

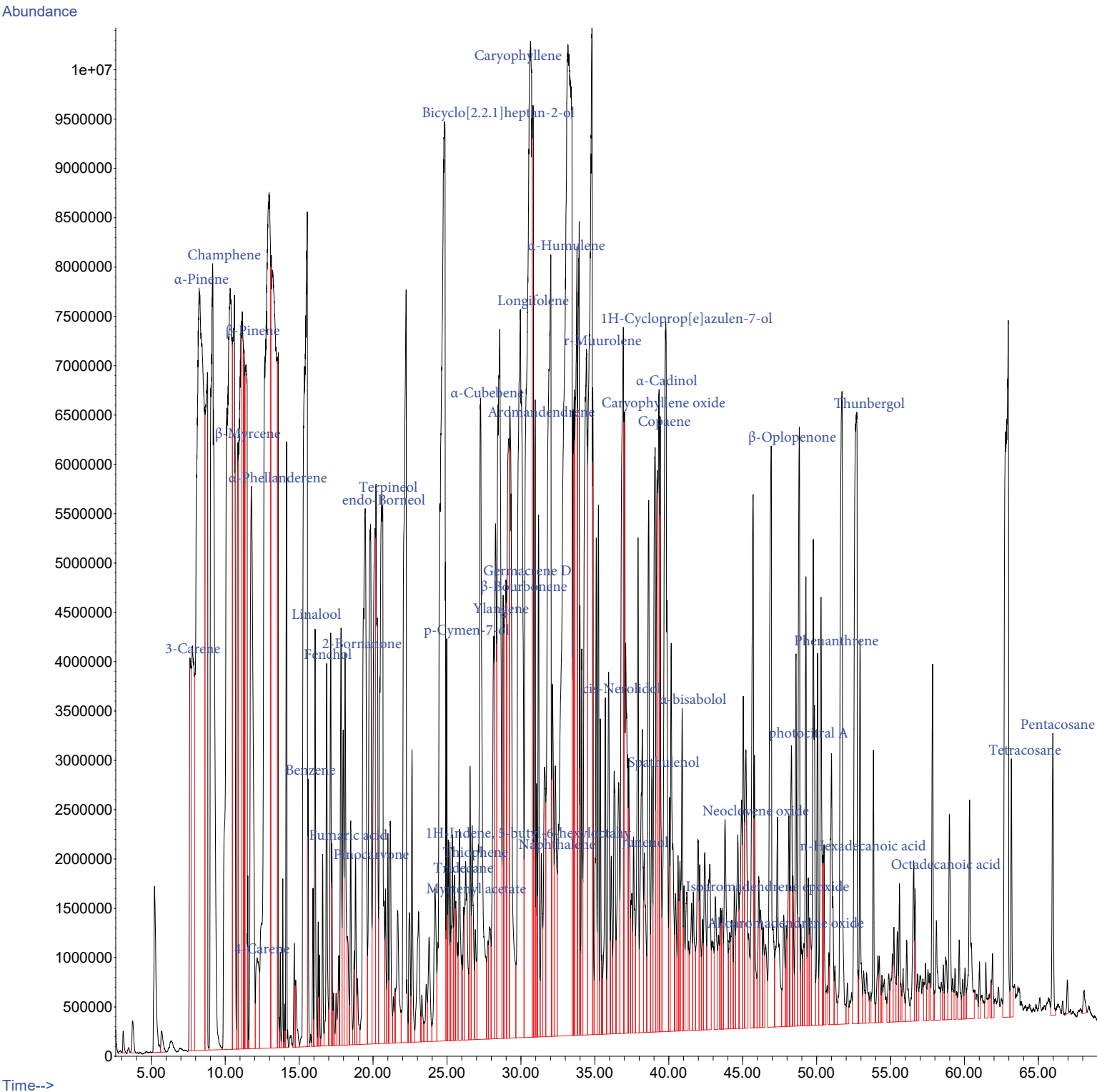
95	4-Fluorobenzoic acid	-	-	-	-	-	0.24		-	-	-	-	-	-	-	-	-
97	3-Fluorobenzoic acid	-	-	-	-	-	-	0.17	-	-	-	-	-	-	-	-	-
98	2,6-Octadienal	-	-	-	0.52	-	-	-	-	-	-	-	-	-	-	-	-
99	1H-Benzocycloheptene	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-
100	1H-Cycloprop[elazulen-7-ol	-	-	-	-	-	1.28			0.51	-	-	-	-	-	-	-
101	Phenanthrene	-	-	-	-	-	0.12	-	-	-	-	-	-	-	-	-	-
102	Cyclododecene	-	-	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-
103	1,3-Cyclododecadiene	-	-	-	-	0.65	0.6	-	-	-	-	-	-	-	-	-	-
104	Tridecane	0.19	-	-	-	0.14	-	-	-	-	-	-	-	-	-	-	-
105	Phenanthrene	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106	3-Tetradecen-5-yne	-	-	-	-	0.35	-	-	-	-	-	-	-	-	-	-	-
108	3-Tetradecen-5-yne	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-
109	n-Hexadecanoic acid	0.23	0.27	-	-	-	-	0.12	-	-	-	-	-	-	-	-	-
110	Octadecanoic acid	0.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
111	1H-Indene, 5-butyl-6-hexyloctahy	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112	Tetracosane	0.18	0.39	7.09	-	0.31	-	-	-	-	-	-	-	-	-	-	-
113	Pentacosane	0.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
114	Hydrazine	-	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115	Silicic acid	-	0.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
116	Carbonic acid	-	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-
117	Acetic acid	0.52	-	-	13.91	-	-	-	5.15	-	-	0.57	-	-	-	-	3.92
Total identified compounds		86.97	93.98	99.56	95.96	90.51	92.93	95.24	91.27	90.34	85.65	82.93	91.21	72.53	72.4	74.7	85.89
Monoterpene Hydrocarbons		23.8	31.34	44.14	38.43	31.51	28.36	28.96	24.43	35.47	25.47	36.02	26.47	19.05	17.49	14.68	29.79
Oxygennted Monoterpenes		4.79	3.98	1.36	4.65	3.58	3.03	1.79	8.44	4.3	6.62	5.76	2.14	10.18	13.75	11.19	2.3
Sesquiterpene Hydrocarbons		21.31	24.74	22.14	7.61	23.75	30.82	39.15	12.43	20.87	12.29	6.25	31.69	9.85	8.94	7.87	22.26
Oxygenated Sesquiterpenes		6.89	1.47	0.41	11.76	4.1	1.24	2.4	10.07	2.43	8.04	9.88	2.52	0.5	0.24	1.68	2.7
Oxygenated Diterpene		1.79	0.91	-	-	0.28	0.44	1.04	2.5	-	-	-	-	0.1	-	-	-
Aldehyde		-	0.19	-	-	0.31	0.76	-	-	-	-	-	-	-	-	-	-
Ketone		-	-	-	-	-	0.2	0.47	-	0.43	1.35	-	-	0.4	-	-	-
Phenol		1.53	1.89	1.13	0.13	1.28	1.38	1.42	2.98	3.23	3.32	2.72	0.27	0.65	0.46	1.02	1.71
Alcohol		9.31	4.15	18.75	4.93	2.03	4.45	1.8	10.83	3.67	9.71	3.89	11.33	18.88	18.23	23.06	3.87
Ester		5.6	6.74	-	-	5.59	3.7	4.99	-	9.26	10.43	9.24	-	3.18	1.22	1.23	-
Hydrocarbons		9.55	17.27	4.54	13.07	16.7	16.35	12.34	14.68	10.03	8.02	8.6	16.86	8.02	10.74	12.83	19.51

-: Not dected.

