Supplementary Material 1

Species data and conservation status

Targeted species were Iberian plants under legal conservation from the obligations of the EU Habitats Directive (Annexes II and IV), and listed under the European Red List of Vascular Plants ([Bilz et al. 2011](#_ENREF_2)), the Portuguese Report on Threatened Plants and the Spanish Red List ([Albert et al. 2011](#_ENREF_1)). Species with more than 15 occurrences were considered as suitable for further analysis, which resulted in a final set of 64 plant species that was considered for the modelling procedures. For species with transboundary distribution across Portugal and Spain, expert-knowledge supported the assignment of species to a category by applying the relevant IUCN criteria to the most-updated occurrence data.

Table S1 – Species full list with conservation status for each species from IUCN lists, Portugal (PT) and Spain (SP) red lists and the combined conservation status.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Code Species | Species name | Conservation status | | | |
| IUCN | PT Red List | SP Red List | Combined Conservation Status |
| allrou | *Allium rouyi* Gaut. | LC |  | CR | CR |
| angmaj | *Angelica major* Lag. |  |  |  | LC |
| antlin | *Antirrhinum majus* subsp. *linkianum* (Boiss. & Reut.) Rothm. |  |  | EN | LC |
| arasad | *Arabis sadina* (Samp.) Cout. | DD | VU |  | DD |
| armrou | *Armeria rouyana* Daveau | NT | VU |  | NT |
| belhac | *Bellevalia dubia* ssp. *hackelii* (Freyn) Feinbrun | LC |  |  | LC |
| biamen | *Biarum mendax* P. C. Boyce |  |  |  | VU |
| cenher | *Centaurea micrantha* ssp. *herminii* (Rouy) Dostál | LC | DD |  | LC |
| cenvic | *Centaurea fraylensis* Sch.Bip. ex Nyman | DD |  |  | DD |
| chaten | *Chaenorhinum tenellum* (Cav.) Lange |  |  | NT | NT |
| cheuli | *Cheirolophus uliginosus* (Brot.) Dostál |  |  | CR | NT |
| clyeri | *Clypeola eriocarpa* Cav. |  |  | CR | CR |
| coilep | *Coincya rupestris* subsp. *leptocarpa* (Gonz.-Albo) Leadlay | EN |  | VU | VU |
| coilon | *Coincya longirostra* (Boiss.) Greuter & Burdet |  |  | EN | EN |
| delsor | *Delphinium fissum* subsp. *Sordidum*  (Cuatrec.) Amich, E. Rico & J. Sánchez | |  | EN | EN |
| diamar | *Dianthus laricifolius* subsp. *marizii* (Samp.) Franco | LC | VU |  | LC |
| erocaz | *Erodium cazorlanum* Heywood |  |  | VU | VU |
| eryjur | *Eryngium duriaei* subsp. *juresianum* (M. Laínz) M. Laínz |  |  | EN | EN |
| euptra | *Euphorbia transtagana* Boiss. | LC | VU | EN | LC |
| fesdur | *Festuca duriotagana* Franco & Rocha Afonso | DD | VU |  | DD |
| fesele | *Festuca elegans* Boiss. |  | LC |  | LC |
| fessum | *Festuca summilusitana* Franco & Rocha Afonso | LC | LC |  | LC |
| galery | *Galium erythrorrhizon* Boiss. & Reut. |  |  | NT | NT |
| genanc | *Genista ancistrocarpa* Spach | EN |  | CR | EN |
| halver | *Halimium verticillatum* (Brot.) |  | EN |  | DD |
| hieram | *Hieracium ramondii* Griseb. |  |  | NT | NT |
| holdur | *Holcus annuus* subsp. *duriensis* (P. Silva)  Franco & Rocha Afonso | | VU | DD | LC |
| ibemic | *Iberis procumbens* Lange ssp. *microcarpa* Franco & P. Silva |  | VU |  | DD |
| iriboi | *Iris boissieri* Henriq. | CR |  | CR | EN |
| isapla | *Isatis platyloba* Link ex Steud. | VU |  | VU | VU |
| isolon | *Isoetes fluitans* M.I.Romero | EN |  | EN | EN |
| junval | *Juncus valvatus* Link | NT | VU |  | VU |
| limcat | *Limonium catalaunicum* (Willk. & Costa) Pignatti |  |  | CR | CR |
| marbat | *Marsilea batardae* Launert | EN | NT | EN | EN |
| mursou | *Murbeckiella sousae* Rothm. | NT |  |  | NT |
| narast | *Narcissus asturiensis* (Jord.) Pugsley | LC | VU |  | LC |
| narbug | *Narcissus pseudonarcissus* subs. *nevadensis* (Pugsley) A. Fern. | EN |  | EN | EN |
| narcal | *Narcissus scaberulus* subsp. *calcicola* (Mendonça) Aedo in Castrov. & al. (eds.) | LC | NT |  | LC |
| narcyc | *Narcissus cyclamineus* DC. | LC | EN | LC | LC |
| narnob | *Narcissus pseudonarcissus* L. subsp.  *nobilis* (Haw.) A. Fernandes | | DD |  | LC |
| nartri | *Narcissus triandrus* L. | LC |  |  | LC |
| nephis | *Nepeta hispanica* Boiss. & Reut. |  |  | VU | VU |
| odokal | *Odontites kaliformis* (Pourr. ex Willd.) Pau |  |  | EN | EN |
| prulus | *Prunus lusitanica* L. subsp. *lusitanica* | VU |  | VU | VU |
| salaus | *Salix salviifolia* subsp. *australis* Franco |  | NT |  | LC |
| sansem | *Santolina semidentata* Hoffmanns. & Link | LC | VU |  | LC |
| scrgra | *Scrophularia grandiflora* DC. |  |  |  | LC |
| scrher | *Scrophularia herminii* Hoffmanns & Link | DD |  |  | LC |
| scrsub | *Scrophularia sublyrata* Brot. | DD |  |  | DD |
| sillong | *Silene longicilia* (Brot.) Otth. | LC | VU |  | LC |
| silmar | *Silene marizii* Samp. |  |  | CR | NT |
| succar | *Succisella carvalhoana* (Mariz) Baksay |  |  | VU | VU |
| sucpin | *Succisa pinnatifida* Lange |  |  | CR | EN |
| teubal | *Teucrium balthazaris* Sennen | NT |  | NT | NT |
| teuoxy | *Teucrium oxylepis* Font Quer subsp. *oxylepis* |  |  | CR | CR |
| teusal | *Teucrium salviastrum* Schreb. |  |  |  | LC |
| thybro | *Thymelaea broteriana* Cout. | NT |  | VU | NT |
| thycam | *Thymus camphoratus* Hoffmanns. & Link | NT |  |  | NT |
| thycap | *Thymus capitellatus* Hoffmanns. & Link | NT |  |  | NT |
| thycar | *Thymus carnosus* Boiss. | NT | VU | CR | NT |
| thylot | *Thymus lotocephalus* G. López & R. Morales | NT | VU |  | NT |
| thyvil | *Thymus villosus* ssp. *villosus* |  |  |  | LC |
| uleden | *Ulex densus* Welw. ex Webb. | LC |  |  | LC |
| vermic | *Veronica micrantha* Hoffmanns. & Link | VU | EN | VU | VU |

