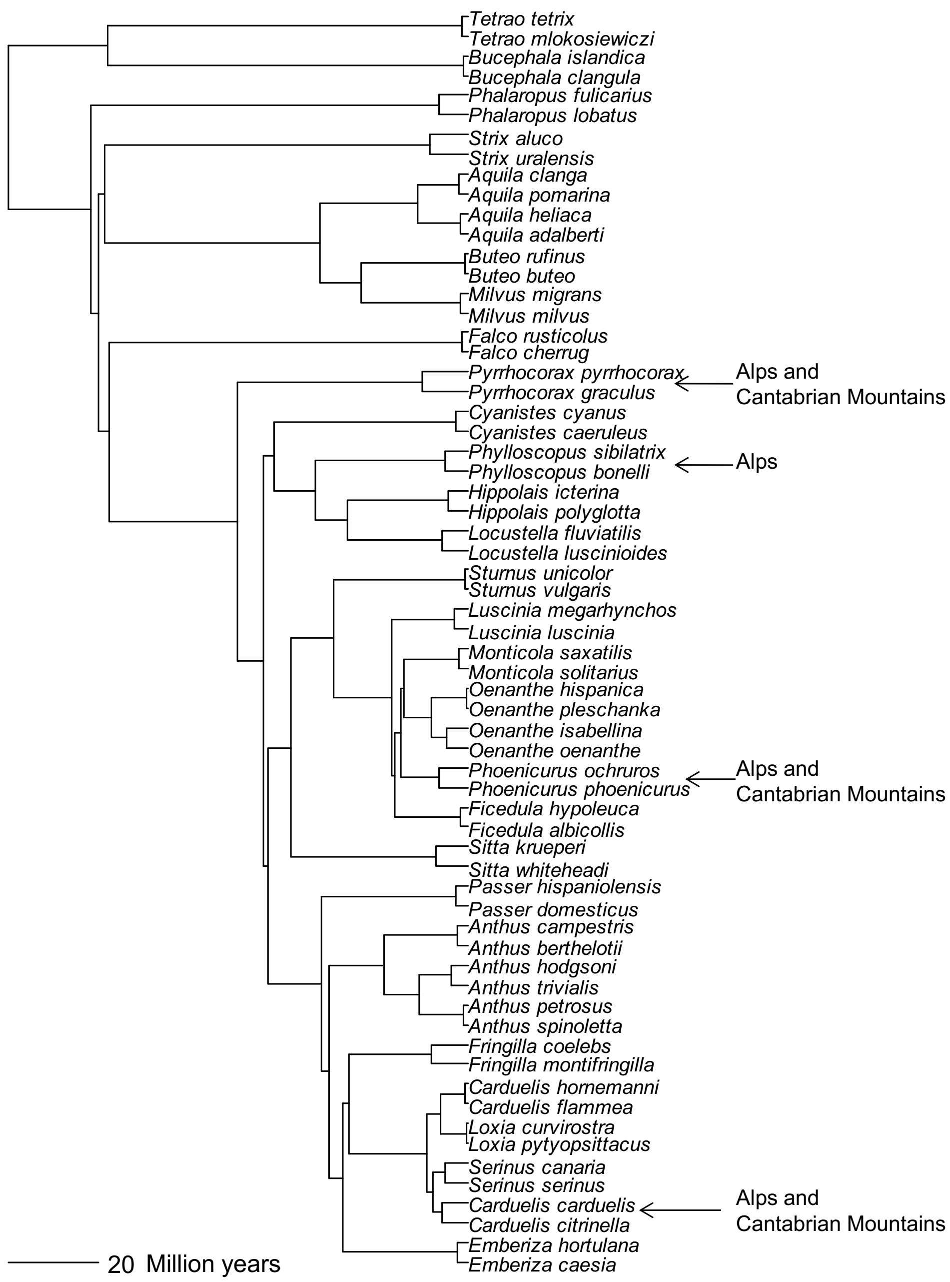
Appendix S1. Multigene phylogeny of 32 European sister species as based on Jetz et al. (2012). Sister species from regional assemblages are highlighted by arrows. In analyses, we also considered two pairs not shown here: the pair formed by *Corvus corone* and *C. cornix* (divergence time: 0.33 myrs in the phylogeny of Jønsson et al. (2016)), found in the Alps, and the pair formed by *Phylloscopus ibericus* and *P. collybita* (divergence time: 2.24 myrs in the phylogeny of Price (2010)), found in the Cantabrian Mountains.



