

Supplementary Materials for

High extinction risk for wild coffee species and implications for coffee sector sustainability

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CWR priority groups

There is a distinct geographical pattern to the coffee CWR priority groupings, due to close correspondence between species distribution, evolutionary history (phylogeny) (4, 24, 32, 73), and crossing studies (27, 29, 76, 77). Phylogenetic data for coffee has a particularly strong geographical pattern, and crossing studies show good intra-regional (i.e. within African species (77) and within Madagascar species (27)) and poor inter-regional fertility (e.g. between African and Madagascan species (27)). Crossing experiments between Madagascan species (CWR Priority Group III) show that post-crossing fertility rates are high, indicating that genetic exchange is not limited by internal barriers (27). Where opportunities exist, genetic exchange between Madagascan species has been demonstrated, both *in situ* for wild populations (88) and *ex situ* within germplasm collections (45), although *in situ* hybridization appears to be limited, due to spatial and temporal (flowering time) isolation (88). There appear to be strong crossing barriers between Madagascan and African diploid species (i.e. all species except the allotetraploid *C. arabica*), with zero or very low fertility rates (27). For crosses between diploid ($2n = 2x = 22$) Madagascan species (CWR Priority Group III) and the tetraploid ($2n = 4x = 44$) *C. arabica* (CWR Priority Group I), the success of the first generation crosses is comparable to those made between diploid African species and Arabica coffee (27), although these crosses result in triploids ($2n = 3x = 33$). Despite CWR Priority Group III being in the lowest CWR priority group ranking for coffee, it is plausible that Madagascan and Indian Ocean Island species could be used in breeding programmes with African species if artificial chromosome duplication was undertaken prior to crossing. The same may be true for other CWR Priority Group III species. Under laboratory conditions Couturon *et al.* (76) crossed *C. arabica* (CWR Priority Group I) with an artificially produced tetraploid *C. ebracteolata* (normally $2n = 2x = 22$), a species of the group formerly treated as *Psilanthus* (see below) and a member of the XC-clade (32) (CWR Priority Group III). Of 41 plants obtained, nine survived after five months in a nursery; hybrid status was confirmed through cytological, molecular and morphological analysis. Couturon *et al.* (76) posited that the production of two surviving hybrids per 100 pollinated flowers, and their level of fertility, represented results comparable with those reported for intrageneric (interspecies) crosses recorded for other *Coffea* species (see above). In addition to considerations of crossing barriers and low post-crossing fertility rates, it should be noted that Madagascan and other Indian Ocean Island species have very poor

coffee cup quality (27, 89) due to their specific coffee bean chemistry (90), providing further challenges for their use , at least using traditional breeding techniques.

In situ and ex situ conservation of Arabica coffee and other crop priority species

There are thousands of Arabica coffee accessions in germplasm collections outside Ethiopia, most notably those held at the Tropical Agricultural Research and Higher Education Centre (Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)). In the 1960s CATIE was the recipient of a major consignment of Arabica accessions (621 seeds) collected in Ethiopia by an international team of scientists under the auspices of the Food and Agriculture Organization (FAO) in 1964–65 (91). This was followed by another collecting mission by ORSTOM (now Institut de recherche pour le développement; IRD) in 1966, providing a further c. 200 accessions (92, 93). These collections were received by CATIE and duplicated, or part-duplicated, in several key coffee germplasm collections around the world (86), and together represent the most comprehensive *ex situ* germplasm resource for *C. arabica* outside Ethiopia. Despite the value of the CATIE collection, and satellite holdings, there are some serious gaps in their coverage of *C. arabica* diversity. At the time of the FAO and ORSTOM missions much of Ethiopia was inaccessible by either road or air transport, leaving many key coffee areas (wild and cultivated) unsampled. Notable omissions (i.e. lacking accessions in CATIE) are the extensive wild Arabica coffee populations of the Bale coffee area (east of the Great Rift Valley), northern Illubabor, western Wellega, and southern Bench-Maji (west of the Great Rift Valley) (7). For cultivated (farmed) accessions, there is little or no representation from western Wellega and the Rift Valley area, and the large and important coffee-growing areas of Sidamo and Harar are grossly underrepresented (7, 16, 48). Germplasm accessions of Arabica coffee from South Sudan (Boma Plateau) are represented in CATIE, several other germplasm collections and the cultivars *C. arabica* cv. ‘Rume Sudan’ and cv. ‘Barbuk Sudan’, are cultivated on many coffee farms. As in the case of Ethiopia, interspecies diversity representation is limited, with options for gathering further genetic diversity diminishing.

