

## **Natural revegetation in the vicinity of the former lead smelter in Žerjav (Slovenia)**

TATJANA VIDIC\*, NEJC JOGAN, BARBARA VILHAR, DAMJANA DROBNE

University of Ljubljana, Biotechnical Faculty, Department of Biology, Večna pot 111, SI-1001  
Ljubljana, Slovenia

*\*Corresponding author:* Tatjana Vidic  
Department of Biology,  
Biotechnical Faculty, University of Ljubljana,  
Večna pot 111, SI-1001, Slovenia, Europe

Tel.: +386 1 423 33 88  
Fax: +386 1 257 33 90  
Email: tatjana.vidic@bf.uni-lj.si

### **Supporting information**

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**TABLE 2. Species composition and abundance on the central ridge in 1981 and 2001**

Species	Plot	2001									1981			
		0	2	3	4	5	6	7	8	R	5	6	7	8
<i>Biscutella laevigata</i> L.		1	1	+	+	+	+	1	1	+		+	1	
<i>Erysimum sylvestre</i> (Crantz) Scop.	1	1	1	+	1	1	1	1	1		2	2	2	+
<i>Minuartia gerardii</i> (Willd.) Hayek <sup>a</sup>	3	1	2	1	1	2	3	1						+
<i>Thlaspi praecox</i> Wulf.	1	+	1	1	1	2	2	1						+
<i>Calamagrostis varia</i> (Schrad.) Host	3	2	3	1	+	1	2		1					2
<i>Erica carnea</i> L.		+	2	+	1	1	1	2	4		+		+	2
<i>Sesleria varia</i> (Jacq.) Wettst. [s.str.] <sup>b</sup>		1	3	4	4	4	3	3	1		2	3	2	2
<i>Solidago virgaurea</i> L. [s.l.]	1	+	+		+	+	1	+	1		1	2		1
<i>Galium austriacum</i> Jacq.		+	1		+	+	+	+	+		1			+
<i>Koeleria pyramidata</i> (Lam.) P. Beauv.	1	3	+	+	1	+					1			1
<i>Silene alpestris</i> Jacq.		1	1	1	+	+		1	1					
<i>Leontodon incanus</i> (L.) Schrank [s.l.]		1	+			+	+	1	1					+
<i>Pinus sylvestris</i> L.	+	1	1			1		1	1					
<i>Salix caprea</i> L.	+	1	2		+			+						+
<i>Silene nutans</i> L. [s.l.]		+			+	1	1	+						
<i>Acinos alpinus</i> (L.) Moench					+	1	2	+			+	+	2	
<i>Betonica alopecuroides</i> L.					1	+	+	+	1		+	1		
<i>Betula pendula</i> Roth		1	+			1		2						2
<i>Laserpitium peucedanoides</i> L.					+	+	1	+	+		1			+
<i>Salix glabra</i> Scop.	1	1	+					2						2
<i>Scabiosa columbaria</i> L.		+			+		+	+	1					
<i>Campanula cespitosa</i> Scop.		1	+			1					1			
<i>Campanula persicifolia</i> L. [s.l.]	+	1	+											+
<i>Carlina acaulis</i> L. [s.l.]	+	+						+						
<i>Cyclamen purpurascens</i> Mill.					+			1	+	1				
<i>Hieracium murorum</i> L.	1		+					+		+				
<i>Lotus corniculatus</i> L.	+							1	+	+				+
<i>Picea abies</i> (L.) H. Karst.	1		+		1					1				
<i>Plantago media</i> L.	+	1						1			+		+	
<i>Populus tremula</i> L.				+				2	+				+	+
<i>Primula vulgaris</i> Huds.					+		+	+	1		+			
<i>Verbascum austriacum</i> Schott ex Roem. & Schult.	+					1	+							
<i>Botrychium lunaria</i> L. (Sw.)	1	+												
<i>Cirsium erisithales</i> (Jacq.) Scop.	+					+			+		+	+	+	
<i>Cornus sanguinea</i> L. [s.l.]					+	+								+
<i>Digitalis grandiflora</i> Mill.						+	+					+	+	
<i>Epipactis helleborine</i> agg. (L.) Crantz	+						+							
<i>Euphorbia cyparissias</i> L.							1	1	1	1				+
<i>Gentianella ciliata</i> (L.) Borkh.					+		+							
<i>Helianthemum ovatum</i> (Viv.) Dunal							1	+						+
<i>Hippocrepis comosa</i> L.							1	1					1	
<i>Phyteuma orbiculare</i> L. [s.str.]						+	+	1						+