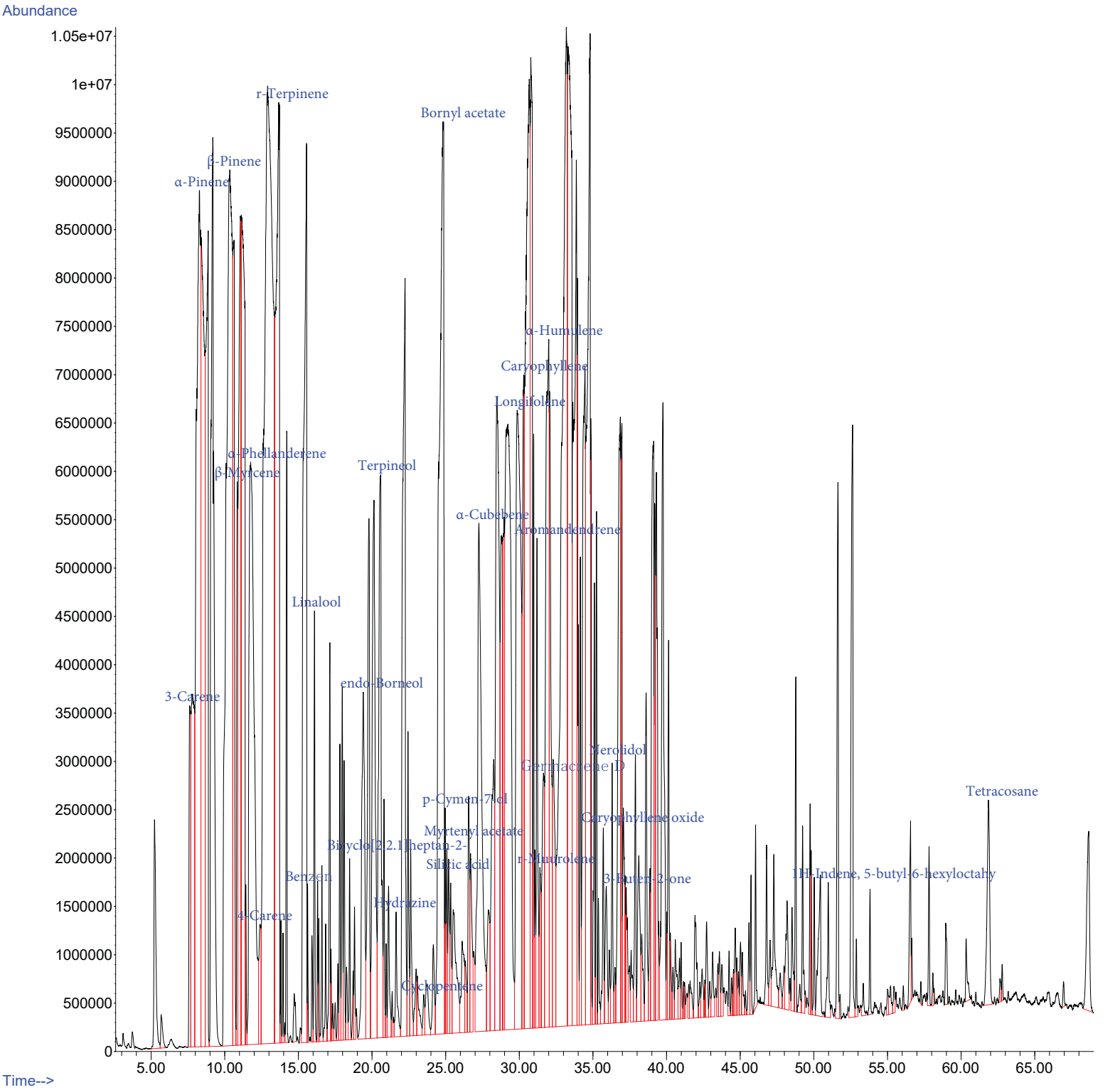
Terpenes are indicated in yellow in compounds column (numbers 1 to 71).

Figure S1. Chromatograms of essential oils extracted from needles of *P. densiflora*, *P. koraiensis*, *A. holophylla*, and *J. chinensis* by seasons (spring, summer, and autumn, and winter)

