SUPPLEMENTARY MATERIAL

Morphological and chemical analysis of male scent organs in the butterfly genus *Pyrgus* (Lepidoptera: Hesperiidae)

Juan L. Hernández-Roldán[1], Roger Bofill[2], Leonardo Dapporto[3], Miguel L. Munguira[1] and Roger Vila[4*]

[1] *Departamento de Biología (Zoología), Facultad de Ciencias de la Universidad Autónoma de Madrid, C/ Darwin, 2, E-28049 Madrid, Spain*

[2]*Departament de Química, Universitat Autònoma de Barcelona, Facultat de Ciències, E-08193 Cerdanyola del Vallès, Spain*

[3] *Department of Biological and Medical Sciences, Oxford Brookes University, Headington, Oxford, OX3 0BP, UK.*

[4] *Institut de Biologia Evolutiva (CSIC-UPF), Passeig Marítim de la Barceloneta, 37, E-08003 Barcelona, Spain*

[*] Corresponding author. e-mail: roger.vila@csic.es

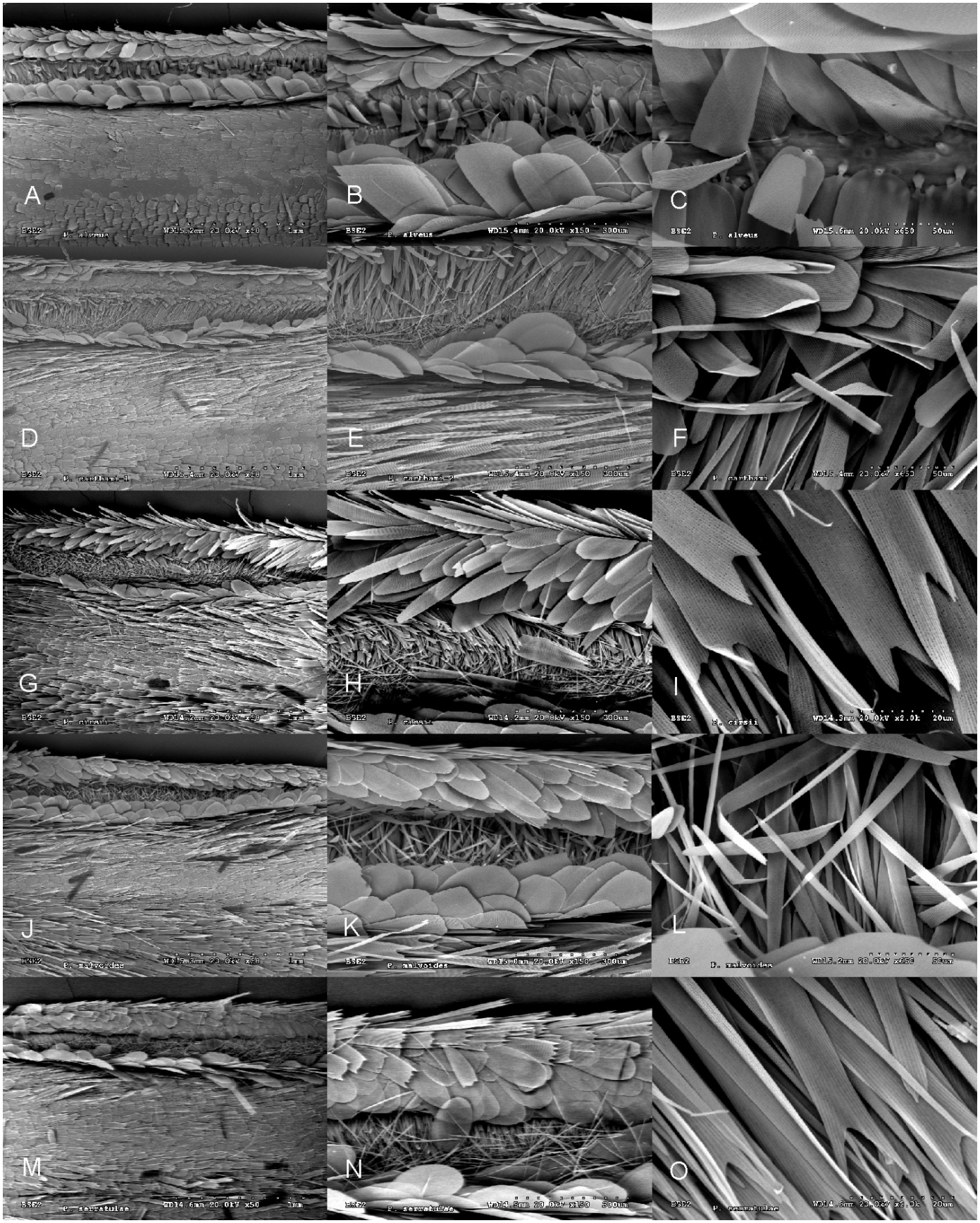

Figure S1 SEM photographs of the costal fold scent organs on the forewings of *Pyrgus* males. Dorsal view of the costal fold at lower (left) and higher magnification (center), and detail of the internal scent scales (androconia) (right) of *P. alveus* (**A** - **C**), *P. carthami* (**D** - **F**), *P. cirsii* (**G** - **I**), *P. malvoides* (**J** - **L**) and *P. serratulae* (**M** - **O**).

