

Ecography

**ECOG-02747**

Loboda, S., Savage, J., Buddle, C. M., Schmidt, N. M. and Høye, T. T. 2017. Declining diversity and abundance of High Arctic fly assemblages over two decades of rapid climate warming. – Ecography doi: 10.1111/ecog.02747

**Supplementary material**

**Appendix 1. Table A1.** Number of individual muscid flies identified per species, collected at Zackenberg, NE Greenland, in three habitats between 1996 and 2014 with 4 yellow pitfall traps per habitat in 1996 and 2 yellow pitfall traps in each habitat, each year between 1997 and 2014

<b>genus</b>	<b>species</b>	<b>Arid heath</b>	<b>Mesic heath</b>	<b>Wet fen</b>	
<i>Drymeia</i>	<i>groenlandica</i> (Lundbeck, 1901)	53	17	2	
	<i>segnis</i> (Holmgren, 1883)	1534	2246	588	
<i>Limnophora</i>	<i>groenlandica</i> (Malloch, 1920)	5	3	20	
<i>Phaonia</i>	<i>bidentata</i> (Ringdahl, 1933)	82	2	8	
<i>Spilogona</i>	<i>almqvistii</i> (Holmgren, 1880)	101	167	214	
	<i>deflorata</i> (Holmgren, 1872)	0	0	60	
	<i>dorsata</i> (Zetterstedt, 1845)	123	168	1333	
	<i>malaisei</i> (Ringdahl, 1920)	26	5	130	
	<i>megastoma</i> (Boheman, 1866)	25	79	2	
	<i>melanosoma</i> (Huckett, 1932)	0	0	15	
	<i>micans</i> (Ringdahl, 1918)	3	4	6	
	<i>novaesibiriae</i> (Frey, 1915)	0	0	372	
	<i>sanctipauli</i> (Malloch, 1921)	2856	2752	212	
	<i>tornensis</i> (Ringdahl, 1926)	2	1	0	
	<i>tundrae</i> (Schnabl, 1915)	1	3	1259	
	<i>zaitzevi</i> (Schnabl, 1915)	6	38	3862	
			<b>4817</b>	<b>5485</b>	<b>8083</b>

**Appendix 2. Table A2.** Statistics (estimates, standard error and p-values) of simple linear regression of species-specific abundance in each assemblage over time at Zackenberg. The \* indicates that regression values have been corrected for a first-order temporal autocorrelation using the cochrann-orcutt procedure.

Assemblage	Species	Estimate	Std-error	p-value
Across habitats	<i>Spilogona zaitzevi</i>	-10.00	4.53	<b>0.04</b>
	<i>Spilogona sanctipauli</i>	-11.74	7.61	0.14
	<i>Drymeia segnis</i>	0.63	3.73	0.87
	other species *	-24.19	5.83	<b>&lt;0.001</b>
Arid heath	<i>Drymeia segnis</i>	-0.66	2.53	0.80
	<i>Spilogona sanctipauli</i>	-6.01	4.15	0.17
	other species	-1.40	0.96	0.16
Mesic heath	<i>Drymeia segnis</i>	-0.33	2.17	0.88
	<i>Spilogona sanctipauli</i>	-5.15	4.82	0.30
	other species	-3.40	1.54	<b>0.04</b>
Wet fen	<i>Spilogona zaitzevi</i>	-9.68	4.54	<b>0.05</b>
	<i>Spilogona dorsata</i> *	-7.30	1.35	<b>0.00</b>
	<i>Spilogona tundrae</i> *	-8.14	2.19	<b>0.00</b>
	other species	-3.61	1.60	<b>0.04</b>

**Appendix 3. Table A3.** Statistics (estimates, standard error and p-values) of simple linear regression of diversity measures (Hille numbers  ${}^0D$ ,  ${}^1D$  and  ${}^2D$ ) in each muscid assemblage studied (across habitats, arid heath, mesic heath and wet fen) over time at Zackenberg. The \* indicates that regression values have been corrected for a first-order temporal autocorrelation using the cochrann-orcutt procedure.

Assemblage	Diversity measure	Estimate	Std-error	p-value
Across habitats	Hill ${}^0D$	-0.21	0.10	0.06
	Hill ${}^1D$	-0.15	0.03	<b>&lt;0.001</b>
	Hill ${}^2D$	-0.11	0.03	<b>&lt;0.001</b>
Arid heath	Hill ${}^0D$	-0.22	0.09	<b>0.04</b>
	Hill ${}^1D$	-0.02	0.02	0.31
	Hill ${}^2D$	0.00	0.02	0.99
Mesic heath	Hill ${}^0D$	-0.29	0.09	<b>0.01</b>
	Hill ${}^1D$	-0.06	0.02	<b>0.01</b>
	Hill ${}^2D$	-0.02	0.01	0.06
Wet fen	Hill ${}^0D$ *	-0.29	0.13	<b>0.04</b>
	Hill ${}^1D$ *	-0.13	0.03	<b>&lt;0.001</b>
	Hill ${}^2D$ *	-0.12	0.03	<b>&lt;0.001</b>