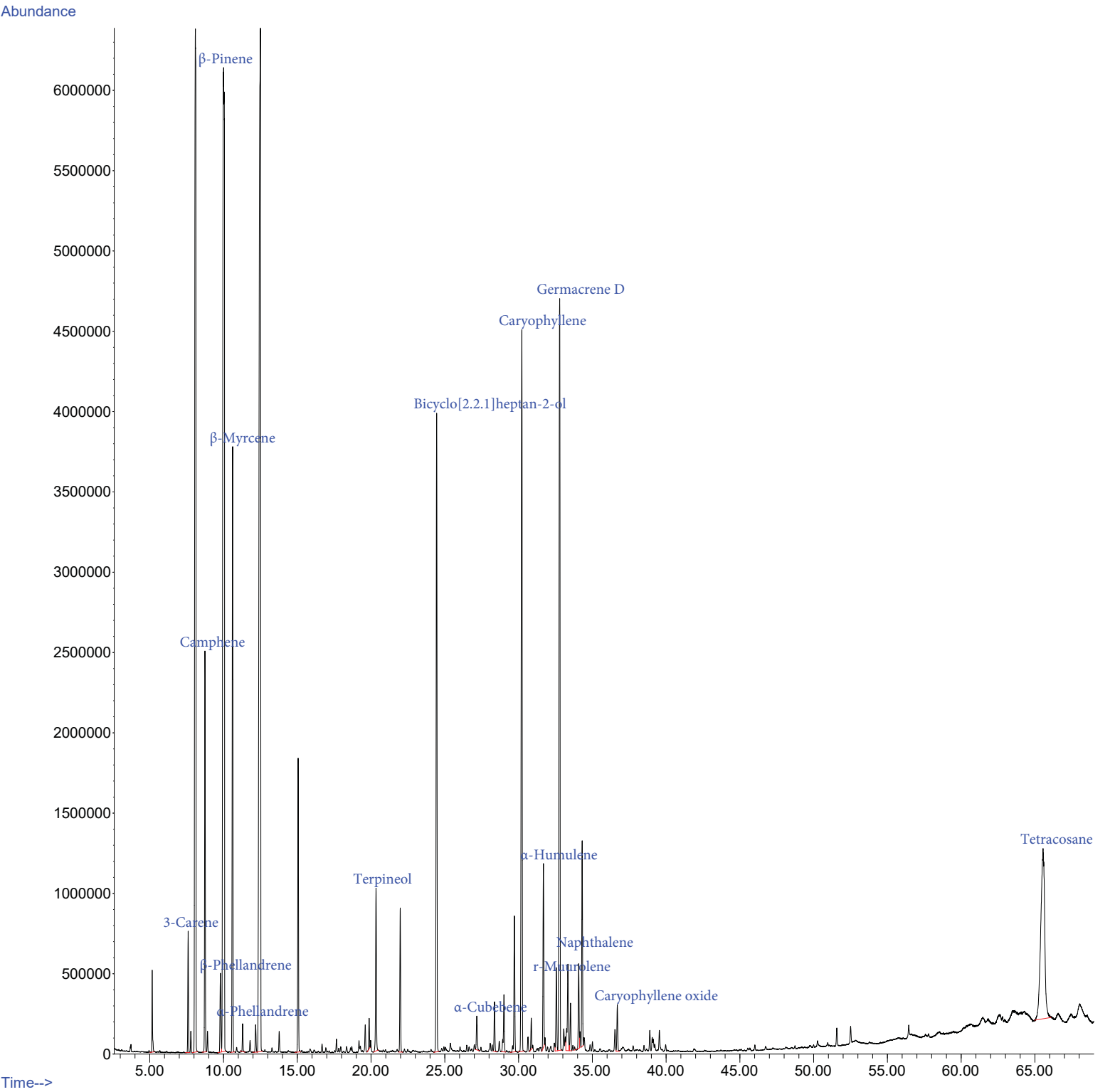
1. *Pinus densiflora* / Spring



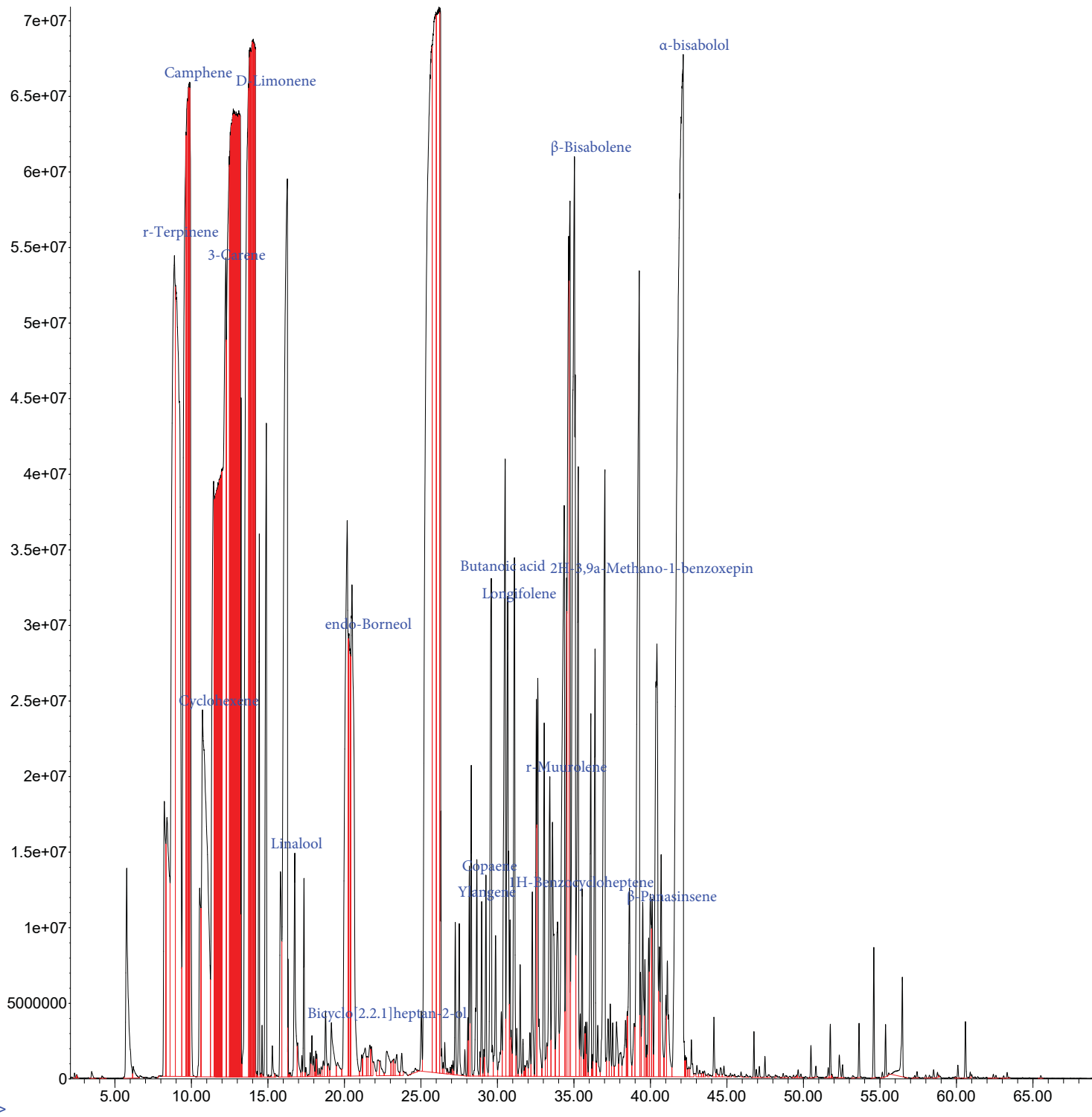
2. *Pinus densiflora* / Summer



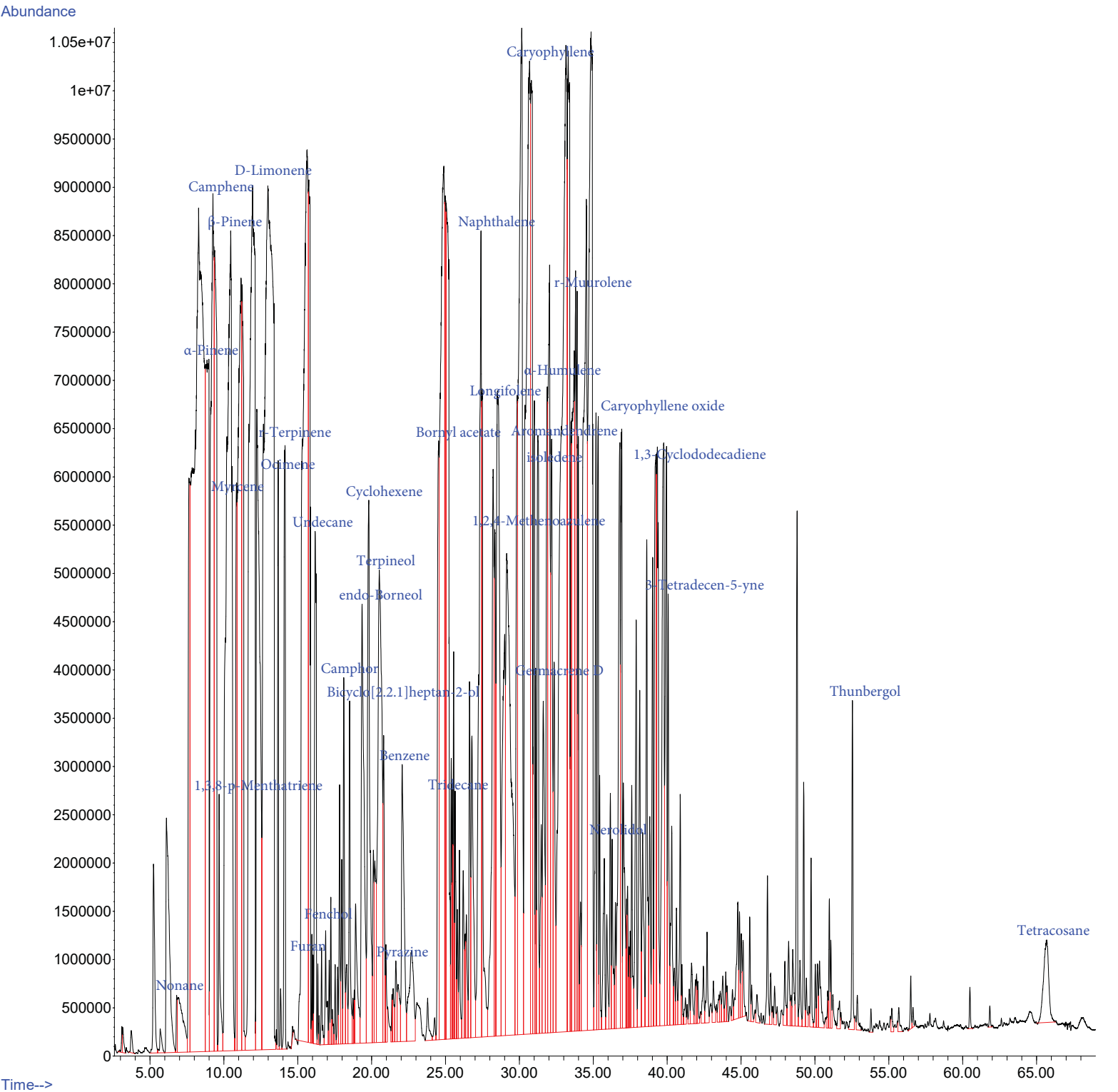