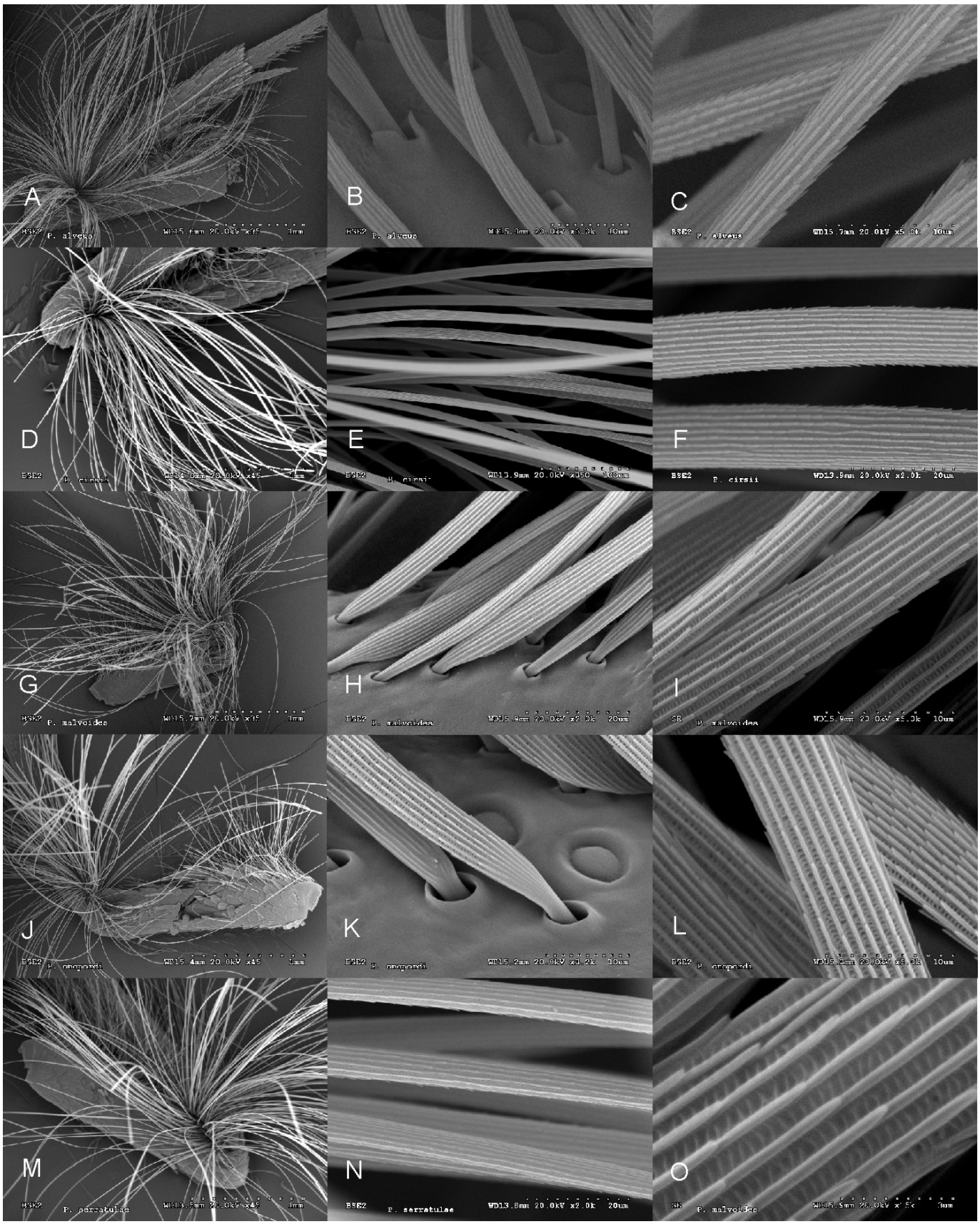

Figure S2 SEM photographs of the tibial tufts scent organs on the hind legs of *Pyrgus* males. General view of a hind leg showing the tibial tufts (left) and detailed view of the setae (center, right) of *P. alveus* (**A - C**), *P. cirsii* (**D - F**), *P. malvoides* (**G - I**, **O**), *P. onopordi* (**J - L**) and *P. serratulae* (**M, N**).

