

## APPENDIX 1

The distribution of dinoflagellate cysts in the outcrop section located along the Jabłonka Stream in Bystre, Polish Outer Carpathians

Species	Sample																			
	1	3,5	4,5	5,4	5,9	6,5	7	7,5	8	8,5	9	9,5	10,2	11,1	12	12,75	14	15,6	16	18,87
<i>Achomosphaera</i> sp.	x	4			4	1	1		6	1		3		2	x			x		x
<i>Achomosphaera alcornu</i>	x		1			1	1		2			2	2	2	x			x		x
<i>Achomosphaera crassipelis</i>	x	1													x			x		x
* <i>Achomosphaera neptuni</i>	x					1									x			x		x
<i>Achomosphaera</i> cf. <i>sagena</i>	x	2											1		x			x		x
<i>Adnatosphaeridium</i> sp.	x			2	2	8	9		5	19			7		x			x		x
<i>Adnatosphaeridium vittatum</i>	x		2	3	1	9	26	2	41	97	1	17	33	1	x			x		x
<i>Adnatosphaeridium williamsi</i>	x								2						x			x		x
<i>Apectodinium</i> sp.	x	1		6	16	6	4					1	6	4	x			x		x
<i>Apectodinium augustum</i>	x	1		4	8	10						5	10	1	x			x		x
<i>Apectodinium homomorphum</i>	x			3	30	13	11	2			7	87	54	26	x			x		x
<i>Apectodinium hyperacanthum</i>	x			2	5	4	3					7	8	1	x			x		x
<i>Apectodinium longispinosum</i>	x				3	3							3		x			x		x
<i>Apectodinium paniculatum</i>	x												2		x			x		x
<i>Apectodinium parvum</i>	x				15	3						4	3		x			x		x
<i>Apectodinium quinquelatum</i>	x			2	5	4						6	10		x			x		x
<i>Alterbidinium</i> sp.	x											1			x			x		x
<i>Areoligera</i> sp.	x	31	4	2	1	7	13	2	22	8		1	17	1	x			x		x
<i>Areoligera coronata</i>	x	2		1		2	7		6	13		1	7		x	1		x		x
<i>Areoligera</i> cf. <i>crescentis</i>	x						5								x			x		x
<i>Areoligera</i> cf. <i>medusettiformis</i>	x								1						x			x		x
<i>Areoligera senonensis</i>	x	6							2				1	1	x			x	1	x
<i>Areoligera undulata</i>	x					1									x			x		x
<i>Areoligera</i> cf. <i>volata</i>	x								1						x			x		x
<i>Batiacasphaera</i> sp.	x			1		1						1		8	x			x		x
<i>Caligodinium</i> sp.	x	2		2	2						1				x			x		x
<i>Cannosphaeropsis</i> sp.	x	1													x			x		x
<i>Cerbia</i> sp.	x	1													x			x		x
<i>Cerodinium</i> sp.	x				3									1	x			x		x
<i>Cerodinium diebelli</i>	x				1										x			x		x
<i>Cerodinium speciosum</i>	x											4			x			x		x
* <i>Chatangiella</i> sp.	x				1	2									x			x		x
* <i>Chatangiella</i> cf. <i>bondarenkoi</i>	x				1										x			x		x