3. *Pinus densiflora* / Autumn



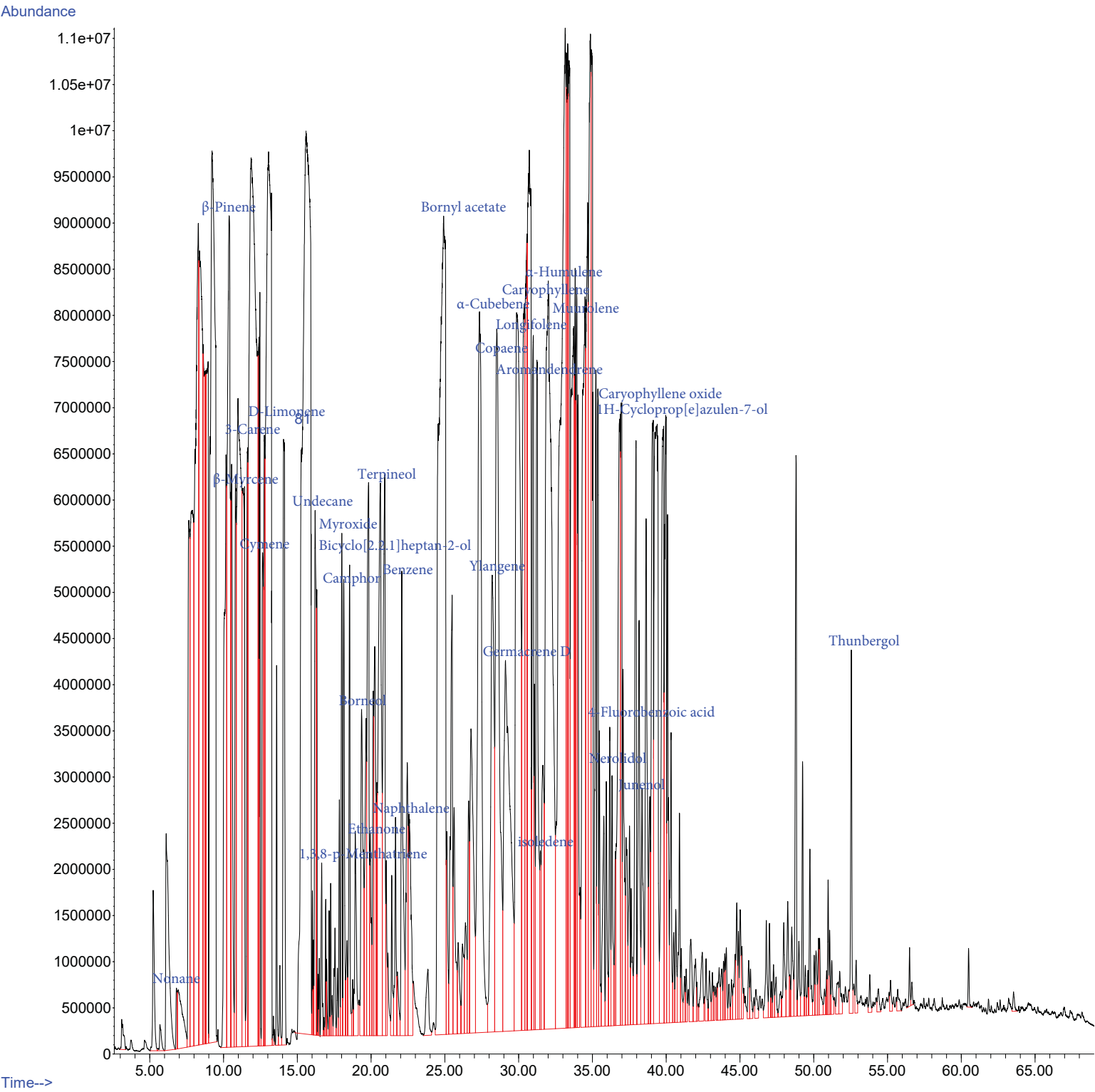
Abundance



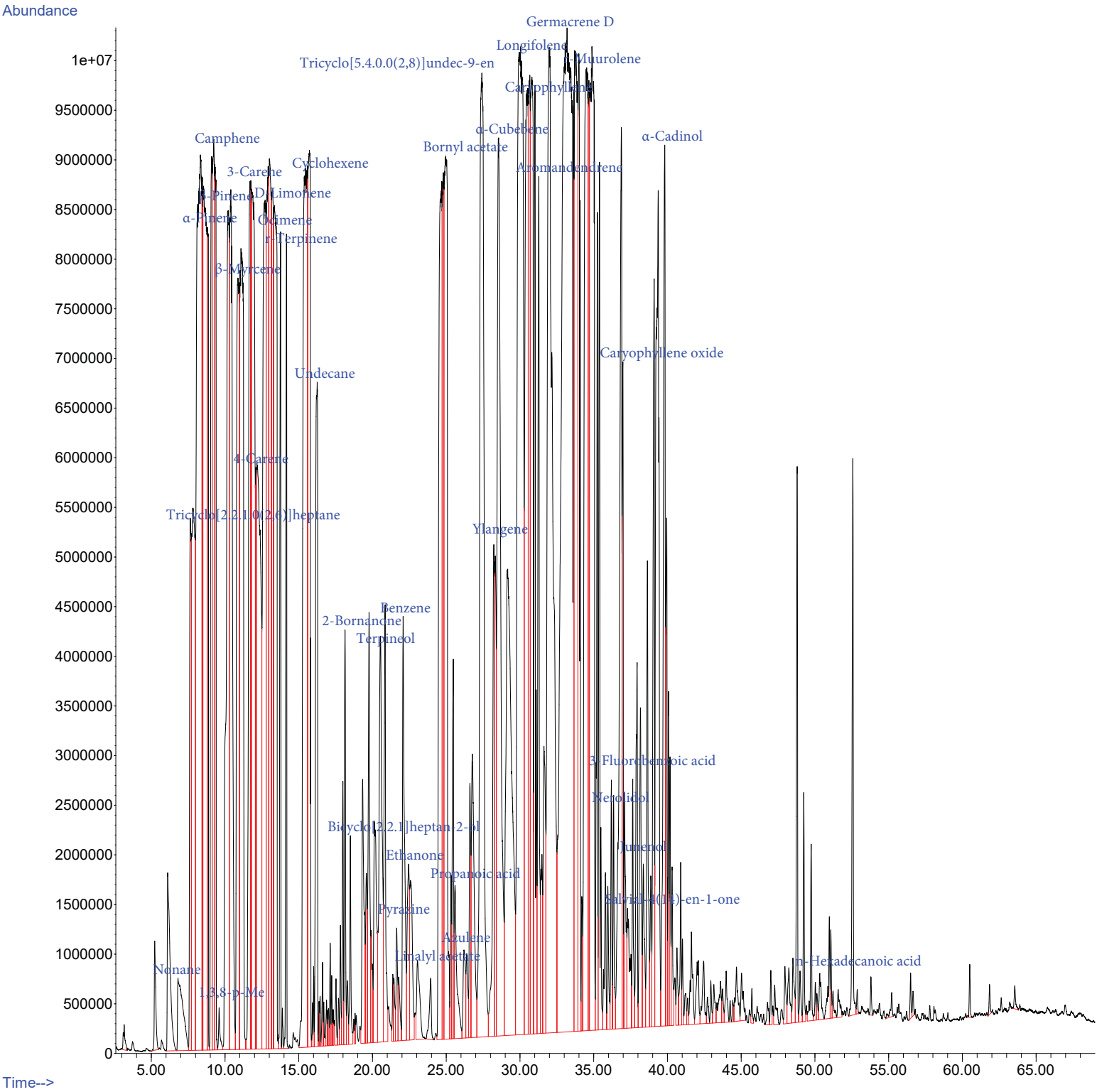
5. Pinus koraiensis / Spring