References

Albert, M. J., Á. Bañares, M. Á. Copete, A. Escudero, P. Ferrandis, J. M. Iriondo, C. Rot, F. Dominguez, M. B. García, and D. Guzmán. 2011. Atlas y Libro Rojo de la Flora Vascular Amenazada de España. Manual de metodología del trabajo corológico y demográfico.

Bilz, M., S. Kell, N. Maxted, and R. Lansdown. 2011. European Red List of Vascular Plants. Luxembourg: Publications Office of the European Union. ISBN 978-92-79-20199-8.

Supplementary Material 2

International Union for Conservation of Nature (IUCN) Threatened Categories.

**IUCN Threatened Categories**

According to the *IUCN Red List Categories and Criteria. Version 3.1*(IUCN 2001), the Red List categories are defined as follows:

**LEAST CONCERN (LC)**  
A species is Least Concern when it has been evaluated against the criteria and does not qualify for any of the above categories. Species classified as Least Concern are considered at low risk of extinction. Widespread and abundant species are included in this category.

**NEAR THREATENED (NT)**  
A species is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

**VULNERABLE (VU)**  
A species is Vulnerable when the best available evidence indicates that it meets any of the criteria A to D for Vulnerable (see Table S2), and it is therefore considered to be facing a high risk of extinction.