Moat *et al.* (37) calculated that there are between 13.5–19.5 billion mature *C. arabica* plants (each a potential genotype) growing indigenously in Ethiopia and South Sudan. This provides us with some idea of the difference in genetic diversity between indigenous (i.e. from Ethiopia and South Sudan) and cultivated *C. arabica*. If the number of genotypes represented in germplasm collections and as the farmed crop (across the world outside the native range) were in the low to mid-thousands, then *ex situ* collections would represent less than 0.0001% of the potential number of genotypes in Ethiopia and South Sudan. *Ex situ* representation of

C. arabica coffee in Ethiopia is much healthier, with several thousand accessions held within the Jimma Agricultural Research Centre (JARC), and regional collections.

The situation is much worse for the other two crop species (CWR Priority Group I). Robusta coffee (*C. canephora*) is represented in rather few germplasm collections and the coverage (and therefore genetic diversity) is sparse. Indigenous accessions in *ex situ* collections probably come from no more than eight countries (Guinea, Ivory Coast, Cameroon, Gabon, Congo, Democratic Republic of Congo, Central African Republic, and Uganda), compared to 18 countries where *C. canephora* occurs naturally (6, 67). In addition, the origin of the germplasm used as planting stock by major robusta coffee farming countries appears to be very limited (e.g. for production in Vietnam and Mexico (83)). For Liberica coffee (*C. liberica*), there are probably only four countries (Sierra-Leone, Ivory Coast, Central African Republic, Uganda) with more than superficial *ex situ* collections, of the 17 countries where it occurs in the wild (6, 67). The natural distribution of *C. eugenioides* (also CWR Priority Group I) is smaller than *C. liberica* and *C. canephora* but it still occurs wild in seven countries (Burundi, Rwanda, Zaire, South Sudan, Kenya, Tanzania and Uganda). It is also very poorly represented in germplasm collections at the country-level, perhaps only including material from Kenya (32, 43, 73, 86) and Uganda.

Notes on the genus *Psilanthus*

Until recently, the genus *Psilanthus* was a separate genus, closely related to coffee (*Coffea*) (4, 74). The species are mostly deciduous, and almost exclusively possess: a long corolla tube, short style (stigmatic surfaces of style positioned deep within the corolla tube) and included anthers (positioned below the throat of the corolla tube) (23-25, 94). Most *Coffea* species are evergreen, have a short corolla tube, a style that extends beyond the throat of the corolla, and exserted anthers (positioned at or above the corolla throat) (25). On the basis of molecular data and morphology Davis *et al.* (24) united *Psilanthus* with *Coffea*, the latter genus name taking priority, an action that has since been confirmed on the basis of further molecular data (32). Former *Psilanthus* species group within a clade that is sister to the rest of *Coffea*, and which has been named as the XC-clade (32). The XC-clade also contains one species, *C. rhamnifolia*, which has an exserted style and exserted anthers (positioned above the throat of the corolla) like all other *Coffea* species. Former *Psilanthus* species were used to make coffee in previous times (22).