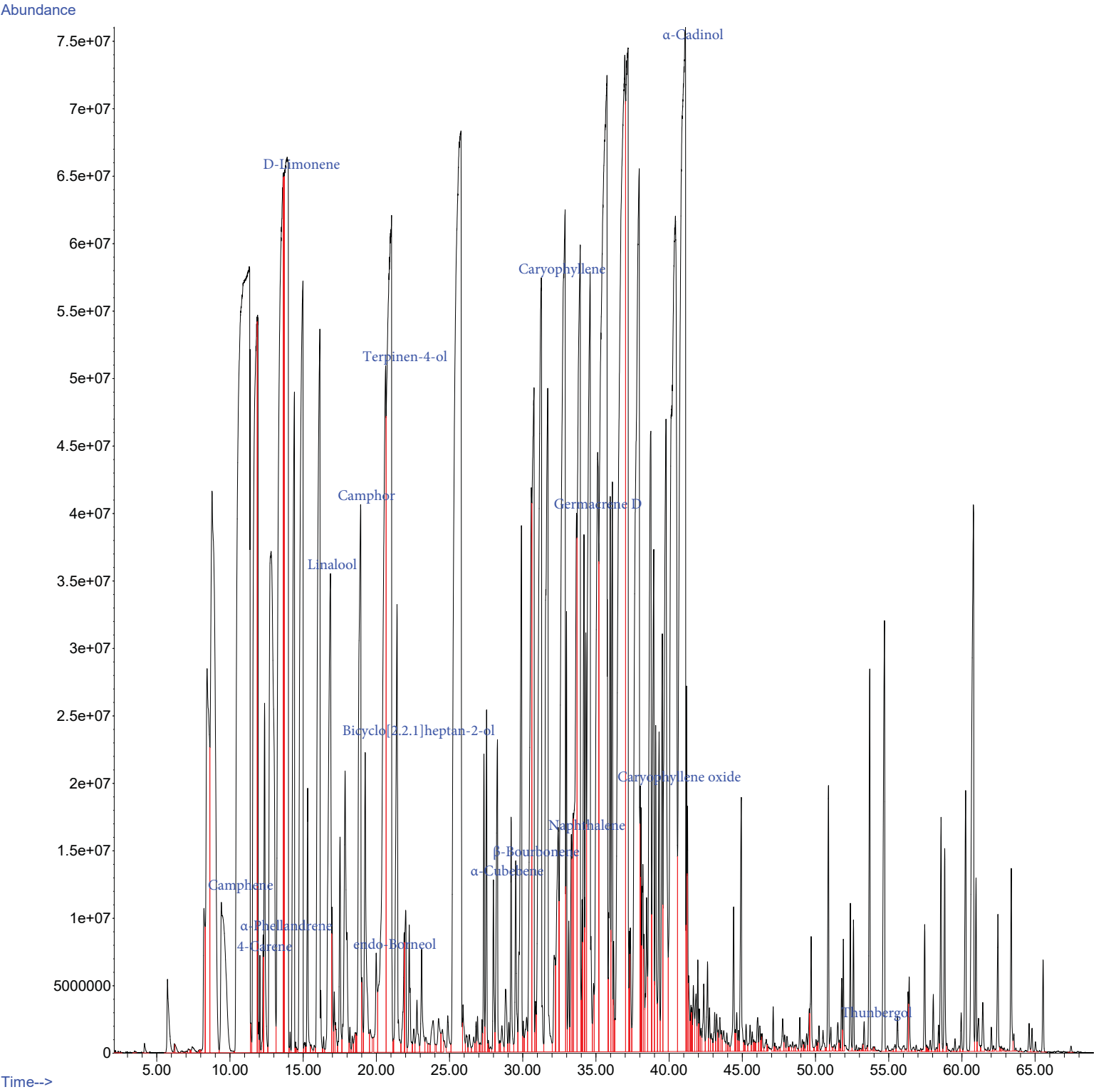
6. *Pinus koraiensis* / Summer



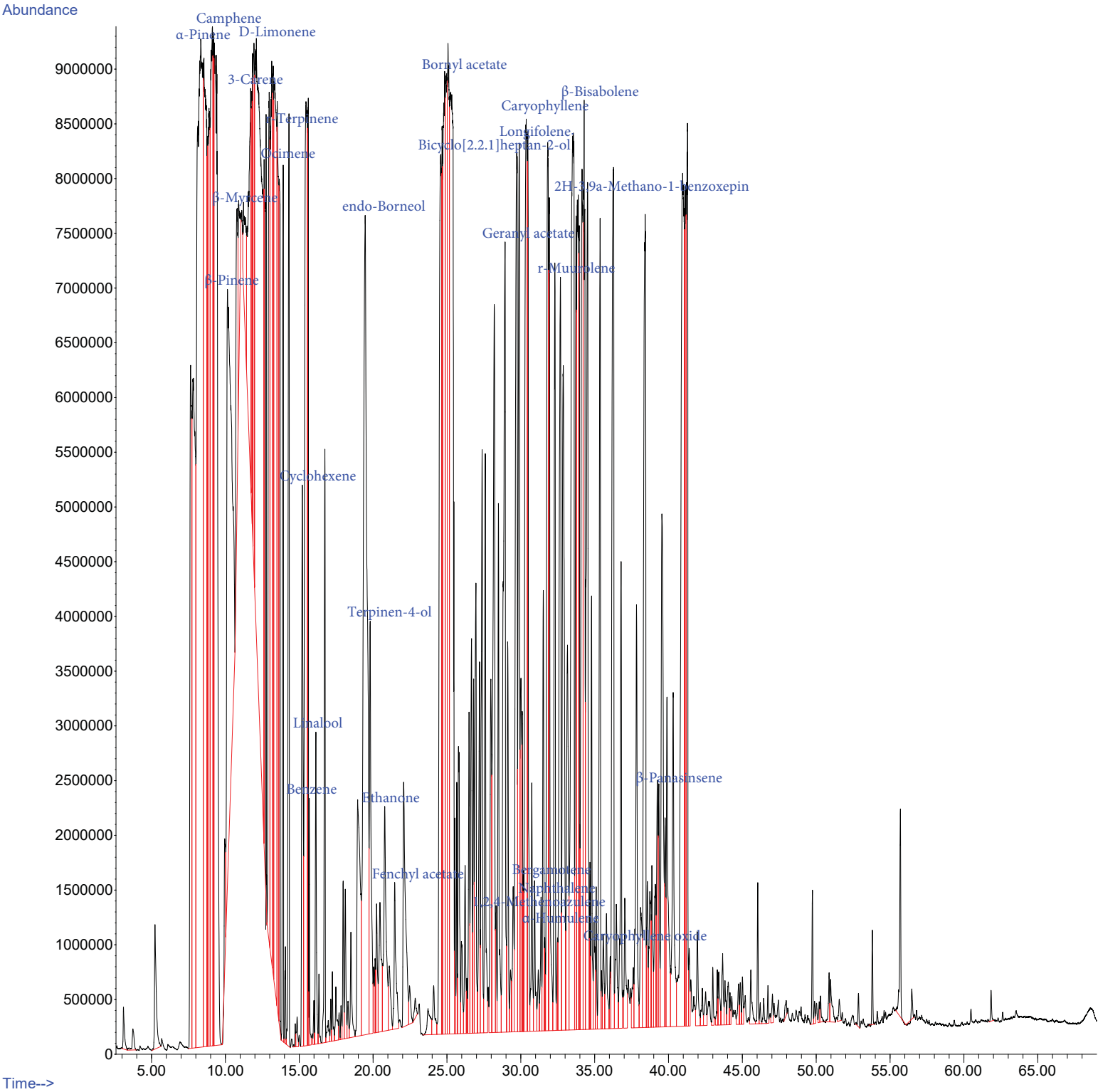
7. Pinus koraiensis / Autumn



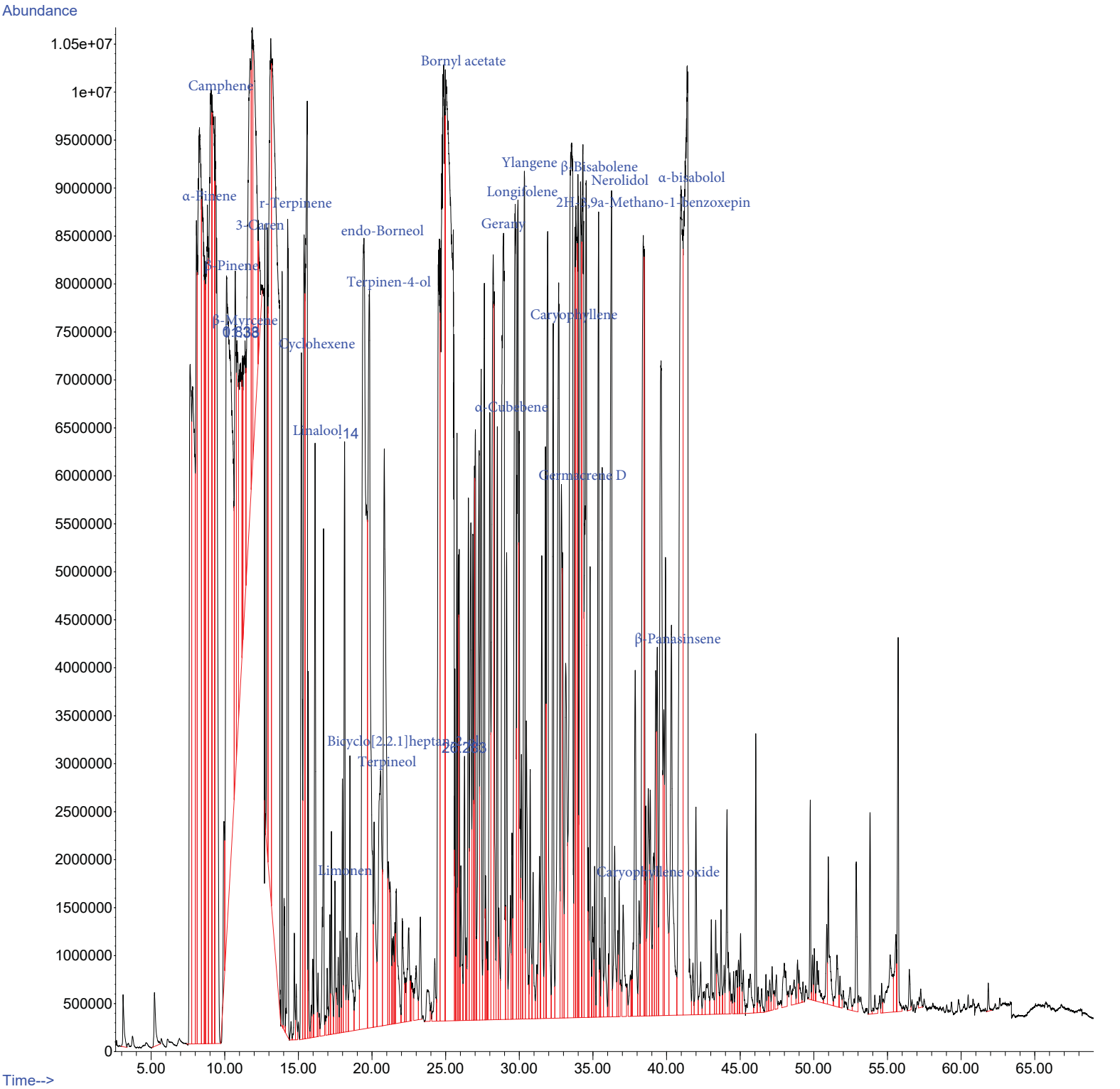
