

RIVPACS IV REFERENCE END-GROUP DESCRIPTIONS

Summary environmental variable statistics, most common taxa & site distribution maps for each of the 43 Great Britain and 11 Northern Ireland end-groups used in the RIVPACS IV models incorporated into RICT

Freshwater Task Team Invertebrate BQE Group 2012

Credits:

J. Davy- Bowker (FBA) - calculated the summary statistics, generated the taxa lists & extracted the mapping information from the RIVPACS IV database.

Dr S. Wilson (SEPA) - produced the maps of the reference site distribution in each end-group.

Dr D. Colvill (SEPA) - assembled the final document.

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1. Introduction

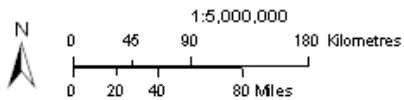
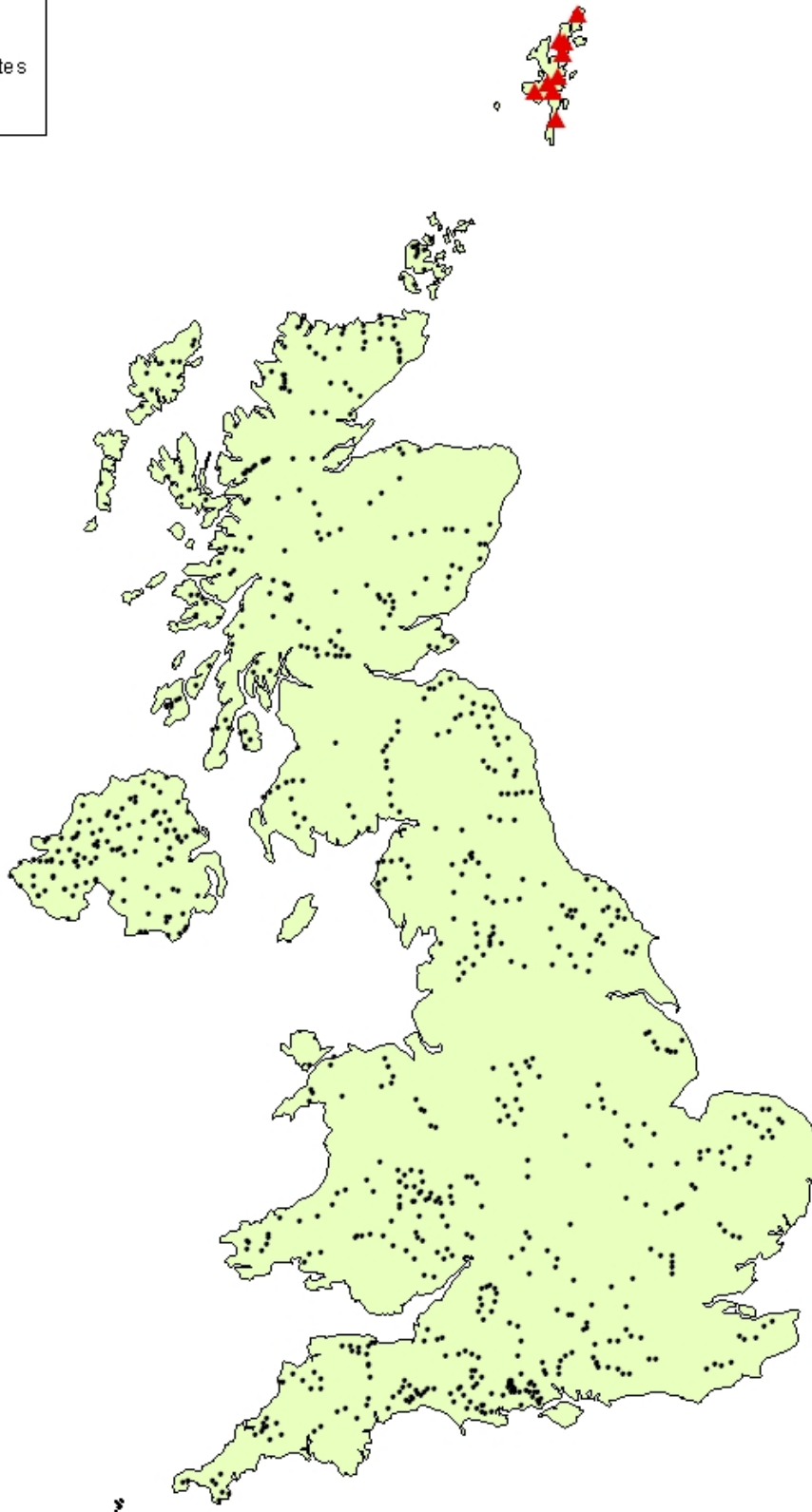
The River Invertebrate Classification Tool (RICT) incorporates RIVPACS models to produce biological status class assessments of running waters in the United Kingdom. This document presents descriptions of the TWINSPAN biological classification end-groups in the RIVPACS IV Great Britain (GB) and Northern Ireland (NI) RIVPACS IV models currently in RICT. Summary statistics of the environmental variables, a list of the 25 most frequently occurring taxa, and a distribution map of the reference sites are given for each of the 43 GB and 11 NI end-groups.

In total 795 reference sites were used to build the two RIVPACS IV models, of which 685 were in GB and 110 were in NI. For more information about the RIVPACS IV models, the derivation of reference conditions and the development of RICT please see the final reports from projects 'WFD46' & 'WFD72C' which are available from the [SNIFFER](#) website.

2. Great Britain (GB) 43 End-Group Descriptions

Legend

- ▲ End group Sites
- Other sites



End Group GB 01

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GB End Group 1

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	4	7.11	11	3.02
Slope (m km ⁻¹)	0	6.83	16.7	6.72
Discharge Category (1-10)	1	1.78	3	0.67
Distance from Source (km)	4.9	7.9	13.4	2.59
Alkalinity (mg/l CaCO ₃)	9.7	24.08	50	13.31
Mean Width (m)	2.5	4.53	7.6	1.5
Mean Depth (cm)	9.7	13.09	18.7	3.3
Boulders & Cobbles (%)	27	57.78	87	19.14
Pebbles & Gravel (%)	12	40	67	16.73
Sand (%)	0	2.11	7	2.98
Silt & Clay (%)	0	0.33	3	1
Mean Substratum (phi)	-7.02	-5.69	-3.97	1.03

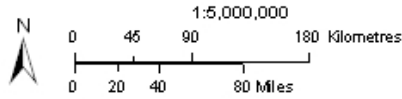
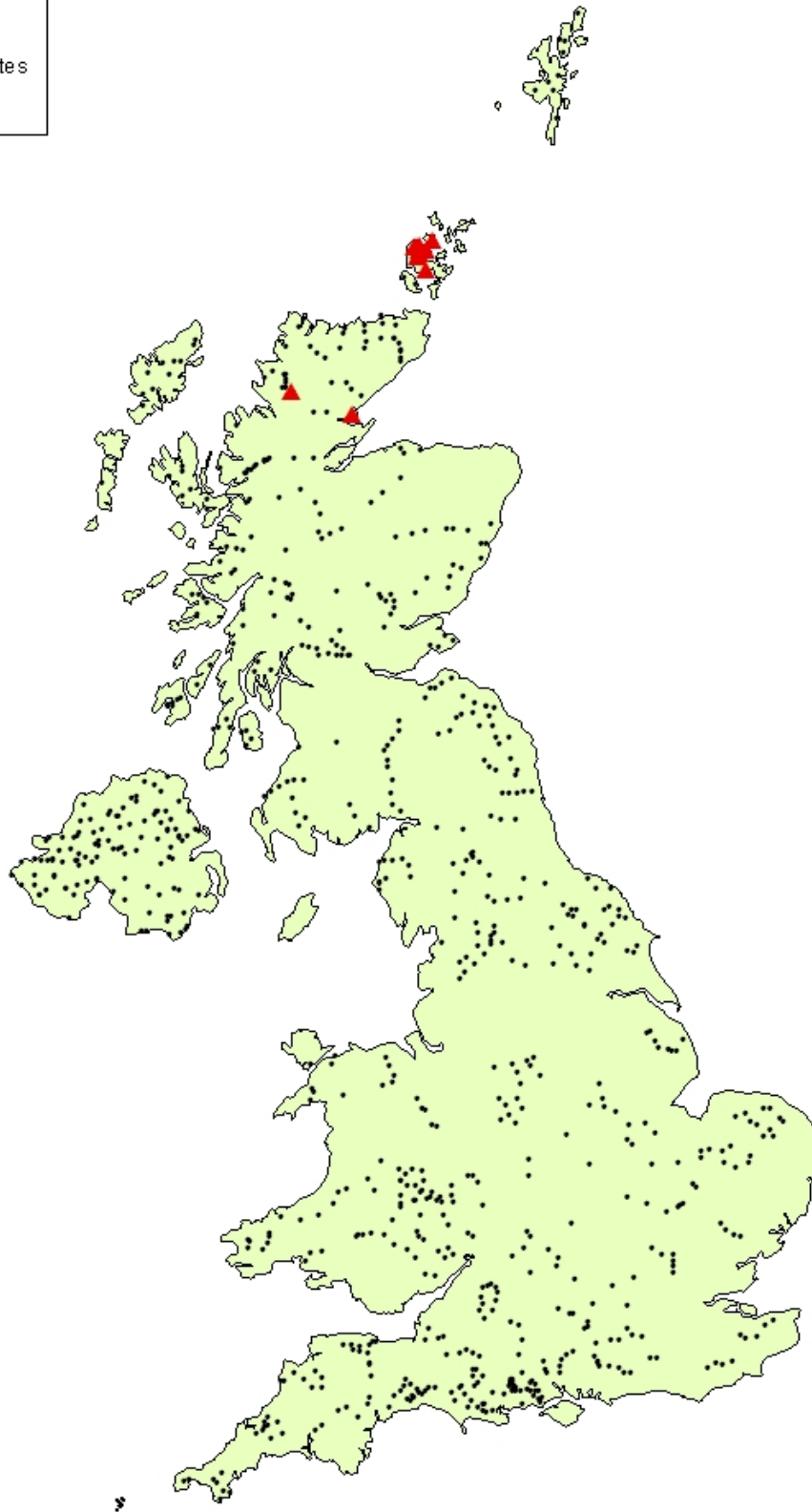
Number of sites =9

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Lumbriculus group	100
Lumbricidae (incl. Glossoscolecidae)	100
Baetis rhodani (Pictet, 1843-1845)	100
Siphonoperla torrentium (Pictet, 1841)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Thienemannimyia group	100
Eukiefferiella group	100
Cricotopus group	100
Nais communis group	88.9
Hydracarina	88.9
Leuctra inermis Kempny, 1899	88.9
Tipula (Yamatotipula) montium group	88.9
Dicranota sp.	88.9
Simulium (Wilhelmia) sp.	88.9
Clinocerinae	88.9
Radix balthica (Linnaeus, 1758)	77.8
Enchytraeidae (including Propappidae)	77.8
Hydraena gracilis Germar, 1824	77.8
Plectrocnemia conspersa (Curtis, 1834)	77.8
Micropsectra group	77.8
Paratanytarsus group	77.8
Polycentropus flavomaculatus (Pictet, 1834)	66.7
Potthastia gaedii group	66.7
Polypedilum sp.	66.7
Nematoda	55.6

Legend

- ▲ End group Sites
- Other sites



End Group GB 02

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GB End Group 2

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	10	43.36	147	37.59
Slope (m km ⁻¹)	3.6	14.21	41	11.38
Discharge Category (1-10)	1	1.27	3	0.65
Distance from Source (km)	0.9	4.55	10.1	2.84
Alkalinity (mg/l CaCO ₃)	36.4	110.62	176.3	54.93
Mean Width (m)	1.2	3.49	6.7	1.86
Mean Depth (cm)	8.8	16.63	26.4	4.96
Boulders & Cobbles (%)	17	26.64	42	8.38
Pebbles & Gravel (%)	47	60.64	73	7.59
Sand (%)	0	5.18	10	3.63
Silt & Clay (%)	3	7.91	22	6.04
Mean Substratum (phi)	-4.52	-3.29	-1.12	1.03

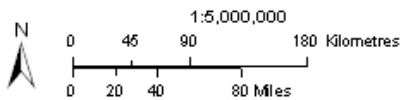
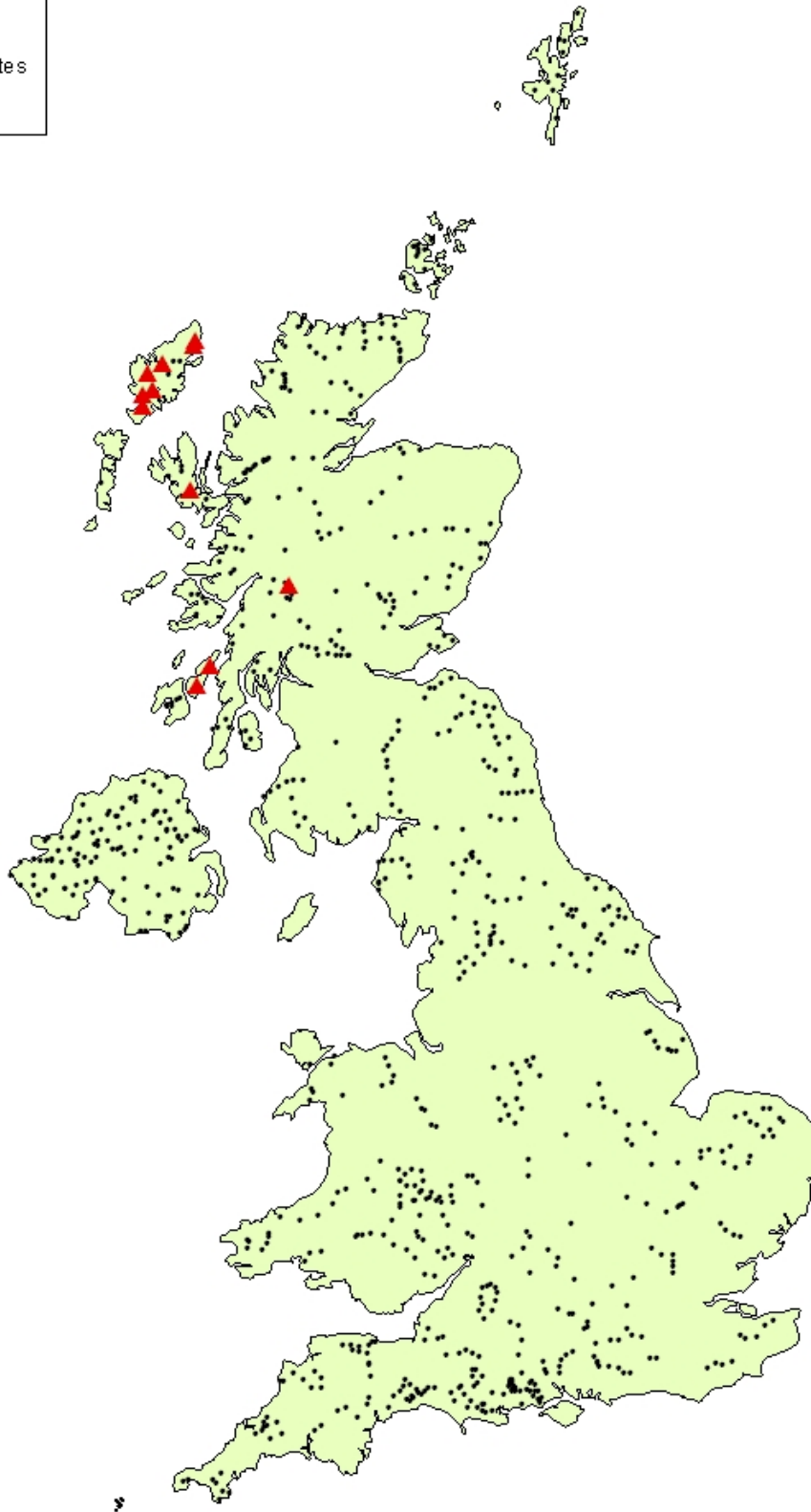
Number of sites =11