Supplementary Figures

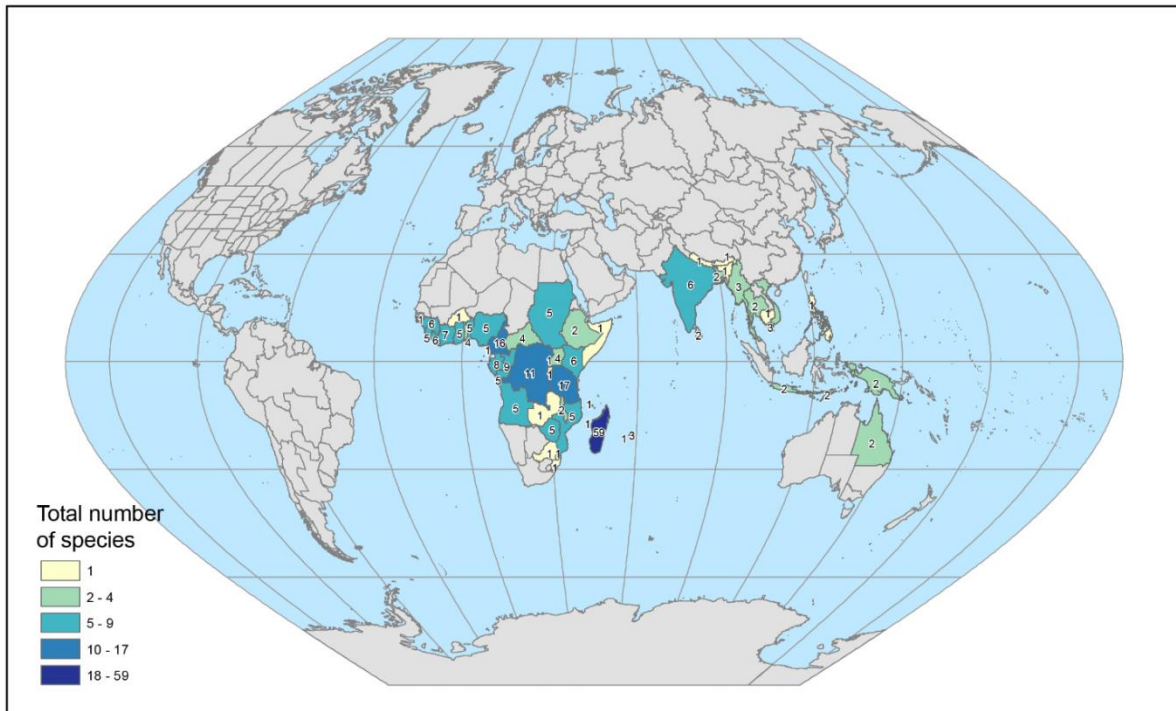


Fig. S1. Total number of coffee species by area. Map showing coffee species by TDWG level 3 areas (countries or subdivisions of countries; see Methods).

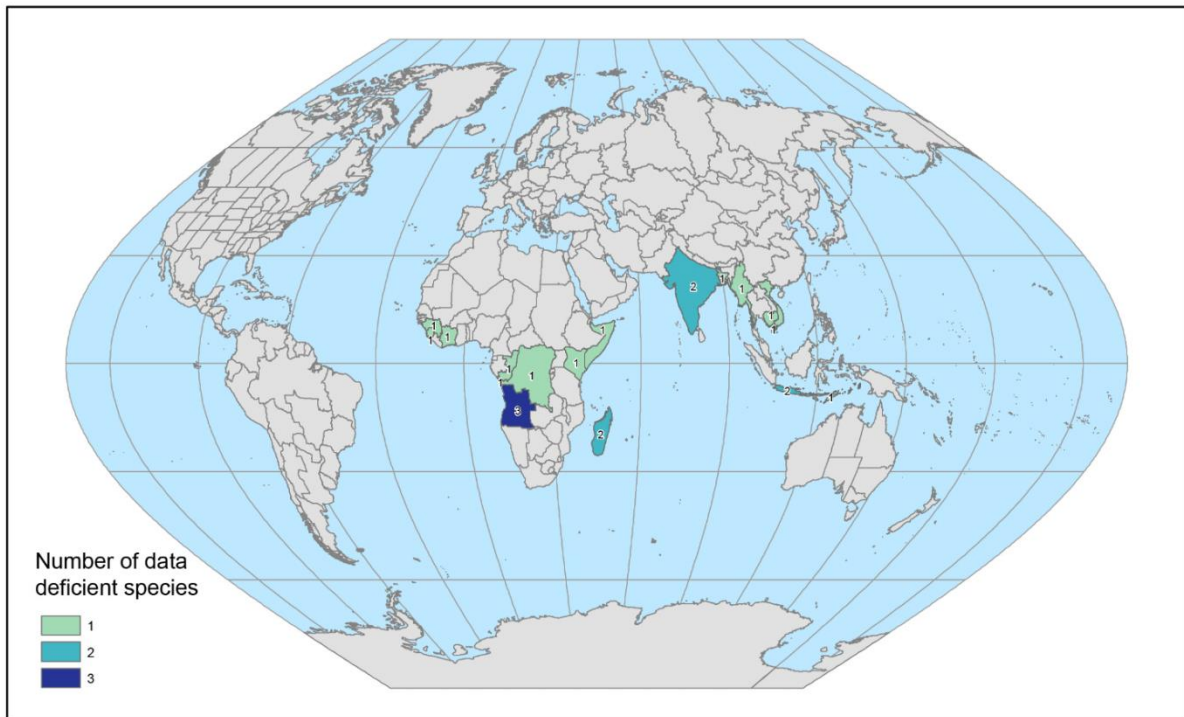


Fig. S2. Total number of DD coffee species by area. Map showing DD coffee species by TDWG level 3 areas (countries or subdivisions of countries; see Methods). See table S1 for species allocation to DD category.