8. *Pinus koraiensis* / Winter



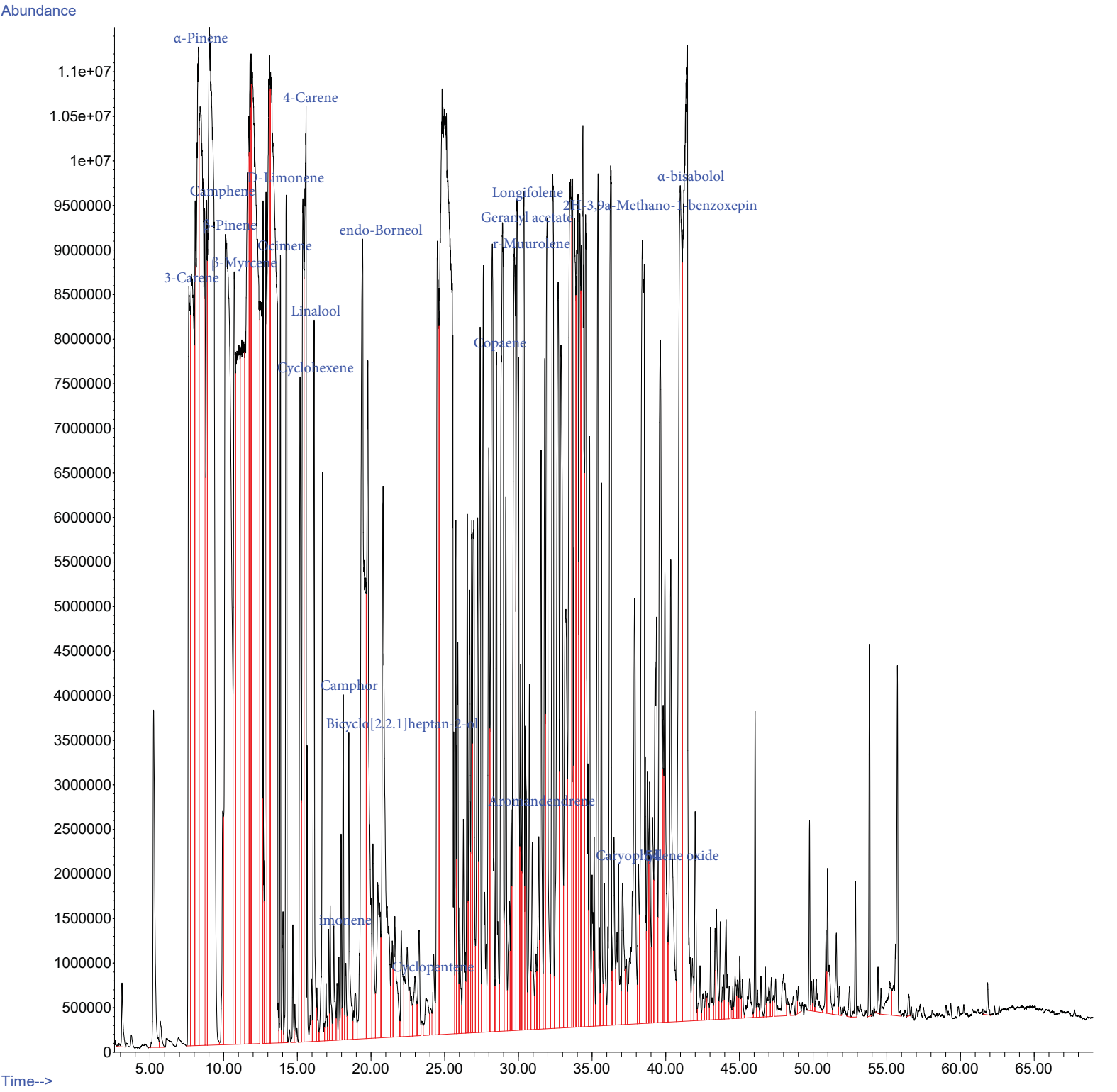
9. *Abies holophylla* / Spring



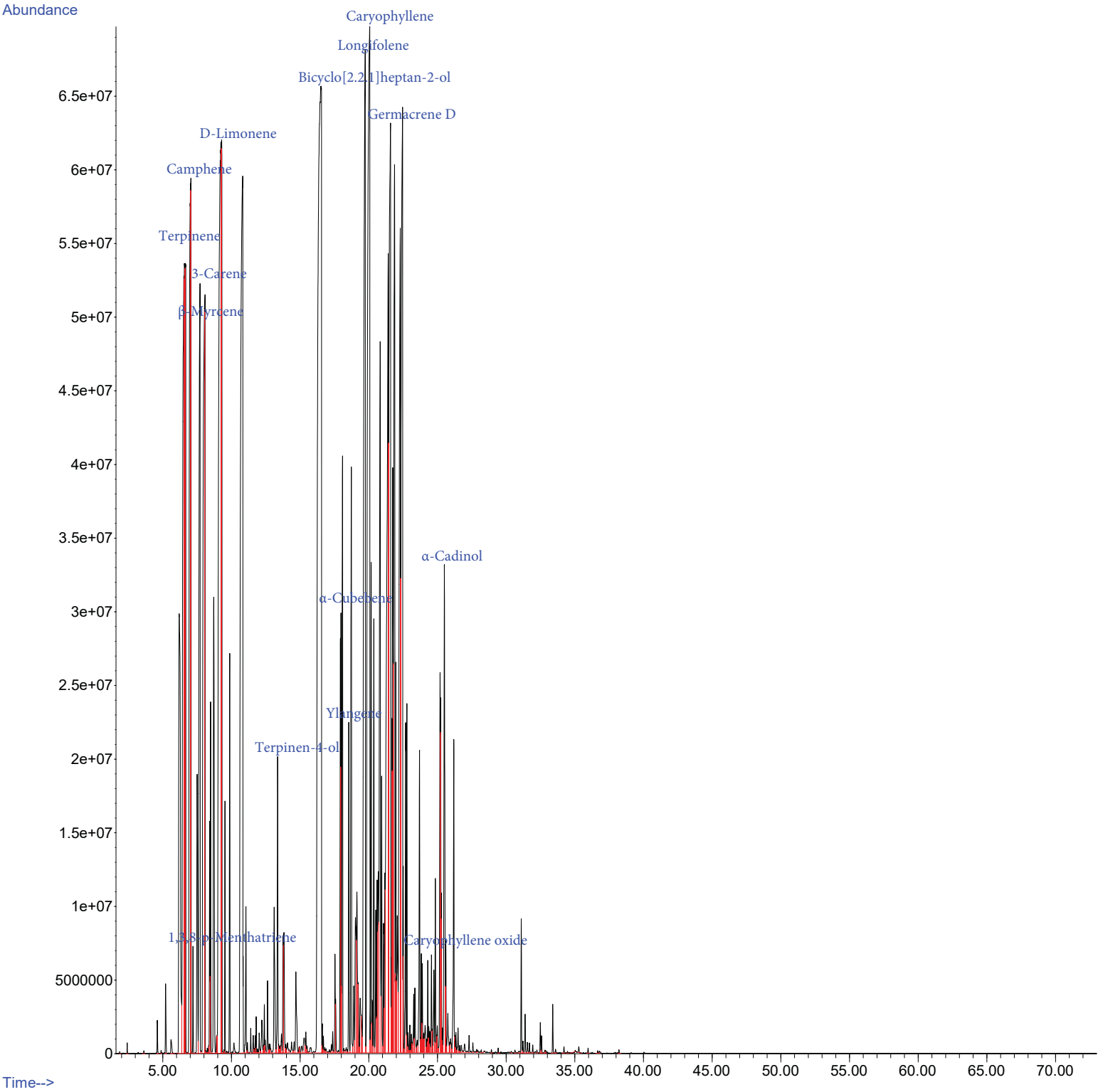
10. *Abies holophylla* / Summer