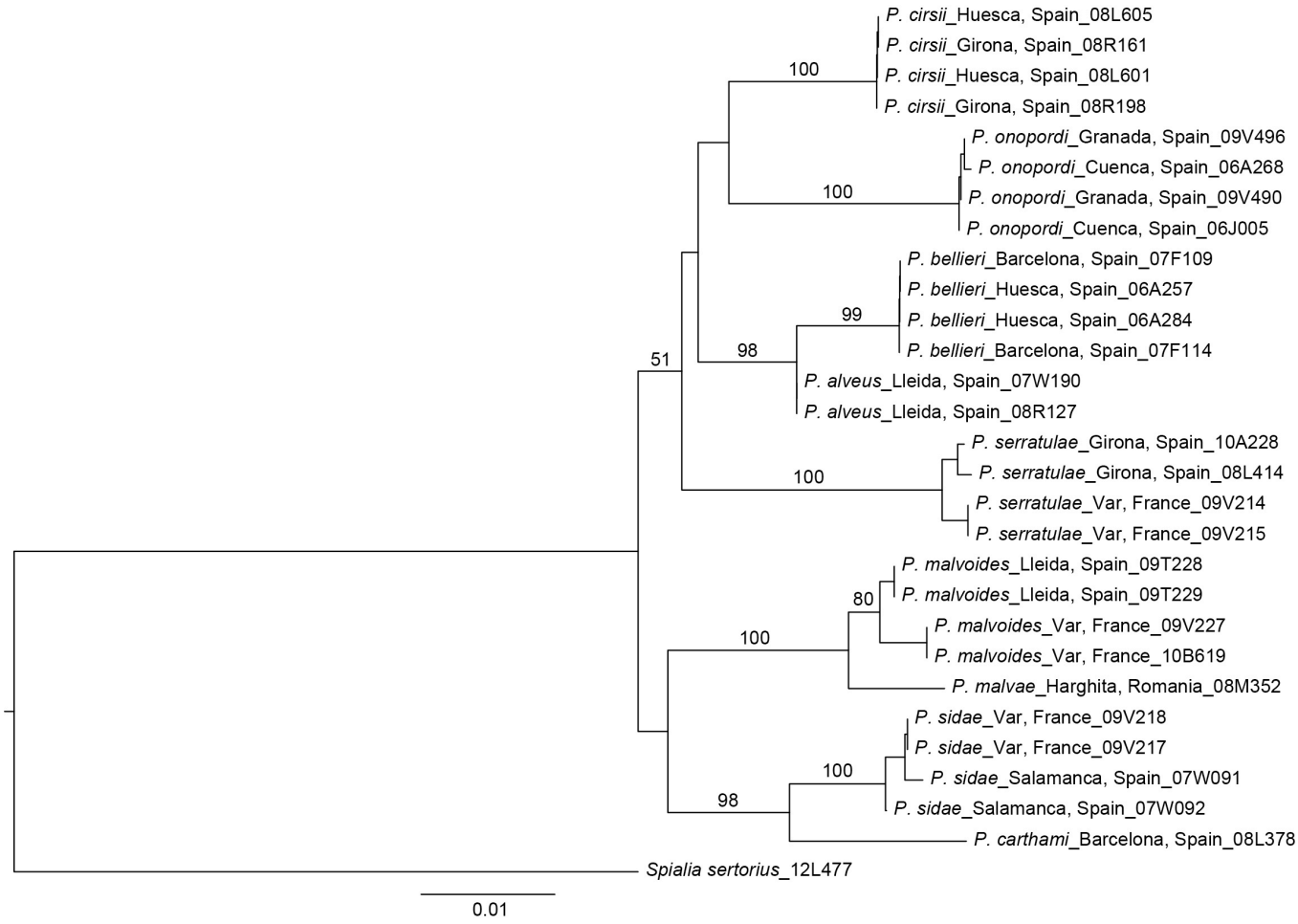

Figure S3 Inferred phylogenetic tree for the *Pyrgus* populations studied based on COI. Neighbour-joining tree with bootstrap supports (>50%) for species monophyly and deeper nodes are shown on the branches.