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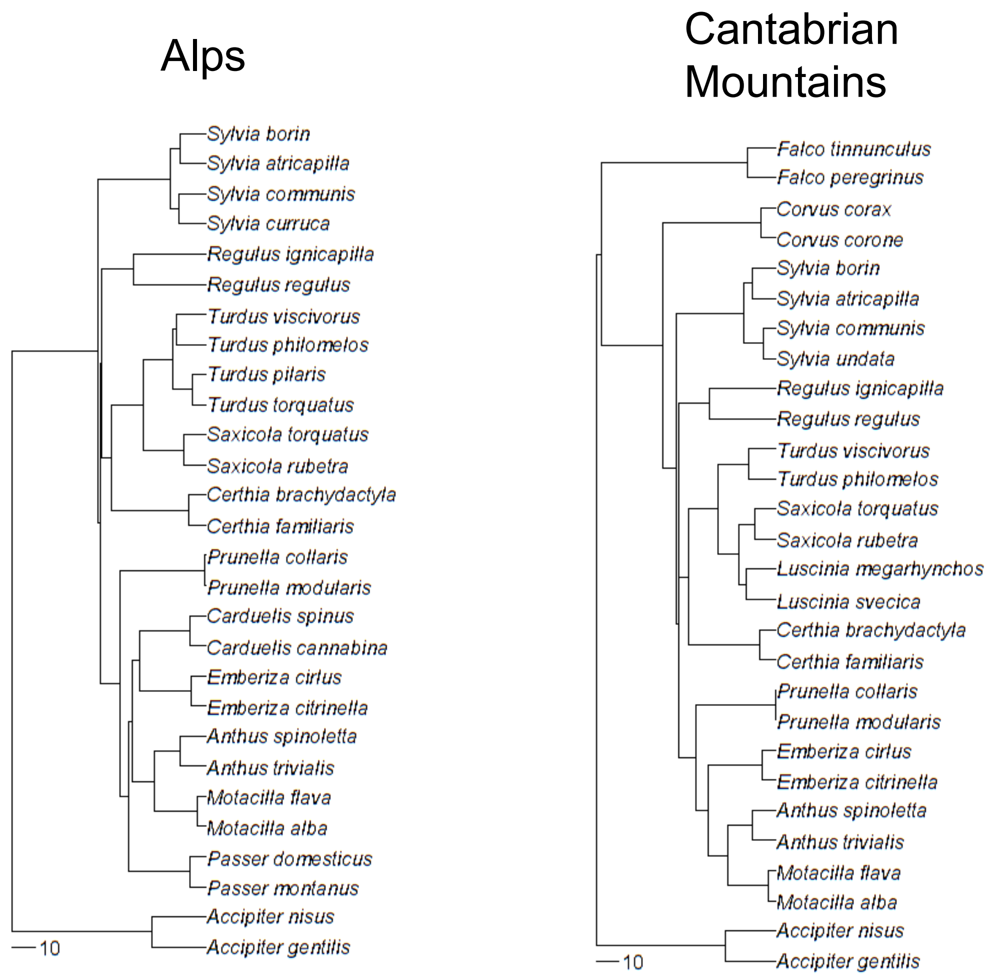
Appendix S2. Literature sources used to check the status of sister species, and the divergence time estimated therein.