**ENDANGERED (EN)**

A species is Endangered when the best available evidence indicates that it meets any of the criteria A to D for Endangered (see Table S2), and it is therefore considered to be facing a very high risk of extinction.

**CRITICALLY ENDANGERED (CR)**  
A species is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to D for Critically Endangered (see Table S2), and it is therefore considered to be facing an extremely high risk of extinction. It is the highest risk category assigned by the IUCN Red List for wild species.

Table S2 *-* IUCN criteria to evaluate species for threatened status (adapted from Kareiva and Floberg 2008)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Critically Endangered** | **Endangered** | **Vulnerable** |
|  |  |  |  |
| 1. Reduction in population size of a | ≥80% | ≥50% | ≥30% |
|  |  |  |  |
| 1. Reduction in geographic range, based on either |  |  |  |
| - extent of occurrence b | <100 km2 | <5000 km2 | <20 000 km2 |
| - area of occupancy b | <10 km2 | <500 km2 | <2000 km2 |
|  |  |  |  |
| 1. Limited remaining individuals, based on either | <250 and 25% decline | <2500 and 20% decline | <10 000 and 10% decline |
| - number of mature individuals c | ≤ 50 | ≤ 250 | ≤1000 d |
| - number of mature individuals with decline c | Expected in 3 years or one generation | Expected in 5 years or two generations | Expected in 10 years or three generations |
|  |  |  |  |
| D. Expected extinction rate based on quantitative analysis e | ≥50% | ≥20% | ≥10% |
|  |  |  |  |

aA greater percentage loss is required to be critically endangered, endangered, or vulnerable (≥90%, ≥70%, and ≥50%, respectively) where the causes of the reduction are clearly reversible and understood and have ceased. Trend over a period of 10 years or three generations, whichever is longer (up to a maximum of 100 years).

bAlso requires at least two of the following: severely fragmented or known to exist at only a single location; continuing decline; or extreme fluctuations.

cAlso requires at least one of the following: any continuing decline if each subpopulation has few individuals, if there is a high percentage of the total number of mature individuals in one subpopulation, or if there is extreme fluctuations in numbers of mature individuals.

dAlso requires the area of occupancy to be less than 20 km2 or to be known to exist at no more than 5 locations.

eTrend over a period of 10 years or three generations for critically endangered, 20 years or five generations for endangered, and for all categories within 100 years.

References

IUCN. 2001. IUCN Red List Categories and Criteria: Version 3.1. IUCN, Gland, Switzerland and Cambridge, UK.

Kareiva P, Floberg J. 2008. Endangered Species. Pages 1246–1253 in S. E. Jørgensen and B. Fath, editors. Encyclopedia of Ecology. Elsevier, Amsterdam.

Supporting Information 3

Environmental predictors

To assess impacts of environmental change on targeted species, two sets of predictors and alternative storylines for future development were considered: climate, and land-use. Two diferent periods were considered: 1960-1990 (hereafter defined as ‘baseline conditions’), and 2021-2050 (hereafter defined as ‘future conditions’).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | *Predictors* | *Code/Units* |  | *Spatial resolution* |  | *Data source and period studied* |
|  | Annual Precipitation | Prec (mm) |  | 100 Km2 Grid cell |  | IBERIA CHANGE  And ALARM projects  Baseline (1960-1990)  Future (2021-2050) |
| Minimum temperature of coldest month | Tmin (oC) |  |  |  |  |
| Maximum temperature of the warmest month | Tmax(oC) |  |  |  |
| Land-use | Percentage cover of agricultural areas | pAgr (%) |  | 100 Km2 Grid cell |  | ECOCHANGE project  Baseline (1960-1990)  Future (2021-2050) |
| Percentage cover of forested areas | pFor (%) |  |  |  |  |
| Percentage cover of artificial areas | pArt (%) |  |  |  |  |

Table S3 *-* Sets of environmental predictors derived to assess the impact of climate and land-use changes on Iberian threatened plants distributions.