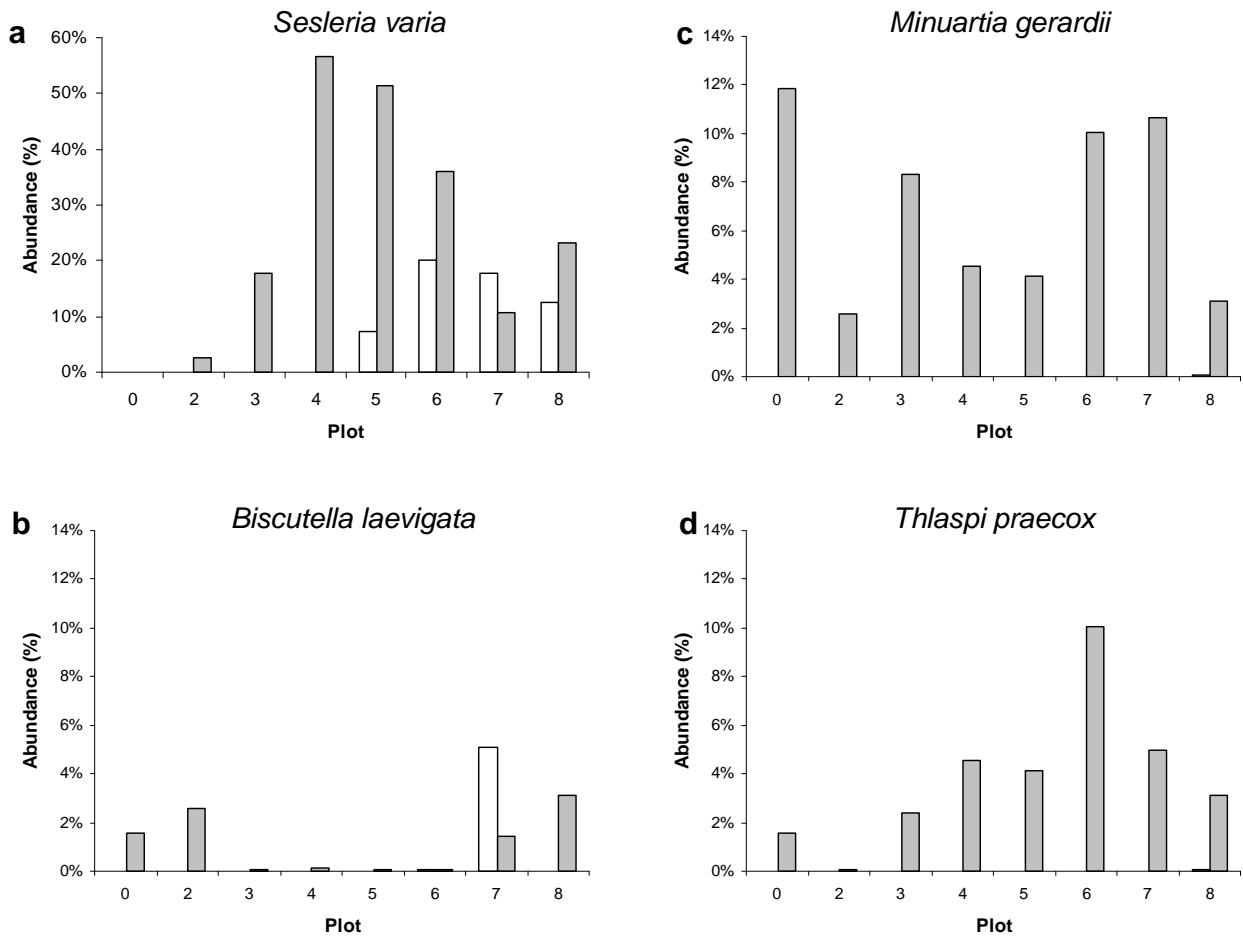
<i>Polygala amara</i> ssp. <i>brachiptera</i> (Chodat) Hayek														
<i>Silene pusilla</i> Waldst & Kit. [s.l.]	1	1												
<i>Teucrium chamaedrys</i> L.														+
<i>Thymus pulegooides</i> L.								2	+	+				
<i>Acer pseudoplatanus</i> L.													+	+
<i>Aster bellidiastrum</i> (L.) Scop.									+					
<i>Buphthalmum salicifolium</i> L.														+
<i>Calamagrostis epigeios</i> (L.) Roth										1				
<i>Campanula thyrsoides</i> L. [s.l.]										+				
<i>Chamaecytisus hirsutus</i> (L.) Link										1				
<i>Daucus carota</i> L.			+											
<i>Epipactis atrorubens</i> (Bernh.) Besser											+			
<i>Eupatorium cannabinum</i> L.									+		+			
<i>Euphrasia salisburgensis</i> Funck ex Hoppe				+										
<i>Fagus sylvatica</i> L.									+					2
<i>Galium verum</i> L. [s.str.]									+					
<i>Galium x pomeranicum</i> Retz.									+					
<i>Genista pilosa</i> L.									1					
<i>Helleborus niger</i> L.										+	1		+	+
<i>Juniperus communis</i> L. [s.str.]									+					+
<i>Knautia drymeia</i> Heuff. [s.l.]									+		1			
<i>Lathyrus pratensis</i> L.										+	+			
<i>Leucanthemum heterophyllum</i> (Willd.) DC.	1													
<i>Luzula sylvatica</i> (Huds.) Gaudin [s.l.]			+											
