 33 | Sunny and semi-shaded margins and clearings of woods | no | MIO | cradle |
| 34 | Herbaceous forest-clearing communities on poor soils | ECR | MIO | both |
| 35 | Bramble underscrub of woodland edges and clearings | ECR | MIO | both |
| 36 | Willow scrub and woodland of mires | no | no | neither |
| 37 | Hedges and scrub of mesotrophic, base-rich soils | ECR | MIO/PPH | both |
| 38 | Woodland of river shoals and terraces | no | MIO | cradle |
| 39 | Woodlands of swamps, fens and wet pastures | no | MIO | cradle |
| 40 | Birch-dominated swampy woodlands | no | no | neither |
| 41 | Pine and juniper woodland communities of acid soils | ECR | MIO/PPH | both |
| 42 | Acidophilous oak, birch, or beech forests | ECR | MIO/PPH | both |
| 43 | Broadleaved woodlands on lime-rich and neutral mull soils | ECR | no | museum |