Supplementary Material 4

Model accuracy (AUC)

Table S4

Model accuracy was measured as the Area Under the Curve (AUC), since it is threshold independent and considers both the false-positive and the true-positive error rates (Elith et al. 2006). For each species in each set of SDMs, the resulting models were combined in an ensemble-forecasting framework (Araújo and New (2007). The ensemble model was built in the biomod2 by computing a consensus of single-model projections (considering models that yielded an AUC > 0.7, using AUC values as model weights) using a weighted average approach (Araújo & New 2007; Marmion et al. 2009).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Climate change | | | Land-use change | | |
| Species | **Evaluating metric** | **AUC** | **Species** | **Evaluating metric** | **AUC** |
| Allrou | ROC | 0,957 | Allrou | ROC | 0,932 |
| Angmaj | ROC | 0,898 | Amgmaj | ROC | 0,849 |
| Antlin | ROC | 0,995 | Antlin | ROC | 0,962 |
| Arasad | ROC | 0,994 | Arasad | ROC | 0,958 |
| armrou | ROC | 0,996 | Armrou | ROC | 0,943 |
| Belhac | ROC | 0,997 | Belhac | ROC | 0,92 |
| Biamen | ROC | 0,982 | Biamen | ROC | 0,966 |
| Cenher | ROC | 0,977 | Cenher | ROC | 0,97 |
| Cenvic | ROC | 1 | Cenvic | ROC | 0,867 |
| Chaten | ROC | 0,987 | Chaten | ROC | 0,952 |
| Cheuli | ROC | 0,977 | Cheuli | ROC | 0,935 |
| Chyeri | ROC | 0,987 | Clyeri | ROC | 0,914 |
| Coilep | ROC | 0,98 | Coilep | ROC | 0,928 |
| coilon | ROC | 0,981 | coilon | ROC | 0,92 |
| Delsor | ROC | 0,959 | delsor | ROC | 0,882 |
| Diamar | ROC | 0,988 | diamar | ROC | 0,909 |
| erocaz | ROC | 0,996 | erocaz | ROC | 0,95 |
| eryjur | ROC | 0,986 | eryjur | ROC | 0,958 |
| euptra | ROC | 0,986 | euptra | ROC | 0,942 |
| Fesdur | ROC | 0,967 | fesdur | ROC | 0,887 |
| fesele | ROC | 0,924 | fesele | ROC | 0,867 |
| fessum | ROC | 0,949 | fessum | ROC | 0,904 |
| Galery | ROC | 0,953 | galery | ROC | 0,917 |
| Genanc | ROC | 0,865 | genanc | ROC | 0,814 |
| Halver | ROC | 0,996 | halver | ROC | 0,969 |
| hieram | ROC | 0,994 | hieram | ROC | 0,986 |
| holdur | ROC | 0,981 | holdur | ROC | 0,861 |
| ibemic | ROC | 0,997 | ibemic | ROC | 0,962 |
| iriboi | ROC | 0,986 | iriboi | ROC | 0,962 |
| Isapla | ROC | 0,955 | isapla | ROC | 0,872 |
| isolon | ROC | 0,994 | isolon | ROC | 0,947 |
| junval | ROC | 0,99 | junval | ROC | 0,97 |
| limcat | ROC | 0,977 | limcat | ROC | 0,975 |
| marbat | ROC | 0,962 | marbat | ROC | 0,776 |
| mursou | ROC | 0,979 | mursou | ROC | 0,936 |
| narast | ROC | 0,986 | narast | ROC | 0,909 |
| narbug | ROC | 0,934 | narbug | ROC | 0,845 |
| narcal | ROC | 0,984 | narcal | ROC | 0,924 |
| narcyc | ROC | 0,98 | narcyc | ROC | 0,893 |
| narnob | ROC | 0,944 | narnob | ROC | 0,878 |
| nartri | ROC | 0,886 | nartri | ROC | 0,812 |
| nephis | ROC | 0,936 | nephis | ROC | 0,957 |
| odokal | ROC | 0,968 | odokal | ROC | 0,95 |
| prulus | ROC | 0,958 | prulus | ROC | 0,887 |
| salaus | ROC | 0,877 | salaus | ROC | 0,689 |
| sansem | ROC | 0,938 | sansem | ROC | 0,876 |
| scrgra | ROC | 0,999 | scrgra | ROC | 0,96 |
| scrher | ROC | 0,955 | scrher | ROC | 0,889 |
| scrsub | ROC | 0,925 | scrsub | ROC | 0,8 |
| sillong | ROC | 0,992 | sillong | ROC | 0,953 |
| silmar | ROC | 0,966 | silmar | ROC | 0,861 |
| succar | ROC | 0,976 | succar | ROC | 0,891 |
| sucpin | ROC | 0,995 | sucpin | ROC | 0,971 |
| teubal | ROC | 0,99 | teubal | ROC | 0,95 |
| teuoxy | ROC | 0,993 | teuoxy | ROC | 0,911 |
| teusal | ROC | 0,961 | teusal | ROC | 0,867 |
| thybro | ROC | 0,983 | thybro | ROC | 0,945 |
| thycam | ROC | 0,998 | thycam | ROC | 0,928 |
| thycap | ROC | 0,994 | thycap | ROC | 0,938 |
| thycar | ROC | 0,992 | thycar | ROC | 0,944 |
| thylot | ROC | 0,999 | thylot | ROC | 0,942 |
| thyvil | ROC | 0,978 | thyvil | ROC | 0,902 |
| uleden | ROC | 0,999 | uleden | ROC | 0,989 |
| vermic | ROC | 0,946 | vermic | ROC | 0,848 |