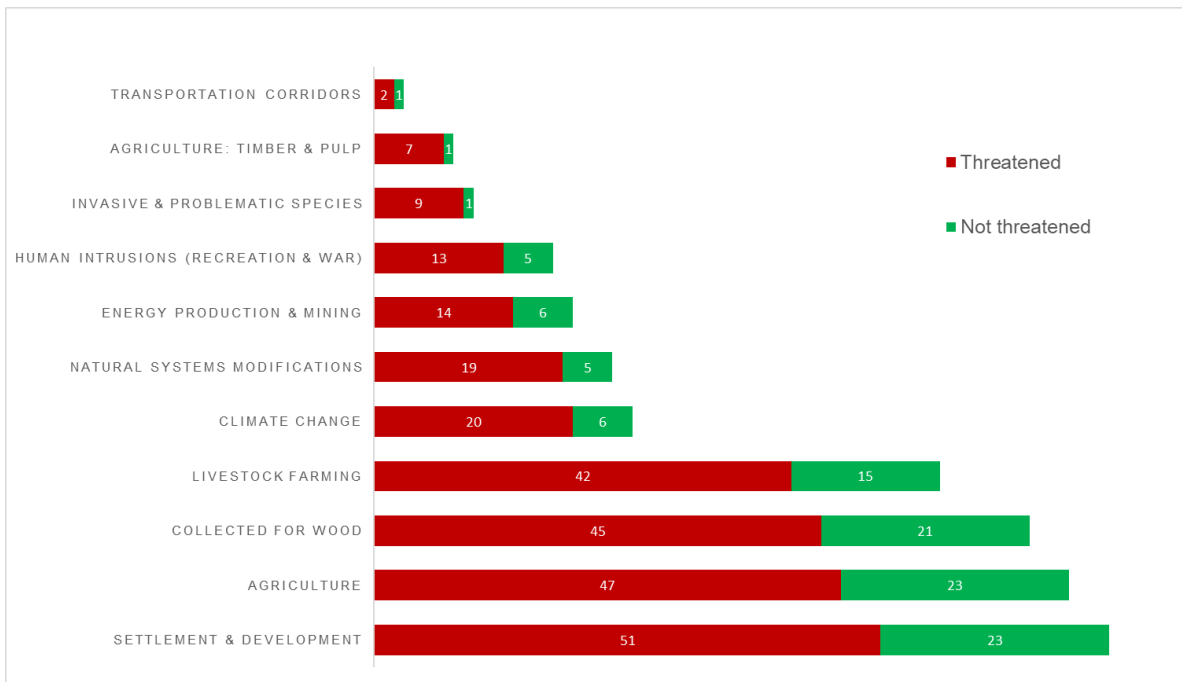


Fig. S3. Summary of threats for coffee species. Identified threats from the IUCN Red List (34) assessments (including those listed for species assessed as threatened and non-threatened), generated from the IUCN Species Information Service (SIS) Toolkit (64). Summaries for each species available via the IUCN Red List of Threatened Species portal (34).

Table S1. List of coffee species with main distribution area, IUCN extinction risk category, CWR priority group, occurrence in germplasm collections (ex situ), and occurrence in protected areas (in situ). IUCN Red List category data and details for individual species can be accessed via the IUCN Red List of Threatened Plant Species portal (34).