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Hydracarina	100
Leuctra fusca (Linnaeus, 1758)	100
Elmis aenea (Müller, 1806)	100
Macropelopia sp.	100
Micropsectra group	100
Ancylus fluviatilis O.F. Müller, 1774	90.9
Lumbriculus group	90.9
Nais alpina Sperber, 1948	90.9
Lumbricidae (incl. Glossoscolecidae)	90.9
Baetis rhodani (Pictet, 1843-1845)	90.9
Leuctra hippopus Kempny, 1899	90.9
Rhyacophila dorsalis (Curtis, 1834)	90.9
Thienemannimyia group	90.9
Eukiefferiella group	90.9
Cricotopus group	90.9
Clinocerinae	90.9
Radix balthica (Linnaeus, 1758)	81.8
Enchytraeidae (including Propappidae)	81.8
Helobdella stagnalis (Linnaeus, 1758)	81.8
Alainites muticus (Linnaeus, 1758)	81.8
Serratella ignita (Poda, 1761)	81.8
Isoperla grammatica (Poda, 1761)	81.8
Siphonoperla torrentium (Pictet, 1841)	81.8
Limnius volckmari (Panzer, 1793)	81.8
Polycentropus flavomaculatus (Pictet, 1834)	81.8

Legend

- ▲ End group Sites
- Other sites



End Group GB 03

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GB End Group 3

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	4	50.91	335	95.38
Slope (m km ⁻¹)	7.1	24.46	67.7	19.46
Discharge Category (1-10)	1	2.64	5	1.21
Distance from Source (km)	1	7.1	12	3.64
Alkalinity (mg/l CaCO ₃)	1.1	2.72	4.9	1.16
Mean Width (m)	1.7	8.19	13.9	4.19
Mean Depth (cm)	7.8	22.59	30	6.51
Boulders & Cobbles (%)	58	70.27	82	7.9
Pebbles & Gravel (%)	18	28	37	6.77
Sand (%)	0	1.73	5	1.95
Silt & Clay (%)	0	0	0	0
Mean Substratum (phi)	-6.94	-6.32	-5.6	0.43

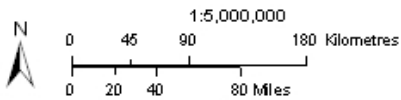
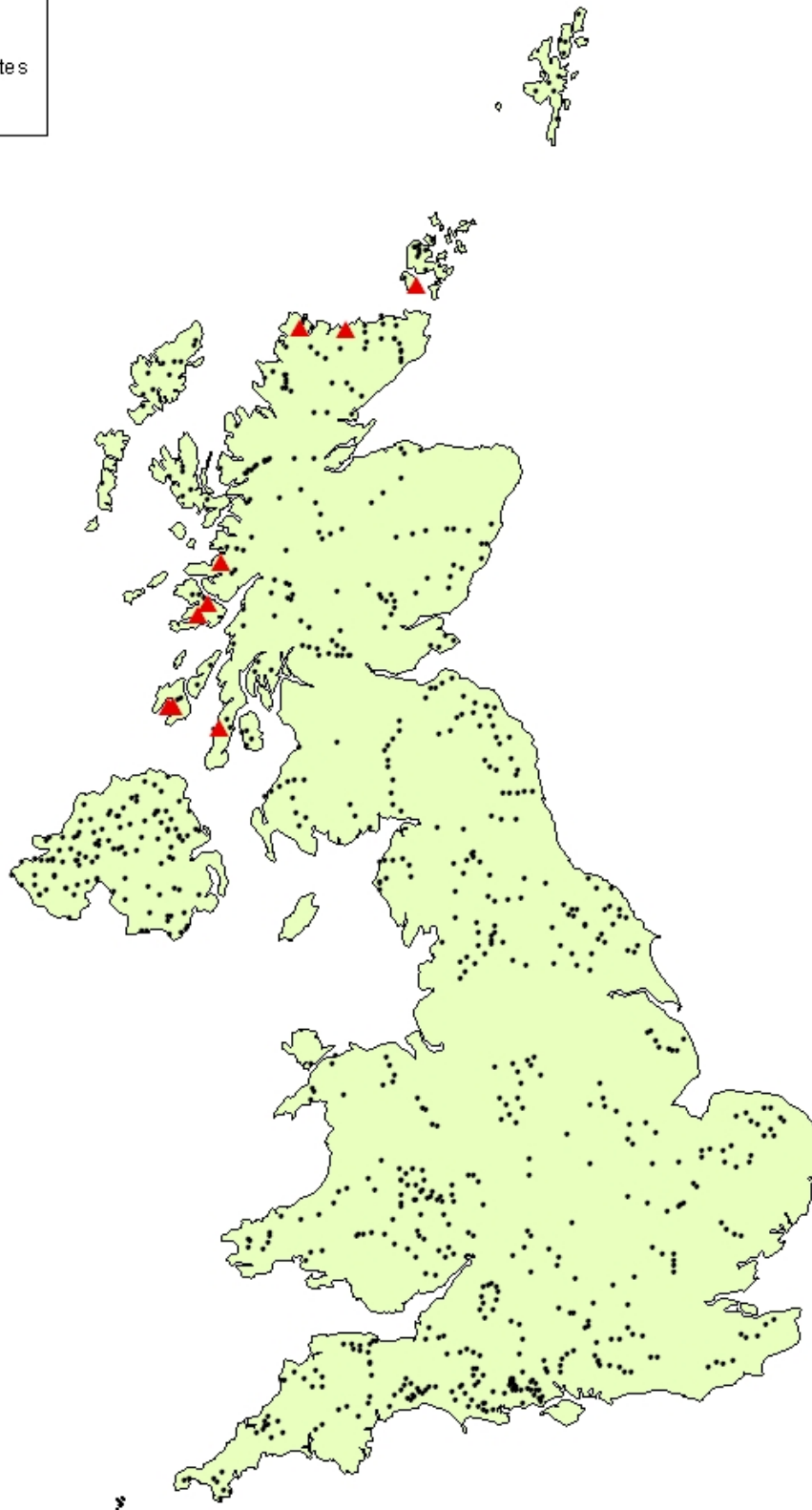
Number of sites =11

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Enchytraeidae (including Propappidae)	100
Baetis rhodani (Pictet, 1843-1845)	100
Amphinemura sulcicollis (Stephens, 1836)	100
Leuctra fusca (Linnaeus, 1758)	100
Siphonoperla torrentium (Pictet, 1841)	100
Limnius volckmari (Panzer, 1793)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Hydropsyche siltalai Döhler, 1963	100
Thienemannimyia group	100
Cricotopus group	100
Micropsectra group	100
Nais communis group	90.9
Hydracarina	90.9
Isoperla grammatica (Poda, 1761)	90.9
Polycentropus flavomaculatus (Pictet, 1834)	90.9
Eukiefferiella group	90.9
Lumbriculus group	81.8
Lumbricidae (incl. Glossoscolecidae)	81.8
Leuctra hippopus Kempny, 1899	81.8
Leuctra inermis Kempny, 1899	81.8
Dicranota sp.	81.8
Simulium (Simulium) argyreatum group	81.8
Clinocerinae	81.8
Nilotanypus dubius (Meigen, 1804)	72.7
Potthastia longimanus group	72.7

Legend

- ▲ End group Sites
- Other sites



End Group GB 04

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GB End Group 4

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	4	29.44	74	27.71
Slope (m km ⁻¹)	2.2	6	11.4	3.02
Discharge Category (1-10)	1	3	5	1.32
Distance from Source (km)	6	10.59	22.6	5.18
Alkalinity (mg/l CaCO ₃)	3	14.8	75.1	23.4
Mean Width (m)	3.9	10.26	20.3	6.14
Mean Depth (cm)	11.3	18.88	24.4	3.93
Boulders & Cobbles (%)	50	63.22	77	10.93
Pebbles & Gravel (%)	23	35.89	50	10.19
Sand (%)	0	1	5	1.73
Silt & Clay (%)	0	0	0	0
Mean Substratum (phi)	-6.72	-6.04	-5.24	0.54

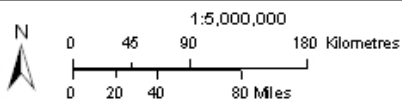
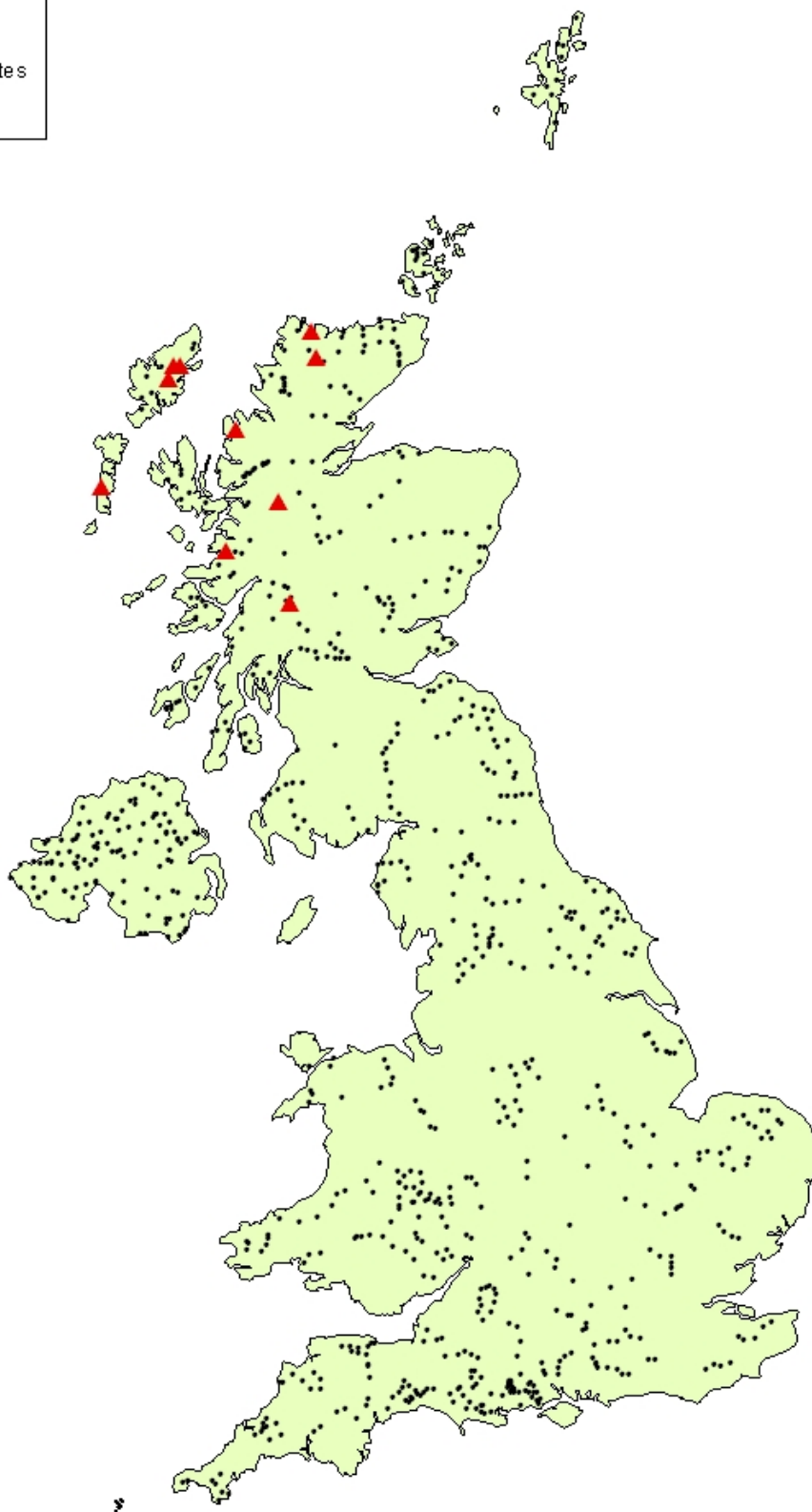
Number of sites =9

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Enchytraeidae (including Propappidae)	100
Baetis rhodani (Pictet, 1843-1845)	100
Leuctra fusca (Linnaeus, 1758)	100
Leuctra hippopus Kempny, 1899	100
Leuctra inermis Kempny, 1899	100
Limnius volckmari (Panzer, 1793)	100
Eukiefferiella group	100
Cricotopus group	100
Lumbriculus group	88.9
Nais communis group	88.9
Hydracarina	88.9
Ecdyonurus sp.	88.9
Serratella ignita (Poda, 1761)	88.9
Amphinemura sulcicollis (Stephens, 1836)	88.9
Perlodes microcephalus (Pictet, 1833)	88.9
Siphonoperla torrentium (Pictet, 1841)	88.9
Dicranota sp.	88.9
Simulium (Simulium) ornatum group	88.9
Micropsectra group	88.9
Paratanytarsus group	88.9
Clinocerinae	88.9
Lumbricidae (incl. Glossoscolecidae)	77.8
Rhithrogena sp.	77.8
Protonemura meyeri (Pictet, 1841)	77.8
Isoperla grammatica (Poda, 1761)	77.8

Legend

- ▲ End group Sites
- Other sites



End Group GB 05

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GB End Group 5

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	4	67.9	230	80.57
Slope (m km ⁻¹)	1.5	4.99	9.1	2.56
Discharge Category (1-10)	2	4.9	8	2.02
Distance from Source (km)	6.9	20.15	50.6	13.53
Alkalinity (mg/l CaCO ₃)	0.7	2.65	7.3	1.79
Mean Width (m)	6.6	17.51	37.5	11.08
Mean Depth (cm)	20.9	35.87	67.8	16.04
Boulders & Cobbles (%)	23	60	87	18.2
Pebbles & Gravel (%)	13	34.2	62	14.14
Sand (%)	0	4.8	20	6.32
Silt & Clay (%)	0	1.1	5	1.66
Mean Substratum (phi)	-7.16	-5.57	-3.2	1.22

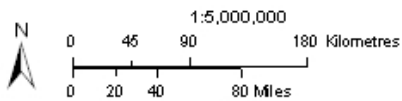
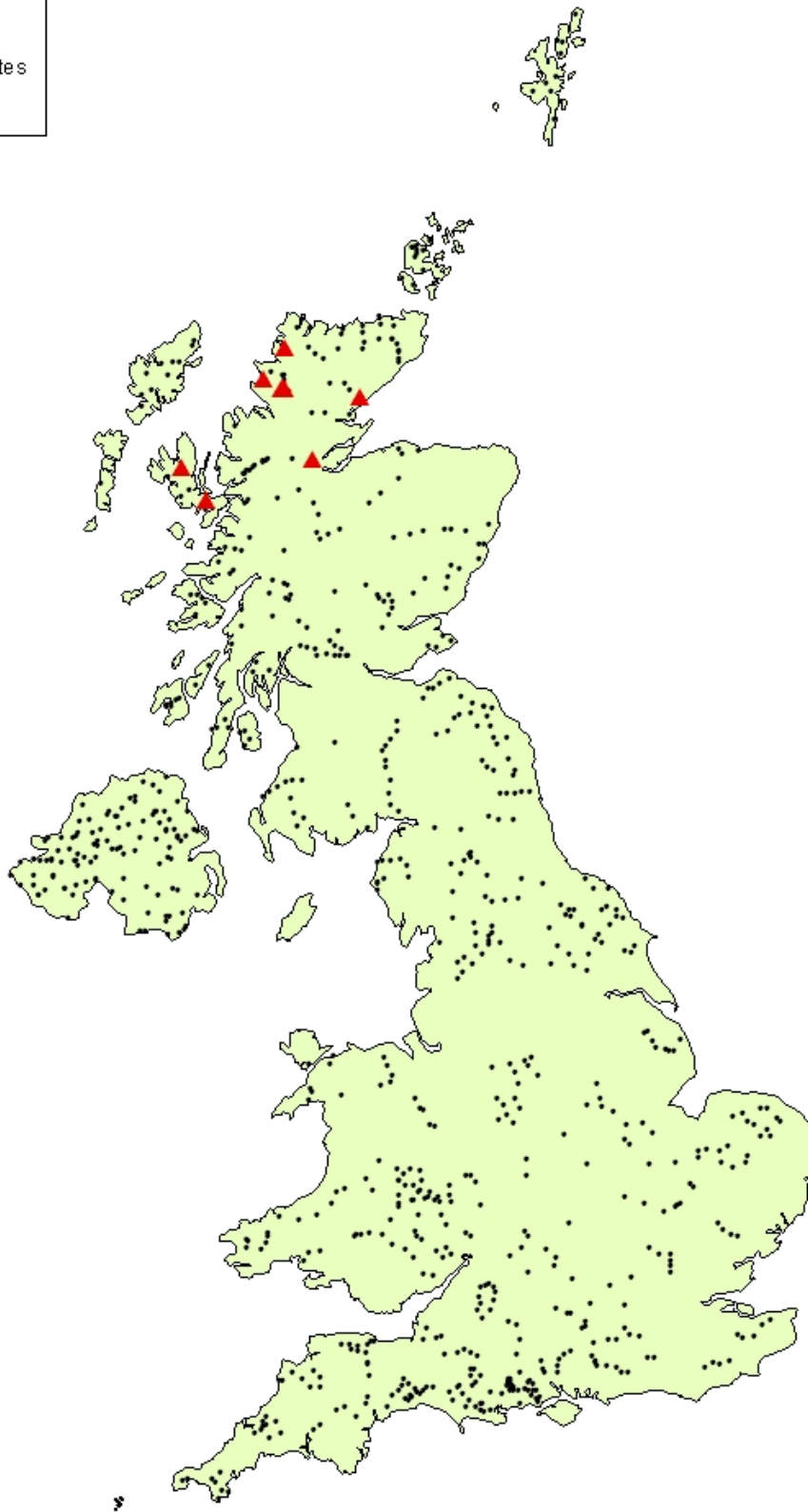
Number of sites =10