Table S1 List of *Pyrgus* populations studied by GC-MS. N = number of male specimens pooled in each case

Species	N	Date collected	Locality data	Province, Region	Country	Elevation (m)
P. malvoides	7	9.V.2009	Fonts del Cardener, La Coma, Solsonès	Lleida, Catalunya	Spain	1100
P. malvoides	6	19.V.2009	Domaine de la chasse de Puits de Rians, Rians	Var, Provence	France	450
P. malvae	7	2.VI.2009	Valea Belchia, Gheorgheni	Harghita	Romania	1000
P. serratulae	8	19.V.2009	Domaine de la chasse de Puits de Rians, Rians	Var, Provence	France	450
P. serratulae	9	11.VI.2009	Meranges, La Cerdanya	Girona, Catalunya	Spain	1700
P. alveus	5	2.VIII.2008	Port de la Bonaigua, Pallars Sobirà	Lleida, Catalunya	Spain	2100
P. bellieri	8	5.VIII.2008	El Brull, Osona	Barcelona, Catalunya	Spain	845
P. bellieri	9	8.VIII.2008	Río Alcanadre, Laguarta	Huesca, Aragón	Spain	1215
P. cirsii	9	8.VIII.2009	Río Alcanadre, Laguarta	Huesca, Aragón	Spain	1215
P. cirsii	8	7.VIII.2008	Llanars, Ripollès	Girona, Catalunya	Spain	1120
P. onopordi	9	17.VII.2009	Sierra de la Sagra	Granada, Andalucía	Spain	1670-1820
P. onopordi	9	24.VII.2009	Serranía de Cuenca, Tragacete	Cuenca, Castilla-La Mancha	Spain	1250
P. sidae	6	19.V.2009	Domaine de la chasse de Puits de Rians, Rians	Var, Provence	France	450
P. sidae	8	30.V.2009	Sierra de Candelario, Candelario	Salamanca, Castilla y León	Spain	1350
P. carthami	8	28.VI.2009	Collformic, El Brull	Barcelona, Catalunya	Spain	1170

Table S2 Spacing between transverse ribs of scent and normal scales in *Pyrgus* males. n= number of measurements.

	Spacing between transverse ribs (μm)	
Species	Scent scales	Normal scales
P. alveus	0.86±0.06 (n=5)	1.36±0.07 (n=3)
P. carthami	0.77±0.06 (n=3)	1.65±0.18 (n=7)
P. cirsii	0.65±0.02 (n=3)	1.49±0.05 (n=4)
P. malvoides	0.68±0.04 (n=3)	1.69±0.10 (n=4)
P. onopordi	0.67±0.06 (n=3)	1.36±0.15 (n=4)
P. serratulae	0.67±0.03 (n=3)	1.46±0.00 (n=3)

Table S3 Chemical compounds detected. Compounds are identified by a compound number. The reference library main match is provided only as additional information (it should not be taken as an identification). When available, the Chemical Abstracts Service (CAS) number corresponding to the library main match is indicated to avoid ambiguity. The "base peak" is the most intense peak detected, and the "experimental molecular peak" corresponds to the highest MW peak. If a chemical has been detected in more than one sample, the minimum and maximum match percentage obtained with respect to the reference library and the lowest and highest molecular weight (MW) corresponding to the experimental base and molecular peaks are indicated. Peak intensities on each total ion chromatogram (TIC) were normalised *vs.* the area of the most intense peak of the same TIC: 0, non-detected compounds; 1, compounds showing 1-33 % abundance compared to the reference peak; 2, compounds with 33-66 % abundance; 3, compounds with abundances above 66%.