Species 1	Species 2	Evolutionary age (myrs) (Literature)	Literature supporting species sister status
Tetrao mlokosiewiczi	*Tetrao tetrix*	0.63	Drovetski, S. V. (2003). *Journal of Biogeography*, *30*(8), 1173-1181.
Phalaropus fulicarius	*Phalaropus lobatus*		Thomas, G. H., Wills, M. A., & Székely, T. (2004*BMC Evolutionary Biology*, *4*(1), 28.
Strix uralensis	*Strix aluco*	3.88	Wink, M., & Heidrich, P. (2000). *Raptors at Risk*, 819-828.
Aquila clanga	*Aquila pomarina*	1.00	Seibold, et al 1996 *Eagle studies. Birds of Prey Bulletin, pp. 1Á/15*
Aquila adalberti	*Aquila heliaca*		Helbig, A. J., Kocum, A., Seibold, I., & Braun, M. J. (2005). *Molecular phylogenetics and evolution*, *35*(1), 147-164.
Pyrrhocorax graculus	*Pyrrhocorax pyrrhocorax*	8.38	Jønsson, K. A. et al. (2016). *Molecular Phylogenetics and Evolution*, 94, 87-94.
Cyanistes cyanus	*Cyanistes caeruleus*	1.50	Tietze, DT, and Borthakur U (2012) *Organisms Diversity & Evolution* 12.4 (2012): 433-444.
Phylloscopus sibilatrix	*Phylloscopus bonelli*	5.25	Price, T. D. (2010). Philosophical Transactions of the Royal Society of London B 365(1547), 1749-1762.
Hippolais icterina	*Hippolais polyglotta*		Helbig, A. J., & Seibold, I. (1999). (*Molecular phylogenetics and evolution*, *11*(2), 246-260.
Locustella fluviatilis	*Locustella luscinioides*		Drovetski, et al. (2004). *Journal of Avian Biology*, *35*(2), 105-110.
Sturnus unicolor	*Sturnus vulgaris*	0.28	Zuccon, D., Pasquet, E., & Ericson, P. G. (2008). *Zoologica Scripta*, *37*(5), 469-481.
Luscinia megarhynchos	*Luscinia luscinia*		Sangster, G., Alström, P., Forsmark, E., & Olsson, U. (2010). *Molecular Phylogenetics and Evolution*, *57*(1), 380-392.
Monticola saxatilis	*Monticola solitarius*	2.36	Zuccon, D., & Ericson, P. G. (2010). *Molecular phylogenetics and evolution*, *55*(3), 901-910.
Oenanthe hispanica	*Oenanthe pleschanka*		Aliabadian, M et al.. (2007). *Molecular phylogenetics and evolution*, *42*(3), 665-675
Oenanthe isabellina	*Oenanthe oenanthe*		Aliabadian, M et al.. (2007). *Molecular phylogenetics and evolution*, *42*(3), 665-675
Phoenicurus ochruros	*Phoenicurus phoenicurus*		Sangster, G., Alström, P., Forsmark, E., & Olsson, U. (2010). *Molecular Phylogenetics and Evolution*, *57*(1), 380-392.
Ficedula hypoleuca	*Ficedula albicollis*	1.75	SÆtre, G. P., & Saether, S. A. (2010). *Molecular Ecology*, *19*(6), 1091-1106.
Sitta krueperi	*Sitta whiteheadi*	5.79	Pasquet, E., et al. (2014) *Journal of Ornithology*, *155*(3), 755-765.
Passer hispaniolensis	*Passer domesticus*		Allende, LM., et al. (2001)*Journal of Molecular Evolution* 53.2 (2001): 144-154.
Anthus berthelotii	*Anthus campestris*	2.47	Voelker, G. (1999). *Evolution*, 1536-1552.
Anthus trivialis	*Anthus hodgsoni*		Voelker, G. (1999). *Evolution*, 1536-1552.
Anthus petrosus	*Anthus spinoletta*		Voelker, G. (1999). *Evolution*, 1536-1552.
Loxia pytyopsittacus	*Loxia curvirostra*		Nguembock, B., Fjeldså, J., Couloux, A., & Pasquet, E. (2009). *Molecular Phylogenetics and Evolution*, *51*(2), 169-18
Serinus canaria	*Serinus serinus*	2.87	Zamora E et al..(2006). *Ardeola*, *53*(1), 1-17.