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Lumbriculus group	100
Enchytraeidae (including Propappidae)	100
Baetis rhodani (Pictet, 1843-1845)	100
Leuctra hippopus Kempny, 1899	100
Siphonoperla torrentium (Pictet, 1841)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Hydropsyche pellucidula (Curtis, 1834)	100
Hydropsyche siltalai Döhler, 1963	100
Thienemannimyia group	100
Cricotopus group	100
Micropsectra group	100
Radix balthica (Linnaeus, 1758)	90
Hydracarina	90
Amphinemura sulcicollis (Stephens, 1836)	90
Leuctra fusca (Linnaeus, 1758)	90
Isoperla grammatica (Poda, 1761)	90
Limnius volckmari (Panzer, 1793)	90
Hydroptila sp.	90
Polycentropus flavomaculatus (Pictet, 1834)	90
Lepidostoma hirtum (Fabricius, 1775)	90
Nais alpina Sperber, 1948	80
Nais communis group	80
Stylaria lacustris (Linnaeus, 1767)	80
Serratella ignita (Poda, 1761)	80
Paratanytarsus group	80

Legend

- ▲ End group Sites
- Other sites



End Group GB 06

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GB End Group 6

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	9	46.12	138	53.17
Slope (m km ⁻¹)	0.9	4.58	16.1	5.34
Discharge Category (1-10)	1	4.75	9	2.87
Distance from Source (km)	4.4	24.08	54	17.64
Alkalinity (mg/l CaCO ₃)	3.3	22.51	69.3	21.69
Mean Width (m)	5.9	22.96	65	18.67
Mean Depth (cm)	19.1	35.22	68.3	17.11
Boulders & Cobbles (%)	7	56.25	99	32.22
Pebbles & Gravel (%)	1	39.62	83	28.6
Sand (%)	0	3.5	8	2.88
Silt & Clay (%)	0	0.75	2	1.04
Mean Substratum (phi)	-7.7	-5.51	-2.92	1.71

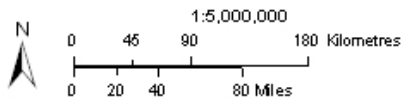
Number of sites =8

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Radix balthica</i> (Linnaeus, 1758)	100
Lumbriculus group	100
Enchytraeidae (including Propappidae)	100
Lumbricidae (incl. Glossoscolecidae)	100
Hydracarina	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Alainites muticus</i> (Linnaeus, 1758)	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Amphinemura sulcicollis</i> (Stephens, 1836)	100
<i>Leuctra fusca</i> (Linnaeus, 1758)	100
<i>Siphonoperla torrentium</i> (Pictet, 1841)	100
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	100
<i>Lepidostoma hirtum</i> (Fabricius, 1775)	100
<i>Thienemannimyia</i> group	100
<i>Eukiefferiella</i> group	100
<i>Cricotopus</i> group	100
<i>Paratanytarsus</i> group	100
<i>Spirosperma ferox</i> Eisen, 1879	87.5
<i>Helobdella stagnalis</i> (Linnaeus, 1758)	87.5
<i>Rhithrogena</i> sp.	87.5
<i>Ecdyonurus</i> sp.	87.5
<i>Leuctra inermis</i> Kempny, 1899	87.5
<i>Limnius volckmari</i> (Panzer, 1793)	87.5
<i>Hydroptila</i> sp.	87.5
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	87.5

Legend

- ▲ End group Sites
- Other sites



End Group GB 07

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GB End Group 7

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	4	21.33	105	41
Slope (m km ⁻¹)	1.1	10.25	38.3	14.41
Discharge Category (1-10)	1	3.5	5	1.64
Distance from Source (km)	2.3	12.67	22	7.79
Alkalinity (mg/l CaCO ₃)	7.7	25.05	48.2	17.33
Mean Width (m)	1.1	9.43	15.7	5.25
Mean Depth (cm)	15.9	19.9	24.2	2.92
Boulders & Cobbles (%)	18	50.17	65	17.72
Pebbles & Gravel (%)	32	48.17	80	17.9
Sand (%)	0	1.17	3	1.33
Silt & Clay (%)	0	0.5	3	1.22
Mean Substratum (phi)	-6.02	-5.39	-3.95	0.8

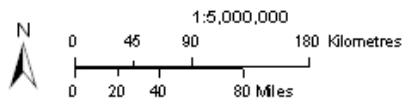
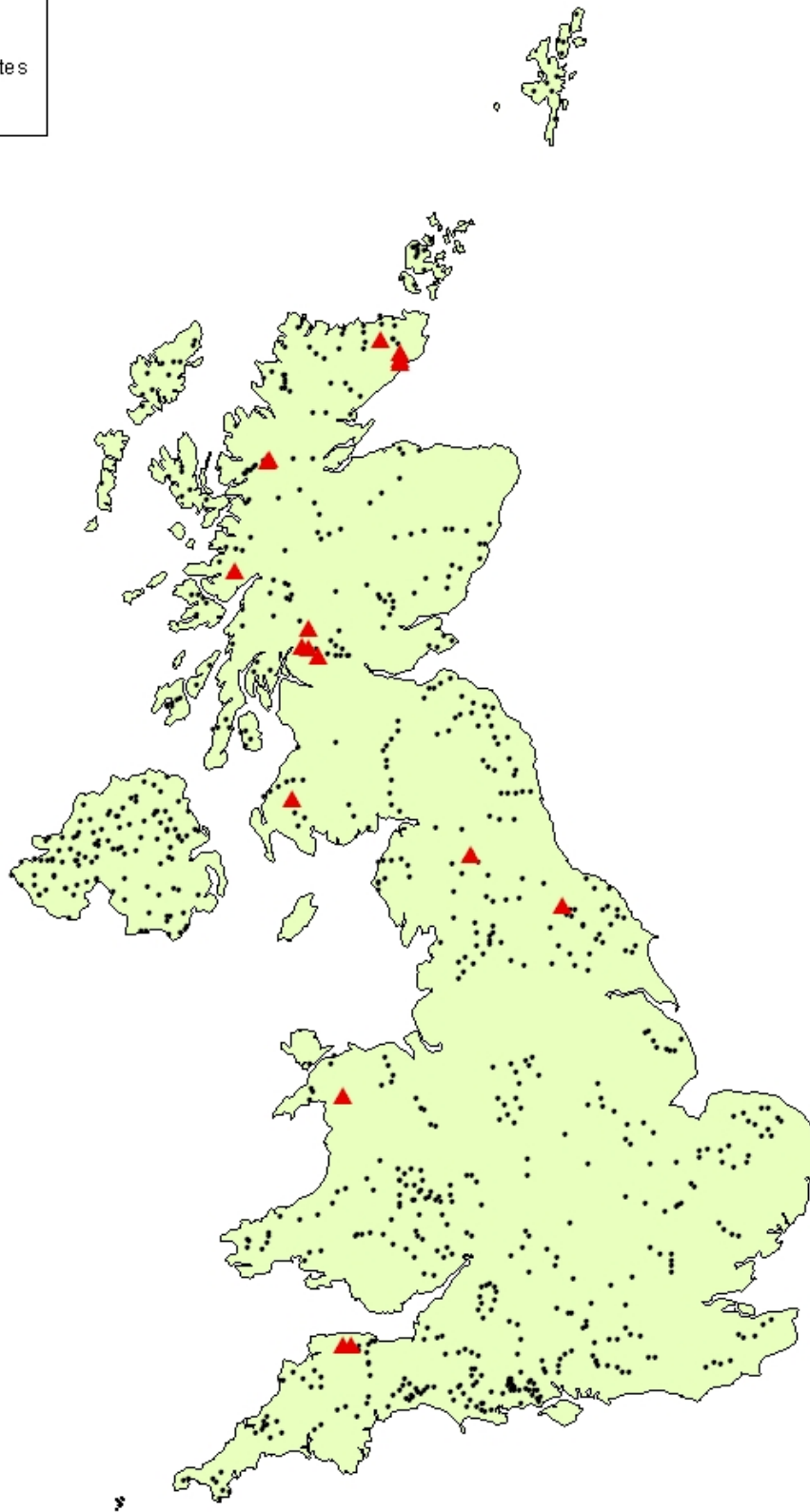
Number of sites =6

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Radix balthica</i> (Linnaeus, 1758)	100
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	100
Enchytraeidae (including Propappidae)	100
Lumbricidae (incl. Glossoscolecidae)	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Rhithrogena</i> sp.	100
<i>Ecdyonurus</i> sp.	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Leuctra fusca</i> (Linnaeus, 1758)	100
<i>Leuctra inermis</i> Kempny, 1899	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Oulimnius tuberculatus</i> (Müller, 1806)	100
<i>Lepidostoma hirtum</i> (Fabricius, 1775)	100
<i>Dicranota</i> sp.	100
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	83.3
Lumbriculus group	83.3
<i>Nais alpina</i> Sperber, 1948	83.3
<i>Baetis scambus</i> group	83.3
<i>Leuctra hippopus</i> Kempny, 1899	83.3
<i>Isoperla grammatica</i> (Poda, 1761)	83.3
<i>Siphonoperla torrentium</i> (Pictet, 1841)	83.3
Potamophylax group	83.3
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	83.3
<i>Thienemannimyia</i> group	83.3
<i>Potthastia longimanus</i> group	83.3

Legend

- ▲ End group Sites
- Other sites



End Group GB 08

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GB End Group 8

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	30	175.29	518	133.12
Slope (m km ⁻¹)	0.6	32.29	150	36.96
Discharge Category (1-10)	1	2.29	6	1.57
Distance from Source (km)	0.8	4.71	13.3	3.94
Alkalinity (mg/l CaCO ₃)	2.1	27.7	90	31.1
Mean Width (m)	0.9	5.45	18.7	5.08
Mean Depth (cm)	7.1	21.82	42.6	11.06
Boulders & Cobbles (%)	18	60.12	82	18.94
Pebbles & Gravel (%)	16	34	65	17.07
Sand (%)	0	4.24	13	3.85
Silt & Clay (%)	0	1.47	8	2.5
Mean Substratum (phi)	-6.94	-5.57	-2.93	1.12

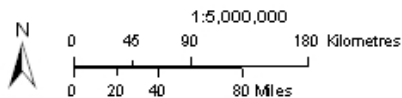
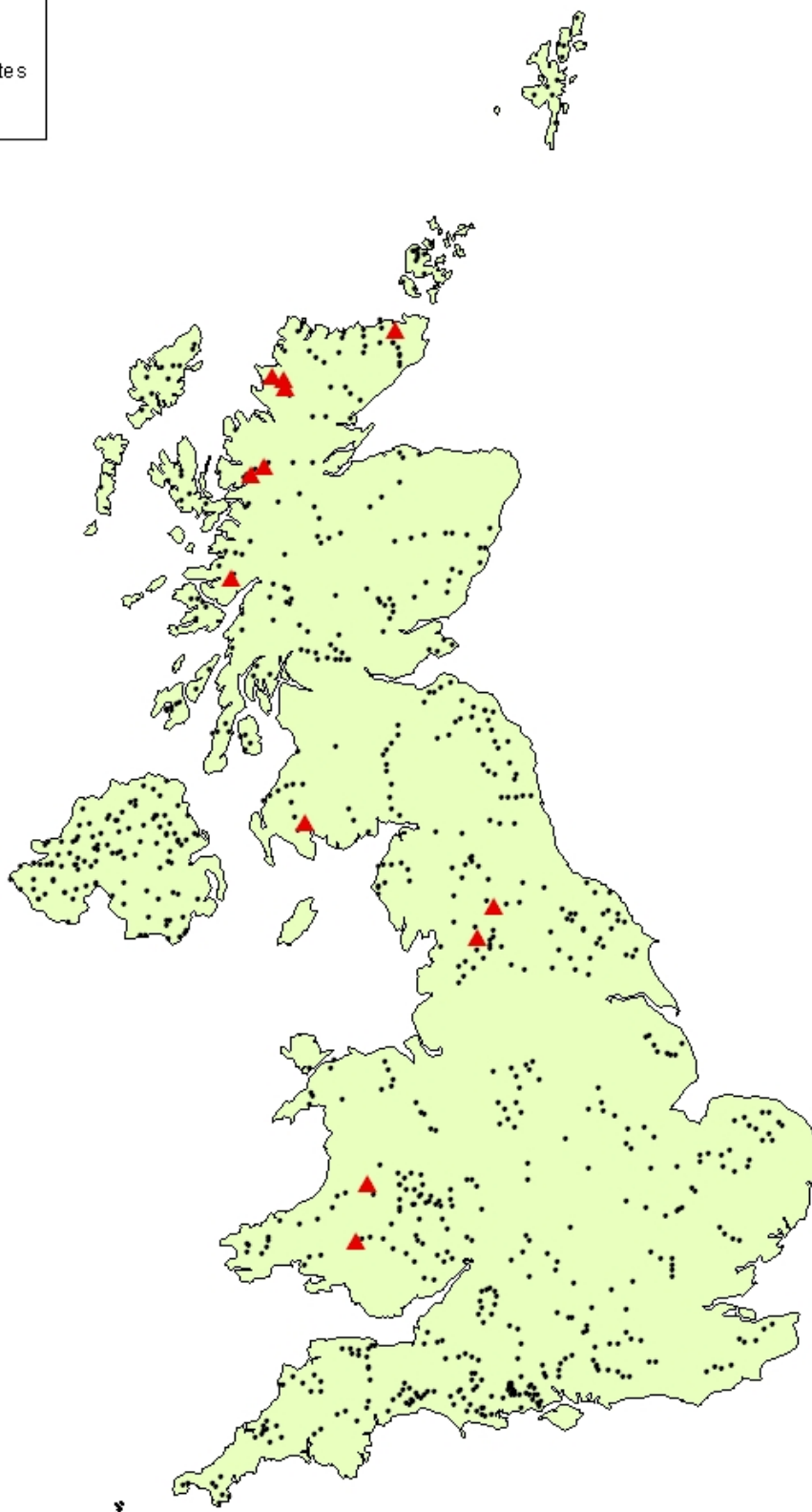
Number of sites =17

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Dicranota sp.	100
Amphinemura sulcicollis (Stephens, 1836)	94.1
Leuctra fusca (Linnaeus, 1758)	94.1
Siphonoperla torrentium (Pictet, 1841)	94.1
Potamophylax group	94.1
Micropsectra group	94.1
Enchytraeidae (including Propappidae)	88.2
Leuctra inermis Kempny, 1899	88.2
Isoperla grammatica (Poda, 1761)	88.2
Rhyacophila dorsalis (Curtis, 1834)	88.2
Polycentropus flavomaculatus (Pictet, 1834)	88.2
Cricotopus group	88.2
Baetis rhodani (Pictet, 1843-1845)	82.4
Limnius volckmari (Panzer, 1793)	82.4
Oulimnius tuberculatus (Müller, 1806)	82.4
Simulium (Nevermannia) venum group	82.4
Thienemannimyia group	82.4
Eukiefferiella group	82.4
Lumbricidae (incl. Glossoscolecidae)	76.5
Leuctra hippopus Kempny, 1899	76.5
Elmis aenea (Müller, 1806)	76.5
Simulium (Nevermannia) cryophilum group	76.5
Hydracarina	70.6
Ecdyonurus sp.	70.6
Serratella ignita (Poda, 1761)	70.6