Coffee (<i>Coffea</i>) species	Main distribution area	IUCN extinction risk category	CWR Priority Group	Occurring in germplasm collections (<i>ex situ</i>)	Occurring in protected areas (<i>in situ</i>)
<i>abbayesii</i> J.-F.Leroy	Madagascar	EN	3	√	√
<i>affinis</i> De Wild.	West Africa	DD	2	×	×
<i>alleizettii</i> Dubard	Madagascar	CR	3	×	×
<i>ambanjensis</i> J.-F.Leroy	Madagascar	EN	3	×	√
<i>ambongensis</i> J.-F.Leroy ex A.P.Davis & Rakotonas.	Madagascar	EN	3	×	×
<i>andrambovatensis</i> J.-F.Leroy	Madagascar	DD	3	√	×
<i>ankaranensis</i> J.-F.Leroy ex A.P.Davis & Rakotonas.	Madagascar	EN	3	√	√
<i>anthonyi</i> Stoff. & F.Anthony	West Africa	VU	2	√	√
<i>arabica</i> L.	East Africa	EN	1	√	√
<i>arenesiana</i> J.-F.Leroy	Madagascar	EN	3	√	√
<i>augagneurii</i> Dubard	Madagascar	EN	3	√	√
<i>bakossii</i> Cheek & Bridson	West Africa	EN	2	×	√
<i>benghalensis</i> B.Heyne ex Schult.	Asia	LC	3	√	√
<i>bertrandii</i> A.Chev.	Madagascar	VU	3	√	√
<i>betamponensis</i> Portères & J.-F.Leroy	Madagascar	EN	3	√	√
<i>bissetiae</i> A.P.Davis & Rakotonas.	Madagascar	VU	3	×	√
<i>boinensis</i> A.P.Davis &	Madagascar	EN	3	×	√

Rakotonas.					
<i>boiviniana</i> (Baill.) Drake	Madagascar	NT	3	√	√
<i>bonnieri</i> Dubard	Madagascar	EN	3	√	√
<i>brassii</i> (J.-F.Leroy) A.P.Davis	Asia	LC	3	√	√
<i>brevipes</i> Hiern	West Africa	LC	2	√	√
<i>bridsoniae</i> A.P.Davis & Mvungi	East Africa	EN	2	×	√
<i>buxifolia</i> A.Chev.	Madagascar	LC	3	×	√
<i>canephora</i> Pierre ex A.Froehner	West Africa	LC	1	√	√
<i>carrissoi</i> A.Chev.	South Africa	DD	2	×	Unknown
<i>charrieriana</i> Stoff. & F.Anthony	West Africa	CR	2	√	×
<i>cochinchinensis</i> Pierre ex Pit.	Asia	DD	3	×	Unknown
<i>commersoniana</i> (Baill.) A.Chev.	Madagascar	VU	3	√	√
<i>congensis</i> A.Froehner	West Africa	LC	2	√	√
<i>costatifructa</i> Bridson	East Africa	EN	2	√	√
<i>coursiana</i> J.-F.Leroy	Madagascar	VU	3	√	√
<i>dactylifera</i> Robbr. & Stoff.	West Africa	VU	2	×	√
<i>decaryana</i> J.-F.Leroy	Madagascar	CR	3	×	√
<i>dubardii</i> Jum.	Madagascar	NT	3	√	√
<i>ebracteolata</i> (Hiern) Brenan	West Africa	LC	3	√	√
<i>eugenioides</i> S.Moore	East Africa	LC	1	√	√
<i>fadenii</i> Bridson	East Africa	EN	2	√	√
<i>farafanganensis</i> J.-F.Leroy	Madagascar	EN	3	√	×
<i>floresiana</i> Boerl.	Asia	DD	3	×	Unknown
<i>fotsoana</i> Stoff. & Sonké	West Africa	CR	2	×	×
<i>fragilis</i> J.-F.Leroy	Madagascar	DD	3	×	Doubtful/unknown
<i>fragrans</i> Wall. ex Hook.f.	Asia	DD	3	×	Unknown
<i>gallienii</i> Dubard	Madagascar	EN	3	×	√
<i>grevei</i> Drake ex A.Chev.	Madagascar	LC	3	×	√
<i>heimii</i> J.-F.Leroy	Madagascar	VU	3	√	√