Compound number	Detected component	Synonym	CAS No.	Empirical formula	match (%)	experimental base peak/s (MW, Da)	experimental molecular peak/s (MW, Da)	Costal fold *P.malvoides* (Solsonès, Lleida)	Tibial tufts *P.malvoides* (Solsonès, Lleida)	Costal fold *P.malvoides* (Puits de Rians, Provence)	Tibial tufts *P.malvoides* (Puits de Rians, Provence)	Costal fold *P.malvae* (Valea Belchia, Romania)	Tibial tufts *P.malvae* (Valea Belchia, Romania)	Costal fold *P.serratulae* (Puits de Rians, Provence)	Tibial tufts *P.serratulae* (Puits de Rians, Provence)	Costal fold *P.serratulae* (Meranges, Girona)	Tibial tufts *P.serratulae* (Meranges, Girona)	Costal fold *P.alveus* (Pallars Sobirà, Lleida)	Tibial tufts *P.alveus* (Pallars Sobirà, Lleida)	Costal fold *P.bellieri* (El Brull, Barcelona)	Tibial tufts *P.bellieri* (El Brull, Barcelona)	Costal fold *P.bellieri* (Laguarta, Huesca)	Tibial tufts *P.bellieri* (Laguarta, Huesca)	Costal fold *P.cirsii* (Laguarta, Huesca)	Tibial tufts *P.cirsii* (Laguarta, Huesca)	Costal fold *P.cirsii* (Llanars, Girona)	Tibial tufts *P.cirsii* (Llanars, Girona)	Costal fold *P.onopordi* (La Sagra, Granada)	Tibial tufts *P.onopordi* (La Sagra, Granada)	Costal fold *P.onopordi* (Tragacete, Cuenca)	Tibial tufts *P.onopordi* (Tragacete, Cuenca)	Costal fold *P.sidae* (Puits de Rians, Provence)	Tibial tufts *P.sidae* (Puits de Rians, Provence)	Costal fold *P.sidae* (Candelario, Salamanca)	Tibial tufts *P.sidae* (Candelario, Salamanca)	Costal fold *P.carthami* (El Brull, Barcelona)	Tibial tufts *P.carthami* (El Brull, Barcelona)
1	2,3-butanediol		513-85-9	C4H10O2	78-82	45	77	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2,3-dimethyl-2,3-butanediol	pinacol	76-09-5	C6H14O2	77	59	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	*(Z)*-alpha-5-(2,3-dimethyl tricyclo(2.2.1.0(2,6))hept-3-yl)-2-methyl-2-penten-1-ol	alpha santalol	115-71-9	C15H24O	50-79	93, 107	202, 220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1-docosanol	behenyl alcohol	661-19-8	C22H46O	83	41	326	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1-pentadecanol		629-76-5	C15H32O	71	83	157	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	4,9,13,17-tetramethyl-4,8,12,16-octadecatetraen-1-ol		56882-10-1	C22H38O	71-86	95	149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0
7	1-octanol		111-87-5	C8H18O	87-90	32, 55	84, 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0

8	3-pentyl-2,4-pentadien-1-ol	3-ethenyl-2-octen-1-ol	666841-70-9	C10H18O	78	69	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
9	benzyl alcohol	alpha toluenol	100-51-6	C7H8O	92	79	107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
10	*(E,E,E)*-3,7,11,15-tetramethyl-2,6,10,14-hexadecatetraen-1-ol	geranylgeraniol	7614-21-3	C20H34O	83-85	41, 69	189, 205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0
11	3,7-dimethyl-6-octen-1-ol	citronellol or dihydrogeraniol	106-22-9	C10H20O	83	59	123	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	5,9,13-trimethyl-4,8,12-tetradecatrien-1-ol		________	C17H30O	83-87	81	163	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	3,7,11-trimethyl-2,6,10-dodecatrien-1-ol	farnesol	4602-84-0	C15H26O	75-88	69, 93	161, 205	0	3	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	*(2R)*-6-methyl-2-[*(1R)*-4-methyl-1-cyclohex-3-enyl]hept-5-en-2-ol	alpha bisabolol	515-69-5	C15H26O	71-87	109, 119	138, 204	0	1	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	3,6,6-trimethyl-bicyclo[3.1.1]heptan-2-ol	3,6,6-trimethyl-2-norpinanol	29548-09-2	C10H18O	92	85	129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
16	4,6,6-trimethylbicyclo[3.1.1]hept-3-en-2-ol	verbenol	473-67-6	C10H16O	86	81	137	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	2-methyl-5-(1-methylethenyl)-cyclohexanol	dihydrocarveol	619-01-2	C10H18O	79-82	83, 95	154	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3
18	(3β)-lanosta-8,24-dien-3-ol	lanosterol	79-63-0	C30H50O	77	69	272	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	*(4aS,7S)*-2,3,4,4a,5,6,7,8-octahydro-1,1,4a,7-tetramethyl-1H-benzocyclohepten-7-ol	widdrol	6892-80-4	C15H26O	71	96	222	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	tricyclo[4.3.1.13,8]undecan-3-ol		14504-80-4	C11H18O	82	96	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
21	*(6E)*-3,7,11-trimethyl-1,6,10-dodecatrien-3-ol	*(E)*-nerolidol	40716-66-3	C15H26O	83-91	69, 93	161, 204	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
22	2,3-dimethyl-1-undecen-3-ol		959050-83-0	C13H26O	92-93	85	85	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1
23	3,7-dimethyl-1,6-octadien-3-ol	linalool	78-70-6	C10H18O	78	93	132	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	*(1R,3E,7E,11R,12R)*-bicyclo[9.3.1]-4,8,12,15,15-pentamethyl-pentadeca-3,7-dien-12-ol	verticiol	70000-19-0	C20H34O	75-76	81	257	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0
25	3-methylbutanal	isopentanal or isovaleral	590-86-3	C5H10O	80-82	41	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	2-methylbutanal	2-methyl butyraldehyde	96-17-3	C5H10O	82	41	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