Legend

- ▲ End group Sites
- Other sites



End Group GB 09

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GB End Group 9

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	6	127.58	320	107.22
Slope (m km ⁻¹)	0.7	4.94	20	5.25
Discharge Category (1-10)	1	4.5	7	1.78
Distance from Source (km)	1	14.84	38.9	11.31
Alkalinity (mg/l CaCO ₃)	5	28.9	90.4	25.42
Mean Width (m)	4	17.44	38.7	9.15
Mean Depth (cm)	11.7	53.14	172.2	44.32
Boulders & Cobbles (%)	17	53.5	90	23.73
Pebbles & Gravel (%)	10	40.75	72	20.38
Sand (%)	0	4.83	11	3.9
Silt & Clay (%)	0	0.92	4	1.24
Mean Substratum (phi)	-7.3	-5.3	-3.26	1.29

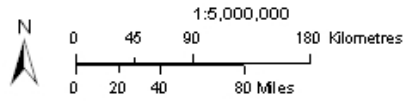
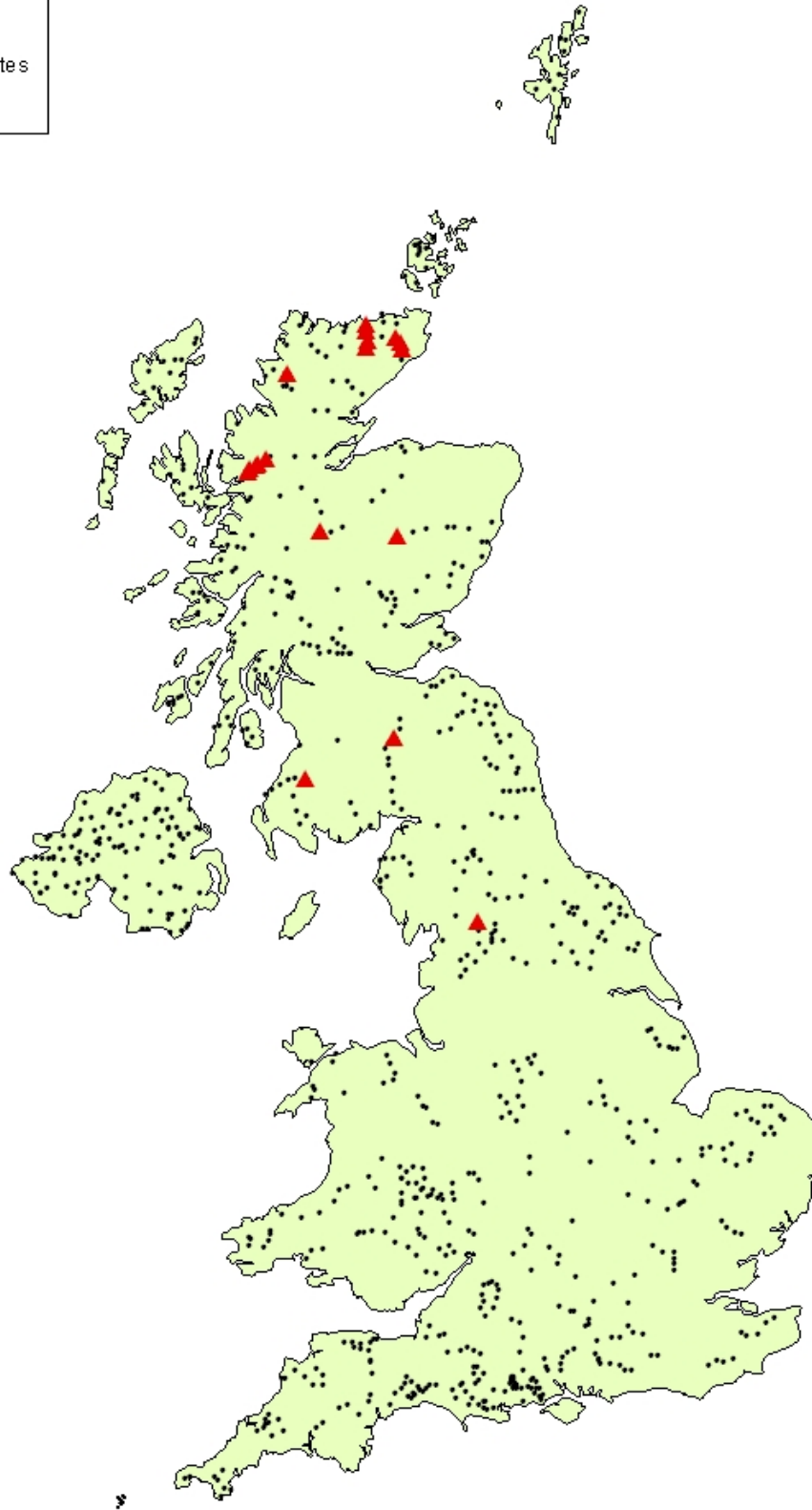
Number of sites =12

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Enchytraeidae (including Propappidae)	100
Lumbricidae (incl. Glossoscolecidae)	100
Baetis rhodani (Pictet, 1843-1845)	100
Ecdyonurus sp.	100
Serratella ignita (Poda, 1761)	100
Amphinemura sulcicollis (Stephens, 1836)	100
Leuctra fusca (Linnaeus, 1758)	100
Isoperla grammatica (Poda, 1761)	100
Limnius volckmari (Panzer, 1793)	100
Polycentropus flavomaculatus (Pictet, 1834)	100
Hydropsyche siltalai Döhler, 1963	100
Thienemannimyia group	100
Eukiefferiella group	100
Cricotopus group	100
Alainites muticus (Linnaeus, 1758)	91.7
Rhithrogena sp.	91.7
Leuctra inermis Kempny, 1899	91.7
Elmis aenea (Müller, 1806)	91.7
Esolus parallelepipedus (Müller, 1806)	91.7
Rhyacophila dorsalis (Curtis, 1834)	91.7
Micropsectra group	91.7
Nais alpina Sperber, 1948	83.3
Hydracarina	83.3
Siphonoperla torrentium (Pictet, 1841)	83.3
Hydropsyche pellucidula (Curtis, 1834)	83.3

Legend

- ▲ End group Sites
- Other sites



End Group GB 10

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GB End Group 10

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	2	131.17	351	116.46
Slope (m km ⁻¹)	1.3	16.81	100	25.12
Discharge Category (1-10)	1	4.22	7	1.9
Distance from Source (km)	3	11.22	27	7.93
Alkalinity (mg/l CaCO ₃)	5	21.9	90.4	21.59
Mean Width (m)	2	14.49	39	10.11
Mean Depth (cm)	17.8	37.24	71.1	15.23
Boulders & Cobbles (%)	20	65.56	90	19.06
Pebbles & Gravel (%)	10	32.89	76	19.07
Sand (%)	0	1.33	8	2.43
Silt & Clay (%)	0	0.22	4	0.94
Mean Substratum (phi)	-7.3	-6.11	-3.94	0.88

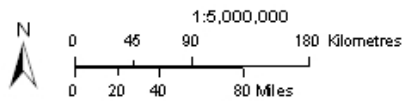
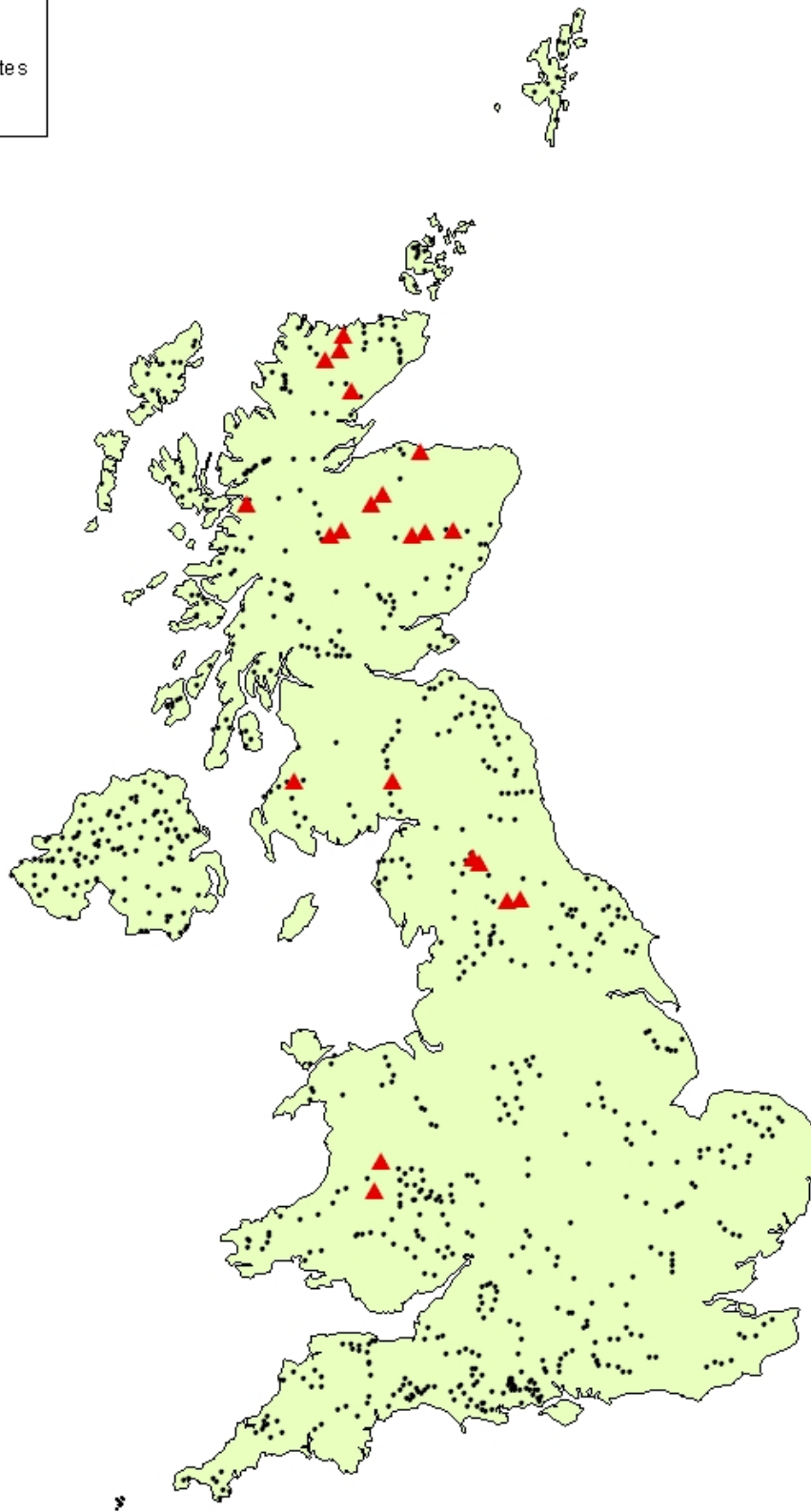
Number of sites =18

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Amphinemura sulcicollis (Stephens, 1836)	100
Isoperla grammatica (Poda, 1761)	100
Thienemannimyia group	100
Eukiefferiella group	100
Cricotopus group	100
Enchytraeidae (including Propappidae)	94.4
Leuctra fusca (Linnaeus, 1758)	94.4
Leuctra inermis Kempny, 1899	94.4
Siphonoperla torrentium (Pictet, 1841)	94.4
Limnius volckmari (Panzer, 1793)	94.4
Polycentropus flavomaculatus (Pictet, 1834)	94.4
Micropsectra group	94.4
Nais alpina Sperber, 1948	88.9
Lumbricidae (incl. Glossoscolecidae)	88.9
Hydracarina	88.9
Ecdyonurus sp.	88.9
Leuctra hippopus Kempny, 1899	88.9
Hydroptila sp.	83.3
Dicranota sp.	83.3
Potthastia longimanus group	83.3
Polypedilum sp.	83.3
Clinocerinae	83.3
Elmis aenea (Müller, 1806)	77.8

Legend

- ▲ End group Sites
- Other sites



End Group GB 11

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GB End Group 11

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	2	162.62	530	134.91
Slope (m km ⁻¹)	0.9	3.61	9.1	1.97
Discharge Category (1-10)	4	6.57	9	1.36
Distance from Source (km)	6	41.9	140	31.99
Alkalinity (mg/l CaCO ₃)	3	25.3	83.3	19.83
Mean Width (m)	12.1	31.53	55	13.21
Mean Depth (cm)	11.4	39.38	100	21.24
Boulders & Cobbles (%)	5	60.14	99	26.41
Pebbles & Gravel (%)	1	37.19	95	25.68
Sand (%)	0	2.29	20	4.54
Silt & Clay (%)	0	0.33	3	0.91
Mean Substratum (phi)	-7.7	-5.8	-3.48	1.26

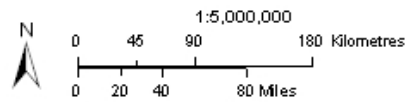
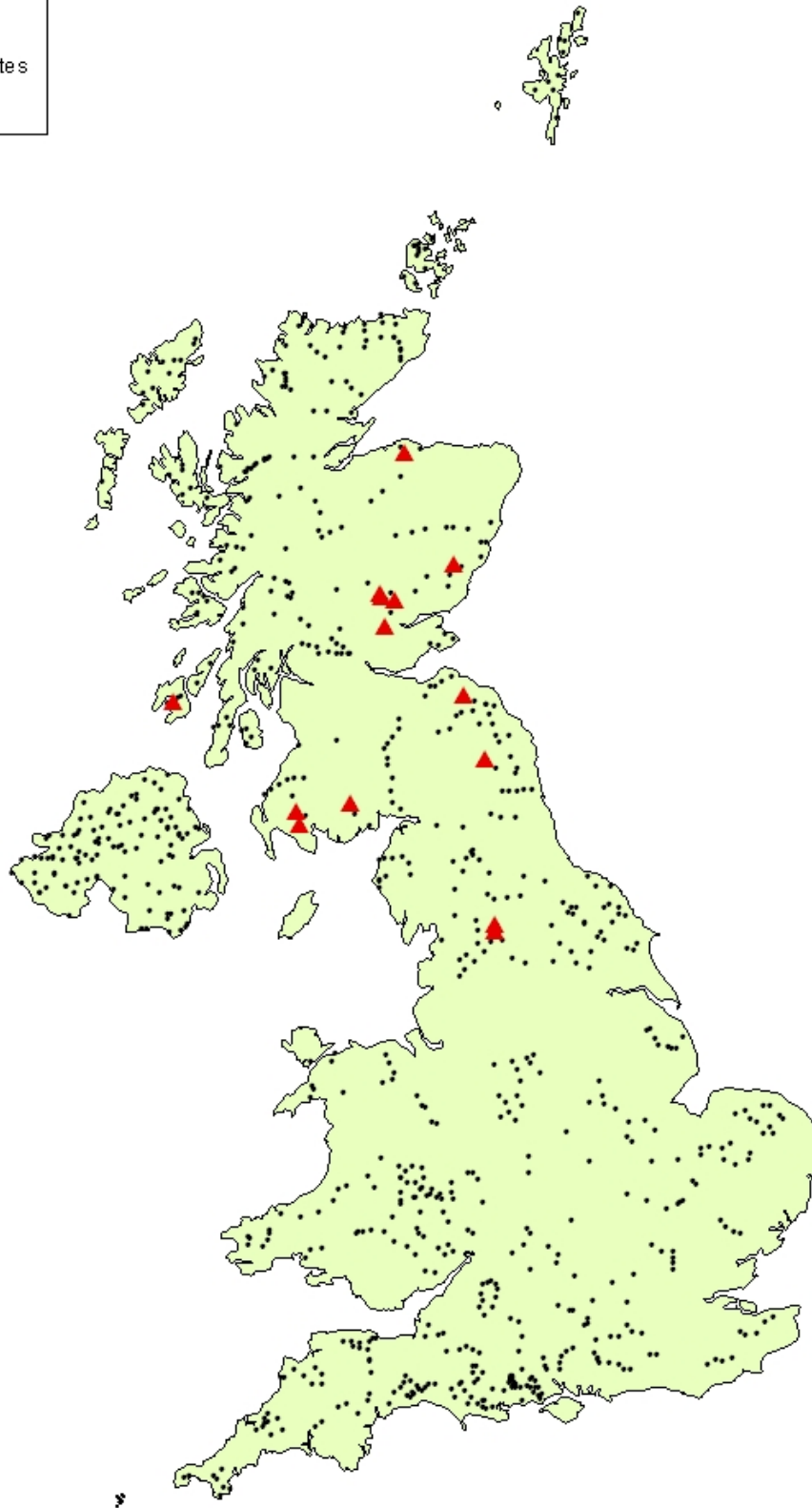
Number of sites =21