Supplementary Material 5

Risk Assessment of species under climate and land-use change.

A risk assessment analysis was implemented to evaluate how environmental change will impact on the distributions of the targeted in the future. The potential change (PC) was calculated for each species following by [Triviño et al. (2013)](#_ENREF_2) (but see also [Araújo et al. (2011)](#_ENREF_1):

where corresponds to the current area occupied by a given species and is the future potential area occupied by the same species. Afterwards, species were classified into four groups considering the percentage of change:

1. “Expanding species”: PC < 0.
2. “Stable species”: 0 < PC < 30.
3. “Contracting species”: PC > 30

The risk assessment was assessed for each individual species within scenarios of climate and land-use change and within three scenarios of change (BAMBU, GRAS and SEDG).

Table S5.1 *–* Species Risk Assessment for climate change. Three scenarios of change (BAMBU, GRAS and SEDG) and PC (Percentage of Change). [Expanding (↗), stable (↔) or contracting (↙)].

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Climate change | | |  |  |  |
| Code Species | IUCN | BAMBU | PC | GRAS | PC | SEDG | PC |
| allrou | CR | ↗ | -91,8 | ↗ | -70,3 | ↙ | 97,1 |
| angmaj | LC | ↔ | 6,4 | ↔ | 19,4 | ↔ | 22,1 |
| antlin | LC | ↔ | 2,4 | ↙ | 46,1 | ↔ | 10,3 |
| arasad | DD | ↙ | 40 | ↙ | 44.1 | ↗ | -28,2 |
| armrou | NT | ↙ | 80,0 | ↙ | 88,4 | ↙ | 83,9 |
| belhac | LC | ↙ | 43,9 | ↙ | 67,3 | ↙ | 52,3 |
| biamen | VU | ↙ | 40,2 | ↙ | 36,5 | ↙ | 90,6 |
| cenher | LC | ↙ | 34,2 | ↙ | 83,2 | ↙ | 39,4 |
| cenvic | DD | ↙ | 100 | ↙ | 100 | ↙ | 100 |
| chaten | NT | ↙ | 51,3 | ↙ | 80,1 | ↙ | 45,4 |
| cheuli | NT | ↗ | -46,8 | ↗ | -55,7 | ↗ | -38,2 |
| clyeri | CR | ↗ | -13,6 | ↙ | 59,2 | ↔ | 12,4 |
| coilep | VU | ↗ | -169,5 | ↗ | -115,4 | ↗ | -88,1 |
| coilon | EN | ↗ | -313,9 | ↗ | -390,5 | ↗ | -247,1 |
| delsor | EN | ↗ | -41,6 | ↗ | -14,8 | ↗ | -35,8 |
| diamar | LC | ↔ | 7,4 | ↙ | 44,0 | ↔ | 17,8 |
| erocaz | VU | ↗ | -173,5 | ↗ | -141,7 | ↗ | -142,2 |
| eryjur | EN | ↙ | 80,1 | ↙ | 93,4 | ↙ | 91,8 |
| euptra | LC | ↙ | 91,3 | ↙ | 94,1 | ↙ | 90,3 |
| fesdur | DD | ↙ | 34,3 | ↙ | 48,2 | ↙ | 27,6 |