27	octanal		124-13-0	C8H16O	88	41	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1
28	2-butyl-2-octenal		13019-16-4	C12H22O	76	95	182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
29	pentadecanal		2765-11-9	C15H30O	91	81-89	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0
30	hexadecanal	palmitaldehyde	629-80-1	C16H32O	87	43	229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
31	heptanal		111-71-7	C7H14O	88	41	96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
32	1-nitropentane		628-05-7	C5H11NO2	84	43	71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
33	3-nitropropanoic acid		504-88-1	C3H5NO4	79	41	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	2-methyl propanoic acid	isobutyric acid	79-31-2	C4H8O2	80-85	41	88	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
35	3-methyl butanoic acid	isovaleric acid	503-74-2	C5H10O2	79-85	60	87	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0
36	2-methyl hexanoic acid	alpha methyl caproic acid	4536-23-6	C7H14O2	83	74	102	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	octanoic acid	caprylic acid	124-07-2	C8H16O2	84-91	60, 73	115	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	0	3
38	nonanoic acid	pelargonic acid	112-05-0	C9H18O2	85-89	73, 85	129	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
39	9-octadecenoic acid	oleic acid	112-80-1	C18H34O2	82	41	131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
40	*(9R,10S)*-9,10,16-trihydroxyhexadecanoic acid	alpha aleuritic acid	533-87-9	C16H32O5	76	155	156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
41	hexanoic acid	caproic acid	142-62-1	C6H12O2	92	60	87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
42	*(2E)-(1aR,2R,3S,4aR,6S,7S,7aS,8E,10R,11R,11aS)*-2-methyl-2-(acetyloxy)-1,1a,2,3,4,6,7,10,11,11a-decahydro-7,10-dihydroxy-1,1,3,6,9-pentamethyl-4-oxo-4a,7a-epoxy-5H-cyclopenta[a]cyclopropa[f]cycloundecen-11-yl-2-butenoate		51906-13-9	C27H38O8	70	43	154	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	2-(7-oxabicyclo[4.1.0]heptan-3-yl)propan-2-yl acetate	alpha terpenyl epoxy acetate	________	C12H20O3	83	109	182	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	1,3,3-trimethyl-2-oxabicyclo[2.2.2]octan-6-ol acetate		________	C12H20O3	73	32	193	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	octyl acetate		112-14-1	C10H20O2	83	43	97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
46	octadecyl acetate	stearyl acetate	822-23-1	C20H40O2	89	83	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
47	*(E)*-2-octadecenyl acetate		135179-41-8	C20H38O2	69	96	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
48	3,7,11-trimethyldodeca-2,6,10-trien-1-yl acetate	farnesyl acetate	29548-30-9	C17H28O2	84-86	69	191, 264	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	trans-γ-caroten-3-ol acetate	rubixanthin acetate	1686-74-4	C42H58O2	85	91	255	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

50	1-hydroxy-2,4,4-trimethylpentan-3-yl isobutyrate		74367-33-2	C12H24O3	82-85	43	143, 145	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
51	2-ethyl-3-hydroxyhexyl isobutyrate		74367-31-0	C12H24O3	89	89	173	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	2-bromo-1-methylbutyl butanoate		959289-39-5	C9H17BrO2	65	43	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
53	1-(2-methylpropyl) 2-nonyl ethanedioate	isobutyl nonyl oxalate	959275-48-0	C15H28O4	91	57	85	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	1-hexadecyl 2-(2-methylpropyl) ethanedioate	isobutyl hexadecyl oxalate	959067-95-9	C22H42O4	86	57	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
55	methyl nonanoate	pelargonic acid methyl ester	1731-84-6	C10H20O2	86-93	74	127, 129	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
56	*(Z,Z,Z)*-2-(acetyloxy)-1-[(acetyloxy)methyl]ethyl-9,12,15-Octadecatrienoate		55320-01-9	C25H40O6	75	81	177	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	octyl octanoate		2306-88-9	C16H32O2	73-80	57, 145	145, 250	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1	0	0
58	heptadecyl octanoate		42231-43-6	C25H50O2	76-78	145	193, 343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	0	0
59	3,3,5-trimethylcyclohexyl-2-hydroxy-benzoate	homomenthyl salycilate	118-56-9	C16H22O3	73	40	249	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
60	5-(acetyloxy)-4,12-dihydro-1-methyl-9,10-[methylenebis(oxy)]-lycorenan-7-one	clivonine acetate	14199-44-1	C19H21NO6	66	83	267	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	5-methyl-5-vinyldihydrofuran-2(3H)-one	lilac lactone	1073-11-6	C7H10O2	82-85	111	126	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62	5-hexyldihydro-4-methyl-2(3H)-furanone		147254-32-8	C11H20O2	87	71	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
63	Benzyl isopentyl ether		122-73-6	C12H18O	89-99	32, 91	119, 130	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
64	dibenzofuran		132-64-9	C12H8O	99	169	169	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	2-tridecynyl 2-furoate		________	C18H26O3	91	95	108	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
66	2,4,5,6,7,7a-hexahydro-4,4,7a-trimethyl-2-benzofurancarboxylic acid methyl ester		77383-92-7	C13H20O3	71	165	203	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67	dihydro-3-(nonen-1-yl)-2,5-furandione	n-nonenylsuccinic anhydride	28928-97-4	C13H20O3	75	81	223	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
68	7-methyl-pentatriacontane		89740-18-1	C36H74	85	57	281	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
69	4-methyldocosane		25117-30-0	C23H48	76	43	173	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	2,5-dimethylheptadecane		136494-39-8	C19H40	92	57	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