Carduelis citrinella	*Carduelis carduelis*	4.90	Zamora E et al. .(2006). *Ardeola*, *53*(1), 1-17.
Emberiza hortulana	*Emberiza caesia*	0.51	Päckert, M., Sun, Y. H., Strutzenberger, P., Valchuk, O., Tietze, D. T., & Martens, J. (2015).) *Vert. Zool*, *65*, 135-150.
Falco rusticolus	*Falco cherrug*		Helbig, A. J., et al. (1994) *Raptor conservation today*, 593-599.
Buteo rufinus	*Buteo buteo*	0.43	Kruckenhauser, L., et al.. (2004). *Zoologica Scripta*, *33*(3), 197-211.
Fringilla montifringilla	*Fringilla coelebs*		Van der Meij, M. A. A., De Bakker, M. A. G., & Bout, R. G. (2005). *Molecular phylogenetics and evolution*, *34*: 97-105.
Carduelis hornemanni	*Carduelis flammea*	0.47	Zamora E et al. .(2006). *Ardeola*, *53*(1), 1-17.
Bucephala clangula	*Bucephala islandica*		Donne-Goussé, C., Laudet, V., & Hänni, C. (2002). *Molecular phylogenetics and evolution*, *23*(3), 339-356.
Milvus migrans	*Milvus milvus*		Schreiber, A., & Weitzel, T. (1995). *Biochemical systematics and ecology*, *23*(3), 235-244.

Appendix S3. Phylogenetic relationships non-sister congeners in the two study regions (as obtained from the phylogeny of Jetz. et al. (2012)), and evolutionary age as estimated from literature sources.



Congener 1	Congener 2	Evolutionary age (myrs) (literature)	Mountain region
Sylvia atricapilla	*S. borin*	14.5	Alps & Cantabrian Mountains
Sylvia curruca	*S. communis*	12.7	Alps
Sylvia communis	*S. undata*	5.0	Cantabrian Mountains
Regulus regulus	*R. ignicapilla*	7.7	Alps & Cantabrian Mountains
Turdus philomelos	*T. viscivorus*	5.6	Alps & Cantabrian Mountains

Turdus pilaris	*T. torquatus*	0.9	Alps
Saxicola rubetra	*S. torquatus*	8.1	Alps & Cantabrian Mountains
Certhia familiaris	*C. brachydactyla*	-	Alps & Cantabrian Mountains
Prunella collaris	*P. modularis*	7.3	Alps & Cantabrian Mountains
Carduelis spinus	*C. cannabina*	5.7	Alps
Emberiza citrinella	*E. cirlus*	7.5	Alps & Cantabrian Mountains
Anthus spinoletta	*A. trivialis*	5.4	Alps & Cantabrian Mountains
Motacilla alba	*M. flava*	3.1	Alps & Cantabrian Mountains
Passer domesticus (italiae)	*P. montanus*	-	Alps
Accipiter gentilis	*A. nisus*	-	Alps & Cantabrian Mountains
Falco peregrinus	*F. tinnunculus*	8.2	Cantabrian Mountains
Corvus corax	*C. corone*	7.5	Cantabrian Mountains
Luscinia megarhynchos	*L. svecica*	-	Cantabrian Mountains

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Sangster, G., Alström, P., Forsmark, E., & Olsson, U. (2010). Molecular Phylogenetics and Evolution, 57(1), 380-392.
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Appendix S4. Regional study areas and bird survey methods

A full description of the study areas and methods is provided by Rolando & Laiolo (1994), Laiolo (2002), Laiolo et al. (2004a, b, c), Laiolo (2005), Laiolo & Rolando (2005), Melendez & Laiolo (2014), Laiolo et al. (2011), Laiolo et al. (2015), Segura et al. (2014). Briefly, we tracked bird breeding phenology along the elevation gradient, beginning the fieldwork at the end of March in lowlands and ending in July in the highlands. We monitored birds in plots of 100 m radius around the observer, recording all birds seen or heard at a distance of 50 m and 50-100 m. In woodlands we stayed for seven-ten minutes in the plot centre, as in a point-count survey. In open habitats, the ten minutes survey was split in five minutes point-count, and five minutes in which we walked in the plot to flush out possible hidden individuals. This procedure permitted us to maximize detections and to clump datasets of different habitat types. The fact that we only used presence-absence data limits the problem of differences in detectability (and estimates of densities) among habitats. Species flying over plots were not included with the exception of aerial feeders (swallows, martins and swifts) when they foraged at less than two meters from the ground, i.e. when they were actively searching for food in the plot, or when nests were placed in cliffs located in the survey plots. Raptors and vultures were recorded only when standing on the ground or perching.