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Ecdyonurus sp.	100
Eukiefferiella group	100
Cricotopus group	100
Rhyacophila dorsalis (Curtis, 1834)	95.2
Hydropsyche siltalai Döhler, 1963	95.2
Nais alpina Sperber, 1948	90.5
Enchytraeidae (including Propappidae)	90.5
Lumbricidae (incl. Glossoscolecidae)	90.5
Amphinemura sulcicollis (Stephens, 1836)	90.5
Isoperla grammatica (Poda, 1761)	90.5
Perla bipunctata Pictet, 1833	85.7
Esolus parallelepipedus (Müller, 1806)	85.7
Limnius volckmari (Panzer, 1793)	85.7
Radix balthica (Linnaeus, 1758)	81
Hydracarina	81
Alainites muticus (Linnaeus, 1758)	81
Leuctra fusca (Linnaeus, 1758)	81
Leuctra inermis Kempny, 1899	81
Siphonoperla torrentium (Pictet, 1841)	81
Agapetus sp.	81
Lepidostoma hirtum (Fabricius, 1775)	81
Hexatoma sp.	81
Dicranota sp.	81

Legend

- ▲ End group Sites
- Other sites



End Group GB 12

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GB End Group 12

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	97	275	91.25
Slope (m km ⁻¹)	0.8	5.61	20	5.36
Discharge Category (1-10)	3	5.36	10	2.44
Distance from Source (km)	7.5	36.45	120.7	35.6
Alkalinity (mg/l CaCO ₃)	2.3	35.92	103.3	33.07
Mean Width (m)	7	23.05	76.7	19.58
Mean Depth (cm)	16	33.29	58.6	12.96
Boulders & Cobbles (%)	35	67.43	91	13.45
Pebbles & Gravel (%)	9	30.43	65	13.84
Sand (%)	0	1.79	12	3.36
Silt & Clay (%)	0	0.36	3	0.93
Mean Substratum (phi)	-7.34	-6.15	-4.82	0.68

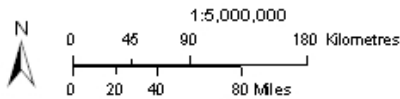
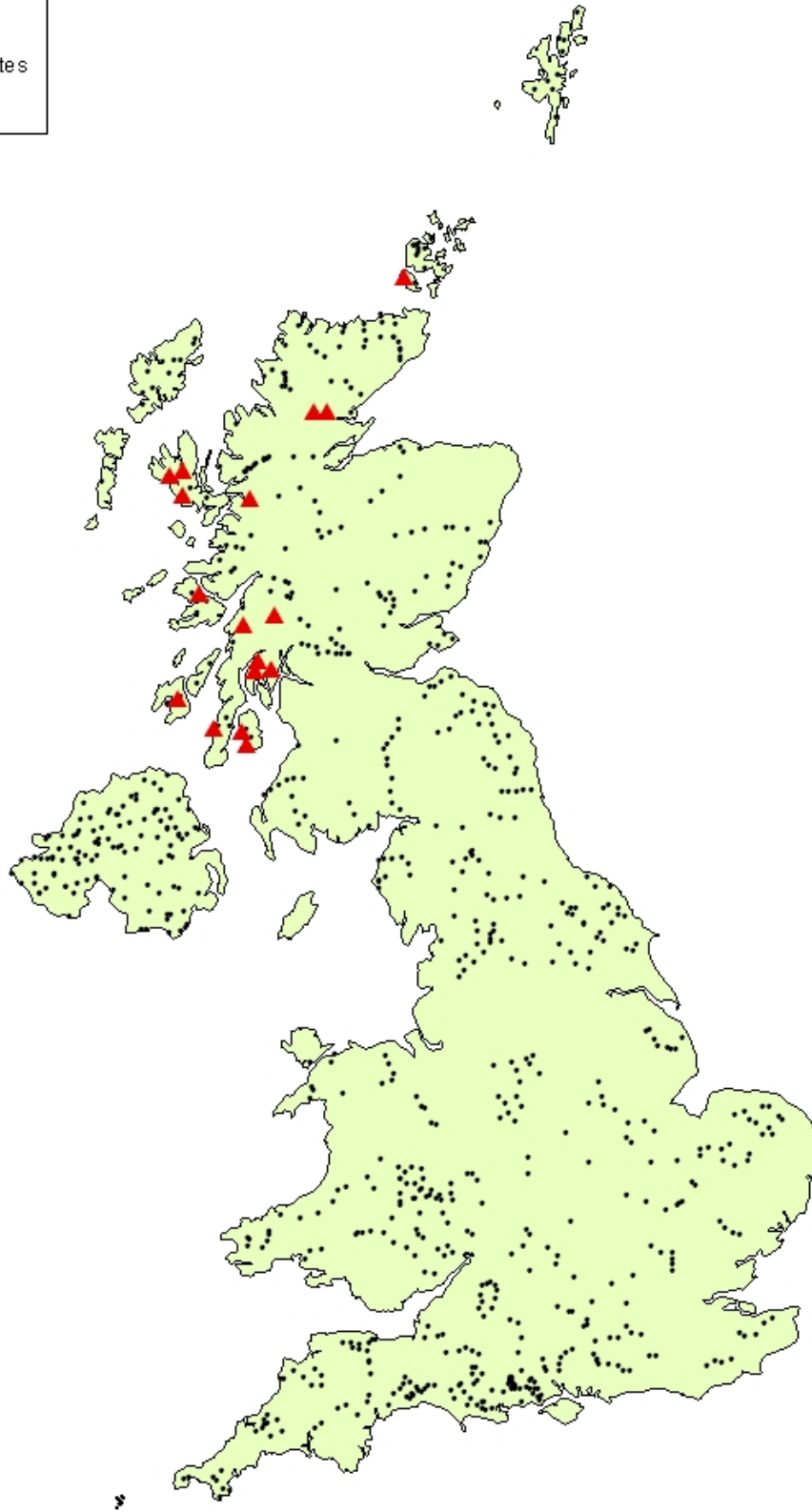
Number of sites =14

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Enchytraeidae (including Propappidae)	100
Lumbricidae (incl. Glossoscolecidae)	100
Hydracarina	100
Baetis rhodani (Pictet, 1843-1845)	100
Ecdyonurus sp.	100
Caenis rivulorum Eaton, 1884	100
Leuctra fusca (Linnaeus, 1758)	100
Isoperla grammatica (Poda, 1761)	100
Elmis aenea (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Hydropsyche siltalai Döhler, 1963	100
Eukiefferiella group	100
Cricotopus group	100
Ancylus fluviatilis O.F. Müller, 1774	92.9
Baetis scambus group	92.9
Rhithrogena sp.	92.9
Serratella ignita (Poda, 1761)	92.9
Siphonoperla torrentium (Pictet, 1841)	92.9
Esolus parallelepipedus (Müller, 1806)	92.9
Polypedilum sp.	92.9
Micropsectra group	92.9
Hydropsyche pellucidula (Curtis, 1834)	85.7
Lepidostoma hirtum (Fabricius, 1775)	85.7
Sericostoma personatum (Spence in Kirby & Spence, 1826)	85.7

Legend

- ▲ End group Sites
- Other sites



End Group GB 13

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GB End Group 13

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	28.29	86	28.05
Slope (m km ⁻¹)	1.5	8.91	26.3	6.57
Discharge Category (1-10)	1	4.47	8	1.81
Distance from Source (km)	5.1	16.65	43	12.27
Alkalinity (mg/l CaCO ₃)	2.9	18.18	47.1	12.59
Mean Width (m)	3.6	14.33	35.7	8.92
Mean Depth (cm)	15.3	25.44	35.4	5.7
Boulders & Cobbles (%)	30	63.06	87	16.04
Pebbles & Gravel (%)	12	34.94	70	14.94
Sand (%)	0	2	10	2.92
Silt & Clay (%)	0	0	0	0
Mean Substratum (phi)	-7.02	-5.98	-4.27	0.79

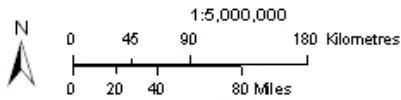
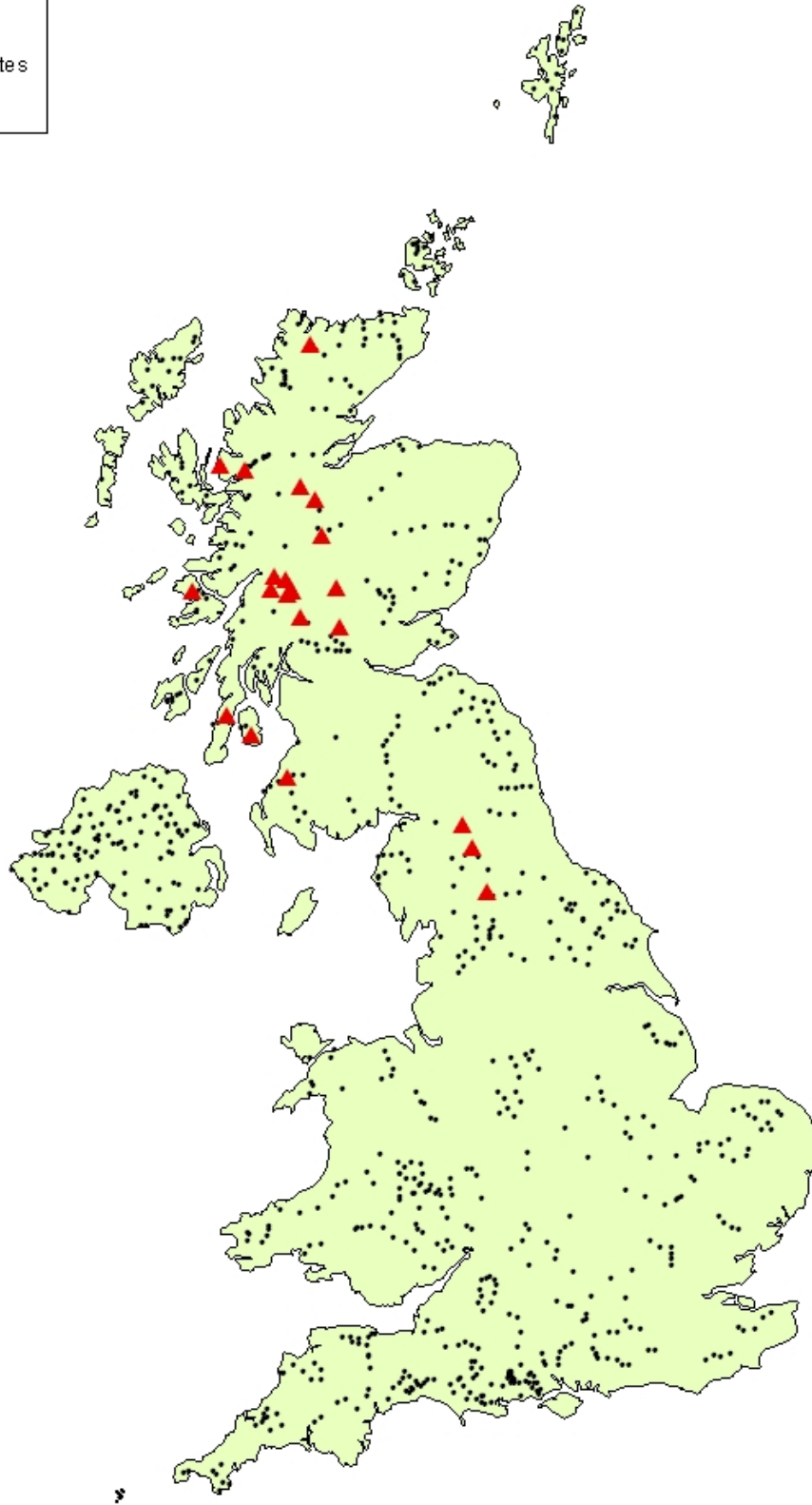
Number of sites =17

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Ecdyonurus sp.	100
Leuctra fusca (Linnaeus, 1758)	100
Limnius volckmari (Panzer, 1793)	100
Eukiefferiella group	100
Enchytraeidae (including Propappidae)	94.1
Serratella ignita (Poda, 1761)	94.1
Leuctra inermis Kempny, 1899	94.1
Isoperla grammatica (Poda, 1761)	94.1
Esolus parallelepipedus (Müller, 1806)	94.1
Rhyacophila dorsalis (Curtis, 1834)	94.1
Hydropsyche siltalai Döhler, 1963	94.1
Nais alpina Sperber, 1948	88.2
Lumbricidae (incl. Glossoscolecidae)	88.2
Protonemura meyeri (Pictet, 1841)	88.2
Lepidostoma hirtum (Fabricius, 1775)	88.2
Dicranota sp.	88.2
Simulium (Simulium) argyreatum group	88.2
Cricotopus group	88.2
Clinocerinae	88.2
Ancylus fluviatilis O.F. Müller, 1774	82.4
Alainites muticus (Linnaeus, 1758)	82.4
Amphinemura sulcicollis (Stephens, 1836)	82.4
Siphonoperla torrentium (Pictet, 1841)	82.4

Legend

- ▲ End group Sites
- Other sites



End Group GB 14

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GB End Group 14

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	12	162.38	550	124.94
Slope (m km ⁻¹)	2.5	21.04	73.6	21.7
Discharge Category (1-10)	1	3.95	6	1.56
Distance from Source (km)	1.8	12.24	27.7	7.82
Alkalinity (mg/l CaCO ₃)	1.7	18.54	78.3	24.24
Mean Width (m)	2.7	11.68	25.2	6.53
Mean Depth (cm)	15.1	25.09	40.9	6.98
Boulders & Cobbles (%)	8	69.62	98	19.38
Pebbles & Gravel (%)	2	29.24	88	18.38
Sand (%)	0	0.95	7	1.77
Silt & Clay (%)	0	0.14	3	0.65
Mean Substratum (phi)	-7.66	-6.32	-3.27	0.96