71	eicosane		112-95-8	C20H42	93	57	113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
72	hentriacontane		630-04-6	C31H64	86-92	57	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
73	1-methyl-4-[*(2E)*-6-methylhepta-2,5-dien-2-yl]cyclohexene	*(E)*-alpha bisabolene	17627-44-0	C15H24	79-98	93	161, 204	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74	1-methyl-4-(5-methyl-1-methylene-4-hexenyl)cyclohexene	beta bisabolene	________	C15H24	83-95	69, 93	204	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	2-ethenyl-1,3,3-trimethyl-cyclohexene		5293-90-3	C11H18	75-82	107	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0
76	14,15-didehydro-1,4,5,8,9,10,11,12,13,16,17,18,19,20-tetradecahydrocyclodecacyclotetradecene		14113-61-2	C22H32	81	91	255	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	2-butyl-1,3,3-trimethylcyclohexene		3293-50-3	C13H24	67	95	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
78	1-dodecene		112-41-4	C12H24	84-89	55, 69	97	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	2
79	*(Z)*-7-tetradecene		41446-60-0	C14H28	88-90	55, 69	111, 166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0
80	1,5,9,13-tetradecatetraene		51487-38-8	C14H22	77	67	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
81	*(Z)*-9-pentatriacontene		334543-50-9	C35H70	85	97	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
82	9-tricosene		52078-48-5	C23H46	88	97	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
83	*(Z)*-3-Heptadecen-5-yne		74744-55-1	C17H30	82	93	220	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
84	3-eicosyne		61886-66-6	C20H38	80	43	170	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85	7-tetradecyne		35216-11-6	C14H26	84-86	67, 81	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
86	11-hexacosyne		34291-69-5	C26H50	73	166	235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
87	1,1,7-trimethyl-4-methylenedecahydro-1H-cycloprop[e]azulene	aromadendrene	109119-91-7	C15H24	86	91	204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
88	*(1S,3aR,4S,8aS)*-decahydro-4,8,8-trimethyl-9-methylene-1,4-methanoazulene	longifolene	475-20-7	C15H24	91-92	91, 161	204	0	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	(*3R*-(3alpha, 3abeta,7beta,8aalpha))-octahydro-3,8,8-trimethyl-6-methylene-1H-3a,7-methanoazulene	beta cedrene	546-28-1	C15H24	84	161	204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	*(1R,3aS,7S,8aR)*-2,3,6,7,8,8a-hexahydro-1,4,9,9-tetramethyl-1H-3a,7-methanoazulene		560-32-7	C15H24	74-80	107	204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
91	*(1S,4S,4aS,6R,8aS)*-1,4,8a-trimethyl-9-methylene-decahydro-1,6-methanonaphthalene	seychellene	20085-93-2	C15H24	85-87	105	204	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