<i>heterocalyx</i> Stoff.	West Africa	CR	2	×	×
<i>homollei</i> J.-F.Leroy	Madagascar	VU	3	√	√
<i>horsfieldiana</i> Miq.	Asia	DD	3	√	Unknown
<i>humbertii</i> J.-F.Leroy	Madagascar	LC	3	×	√
<i>humblotiana</i> Baill.	Madagascar	EN	3	√	√
<i>humilis</i> A.Chev.	West Africa	NT	2	√	√
<i>jumellei</i> J.-F.Leroy	Madagascar	EN	3	√	√
<i>kapakata</i> (A.Chev.) Bridson	South Africa	DD	2	√	Unknown
<i>kianjavatensis</i> J.-F.Leroy	Madagascar	EN	3	√	×
<i>kihansiensis</i> A.P.Davis & Mvungi	East Africa	CR	2	×	×
<i>kimbozensis</i> Bridson	East Africa	CR	2	×	√
<i>kivuensis</i> Lebrun	West Africa	EN	2	×	√
<i>labatii</i> A.P.Davis & Rakotonas.	Madagascar	VU	3	×	√
<i>lancifolia</i> A.Chev.	Madagascar	EN	3	√	√
<i>lebruniana</i> Germ. & Kesler	West Africa	LC	2	√	√
<i>leonimontana</i> Stoff.	West Africa	CR	2	×	×
<i>leroyi</i> A.P.Davis	Madagascar	LC	3	√	√
<i>liaudii</i> J.-F.Leroy ex A.P.Davis	Madagascar	EN	3	×	×
<i>liberica</i> W.Bull	West Africa	LC	1	√	√
<i>ligustroides</i> S.Moore	South Africa	VU	2	×	√
<i>littoralis</i> A.P.Davis & Rakotonas.	Madagascar	EN	3	×	×
<i>lulandoensis</i> Bridson	East Africa	VU	2	×	√
<i>mabesae</i> (Elmer) J.-F.Leroy	Asia	VU	3	×	×
<i>macrocarpa</i> A.Rich.	Mauritius	VU	3	√	√
<i>madurensis</i> Teijsm. & Binn. ex Koord.	Asia	DD	3	×	Unknown
<i>magnistipula</i> Stoff. & Robbr.	West Africa	LC	2	×	√
<i>malabarica</i> (Sivar., Biju & P.Mathew) A.P.Davis	Asia	DD	3	×	Unknown
<i>mangoroensis</i> Portères	Madagascar	NT	3	√	√
<i>mannii</i> (Hook.f.) A.P.Davis	West Africa	LC	2	×	√

<i>manombensis</i> A.P.Davis	Madagascar	CR	3	×	√
<i>mapiana</i> Sonké, Nguembou & A.P.Davis	West Africa	VU	2	×	√
<i>mauritiana</i> Lam.	Mauritius & Reunion	VU	3	√	√
<i>mayombensis</i> A.Chev.	West Africa	LC	2	×	√
<i>mcphersonii</i> A.P.Davis & Rakotonas.	Madagascar	EN	3	×	×
<i>melanocarpa</i> Welw. ex Hiern	South Africa	DD	3	×	Unknown
<i>merguensis</i> Ridl.	Asia	NT	3	×	√
<i>millotii</i> J.-F.Leroy	Madagascar	LC	3	√	√
<i>minutiflora</i> A.P.Davis & Rakotonas.	Madagascar	CR	3	×	×
<i>mogenetii</i> Dubard	Madagascar	EN	3	√	√
<i>mongensis</i> Bridson	East Africa	EN	2	×	√
<i>montekupensis</i> Stoff.	West Africa	NT	2	×	√
<i>montis-sacri</i> A.P.Davis	Madagascar	CR	3	√	×
<i>moratii</i> J.-F.Leroy ex A.P.Davis & Rakotonas.	Madagascar	VU	3	√	√
<i>mufindiensis</i> Hutch. ex Bridson	East Africa	LC	2	√	√
<i>myrtifolia</i> (A.Rich. ex DC.) J.-F.Leroy	Mauritius	EN	3	√	Doubtful/unknown
<i>namorokensis</i> A.P.Davis & Rakotonas.	Madagascar	EN	3	×	√
<i>neobridsoniae</i> A.P.Davis	Asia	EN	3	√	Doubtful/unknown
<i>neoleroyi</i> A.P.Davis	East Africa	EN	3	×	√
<i>perrieri</i> Drake ex Jum. & H.Perrier	Madagascar	LC	3	√	√
<i>pervilleana</i> (Baill.) Drake	Madagascar	LC	3	√	√
<i>pocsii</i> Bridson	East Africa	EN	2	√	√
<i>pseudozanguebariae</i> Bridson	East Africa	NT	2	√	√
<i>pterocarpa</i> A.P.Davis & Rakotonas.	Madagascar	EN	3	×	√