| fesele | LC | ↔ | 9,2 | ↔ | 23,4 | ↔ | 16,8 |
| fessum | LC | ↗ | -2,2 | ↔ | 12,7 | ↔ | 10,5 |
| galery | NT | ↔ | 15,1 | ↙ | 57,7 | ↔ | 5,4 |
| genanc | EN | ↗ | -45,6 | ↗ | -90,3 | ↗ | -23,2 |
| halver | DD | ↙ | 83.2 | ↙ | 89.9 | ↙ | 85.4 |
| hieram | NT | ↙ | 86,3 | ↙ | 99,0 | ↙ | 88,8 |
| holdur | LC | ↔ | 22,1 | ↙ | 69,3 | ↔ | 17,3 |
| ibemic | DD | ↙ | 56,4 | ↙ | 56,4 | ↙ | 50,5 |
| iriboi | EN | ↙ | 47,5 | ↙ | 58,8 | ↙ | 60,5 |
| isapla | VU | ↙ | 59,3 | ↙ | 91,4 | ↙ | 57,5 |
| isolon | EN | ↙ | 100,0 | ↙ | 100,0 | ↙ | 100,0 |
| junval | VU | ↙ | 38,5 | ↙ | 44,5 | ↔ | 11,9 |
| limcat | CR | ↙ | 95,6 | ↙ | 100,0 | ↙ | 71,9 |
| marbat | EN | ↙ | 32,5 | ↙ | 52,6 | ↔ | 15,3 |
| mursou | NT | ↗ | -31,3 | ↗ | -0,4 | ↗ | -34,6 |
| narast | LC | ↔ | 10,7 | ↙ | 56,7 | ↔ | 20,0 |
| narbug | EN | ↗ | -39,5 | ↔ | 0,1 | ↗ | -24,7 |
| narcal | LC | ↙ | 77,0 | ↙ | 76,5 | ↙ | 62,0 |
| narcyc | LC | ↙ | 58,2 | ↙ | 89,3 | ↙ | 66,0 |
| narnob | LC | ↙ | 78,9 | ↙ | 92,1 | ↗ | -70,2 |
| nartri | LC | ↔ | 18,8 | ↙ | 49,1 | ↔ | 22,1 |
| nephis | VU | ↙ | 54,1 | ↙ | 87,8 | ↙ | 34,1 |
| odokal | EN | ↙ | 86,1 | ↙ | 98,9 | ↙ | 85,2 |
| prulus | VU | ↗ | -11,6 | ↔ | 4,9 | ↔ | 4,2 |
| salaus | LC | ↙ | 46,4 | ↙ | 55,3 | ↙ | 61,1 |
| sansem | LC | ↙ | 47,0 | ↙ | 73,8 | ↙ | 43,2 |
| scrgra | LC | ↙ | 68,2 | ↙ | 70,5 | ↔ | 18,6 |
| scrher | LC | ↔ | 1,4 | ↔ | 7,3 | ↔ | 26,8 |
| scrsub | DD | ↗ | -6,4 | ↔ | 2,4 | ↗ | -6,9 |
| sillong | LC | ↗ | -2,5 | ↔ | 25,4 | ↗ | -30,4 |
| silmar | NT | ↗ | -52,2 | ↗ | -20,5 | ↗ | -37,2 |
| succar | VU | ↔ | 11,8 | ↔ | 30,1 | ↔ | 11,8 |
| sucpin | EN | ↔ | 21,0 | ↙ | 54,8 | ↔ | 27,4 |
| teubal | NT | ↗ | -55,5 | ↗ | -116,2 | ↗ | -69,1 |
| teuoxy | CR | ↗ | -384,1 | ↗ | -389,0 | ↗ | -200,6 |
| teusal | LC | ↗ | -30,3 | ↗ | -1,7 | ↗ | -36,4 |
| thybro | NT | ↔ | 5,4 | ↔ | 26,4 | ↔ | 15,6 |
| thycam | NT | ↙ | 56,8 | ↙ | 67,6 | ↙ | 64,9 |
| thycap | NT | ↙ | 43,1 | ↙ | 65,8 | ↙ | 46,9 |
| thycar | NT | ↔ | 4,8 | ↙ | 34,7 | ↗ | -12,9 |
| thylot | NT | ↗ | -71,6 | ↗ | -35,1 | ↗ | -71,6 |
| thyvil | LC | ↔ | 25,4 | ↙ | 36,9 | ↔ | 28,1 |
| uleden | LC | ↙ | 100,0 | ↙ | 100,0 | ↙ | 100,0 |
| vermic | VU | ↗ | -23,6 | ↗ | -3,7 | ↗ | -18,7 |