* <i>Chatangiella cf. vnigrii</i>	x											1			x			x		x			
* <i>Chichaouadinium sp.</i>	x													1	x				x		x		
* <i>Circulodinium sp.</i>	x				1	1									x				x		x		
<i>Cleistopshaeridium sp.</i>	x	19			24	24	61	31	2	18	6		13	35	13	x	1		x		x		
<i>Cleistopshaeridium diversispinosum</i>	x					1	4							2		x				x		x	
<i>Cleistopshaeridium placacanthum</i>	x	4			1	2							2			x					x		x
<i>Cleistopshaeridium polypetellum</i>	x						2						2			x					x		x
<i>Cordosphaeridium sp.</i>	x					5	2						2	6		x					x		x
<i>Cordosphaeridium fibrospinosum</i>	x												3		1	x					x		x
<i>Cordosphaeridium funiculatum</i>	x												2			x					x		x
<i>Coronifera sp.</i>	x									1						x					x		x
<i>Coronifera oceanica</i>	x												1			x					x		x
<i>Corrudinium sp.</i>	x					1										x					x		x
* <i>Ctenidodinium sp.</i>	x												1			x					x		x
* <i>Culversphaera velata</i>	x														1	x					x		x
<i>Cyclonephelium sp.</i>	x						2	3						1	1	x					x		x
<i>Danea sp.</i>	x	1			1		4				4	1				x					x		x
<i>Deflandrea sp.</i>	x					2									4	x					x		x
<i>Deflandrea oebisfeldensis</i>	x					2	1						1			x					x		x
<i>Diphyes sp.</i>	x							1					1			x					x		x
<i>Diphyes colligerum</i>	x												1			x					x		x
<i>Distatodinium sp.</i>	x	2				1										x					x		x
<i>Epelidinium sp.</i>	x												1			x					x		x
<i>Eocladopyxis sp.</i>	x	2					2	2				2	3		1	x					x		x
* <i>Exiguosphaera ? sp.</i>	x							12			3					x					x		x
* <i>Exochosphaeridium sp.</i>	x	1				7	5							2	1	x					x		x
<i>Fibrocysta sp.</i>	x			1	3	1	3				3	1			4	x					x		x
<i>Fibrocysta bipolaris</i>	x				1			3			2			1		x					x		x
<i>Fibrocysta vectensis</i>	x									1		1	1			x					x		x
<i>Florentinia reichartii</i>	x					25		1					2			x					x		x
<i>Glaphyrocysta sp.</i>	x	40	10	8	10	17	24	1	26	21	2	3	33			x	2				x		x
<i>Glaphyrocysta divaricata</i>	x	4	1				34		10	22			1			x					x		x
<i>Glaphyrocysta exuberans</i>	x	8	2			1	3	10		11	18	1	2	15		x					x		x
<i>Glaphyrocysta microfenestrata</i>	x	1				1	1				1			2		x					x		x
<i>Glaphyrocysta ordinata</i>	x	5	2	1	1	3	29	1	29	21	1		4			x					x		x
<i>Glaphyrocysta pastielsii</i>	x				1	1	3			3	5			10		x					x		x
<i>Glaphyrocysta perforata</i>	x												1			x					x		x
<i>Glaphyrocysta retiintexta</i>	x	3			3		5	1		5	2			5		x					x		x
<i>Glaphyrocysta semitecta</i>	x				1									1		x					x		x