<i>racemosa</i> Lour.	East Africa	NT	2	√	√
<i>rakotonasoloi</i> A.P.Davis	Madagascar	CR	3	×	×
<i>ratsimamangae</i> J.-F.Leroy ex A.P.Davis & Rakotonas.	Madagascar	VU	3	√	√
<i>resinosa</i> (Hook.f.) Radlk.	Madagascar	LC	3	√	√
<i>rhamnifolia</i> (Chiov.) Bridson	East Africa	DD	3	×	×
<i>richardii</i> J.-F.Leroy	Madagascar	NT	3	√	√
<i>sahafaryensis</i> J.-F.Leroy	Madagascar	EN	3	√	√
<i>sakaraha</i> J.-F.Leroy	Madagascar	LC	3	√	√
<i>salvatrix</i> Swynn. & Philipson	East Africa	EN	2	√	√
<i>sambavensis</i> J.-F.Leroy ex A.P.Davis & Rakotonas.	Madagascar	EN	3	√	√
<i>sapinii</i> (De Wild.) A.P.Davis	West Africa	DD	3	×	Unknown
<i>schliebenii</i> Bridson	East Africa	VU	2	×	√
<i>semsei</i> (Bridson) A.P.Davis	East Africa	EN	3	×	√
<i>sessiliflora</i> Bridson	East Africa	LC	2	√	√
<i>stenophylla</i> G.Don	West Africa	VU	2	√	√
<i>tetragona</i> Jum. & H.Perrier	Madagascar	LC	3	√	√
<i>togoensis</i> A.Chev.	West Africa	EN	2	×	√
<i>toshii</i> A.P.Davis & Rakotonas.	Madagascar	EN	3	×	√
<i>travancorensis</i> Wight & Arn.	Asia	VU	3	√	√
<i>tricalysioides</i> J.-F.Leroy	Madagascar	LC	3	×	√
<i>tsirananae</i> J.-F.Leroy	Madagascar	VU	3	√	√
<i>vatovavyensis</i> J.-F.Leroy	Madagascar	CR	3	√	×
<i>vianneyi</i> J.-F.Leroy	Madagascar	EN	3	√	×
<i>vohemarensis</i> A.P.Davis & Rakotonas.	Madagascar	EN	3	√	×
<i>wightiana</i> Wall. ex Wight & Arn.	Asia	LC	3	√	√
<i>zanguebariae</i> Lour.	East Africa	VU	2	×	√

Table S2. Main distribution area and number and percentage of species against IUCN extinction risk category.

Main distribution area	IUCN extinction risk category	Number of species	Percentage of threatened species	Percentage of threatened species excl. Data Deficient (DD) species
All	Threatened (CR, EN, VU)	75	60.48%	68.18%
All	Near Threatened (NT)	9	7.26%	8.18%
All	Least Concern (LC)	26	20.97%	23.64%
All	Data Deficient (DD)	14	11.29%	n/a
Total		124	60.48%	68.18%
West Africa	Threatened	11	45.83%	50.00%
West Africa	NT	2	8.33%	9.09%
West Africa	LC	9	37.50%	40.91%
West Africa	DD	2	8.33%	n/a
Total		24	45.83%	50.00%
East Africa	Threatened	14	70.00%	73.68%
East Africa	NT	2	10.00%	10.53%
East Africa	LC	3	15.00%	15.79%
East Africa	DD	1	5.00%	n/a
Total		20	70.00%	73.68%
South Africa	Threatened	1	25.00%	100.00%
South Africa	NT	0	0.00%	0.00%
South Africa	LC	0	0.00%	0.00%
South Africa	DD	3	75.00%	n/a
Total		4	25.00%	100.00%
Madagascar & Indian Ocean Islands	Threatened	46	73.02%	75.41%
Madagascar & Indian Ocean Islands	NT	4	6.35%	6.56%
Madagascar & Indian Ocean Islands	LC	11	17.46%	18.03%

Madagascar & Indian Ocean Islands	DD	2	3.17%	n/a
Total		63	73.02%	75.41%
Asia	Threatened	3	23.08%	42.86%
Asia	NT	1	7.69%	14.29%
Asia	LC	3	23.08%	42.86%
Asia	DD	6	46.15%	n/a
Total		13	23.08%	42.86%

Table S3. Number and percentage of threatened and DD coffee species arranged by TDWG level 3.