Table S5.2 *–* Species Risk Assessment for land-use change. Three scenarios of change (BAMBU, GRAS and SEDG) and PC (Percentage of Change). [Expanding (↗), stable (↔) or contracting (↙)].

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Code Species | IUCN | BAMBU | PC | GRAS | PC | SEDG | PC |
| allrou | CR | ↗ | -56,6 | ↗ | -55,0 | ↗ | -57,1 |
| angmaj | LC | ↗ | -26,0 | ↗ | -36,0 | ↗ | -21,6 |
| antlin | LC | ↗ | -33,7 | ↗ | -16,5 | ↗ | -26,8 |
| arasad | DD | ↗ | -3,5 | ↔ | 0,96 | ↗ | -2.5 |
| armrou | NT | ↗ | -292,0 | ↗ | -268,8 | ↗ | -281,3 |
| belhac | LC | ↔ | 4,8 | ↔ | 13,0 | ↔ | 1,6 |
| biamen | VU | ↔ | 3,6 | ↗ | -11,6 | ↔ | 1,3 |
| cenher | LC | ↙ | 77,5 | ↙ | 81,2 | ↙ | 82,9 |
| cenvic | DD | ↗ | -50,6 | ↗ | -44,3 | ↗ | -43,5 |
| chaten | NT | ↙ | 84,6 | ↙ | 84,6 | ↙ | 83,1 |
| cheuli | NT | ↗ | -39,3 | ↗ | -33,6 | ↗ | -31,9 |
| clyeri | CR | ↗ | -91,9 | ↗ | -89,4 | ↗ | -92,7 |
| coilep | VU | ↙ | 79,0 | ↙ | 76,0 | ↙ | 74,5 |
| coilon | EN | ↙ | 78,9 | ↙ | 80,7 | ↙ | 82,2 |
| delsor | EN | ↙ | 75,3 | ↙ | 75,4 | ↙ | 78,9 |
| diamar | LC | ↙ | 42,5 | ↙ | 50,6 | ↙ | 46,3 |
| erocaz | VU | ↗ | -166,9 | ↗ | -167,2 | ↗ | -168,2 |
| eryjur | EN | ↙ | 78,6 | ↙ | 77,8 | ↙ | 80,0 |
| euptra | LC | ↗ | -171,4 | ↗ | -156,4 | ↗ | -167,0 |
| fesele | LC | ↙ | 71,4 | ↙ | 67,4 | ↙ | 74,4 |
| fesdur | DD | ↗ | -23,2 | ↗ | -22,5 | ↗ | -22 |
| fessum | LC | ↙ | 73,0 | ↙ | 68,1 | ↙ | 74,1 |
| galery | NT | ↙ | 70,6 | ↙ | 68,8 | ↙ | 73,3 |
| genanc | EN | ↔ | 26,4 | ↙ | 33,1 | ↔ | 30,4 |
| halver | DD | ↗ | -284,9 | ↗ | -260,1 | ↗ | -277,8 |
| hieram | NT | ↗ | -39,6 | ↗ | -52,5 | ↗ | -43,4 |
| holdur | LC | ↔ | 23,0 | ↔ | 30,1 | ↔ | 25,4 |
| ibemic | DD | ↗ | -13,9 | ↗ | -3,2 | ↗ | -14,7 |
| iriboi | EN | ↙ | 71,2 | ↙ | 69,5 | ↙ | 71,1 |
| isapla | VU | ↙ | 69,5 | ↙ | 72,8 | ↙ | 69,6 |
| isolon | EN | ↗ | -86,2 | ↗ | -73,5 | ↗ | -80,7 |
| junval | VU | ↗ | -37,0 | ↗ | -19,1 | ↗ | -35,6 |
| limcat | CR | ↔ | 24,4 | ↔ | 27,6 | ↔ | 22,7 |
| marbat | EN | ↔ | 12,9 | ↔ | 12,3 | ↔ | 11,3 |
| mursou | NT | ↙ | 67,2 | ↙ | 70,0 | ↙ | 72,4 |
| narast | LC | ↙ | 78,5 | ↙ | 81,6 | ↙ | 82,6 |
| narbug | EN | ↗ | -24,5 | ↗ | -26,7 | ↗ | -25,9 |