<i>Glaphyrocysta? vicina</i>	x			1										x			x		x
<i>*Gonyaulacysta sp.</i>	x				2									x			x		x
<i>Heteraulacysta sp.</i>	x												1	x			x		x
<i>*Heterosphaeridium sp.</i>	x				1									x			x		x
<i>Homotryblium sp.</i>	x					2					2			x			x		x
<i>Homotryblium abbreviatum</i>	x		1							1	19			1	x			x	
<i>Homotryblium tenuispinosum</i>	x				1	1					1				x			x	
<i>Hystrichokolpoma sp.</i>	x	1				1	1		1				1		x			x	
<i>Hystrichokolpoma cinctum</i>	x												1		x			x	
<i>Hystrichokolpoma rigaudiae</i>	x					2							1		x			x	
<i>Hystrichokolpoma salacia</i>	x				1										x			x	
<i>Hystrichosphaeridium sp.</i>	x	1	3		1				1						x			x	
<i>*Hystrichosphaerina sp.</i>	x	1													x			x	
<i>Hystrichostrogylon sp.</i>	x	6			2	5	2		3				2	2	x			x	
<i>Hystrichostrogylon membraniphorum</i>	x												1					x	
<i>Impagidinium sp.</i>	x	1				1							4	8	x			x	
<i>*Isabelidinium sp.</i>	x												3	1	x			x	
<i>Kiokansium ? sp.</i>	x												1					x	
<i>Kallosphaeridium ? sp.</i>	x												1	2				x	
<i>Lejeunecysta sp.</i>	x	1			4								2					x	
<i>Lentinia wetzelli</i>	x	2			2									1				x	
<i>Leptodinium sp.</i>	x				2								5					x	
<i>Lingulodinium sp.</i>	x	1	1		3				1	1								x	
<i>Membranophoridium sp.</i>	x	1	1	1														x	
<i>Melitasphaeridium sp.</i>	x				2													x	
<i>Muratodinium sp.</i>	x								1									x	
<i>Nematosphaeropsis sp.</i>	x												1					x	
<i>Oligosphaeridium sp.</i>	x	2	2	1	1				1					1				x	
<i>Oligosphaeridium complex</i>	x	4	2		4	2					1	3						x	
<i>*Oligosphaeridium poculum</i>	x				1													x	
<i>Operculodinium sp.</i>	x	9	6	36	15	29	13		13	11	2	16	4	3	x			x	
<i>Operculodinium tiara</i>	x	2				1												x	
<i>*Palaeochystrichophora sp.</i>	x				1	1												x	
<i>Palaeocystodinium sp.</i>	x				7									1	x			x	
<i>Palaeocystodinium bulliforme</i>	x												1					x	
<i>Palaeocystodinium golzowense</i>	x				1								1					x	
<i>Palaeoperidinium sp.</i>	x				1								1					x	
<i>Phelodinium magnificum</i>	x				4								1					x	
<i>Polysphaeridium sp.</i>	x		2		3	5	27		26	23	2	2	2	5	x			x	

<i>Pyxidiniopsis</i> sp.	x				2											x			x		x	
* <i>Raetiaedinium</i> ? sp.	x					1										x			x		x	
* <i>Rhynchodiniopsis</i> sp.	x					1									1	x			x		x	
* <i>Rottnestia</i> ? <i>borrusica</i>	x														1	x			x		x	
<i>Selenophempix</i> sp.	x						2		1							x			x		x	
<i>Selenophempix</i> cf. <i>armata</i>	x						1									x			x		x	
* <i>Spinidinium</i> sp.	x	1				2					1	6				x		1	x		x	
<i>Spiniferites</i> sp.	x	44	13	5	35	48	19			16	3	6	27	5	26	x			x		x	
<i>Spiniferites membranaceus</i>	x											2				x			x		x	
<i>Spiniferites pseudofurcatus</i>	x	1			1		1			2	3	1	3			x			x		x	
<i>Spiniferites ramosus</i>	x	10	1		4	2							8			x			x		x	
* <i>Spongiodinium</i> sp.	x									1						x			x		x	
* <i>Subtilisphaera</i> sp.	x				1											x			x		x	
* <i>Surculosphaeridium</i> sp.	x		2		4	1		1								x			x		x	
<i>Systematophora</i> sp.	x						2			1					2	x			x		x	
<i>Tanyosphaeridium salpinx</i>	x									1						x			x		x	
* <i>Tubotuburella</i> ? sp.	x					1										x			x		x	
<i>Thalassiphora</i> sp.	x										1					x			x		x	
<i>Thalassiphora delicata</i>	x	1											1			x			x		x	
<i>Trabeculidium</i> ? sp.	x	1			1						1				3	x			x		x	
<i>Wetzeliiella</i> sp.	x				2											x			x		x	
<i>Wetzeliiella</i> cf. <i>articulata</i>	x				1							1				x			x		x	
<i>Wilsonidium</i> sp.	x						1					1				x			x		x	
<b>Total</b>	0	232	57	116	295	300	300	11	263	289	33	300	300	126	0	4	1	0	1	0	1	0

x- sample barren in dinocyst, \*- reworked dinoflagellate cyst