TDWG level 3 code	TDWG level 3 name	Number of species	Number of threatened species	Number Data Deficient species	Percentage of threatened species
ANG	Angola	5	0	3	0%
ASS	Assam	1	0	0	0%
BAN	Bangladesh	2	0	1	0%
BEN	Benin	5	1	0	20%
BKN	Burkina	1	0	0	0%
BUR	Burundi	1	0	0	0%
CAB	Cabinda	5	0	1	0%
CAF	Central African Republic	4	0	0	0%
CBD	Cambodia	1	0	1	0%
CMN	Cameroon	16	7	0	44%
COM	Comoros	1	1	0	100%
CON	Congo	9	1	1	11%
EHM	East Himalaya	1	0	0	0%
ETH	Ethiopia	2	2	0	100%
GAB	Gabon	8	0	0	0%
GGI	Gulf of Guinea Is.	1	0	0	0%
GHA	Ghana	5	1	0	20%
GNB	Guinea-Bissau	1	0	0	0%
GUI	Guinea	6	1	1	17%
IND	India	6	2	2	33%
IVO	Ivory Coast	7	1	1	14%
JAW	Jawa	2	0	2	0%
KEN	Kenya	6	2	1	33%
LBR	Liberia	6	1	0	17%
LSI	Lesser Sunda Is.	2	1	1	50%
MAU	Mauritius	3	3	0	100%

MCI	Mozambique Channel Is.	1	0	0	0%
MDG	Madagascar	60	43	2	72%
MLW	Malawi	2	1	0	50%
MOZ	Mozambique	5	3	0	60%
MYA	Myanmar	3	0	1	0%
NAT	KwaZulu-Natal	1	0	0	0%
NEP	Nepal	1	0	0	0%
NGA	Nigeria	5	0	0	0%
NWG	New Guinea	2	1	0	50%
PHI	Philippines	1	1	0	100%
QLD	Queensland	2	1	0	50%
REU	Réunion	1	1	0	100%
RWA	Rwanda	1	0	0	0%
SIE	Sierra Leone	5	1	1	20%
SOM	Somalia	1	0	1	0%
SRL	Sri Lanka	2	1	0	50%
SUD	Sudan	5	2	0	40%
SWZ	Swaziland	1	1	0	100%
TAN	Tanzania	17	12	0	71%
THA	Thailand	2	0	0	0%
TOG	Togo	4	1	0	25%
TVL	Northern Provinces	1	1	0	100%
UGA	Uganda	4	1	0	25%
VIE	Vietnam	3	0	1	0%
ZAI	Zaire	11	2	1	18%
ZAM	Zambia	1	0	0	0%
ZIM	Zimbabwe	5	3	0	60%

Table S4. Number and percentage of coffee species held in germplasm collections (ex situ) and occurring in protected areas (in situ). Organized by IUCN extinction risk category (33, 34).

Extinction risk	Total number of species	Number of species in <i>ex situ</i> collections	Percentage in <i>ex situ</i> collections	Number of species in protected areas (<i>in situ</i>)	Percentage of species in protected areas (<i>in situ</i>)
CR	13	3	23.1%	3	23.1%
EN	40	23	57.5%	30	75.0%
VU	22	13	59.1%	21	95.5%
NT	9	7	77.8%	9	100.0%
LC	26	19	73.1%	26	100.0%
DD	14	3	21.4%	n/a	n/a
Totals	124	68	54.8%	89	71.8%

Table S5. Size distribution of species numbers according to EOO in km². Data Deficient (DD) species lacking EOO are not included (13 in total). Arabica coffee (*Coffea arabica*) is within the 1,000,000 km² size class.

EOO Area km ²	Species within EOO size class (number)	Species within EOO size class (cumulative)
1 km ²	0	0
10 km ²	6	6
100 km ²	10	16
1,000 km ²	29	45
10,000 km ²	17	62
100,000 km ²	29	91
1,000,000 km ²	13	104
10,000,000 km ²	7	111
Total	111	