Each field day we walked a 5-24 km route in which we stopped regularly to survey birds in plots of 100 m radius, as described above. For this study, we used only data from survey plots separated, at least, at 400 m from each other. Each survey session started at sunrise and ended at midday. The location of plots was not fully random depending on the ability to trek or climb in the steep and rocky terrains when approaching mountaintops. All terrestrial habitats characterizing the Cantabrian and Alpine range were surveyed with the exception of those highly anthropogenic (i.e. urban and intensive agricultural areas). Pastures, alpine grasslands, deciduous forests, coniferous forest (only in the Alps), rock outcrops, extensive cultivations (corn and maize fields, vineyards, these more common in the Alpine study area), heathlands and other shrub formations are the most common habitats.

Overall, we detected the presence of 136 species, 90 shared among regions. The number of pairs of sister species was 4 in the Cantabrian Mountains and 5 in the Alps, and the number of pairs of congeneric non sister species was 14 in the Cantabrian Mountains and 14 in the Alps.

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Appendix S5. Dataset of niche variables, body size, elevational preferences of sister and non-sister congeneric birds.

	Literature data																												Own data	
			Diet items						Foraging techniques										Foraging substrate											
Sister lineages	Elevation (m) (literature)	Body mass (g)	Invertebrates	Herbivory	Seed predation	Frugivory	Scanvenger	Vertebrates	Gleaning - Flutter	Hang	Lunge- Dive	Aerial pursuit	Sally - Leap	Flush-Pursue	Screen	Hovering	Grazing	Probing - Digging	Rock	Ground	Grass	Shrub	Tree trunk	Tree branch	Twigs	Tree leaf	Air	Water	Elevation (m) (Alps)	Elevation (m) (Cantabrian Mountains)
Phalaropus fulicarius	0	50	1	1	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	-	-
Phalaropus lobatus	950	35	1	0	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	1	-	-
Strix uralensis	525	807	1	1	0	0	1	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	-	-
Strix aluco	533	491	0	0	0	0	0	1	0	0	0	1	1	0	1	1	0	0	0	1	0	0	0	0	0	0	1	0	-	-
Aquila clanga	500	1953	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	-	-
Aquila pomarina	950	1410	1	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	-	-
Aquila adalberti	0	2805	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	-	-
Aquila heliaca	100	2805	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	-	-
Tetrao mlokosiewiczi	2250	62	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	-	-
Tetrao tetrix	1250	1139	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	1	0	1	0	0	0	0	-	-
Parus cyanus	1250	13	1	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	1	1	1	0	1	1	1	0	0	-	-
Parus caeruleus	417	11	1	1	1	0	0	0	1	1	1	1	1	0	0	1	0	0	0	1	0	1	1	1	1	1	0	0	-	-
Hippolais icterina	667	13	1	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	0	-	-
Hippolais polyglotta	167	12	1	0	0	1	0	0	1	0	1	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	-	-
Locustella fluviatilis	176	16	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	-	-
Locustella luscinioides	198	15	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	-	-
Sturnus unicolor	683	90	1	0	1	1	0	1	1	0	1	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	-	-
Sturnus vulgaris	400	73	1	0	1	1	0	1	1	0	0	1	0	0	0	0	0	1	0	1	1	0	0	1	1	1	0	0	-	-
Luscinia megarhynchos	364	24	1	0	0	1	0	0	1	0	1	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	-	-
Luscinia luscinia	143	25	1	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	1	1	1	1	0	0	1	1	0	-	-
Monticola saxatilis	1708	52	1	0	0	1	0	1	1	0	1	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	-	-
Monticola solitarius	400	70	1	0	1	1	0	1	1	0	0	1	1	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0	-	-