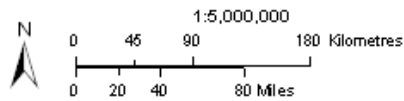
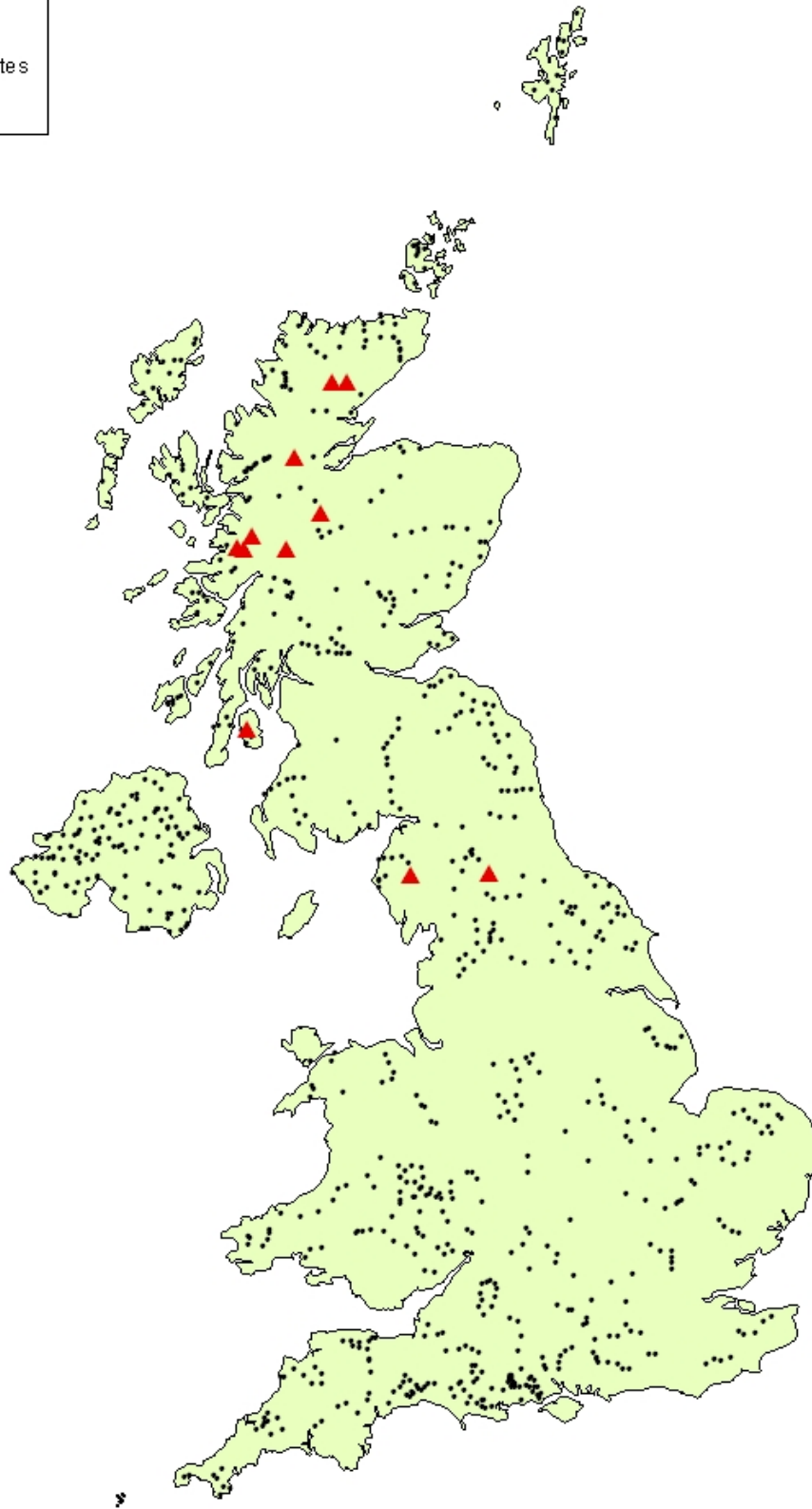
Number of sites =21

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Amphinemura sulcicollis (Stephens, 1836)	100
Leuctra fusca (Linnaeus, 1758)	100
Leuctra inermis Kempny, 1899	100
Ecdyonurus sp.	95.2
Isoperla grammatica (Poda, 1761)	95.2
Siphonoperla torrentium (Pictet, 1841)	95.2
Limnius volckmari (Panzer, 1793)	95.2
Simulium (Simulium) argyreatum group	90.5
Eukiefferiella group	90.5
Rhyacophila dorsalis (Curtis, 1834)	85.7
Electrogena lateralis (Curtis, 1834)	81
Serratella ignita (Poda, 1761)	81
Caenis rivulorum Eaton, 1884	76.2
Perla bipunctata Pictet, 1833	76.2
Dicranota sp.	76.2
Cricotopus group	76.2
Enchytraeidae (including Propappidae)	71.4
Protonemura meyeri (Pictet, 1841)	71.4
Hydropsyche siltalai Döhler, 1963	71.4
Nais alpina Sperber, 1948	66.7
Baetis scambus group	66.7
Alainites muticus (Linnaeus, 1758)	66.7
Elmis aenea (Müller, 1806)	66.7

Legend

- ▲ End group Sites
- Other sites



End Group GB 15

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GB End Group 15

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	126.36	349	113.95
Slope (m km ⁻¹)	3.8	14.77	50	14.18
Discharge Category (1-10)	2	4.82	7	1.72
Distance from Source (km)	2	15.5	59	16.19
Alkalinity (mg/l CaCO ₃)	1.8	8.54	27	7.39
Mean Width (m)	2.3	19.12	40	11.1
Mean Depth (cm)	15	26.43	41.7	8.66
Boulders & Cobbles (%)	13	51.82	97	27.34
Pebbles & Gravel (%)	3	44.27	84	26.04
Sand (%)	0	3.45	8	2.98
Silt & Clay (%)	0	0.45	2	0.82
Mean Substratum (phi)	-7.62	-5.35	-3.68	1.34

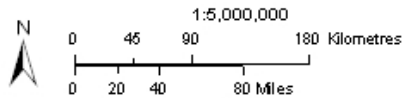
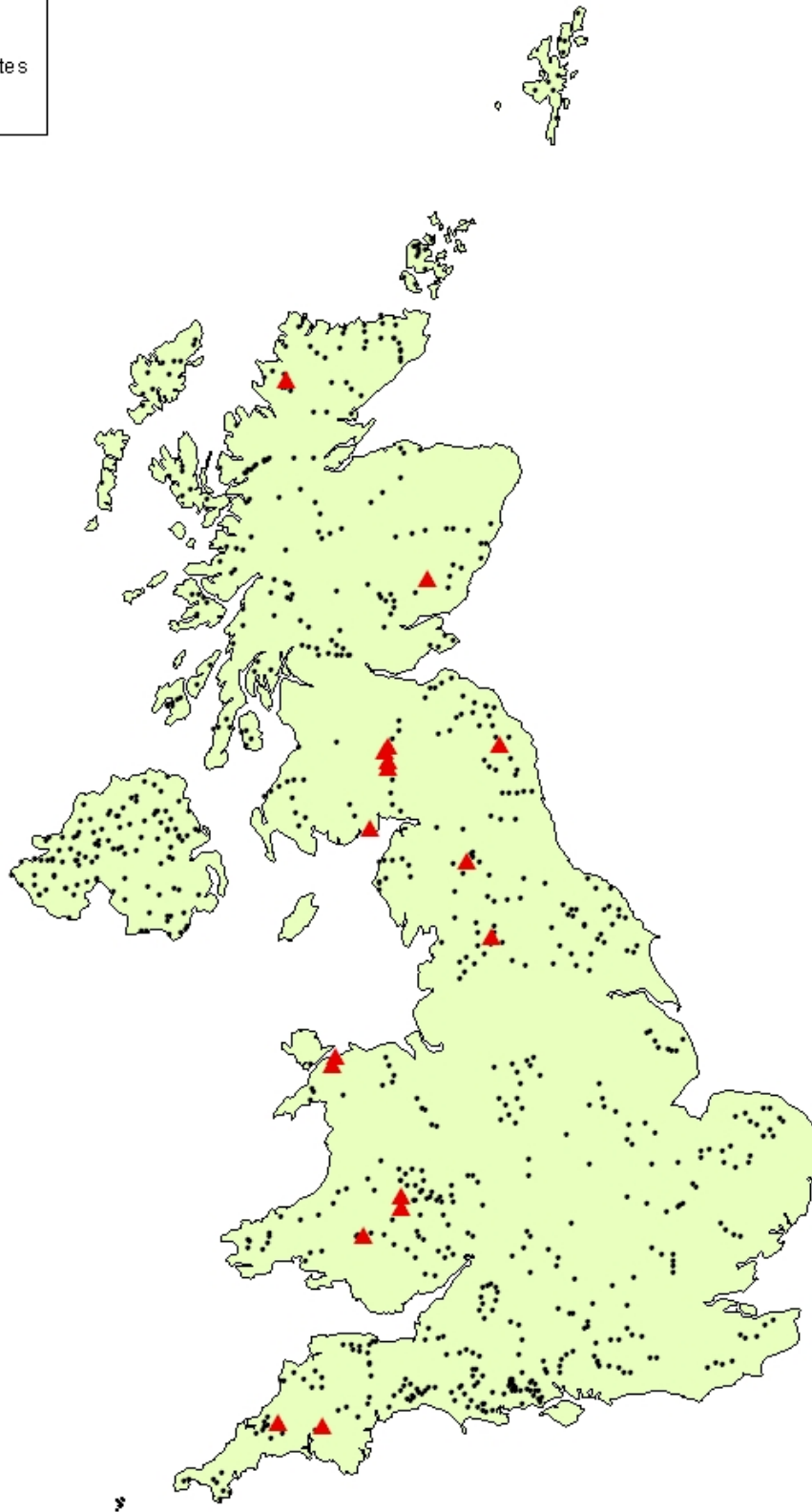
Number of sites =11

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Amphinemura sulcicollis (Stephens, 1836)	100
Leuctra fusca (Linnaeus, 1758)	100
Leuctra inermis Kempny, 1899	100
Siphonoperla torrentium (Pictet, 1841)	100
Limnius volckmari (Panzer, 1793)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Polycentropus flavomaculatus (Pictet, 1834)	100
Enchytraeidae (including Propappidae)	90.9
Baetis scambus group	90.9
Ecdyonurus sp.	90.9
Dicranota sp.	90.9
Cricotopus group	90.9
Paratanytarsus group	90.9
Hydracarina	81.8
Rhithrogena sp.	81.8
Protonemura meyeri (Pictet, 1841)	81.8
Isoperla grammatica (Poda, 1761)	81.8
Hydropsyche siltalai Döhler, 1963	81.8
Micropsectra group	81.8
Nais communis group	72.7
Serratella ignita (Poda, 1761)	72.7
Oreodytes sanmarkii (C.R. Sahlberg, 1826)	72.7
Esolus parallelepipedus (Müller, 1806)	72.7
Hexatoma sp.	72.7

Legend

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- Other sites



End Group GB 16

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GB End Group 16

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	16	223.71	590	140.88
Slope (m km ⁻¹)	2.5	31.84	100	32.29
Discharge Category (1-10)	1	2.24	5	1.3
Distance from Source (km)	1	7.48	25.5	6.03
Alkalinity (mg/l CaCO ₃)	5.8	37.34	103.3	25.77
Mean Width (m)	0.8	6.45	19.7	4.84
Mean Depth (cm)	5.1	21.95	50	9.53
Boulders & Cobbles (%)	35	69.06	89	17.19
Pebbles & Gravel (%)	8	26.65	65	17.17
Sand (%)	0	3.47	35	8.46
Silt & Clay (%)	0	0.82	5	1.51
Mean Substratum (phi)	-7.08	-6.08	-3.53	0.98

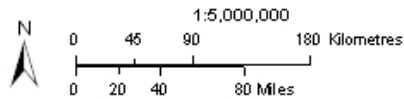
Number of sites =17

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Dicranota</i> sp.	100
<i>Eukiefferiella</i> group	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	94.1
<i>Ecdyonurus</i> sp.	94.1
<i>Serratella ignita</i> (Poda, 1761)	94.1
<i>Amphinemura sulcicollis</i> (Stephens, 1836)	94.1
<i>Leuctra fusca</i> (Linnaeus, 1758)	94.1
<i>Leuctra inermis</i> Kempny, 1899	94.1
<i>Micropsectra</i> group	94.1
Enchytraeidae (including Propappidae)	88.2
<i>Rhithrogena</i> sp.	88.2
<i>Isoperla grammatica</i> (Poda, 1761)	88.2
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	88.2
Hydracarina	82.4
<i>Gammarus pulex</i> (Linnaeus, 1758)	82.4
<i>Hydraena gracilis</i> Germar, 1824	82.4
<i>Simulium</i> (<i>Simulium</i>) <i>argyreatum</i> group	82.4
Lumbricidae (incl. Glossoscolecidae)	76.5
<i>Alainites muticus</i> (Linnaeus, 1758)	76.5
<i>Protonemura meyeri</i> (Pictet, 1841)	76.5
<i>Siphonoperla torrentium</i> (Pictet, 1841)	76.5
<i>Oreodytes sanmarkii</i> (C.R. Sahlberg, 1826)	76.5
<i>Esolus parallelepipedus</i> (Müller, 1806)	76.5

Legend

- ▲ End group Sites
- Other sites



End Group GB 17

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GB End Group 17

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	12	62.13	140	38.08
Slope (m km ⁻¹)	0.9	2.46	7.5	1.58
Discharge Category (1-10)	5	7	9	1.07
Distance from Source (km)	22	49.41	100.9	19.13
Alkalinity (mg/l CaCO ₃)	18.9	56.85	180	51.11
Mean Width (m)	6.2	26.23	70	17.69
Mean Depth (cm)	15.6	36.59	65.8	17.07
Boulders & Cobbles (%)	6	54.4	84	25.63
Pebbles & Gravel (%)	12	41.73	87	23.54
Sand (%)	0	2.2	7	2.65
Silt & Clay (%)	0	1.8	8	2.18
Mean Substratum (phi)	-6.72	-5.38	-2.83	1.3

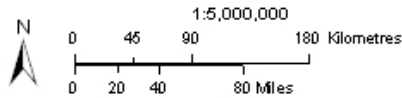
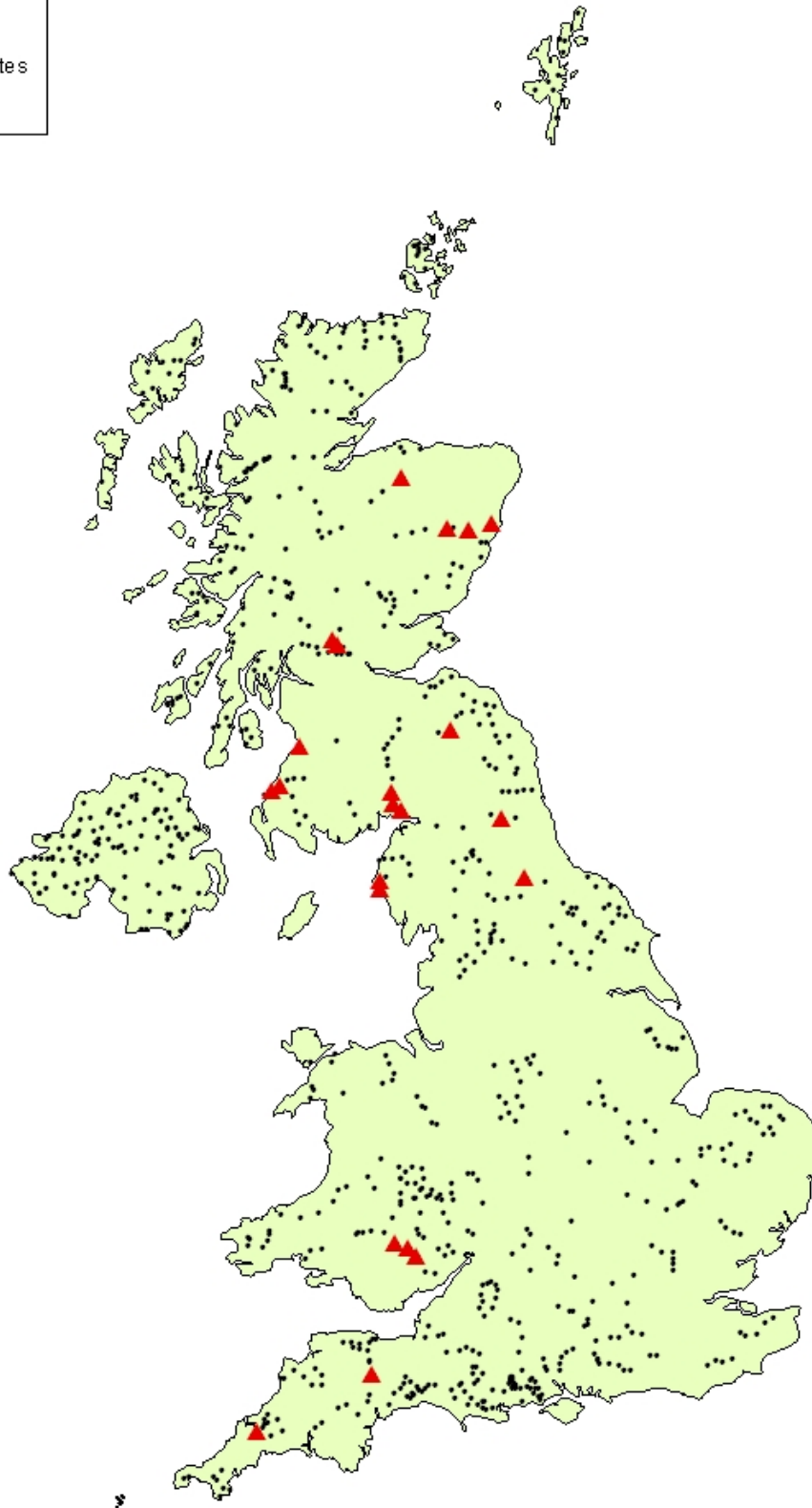
Number of sites =15