<i>Orobanche alba</i> Steph. ex Willd.									1					
<i>Petrorhagia saxifraga</i> (L.) Link									+					
<i>Poa angustifolia</i> L.									3					
<i>Rubus saxatilis</i> L.										+	+			+
<i>Silene dioica</i> (L.) Claiwr									+				+	
<i>Sorbus aria</i> (L.) Crantz [s.str.]									+	+				
<i>Tofieldia calyculata</i> (L.) Wahlenb.			+								1			
<i>Verbascum thapsus</i> L.		+												
<i>Veronica officinalis</i> L.									+					
<i>Vincetoxicum hirundinaria</i> Medik. [s.l.]									+				+	+
<i>Ajuga genevensis</i> L.												+		
<i>Centaurea jacea</i> L.														+
<i>Centaurea macroptilon</i> Borbás														+
<i>Crataegus monogyna</i> [s.l.] Jacq. s.l.										+				+
<i>Dianthus sylvestris</i> Wulf. [s.str.]												+		
<i>Gentiana cruciata</i> L.														+
<i>Poa trivialis</i> L. [s.str.]													+	
<i>Pteridium aquilinum</i> (L.) Kuhn										1				+
<i>Pyrus communis</i> L.														+
<i>Ranunculus nemorosus</i> DC.										+				+
<i>Scabiosa lucida</i> Vill. [s.l.]											+	+	+	
<i>Vicia sepium</i> L.														+
<b>Number of species</b>	<b>18</b>	<b>24</b>	<b>26</b>	<b>14</b>	<b>20</b>	<b>25</b>	<b>44</b>	<b>42</b>	<b>106<sup>c</sup></b>	<b>14</b>	<b>15</b>	<b>21</b>	<b>31</b>	