Oenanthe hispanica	300	18	1	0	0	1	0	0	1	0	0	1	1	0	0	1	0	0	0	1	1	1	0	0	0	0	1	0	-	-
Oenanthe pleschanka	900	18	1	0	0	1	0	1	1	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	-	-
Oenanthe isabellina	1725	29	1	0	1	0	0	1	1	0	0	0	1	1	0	1	0	1	0	1	1	1	0	0	0	0	1	0	-	-
Oenanthe oenanthe	1500	25	1	0	0	0	0	0	1	0	1	0	1	1	0	1	0	1	1	1	1	0	0	0	0	0	0	0	-	-
Ficedula hypoleuca	274	14	1	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	1	1	1	0	-	-
Ficedula albicollis	332	13	1	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	1	1	1	0	-	-
Sitta krueperi	1333	13	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	-	-
Sitta whiteheadi	1250	12	1	0	1	0	0	0	1	0	0	0	0	1	0	1	0	1	0	0	0	0	1	1	1	0	1	0	-	-
Passer hispaniolensis	304	27	1	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	-	-
Passer domesticus	294	29	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	0	0	1	1	0	-	-
Anthus berthelotii	1233	17	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	-	-
Anthus campestris	1100	27	1	0	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	-	-
Anthus trivialis	1238	22	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	-	-
Anthus hodgsoni	1783	21	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	-	-
Anthus petrosus	50	25	1	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	-	-
Anthus spinoletta	2000	22	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	-	-
Loxia pytyopsittacus	500	52	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	-	-
Loxia curvirostra	2250	30	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	-	-
Serinus canaria	380	15	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	-	-
Serinus serinus	650	12	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	-	-
Emberiza hortulana	817	24	1	0	1	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	1	1	0	0	0	1	0	0	-	-
Emberiza caesia	650	21	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	-	-
Falco rusticolus	700	1425	0	0	0	0	0	1	1	0	0	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	1	-	-
Falco cherrug	1825	988	0	0	0	0	0	1	1	0	0	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	-	-
Parus montanus	1167	11	1	0	1	1	0	0	1	1	0	0	1	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	-	-
Parus cinctus	404	12	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	1	0	0	-	-
Buteo rufinus	300	1175	1	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	-	-
Buteo buteo	500	848	1	0	0	0	1	1	1	0	0	0	1	0	1	1	0	0	0	1	1	0	0	0	0	0	1	0	-	-
Fringilla montifringilla	291	23	1	0	1	1	0	0	1	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1	0	0	-	-
Fringilla coelebs	303	24	1	1	1	0	0	0	1	0	1	1	1	0	0	1	0	0	0	1	1	1	0	1	0	1	0	0	-	-
Carduelis hornemanni	335	13	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	-	-
Carduelis flammea	800	14	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	-	-

Bucephala clangula	231	962	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	-
Bucephala islandica	500	1035	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	-
Milvus migrans	328	829	1	0	0	0	1	1	0	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	-	-
Milvus milvus	300	1080	0	0	0	0	1	1	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	-	-
Corvus corone	397	506	1	0	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1292.18	-
Corvus cornix	155	437	1	0	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	260.68	-
Phoenicurus ochruros	300	16	1	0	0	1	0	0	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	1	1	1	1	0	2030.19	1660.39
Phoenicurus phoenicurus	1200	15	1	0	0	1	0	0	1	0	1	1	1	0	0	1	0	1	1	1	1	0	0	0	0	0	1	0	473.70	329.69
Carduelis citrinella	1100	13	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	2208.30	1571.60
Carduelis carduelis	333	17	1	1	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	790.10	338.38
Phylloscopus sibilatrix	840	10	1	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	1	1	1	0	911.58	-
Phylloscopus bonelli	875	8	1	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	1	0	0	1	1	1	0	1132.26	-
Pyrrhocorax graculus	2467	230	1	0	1	1	1	1	1	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	2315.00	1781.42
Pyrrhocorax pyrrhocorax	1680	296	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	1	1	1	1	1	0	0	0	0	0	0	2148.00	1526.59
Phylloscopus collybita	-	8	1	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	-	772.11
Phylloscopus ibericus	-	7	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	-	709.13
Non-sister congeners																														
Accipiter gentilis	-	950	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	1106.00	1114.67
Accipiter nisus	-	204	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	829.67	884.50
Anthus spinoletta	-	22	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2251.05	1726.63
Anthus trivialis	-	22	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	1743.59	1166.98
Carduelis cannabina	-	18	1	1	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1989.60	-
Carduelis spinus	-	13	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	1195.83	-
Certhia brachydactyla	-	9	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	0	0	0	730.98	894.26
Certhia familiaris	-	9	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	0	0	0	1673.22	1315.92
Corvus corax	-	1189	1	1	1	0	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	-	517.93
Corvus corone	-	506	1	0	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	-	1244.95
Emberiza cirlus	-	23	1	0	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	229.80	-
Emberiza citrinella	-	29	1	0	1	0	0	0	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1175.00	1335.65
Falco peregrinus	-	918	0	0	0	0	0	1	0	0	0	1	1	0	1	1	0	0	0	1	0	0	0	0	0	0	1	1	-	929.67
Falco tinnunculus	-	197	1	0	0	0	0	1	0	0	0	1	1	0	1	1	0	0	0	1	0	1	0	0	0	0	1	0	-	1275.94