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Erpobdella octoculata</i> (Linnaeus, 1758)	100
<i>Gammarus pulex</i> (Linnaeus, 1758)	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Baetis scambus</i> group	100
<i>Ecdyonurus</i> sp.	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Leuctra fusca</i> (Linnaeus, 1758)	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Esolus parallelepipedus</i> (Müller, 1806)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	100
<i>Hydropsyche siltalai</i> Döhler, 1963	100
<i>Thienemannimyia</i> group	100
<i>Eukiefferiella</i> group	100
<i>Cricotopus</i> group	100
<i>Polypedilum</i> sp.	100
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	93.3
<i>Hydracarina</i>	93.3
<i>Alainites muticus</i> (Linnaeus, 1758)	93.3
<i>Rhithrogena</i> sp.	93.3
<i>Caenis rivulorum</i> Eaton, 1884	93.3
<i>Isoperla grammatica</i> (Poda, 1761)	93.3
<i>Orectochilus villosus</i> (O.F. Müller, 1776)	93.3
<i>Oulimnius tuberculatus</i> (Müller, 1806)	93.3
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	93.3

Legend

- ▲ End group Sites
- Other sites



End Group GB 18

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GB End Group 18

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	52.64	135	36.55
Slope (m km ⁻¹)	0.8	2.45	6	1.51
Discharge Category (1-10)	5	7.41	9	1.14
Distance from Source (km)	21	57	125.9	28.35
Alkalinity (mg/l CaCO ₃)	9.2	45.28	83	21.17
Mean Width (m)	5	39.23	116.7	27.8
Mean Depth (cm)	18.2	51.18	113.3	28.89
Boulders & Cobbles (%)	40	65.91	92	15.03
Pebbles & Gravel (%)	7	30.09	51	13.7
Sand (%)	0	2.95	11	3.08
Silt & Clay (%)	0	1	7	2.12
Mean Substratum (phi)	-7.43	-5.95	-4.22	0.88

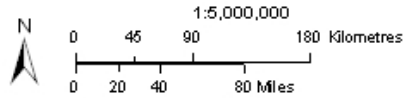
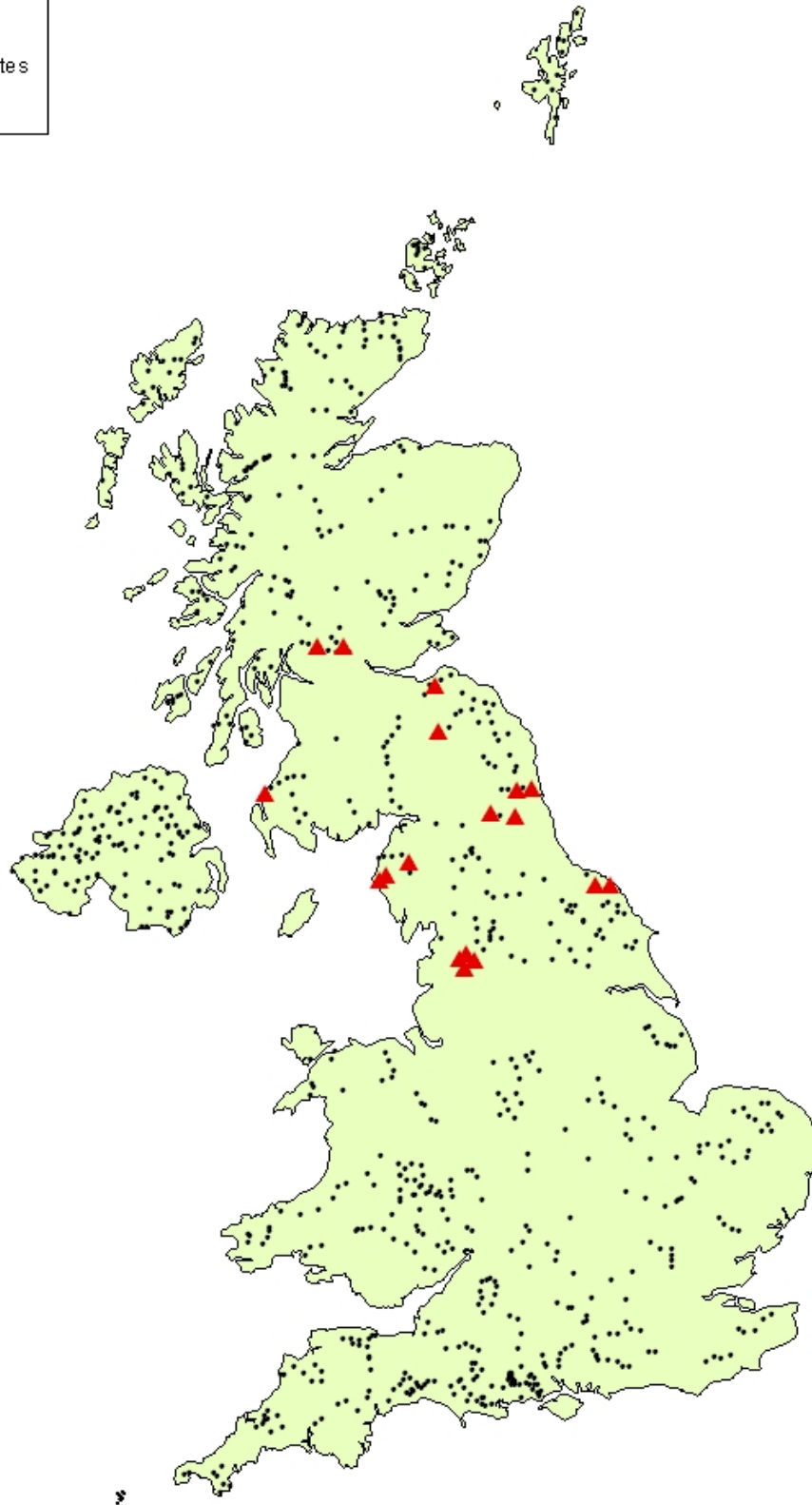
Number of sites =22

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Elmis aenea (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Hydropsyche siltalai Döhler, 1963	100
Eukiefferiella group	100
Enchytraeidae (including Propappidae)	95.5
Hydracarina	95.5
Baetis scambus group	95.5
Rhithrogena sp.	95.5
Ecdyonurus sp.	95.5
Serratella ignita (Poda, 1761)	95.5
Esolus parallelepipedus (Müller, 1806)	95.5
Rhyacophila dorsalis (Curtis, 1834)	95.5
Hydropsyche pellucidula (Curtis, 1834)	95.5
Polypedilum sp.	95.5
Gammarus pulex (Linnaeus, 1758)	90.9
Leuctra fusca (Linnaeus, 1758)	90.9
Glossosoma sp.	90.9
Simulium (Simulium) reptans (Linnaeus, 1758)	90.9
Nais alpina Sperber, 1948	86.4
Ceratopogonidae	86.4
Cricotopus group	86.4
Atherix ibis (Fabricius, 1798)	86.4
Potamopyrgus antipodarum (J.E.Gray, 1843)	81.8
Ancylus fluviatilis O.F. Müller, 1774	81.8

Legend

- ▲ End group Sites
- Other sites



End Group GB 19

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GB End Group 19

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	58.61	125	37.17
Slope (m km ⁻¹)	0.6	3.22	6	1.63
Discharge Category (1-10)	4	6	9	1.53
Distance from Source (km)	10	34.6	89.9	22.22
Alkalinity (mg/l CaCO ₃)	9	68.27	170.1	45.27
Mean Width (m)	7.7	24.78	106.7	24.55
Mean Depth (cm)	17.2	32.21	66.1	15.76
Boulders & Cobbles (%)	12	58.28	93	21.68
Pebbles & Gravel (%)	7	36.28	78	20.25
Sand (%)	0	4.5	29	6.83
Silt & Clay (%)	0	1	7	2.2
Mean Substratum (phi)	-7.44	-5.52	-2.96	1.21

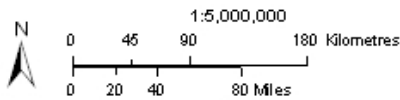
Number of sites =18

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Caenis rivulorum Eaton, 1884	100
Elmis aenea (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Hydropsyche pellucidula (Curtis, 1834)	100
Hydropsyche siltalai Döhler, 1963	100
Ceratopogonidae	100
Cricotopus group	100
Micropsectra group	100
Ancylus fluviatilis O.F. Müller, 1774	94.4
Enchytraeidae (including Propappidae)	94.4
Hydracarina	94.4
Ecdyonurus sp.	94.4
Serratella ignita (Poda, 1761)	94.4
Leuctra fusca (Linnaeus, 1758)	94.4
Isoperla grammatica (Poda, 1761)	94.4
Rhyacophila dorsalis (Curtis, 1834)	94.4
Polycentropus flavomaculatus (Pictet, 1834)	94.4
Thienemannimyia group	94.4
Eukiefferiella group	94.4
Polypedilum sp.	94.4
Stylodrilus heringianus Claparède, 1862	88.9
Esolus parallelepipedus (Müller, 1806)	88.9
Oulimnius tuberculatus (Müller, 1806)	88.9

Legend

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- Other sites



End Group GB 20

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GB End Group 20

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	3	98	180	48.79
Slope (m km ⁻¹)	1.2	4.59	15	3.98
Discharge Category (1-10)	2	3.6	6	1.43
Distance from Source (km)	5	20.97	41.6	12.8
Alkalinity (mg/l CaCO ₃)	23	87.18	174.3	50.21
Mean Width (m)	3.9	9.6	20	5.02
Mean Depth (cm)	15.6	33.65	73.3	17.23
Boulders & Cobbles (%)	13	46.8	77	25.28
Pebbles & Gravel (%)	15	39.6	80	21.95
Sand (%)	1	5.9	12	3.07
Silt & Clay (%)	0	7.5	24	7.2
Mean Substratum (phi)	-6.35	-4.2	-1.08	1.71

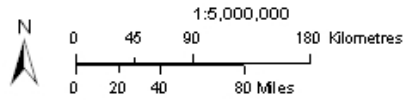
Number of sites =10

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Ancyclus fluviatilis</i> O.F. Müller, 1774	100
Hydracarina	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Ecdyonurus</i> sp.	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Leuctra fusca</i> (Linnaeus, 1758)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	100
<i>Polycentropus flavomaculatus</i> (Pictet, 1834)	100
<i>Hydropsyche siltalai</i> Döhler, 1963	100
<i>Dicranota</i> sp.	100
<i>Limnodrilus hoffmeisteri</i> Claparède, 1862	90
<i>Baetis scambus</i> group	90
<i>Alainites muticus</i> (Linnaeus, 1758)	90
<i>Rhithrogena</i> sp.	90
<i>Ephemera danica</i> Müller, 1764	90
<i>Caenis rivulorum</i> Eaton, 1884	90
<i>Isoperla grammatica</i> (Poda, 1761)	90
<i>Elmis aenea</i> (Müller, 1806)	90
<i>Oulimnius tuberculatus</i> (Müller, 1806)	90
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	90
Ceratopogonidae	90
<i>Eukiefferiella</i> group	90
<i>Cricotopus</i> group	90
<i>Polypedilum</i> sp.	90

Legend

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- Other sites



End Group GB 21

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GB End Group 21

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	15	120.54	255	85.85
Slope (m km ⁻¹)	1.4	7	30	7.64
Discharge Category (1-10)	2	3.92	7	1.5
Distance from Source (km)	4	20.15	47	12.41
Alkalinity (mg/l CaCO ₃)	14	96.11	191	57.33
Mean Width (m)	2.3	8.81	21.7	6.3
Mean Depth (cm)	8.3	20.45	34.1	7.73
Boulders & Cobbles (%)	5	48.23	87	28.81
Pebbles & Gravel (%)	13	45.62	84	24.56
Sand (%)	0	4.46	13	4.63
Silt & Clay (%)	0	1.62	5	2.02
Mean Substratum (phi)	-7.16	-5.01	-2.5	1.66

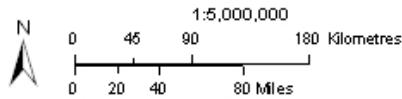
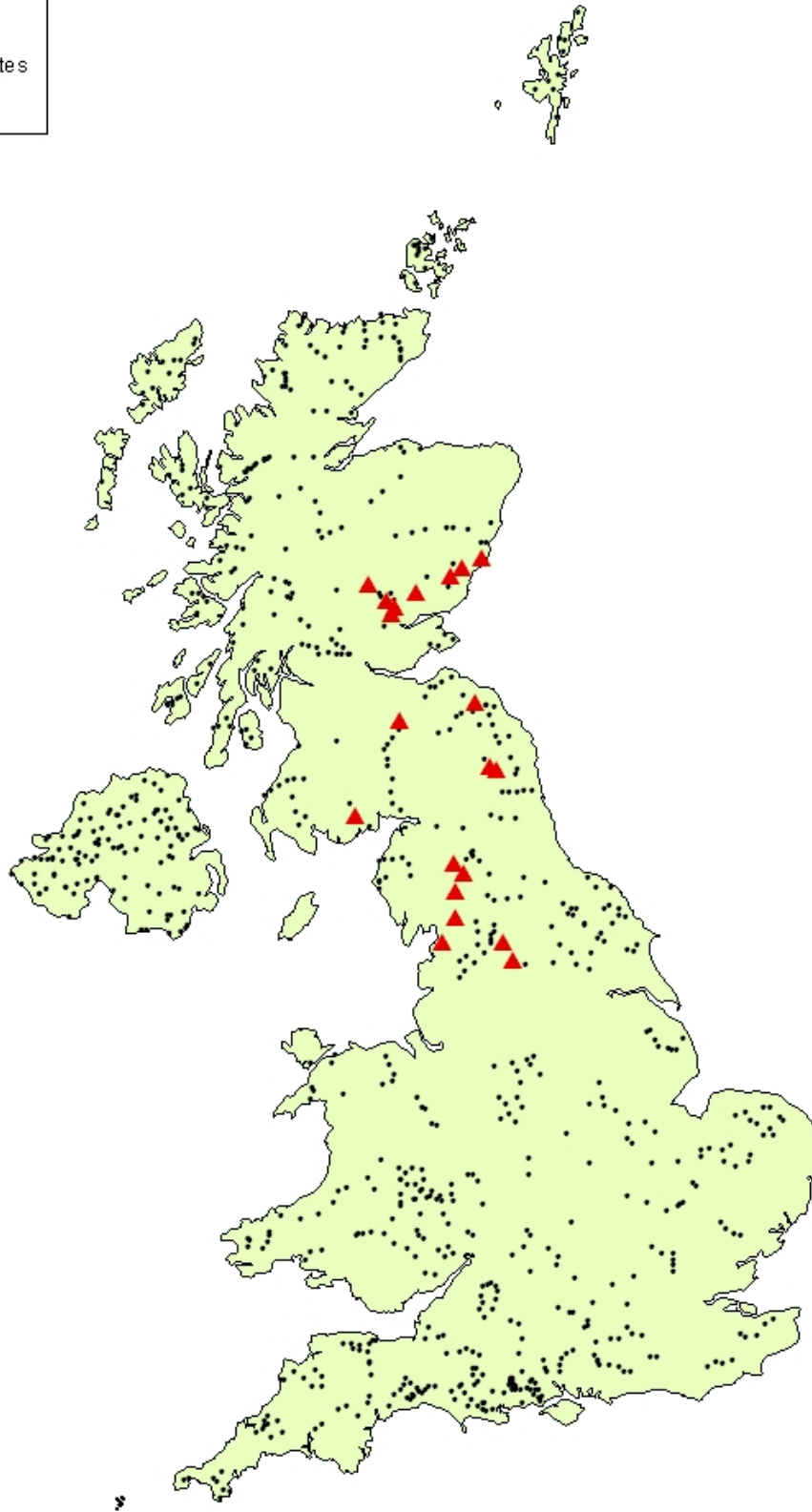
Number of sites =13