For position of plots 0–8, see Figure 1. Symbols in the table represent the Braun-Blanquet abundance values: + (< 1%), 1 (1–10%), 2 (10–25%), 3 (25%–50%), 4 (50%–75%; 19). Species are separated into groups by the number of plots on the central ridge at which they were recorded in 2001 (number of plots in decreasing order), and are ordered alphabetically within each group. Species were determined according to Martinčič et al. (1999). Data for 1981 were obtained from Druškovič (4). <sup>a</sup> Synonym: *Minurtia verna* (L.) Hiern. p.p., <sup>b</sup> Synonyms: *Sesleria albicans* Kit. ex Schult. [s.str.], *Sesleria caerulea* ssp. *calcaria* (Opiz) Čelak. ex Hegi, <sup>c</sup> Species that were recorded on plot R but not on plots 0 – 8 are not shown.

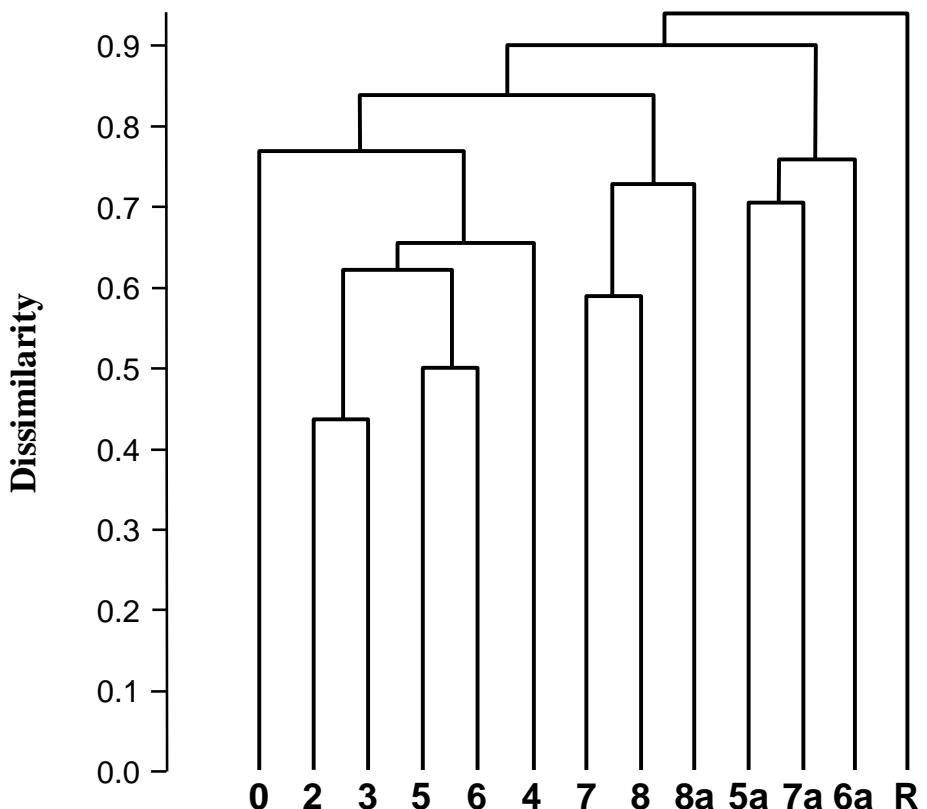
**TABLE 3. Correlation between concentration of metals in the soil and biodiversity parameters for plots 2–8 in 2001**

Metal / Index		Species richness	Family richness	Shannon's diversity index	Species evenness
<b>Total</b>	<b>Pb</b>	-0.714 <i>0.055</i>	-0.727 <i>0.055</i>	-0.679 <i>0.074</i>	-0.679 <i>0.074</i>
		ns	ns	ns	ns
	<b>Cd</b>	-0.571 <i>0.150</i>	-0.582 <i>0.150</i>	-0.714 <i>0.055</i>	-0.714 <i>0.055</i>
<b>Extractable with ammonium acetate</b>	<b>Pb</b>	-0.536 <i>0.181</i>	-0.491 <i>0.217</i>	-0.786 <i>0.025</i>	-0.857 <i>0.006</i>
		ns	ns	*	**
	<b>Cd</b>	-0.536 <i>0.181</i>	-0.473 <i>0.255</i>	-0.857 <i>0.006</i>	-0.857 <i>0.006</i>
<b>Extractable with water</b>	<b>Zn</b>	-0.536 <i>0.181</i>	-0.473 <i>0.255</i>	-0.857 <i>0.006</i>	-0.857 <i>0.006</i>
		ns	ns	**	**
	<b>Pb</b>	-0.393 <i>0.341</i>	-0.346 <i>0.388</i>	-0.607 <i>0.121</i>	-0.786 <i>0.025</i>
		ns	ns	ns	*
	<b>Zn</b>	-0.429 <i>0.297</i>	-0.327 <i>0.438</i>	-0.714 <i>0.055</i>	-0.857 <i>0.006</i>
		ns	ns	ns	**

Spearman's correlation coefficient is shown, with p-values in italic. ns – not significant ( $P > 0.05$ ), \* – significant at  $P < 0.05$ , \*\* –  $P < 0.01$ .



**FIGURE 4.** Abundance of the dominant grass species (a) and metal accumulators (b–d) in 1981 (open bars) and in 2001 (grey bars). The abundance values represent the percentage of ground cover by individual species on the respective plots. Note the different scale for abundance in a and b–d. Data for 1981 are only available for plots 5–6 (4).



**FIGURE 5.** Dendrogram showing similarity in species composition among plots in Dolina smrti. 0–R – species composition at the respective plots in 2001; 5a, 6a, 7a, 8a – species composition at the respective plots in 1981. Data were converted to binary form (1 – species present, 0 – species absent) and analysed with hierarchical cluster analysis (distance optimising method, complete link, Jaccard coefficient of dissimilarity between sites).