Luscinia megarhynchos	-	24	1	0	0	1	0	0	1	0	1	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	-	1353.14
Luscinia svecica	-	19	1	0	1	1	0	0	1	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	-	1704.89
Motacilla alba	-	22	1	0	0	0	0	0	1	0	0	1	1	0	0	1	1	1	0	1	1	0	0	0	0	0	1	1	1561.26	1018.85
Motacilla flava	-	17	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	253.85	127.48
Passer domesticus	-	29	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	0	0	1	1	0	532.00	-
Passer montanus	-	22	1	1	1	1	0	0	1	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	1	1	0	0	252.73	-
Prunella collaris	-	42	1	0	1	0	0	0	1	0	1	0	1	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	2303.08	1945.69
Prunella modularis	-	20	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1938.63	1406.21
Regulus ignicapilla	-	5	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	1	0	1	0	1	1	1	0	0	1244.65	810.45
Regulus regulus	-	6	1	0	0	0	0	0	1	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	1468.69	982.05
Saxicola rubetra	-	18	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1773.10	1403.19
Saxicola torquatus	-	15	1	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	1	1	0	0	0	0	0	1	0	282.78	1176.81
Sylvia atricapilla	-	18	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1	1	0	0	579.37	875.91
Sylvia borin	-	19	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	1733.44	1286.87
Sylvia communis	-	15	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	384.08	1473.05
Sylvia curruca	-	12	1	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	1	1	1	1	0	0	1915.87	-
Sylvia undata	-	9	1	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	-	1207.72
Turdus philomelos	-	73	1	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	1	1	1	0	1	0	0	0	0	522.62	833.12
Turdus pilaris	-	112	1	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	0	1109.22	-
Turdus torquatus	-	112	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	0	0	1824.35	-
Turdus viscivorus	-	125	1	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	1	1	1	0	1	1	0	1	0	1462.58	1298.21

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Appendix S6. Performance of multistate models analysing the transition to sympatry of European and regional sister species as a function of time and covariates indicators of ecological and morphological differences among species. The five highest ranking models are shown, together with their AIC_c score. The best models, in bold, are the sole with covariate hazard ratios non-overlapping one.

European sister species

Model	AIC_c
Differences in elevation + Diff. in niche breadth + Diff. in elevation x Diff. in niche breadth	**44.43**
Differences in elevation + Diff. in niche breadth + Diff. In body size + their interactions	48.93
Constant-rate model including just time	49.96
Differences in body size	51.84
Differences in body size + Diff. in elevation + Diff. in body size x Diff. in elevation	55.44

Regional sister species

Model	AIC_c
Differences in niche breadth	**6.57**
Differences in elevation + Diff. in niche breadth	8.58
Differences in elevation + Diff. in niche breadth + Diff. in elevation x Diff. in niche breadth	9.45
Constant-rate model including just time	13.42
Niche overlap	13.95

Appendix S7. Relationships between species divergence time (as estimated by multigene phylogeny) and their segregation patterns (C-score) in syntopy, in the Alps and the Cantabrian Mountains.