92	1,2,3,4,4a,5,6,8a-octahydro-4a,8-dimethyl-2-(prop-1-en-2-yl)-naphthalene	alpha selinene	473-13-2	C15H25	82-86	133, 189	204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
93	*(6E,10E)*-7,11,15-trimethyl-3-methylene-1,6,10,14-hexadecatetraene	beta springene	70901-63-2	C20H32	75-87	41, 93	187, 257	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0
94	*(3E,6E,10E)*-3,7,11,15-tetramethyl-1,3,6,10,14-hexadecapentaene	alpha springene	77898-97-6	C20H32	71-89	41, 93	191, 272	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0
95	*(6E)*-7,11-dimethyl-3-methylene-1,6,10-dodecatriene	*(E)*-beta farnesene	18794-84-8	C15H24	97	69, 79	189, 204	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	*(6Z)*-7,11-dimethyl-3-methylene-1,6,10-dodecatriene	*(Z)*-beta farnesene	28973-97-9	C15H24	91-92	69, 93	161	0	1	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	*(E,E)*-3,7,11-trimethyl-1,3,6,10-dodecatetraene	*(E,E)*-alpha farnesene	502-61-4	C15H24	80-90	93, 107	133, 204	0	1	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
98	*(Z,E)*-3,7,11-trimethyl-1,3,6,10-dodecatetraene	*(Z,E)*-alpha farnesene	26560-14-5	C15H24	91	93	119, 133	0	1	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	*(Z,Z,Z,Z)*-14-isopropyl-3,7,11-trimethyl-1,3,6,10-cyclotetradecatetraene	cembrene	1898-13-1	C20H32	74-78	41, 105	272	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
100	1-methyl-4-[*(2Z)*-6-methylhepta-2,5-dien-2-yl]cyclohexene	*cis* alpha bisabolene	29837-07-8	C15H24	79-99	93	204	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	*(1S,2S,4R)*-1-ethenyl-1-methyl-2,4-bis(1-methylethenyl)-cyclohexane	(-) beta elemene	515-13-9	C15H24	90	67	189	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	7,9-bis(1,1-dimethylethyl)-1-Oxaspiro[4.5]deca-6,9-diene-2,8-dione		82304-66-3	C17H24O3	90	205	261	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	3,3,5-trimethyl-cyclohexanone		873-94-9	C9H16O	86	83	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	2-cyclopenten-1-one		930-30-3	C5H6O	85	82	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	2-(2-methyl-2-propen-1-yl)-cycloheptanone		65737-49-7	C11H18O	76	43	111	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	4,13,19,28-tetrone-oxacyclotriacontane		56613-38-8	C29H50O5	69-80	55, 83	223, 343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	1
107	3-methyl-3-buten-2-one	methyl isopropenyl ketone	814-78-8	C5H8O	77	41	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	2-heptanone		110-43-0	C7H14O	86-90	43	114	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	6,10,14-trimethyl-2-pentadecanone		502-69-2	C18H36O	78-82	43	137, 250	0	0	0	0	0	0	0	0	0	0	1	2	1	3	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	6-methyl-5-hepten-2-one	sulcatone	110-93-0	C8H14O	86-87	43	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0
111	4,8-dimethyl-3,8-nonadien-2-one		________	C11H18O	81	69	151	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

112	*(E,Z)*-6,10-dimethyl-3,5,9-undecatrien-2-one	*(E,Z)*-pseudoionone	13927-47-4	$C_{13}H_{20}O$	87	81	192	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	1-heptanoyl-3-methylene-2-pentylcyclopropane		959247-66-6	$C_{16}H_{28}O$	70-78	156, 166	236	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	0	3
114	3-decen-2-one		10519-33-2	$C_{10}H_{18}O$	75-76	55	139, 154	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
115	N-methyl-9-aza-tricyclododec-2,4,6,11-tetraene-10-one		13131-19-6	$C_{12}H_{11}NO$	85	128	134	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	1-(4-hydroxy-3-methoxyphenyl)ethanone	acetovanillone	498-02-2	$C_9H_{10}O_3$	92-95	151	166	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	diphenylmethanone	benzophenone	119-61-9	$C_{13}H_{10}O$	92	105	182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	3,4-dimethoxy-acetophenone		1131-62-0	$C_{10}H_{12}O_3$	92	165	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
119	6,10-dimethyl-*(5E)*-5,9-undecadien-2-one	*(E)*-geranyl acetone	3796-70-1	$C_{13}H_{22}O$	76-84	43	145, 177	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0
120	4,6,6,-trimethylbicyclo[3.1.1]hept-3-en-2-one	verbenone	1196-01-6	$C_{10}H_{14}O$	83-88	91	150	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	*(1S)*-1,7,7-trimethylbicyclo[2.2.1]heptan-2-one	laevo camphor	464-48-2	$C_{10}H_{16}O$	83	95	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	*(Z)*-3-methylbutylaldoxime		5780-40-5	$C_5H_{11}NO$	87-88	59	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
123	4-(1,1-dimethylethyl)-1,2-BenzeneAlcohol, diol	4-tertbutylcatechol	98-29-3	$C_{10}H_{14}O_2$	93-94	151	166	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
124	2,4-bis(1,1-dimethylethyl)phenol	2,4-tertbutylphenol	96-76-4	$C_{14}H_{22}O$	73	191	206	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	*(3S,4aR,6aS,10aS,10bR)*-3,4a,7,7,10a-pentamethyl- 3-ethenyldodecahydro-1H-naphtho[2,1-b]pyran		1227-93-6	$C_{20}H_{34}O$	81	257	275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0