| narcal | LC | ↔ | 2,0 | ↔ | 11,2 | ↔ | 1,9 |
| narcyc | LC | ↗ | -56,0 | ↗ | -45,6 | ↗ | -47,6 |
| narnob | LC | ↗ | -20,4 | ↗ | -25,4 | ↗ | -16,2 |
| nartri | LC | ↙ | 55,3 | ↙ | 50,6 | ↙ | 60,1 |
| nephis | VU | ↗ | -244,0 | ↗ | -243,7 | ↗ | -250,7 |
| odokal | EN | ↙ | 67,9 | ↙ | 73,8 | ↙ | 60,9 |
| prulus | VU | ↔ | 10,7 | ↔ | 3,7 | ↔ | 11,2 |
| salaus | LC | ↗ | -45,9 | ↗ | -45,1 | ↗ | -42,6 |
| sansem | LC | ↔ | 23,6 | ↔ | 13,5 | ↔ | 28,7 |
| scrgra | LC | ↗ | -74,5 | ↗ | -61,9 | ↗ | -62,5 |
| scrher | LC | ↗ | -67,6 | ↗ | -80,0 | ↗ | -59,8 |
| scrsub | DD | ↙ | 30,9 | ↙ | 34,9 | ↙ | 33,1 |
| sillong | LC | ↗ | -10,6 | ↔ | 2,3 | ↗ | -10,3 |
| silmar | NT | ↙ | 62,2 | ↙ | 63,1 | ↙ | 67,0 |
| succar | VU | ↔ | 10,1 | ↔ | 14,9 | ↔ | 9,0 |
| sucpin | EN | ↗ | -59,7 | ↗ | -54,0 | ↗ | -46,0 |
| teubal | NT | ↙ | 91,6 | ↙ | 91,9 | ↙ | 85,2 |
| teuoxy | CR | ↙ | 79,9 | ↙ | 80,9 | ↙ | 82,0 |
| teusal | LC | ↙ | 56,1 | ↙ | 58,9 | ↙ | 57,8 |
| thybro | NT | ↙ | 74,1 | ↙ | 71,8 | ↙ | 76,8 |
| thycam | NT | ↗ | -33,1 | ↗ | -24,8 | ↗ | -25,5 |
| thycap | NT | ↗ | -203,2 | ↗ | -188,3 | ↗ | -196,4 |
| thycar | NT | ↗ | -66,7 | ↗ | -59,9 | ↗ | -63,9 |
| thylot | NT | ↙ | 31,4 | ↙ | 37,8 | ↔ | 25,0 |
| thyvil | LC | ↗ | -20,2 | ↗ | -10,4 | ↗ | -14,2 |
| uleden | LC | ↗ | -32,7 | ↗ | -12,2 | ↗ | -35,1 |
| vermic | VU | ↙ | 62,5 | ↙ | 66,3 | ↙ | 66,7 |

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Supplementary Material 6

Forecasting changes in species of conservation concern distributions under scenarios of environmental change.

Table S6. The number of species (%) within classes of risk assessment (Expanding, Stable, Contracting) for all the scenarios (BAMBU, GRAS, and SEDG) and for both climate and land-use change. Numbers in Bold **(B)** pinpoint the most relevant results.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Expanding (%) | Stable (%) | Contracting (%) |
|  |  |
| CLIM | BAMBU | **31.25** | 21.88 | 46.88 |
| GRAS | 21.88 | 15.63 | **62.50** |
| SEDG | 29.69 | **31.25** | 39.06 |
| LUC | BAMBU | **46.88** | **15.63** | 37.50 |
| GRAS | 45.31 | **15.63** | **39.06** |
| SEDG | **46.88** | **15.63** | 37.50 |