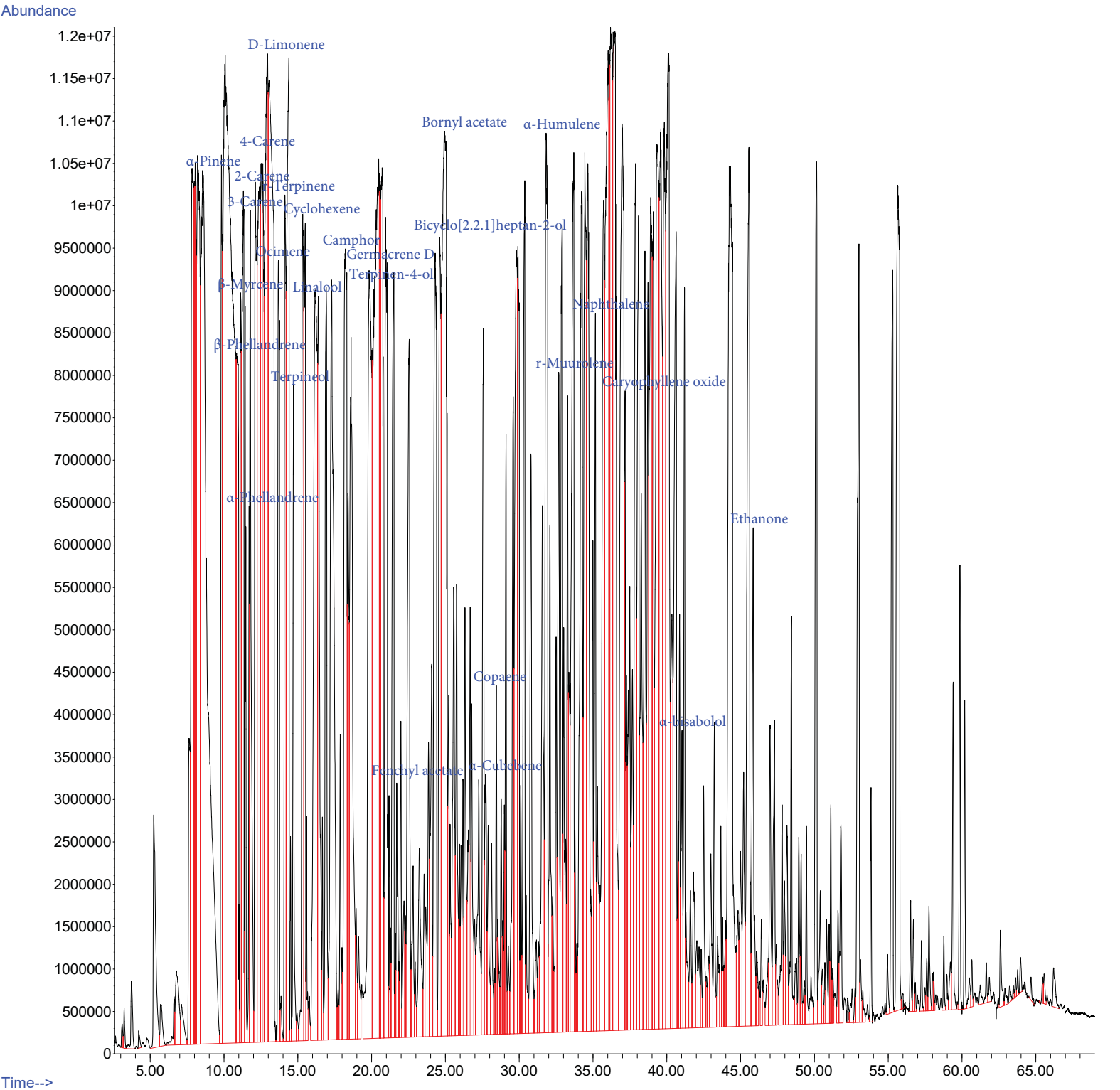
11. *Abies holophylla* / Autumn



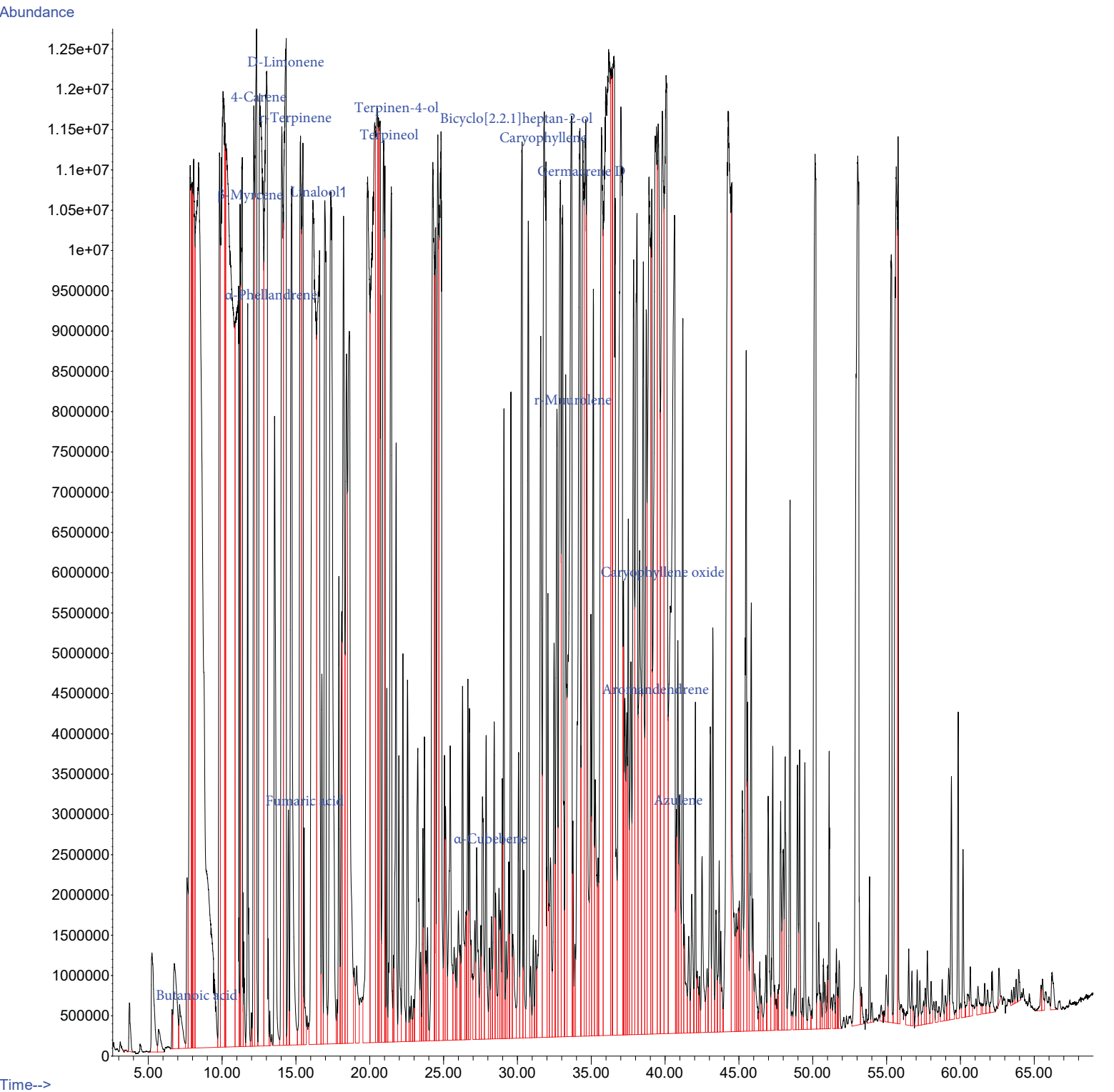
12. *Abies holophylla* / Winter



