## **Supplementary material**

**Tab. S1** - Example of assignation of simulated individuals to specific categories according to STRUCTURE  $q_s$ . Simulated population includes 5% of first generation hybrids (specific category 4).

Specific coefficient	True specific category	Structure-assigned specific category							
		1	2	3	4	5	6	7	number
0	1	100%							6356
(0, 100)	1'								
(100, 200]	2								
(200-300]	3								
(300, 400)	4			16.87%	70.44%	12.69%			670
[400, 500)	5								
[500, 600)	6								
[600, 700)	7'								
700	7						0.11%	99.89%	6355

**Tab. S2** - Example of assignation of simulated individuals to specific categories according to STRUCTURE  $q_s$ . Simulated population includes 10% of first generation hybrids (specific category 4).

Specific coefficient	True specific <sup>–</sup> category	Structure-assigned specific category							
		1	2	3	4	5	6	7	number
0	1	100%							5998
(0, 100)	1'								
(100, 200]	2								
(200-300]	3								
(300, 400)	4		0.15%	16.73%	69.32%	13.65%	0.15%		1333
[400, 500)	5								
[500, 600)	6								
[600, 700)	7'								
700	7						0.13%	99.87%	6000

## Soto A, Rodríguez-Martínez D, López De Heredia U (2018). SIMHYB: a simulation software for the study of the evolution of hybridizing populations. Application to *Quercus ilex* and *Q. suber* suggests hybridization could be underestimated iForest – Biogeosciences and Forestry – doi: 10.3832/ifor2569-011

**Tab. S3** - Example of assignation of simulated individuals to specific categories according to STRUCTURE  $q_s$ . Simulated population includes 5% of first generation hybrids (specific category 4) and 18% of advanced introgressed individuals (categories 2 and 6).

Specific coefficient	True specific category	Structure-assigned specific category								
		1	2	3	4	5	6	7	number	
0	1	100%							6356	
(0, 100)	1'									
(100, 200]	2	21.24%	46.67%	26.49%	5.48%	0.12%			1695	
(200-300]	3									
(300, 400)	4		0.12%	16.86%	70.52%	12.38%	0.12%		848	
[400, 500)	5									
[500, 600)	6			0.24%	6.67%	31.21%	46.14%	15.74%	1695	
[600, 700)	7'									
700	7						0.33%	99.67%	6356	

## Soto A, Rodríguez-Martínez D, López De Heredia U (2018). SIMHYB: a simulation software for the study of the evolution of hybridizing populations. Application to *Quercus ilex* and *Q. suber* suggests hybridization could be underestimated iForest – Biogeosciences and Forestry – doi: 10.3832/ifor2569-011

**Tab. S4** - Example of assignation of simulated individuals to specific categories according to STRUCTURE  $q_s$ . Simulated population includes 0.5% of first generation hybrids (specific category 4) and 29.5% of advanced introgressed individuals (categories 1', 2, 6 and 7').

Specific coefficient	True specific category	Structure-assigned specific category							
		1	2	3	4	5	6	7	number
0	1	100.00%							6573
(0, 100)	1'	64.60%	27.68%	6.87%	0.64%	0.21%			466
(100, 200]	2	18.92%	45.70%	28.75%	6.38%	0.25%			2400
(200-300]	3								0
(300, 400)	4		1.00%	16.00%	67.00%	15.00%	1.00%		100
[400, 500)	5								0
[500, 600)	6			0.23%	5.82%	28.79%	46.13%	19.03%	2181
[600, 700)	7'				0.25%	5.63%	34.07%	60.05%	408
700	7						0.35%	99.65%	6356