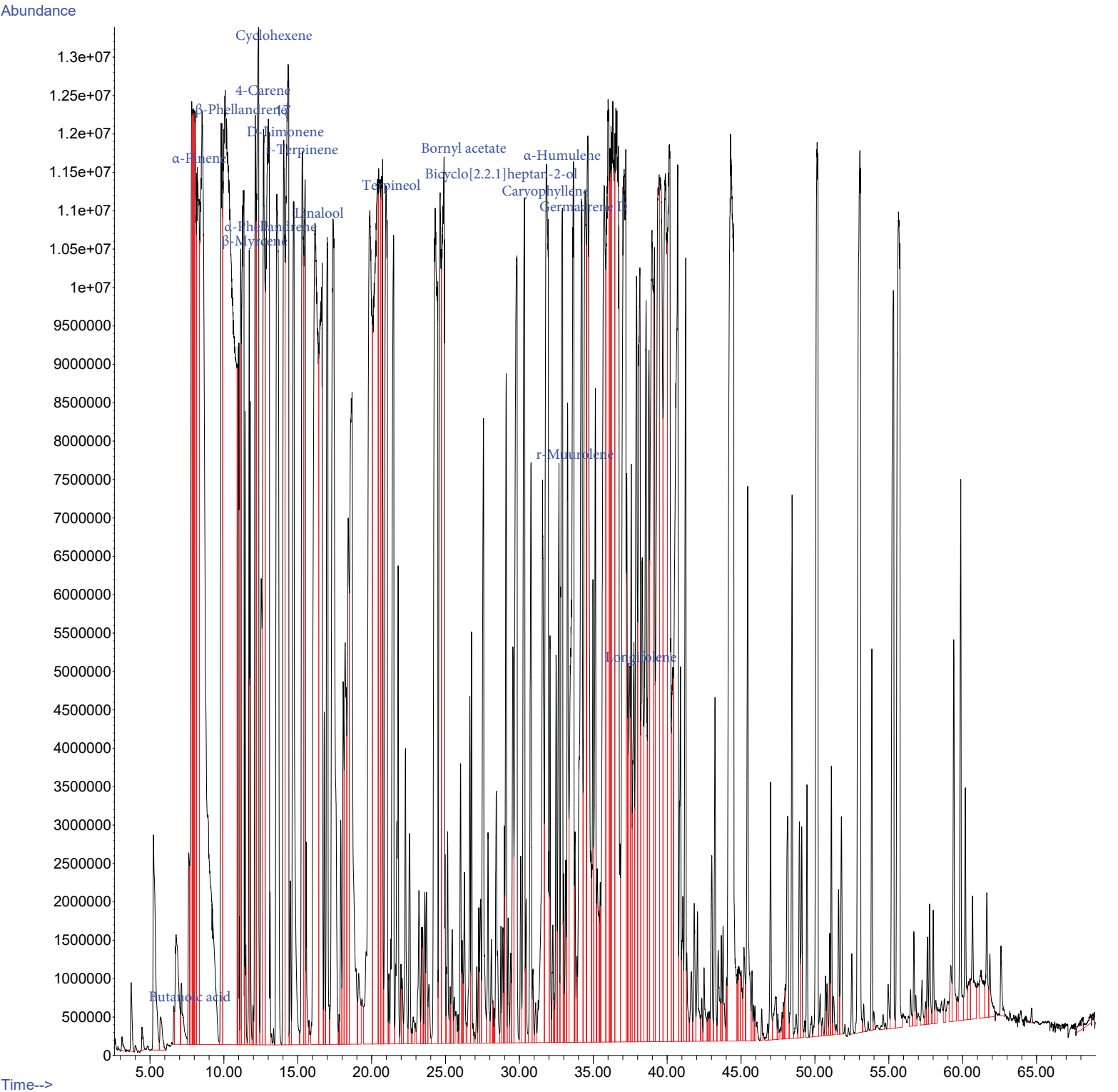
13. *Juniperus chinensis* / Spring



14. *Juniperus chinensis* / Summer



15. *Juniperus chinensis* / Autumn



16. *Juniperus chinensis* / Winter