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Lumbricidae (incl. Glossoscolecidae)	100
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Ecdyonurus sp.	100
Serratella ignita (Poda, 1761)	100
Leuctra fusca (Linnaeus, 1758)	100
Elmis aenea (Müller, 1806)	100
Esolus parallelepipedus (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Agapetus sp.	100
Hydropsyche siltalai Döhler, 1963	100
Dicranota sp.	100
Simulium (Simulium) ornatum group	100
Thienemannimyia group	100
Brillia bifida (Kieffer, 1909)	100
Eukiefferiella group	100
Cricotopus group	100
Polypedilum sp.	100
Micropsectra group	100
Potamopyrgus antipodarum (J.E.Gray, 1843)	92.3
Ancylus fluviatilis O.F. Müller, 1774	92.3
Stylodrilus heringianus Claparède, 1862	92.3
Gammarus pulex (Linnaeus, 1758)	92.3
Baetis scambus group	92.3

Legend

- ▲ End group Sites
- Other sites



End Group GB 22

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GB End Group 22

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	8	77.05	191	62.62
Slope (m km ⁻¹)	0.5	2.86	10	2.38
Discharge Category (1-10)	3	6.7	10	1.95
Distance from Source (km)	11	53.98	137.8	36.92
Alkalinity (mg/l CaCO ₃)	11.7	60.42	138	38.07
Mean Width (m)	3.8	32.97	78.3	23.66
Mean Depth (cm)	15	38.93	67.3	15.83
Boulders & Cobbles (%)	13	56.6	82	20.04
Pebbles & Gravel (%)	18	39.85	80	18.29
Sand (%)	0	2.4	9	3.03
Silt & Clay (%)	0	1.05	10	2.42
Mean Substratum (phi)	-6.94	-5.55	-3.42	1.11

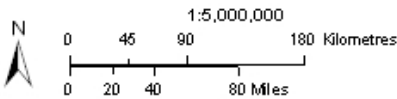
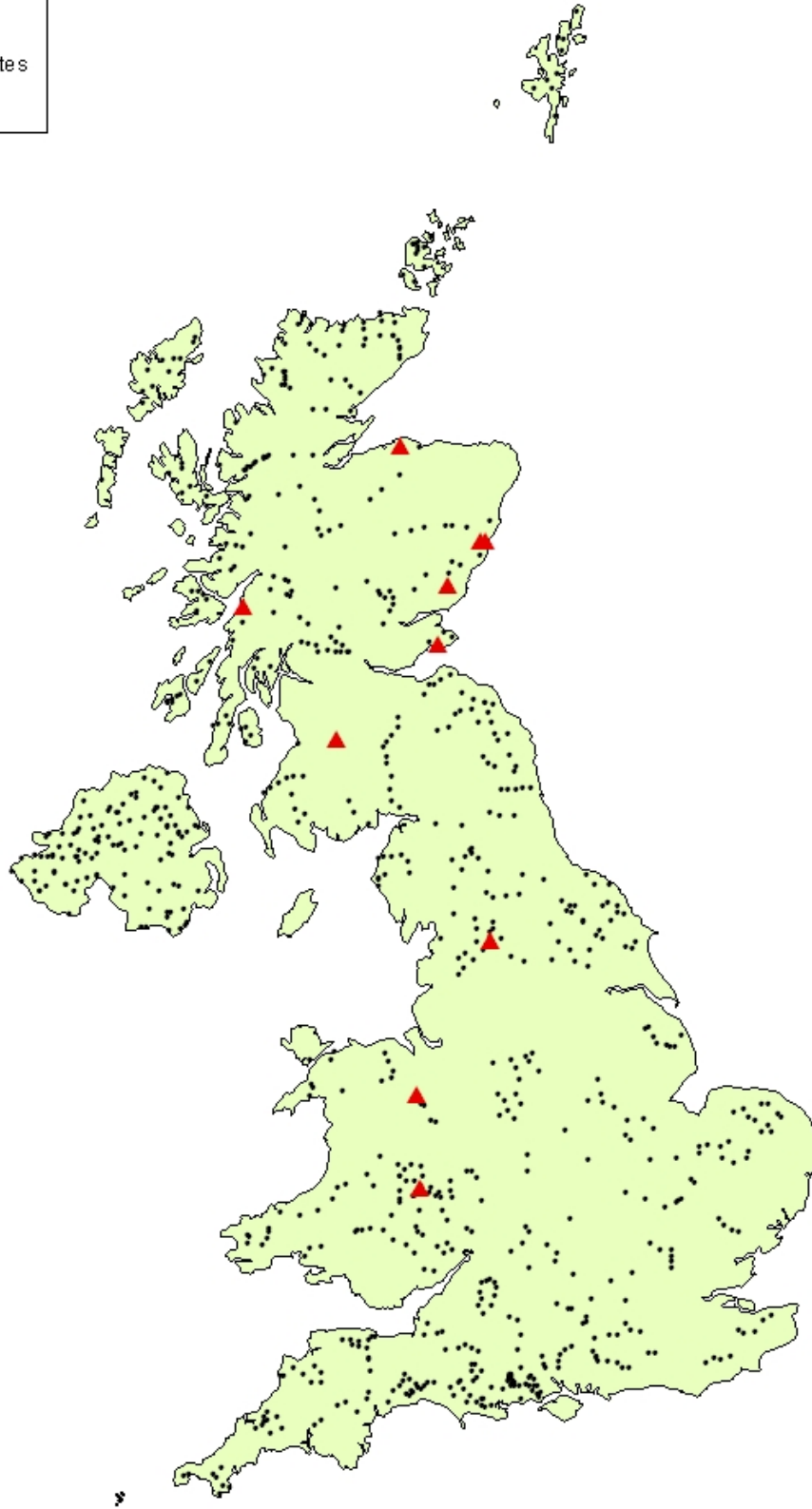
Number of sites =20

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Baetis scambus group	100
Ecdyonurus sp.	100
Serratella ignita (Poda, 1761)	100
Leuctra fusca (Linnaeus, 1758)	100
Isoperla grammatica (Poda, 1761)	100
Elmis aenea (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Hydropsyche siltalai Döhler, 1963	100
Eukiefferiella group	100
Polypedilum sp.	100
Gammarus pulex (Linnaeus, 1758)	95
Rhithrogena sp.	95
Caenis rivulorum Eaton, 1884	95
Esolus parallelepipedus (Müller, 1806)	95
Lepidostoma hirtum (Fabricius, 1775)	95
Tipula (Yamatotipula) montium group	95
Potamopyrgus antipodarum (J.E.Gray, 1843)	90
Ancylus fluviatilis O.F. Müller, 1774	90
Stylodrilus heringianus Claparède, 1862	90
Lumbricidae (incl. Glossoscolecidae)	90
Hydropsyche pellucidula (Curtis, 1834)	90
Cricotopus group	90
Micropsectra group	90

Legend

- ▲ End group Sites
- Other sites



End Group GB 23

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GB End Group 23

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	4	76.8	230	80.01
Slope (m km ⁻¹)	2.3	12.33	50	14.77
Discharge Category (1-10)	1	2.5	4	1.18
Distance from Source (km)	2	12.43	32	8.88
Alkalinity (mg/l CaCO ₃)	28	84.01	154.1	43.22
Mean Width (m)	2.6	5.81	9.9	2.19
Mean Depth (cm)	7.9	19.49	39.3	8.47
Boulders & Cobbles (%)	3	53.5	84	26.43
Pebbles & Gravel (%)	12	35.2	63	18.37
Sand (%)	0	9.6	50	14.75
Silt & Clay (%)	0	1.8	7	2.57
Mean Substratum (phi)	-6.76	-4.95	-0.76	1.87

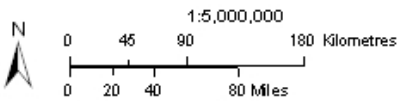
Number of sites =10

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Lumbricidae (incl. Glossoscolecidae)	100
Gammarus pulex (Linnaeus, 1758)	100
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Ecdyonurus sp.	100
Serratella ignita (Poda, 1761)	100
Isoperla grammatica (Poda, 1761)	100
Elmis aenea (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Eukiefferiella group	100
Cricotopus group	100
Ancylus fluviatilis O.F. Müller, 1774	90
Enchytraeidae (including Propappidae)	90
Rhyacophila dorsalis (Curtis, 1834)	90
Agapetus sp.	90
Dicranota sp.	90
Potamopyrgus antipodarum (J.E.Gray, 1843)	80
Radix balthica (Linnaeus, 1758)	80
Oreodytes sanmarkii (C.R. Sahlberg, 1826)	80
Sericostoma personatum (Spence in Kirby & Spence, 1826)	80
Simulium (Simulium) ornatum group	80
Brillia bifida (Kieffer, 1909)	80
Polypedilum sp.	80
Micropsectra group	80
Clinocerinae	80

Legend

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- Other sites



End Group GB 24

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GB End Group 24

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	8	103.73	150	46.89
Slope (m km ⁻¹)	0.7	4.15	10	2.47
Discharge Category (1-10)	1	3.91	6	1.64
Distance from Source (km)	6	23.06	38	10.87
Alkalinity (mg/l CaCO ₃)	39.7	121.45	196.6	56.19
Mean Width (m)	3	10.96	20	5.95
Mean Depth (cm)	9	23.17	40.6	8.81
Boulders & Cobbles (%)	0	45.27	83	28.11
Pebbles & Gravel (%)	13	45	95	28.08
Sand (%)	0	6.55	20	7.37
Silt & Clay (%)	0	3.09	13	3.81
Mean Substratum (phi)	-6.86	-4.6	-2.8	1.52

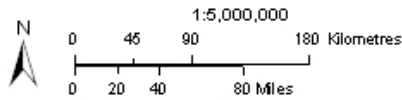
Number of sites =11

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Potamopyrgus antipodarum (J.E.Gray, 1843)	100
Gammarus pulex (Linnaeus, 1758)	100
Baetis rhodani (Pictet, 1843-1845)	100
Serratella ignita (Poda, 1761)	100
Caenis rivulorum Eaton, 1884	100
Leuctra fusca (Linnaeus, 1758)	100
Isoperla grammatica (Poda, 1761)	100
Elmis aenea (Müller, 1806)	100
Simulium (Simulium) ornatum group	100
Eukiefferiella group	100
Cricotopus group	100
Hydracarina	90.9
Rhithrogena sp.	90.9
Ecdyonurus sp.	90.9
Ephemera danica Müller, 1764	90.9
Rhyacophila dorsalis (Curtis, 1834)	90.9
Sericostoma personatum (Spence in Kirby & Spence, 1826)	90.9
Dicranota sp.	90.9
Ceratopogonidae	90.9
Polypedilum sp.	90.9
Radix balthica (Linnaeus, 1758)	81.8
Ancylus fluviatilis O.F. Müller, 1774	81.8
Stylodrilus heringianus Claparède, 1862	81.8
Limnodrilus hoffmeisteri Claparède, 1862	81.8
Lumbricidae (incl. Glossoscolecidae)	81.8

Legend

- ▲ End group Sites
- Other sites



End Group GB 25

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GB End Group 25

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	102.48	275	81.22
Slope (m km ⁻¹)	2.2	7.73	50	10.05
Discharge Category (1-10)	1	3.3	6	1.49
Distance from Source (km)	4	14.47	37	9.18
Alkalinity (mg/l CaCO ₃)	5.7	28.74	153	34.24
Mean Width (m)	3.2	9.46	18	4.15
Mean Depth (cm)	10	25.81	50.4	10.85
Boulders & Cobbles (%)	0	50.3	90	30.62
Pebbles & Gravel (%)	7	40	87	27.28
Sand (%)	0	5.96	14	3.59
Silt & Clay (%)	0	3.91	11	3.49
Mean Substratum (phi)	-7.2	-4.76	-1.91	1.71

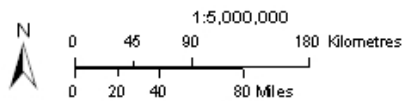
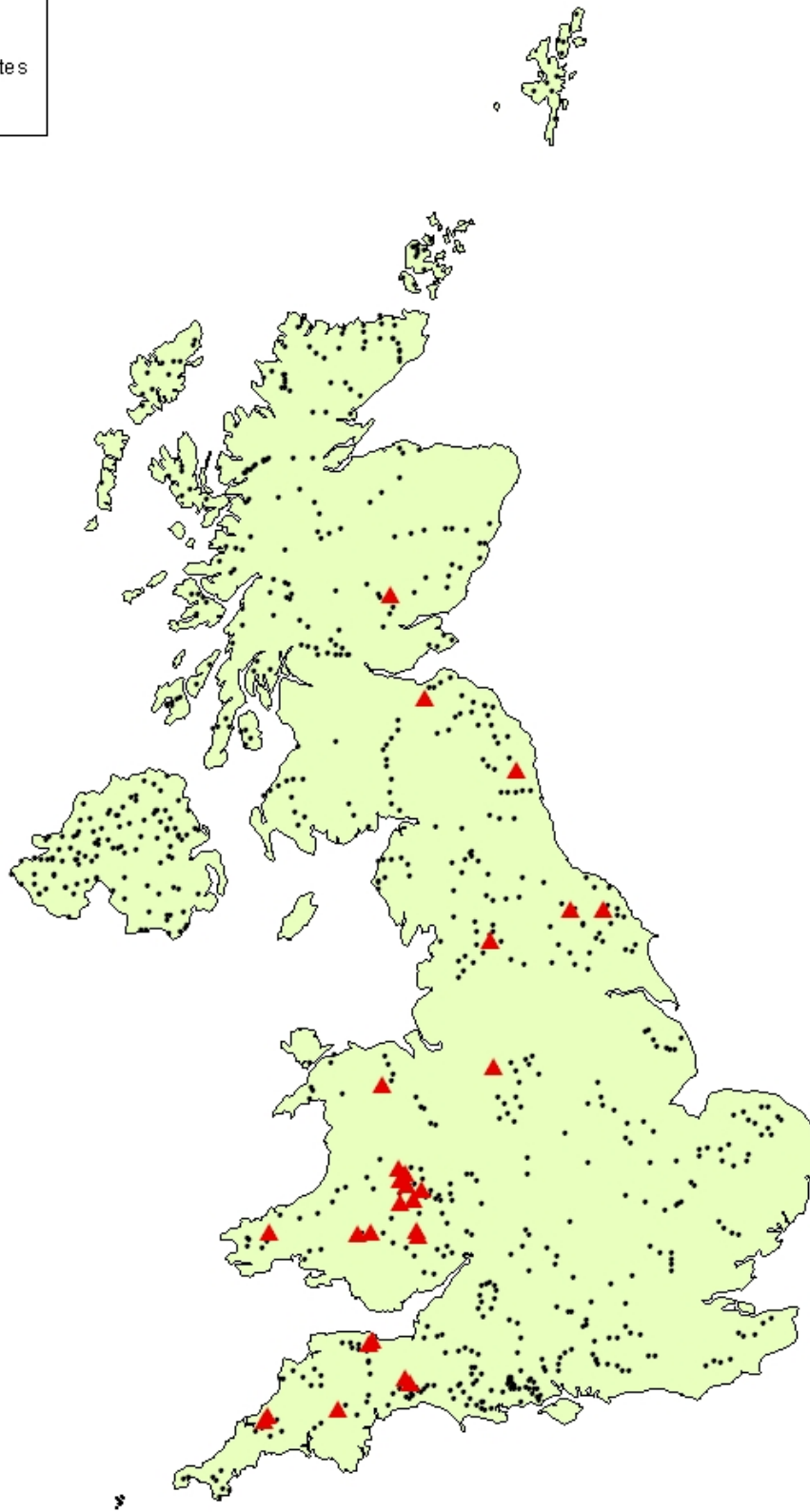
Number of sites =23

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Serratella ignita (Poda, 1761)	100
Limnius volckmari (Panzer, 1793)	100
Thienemannimyia group	100
Eukiefferiella group	100
Polypedilum sp.	100
Micropsectra group	100
Ancylus fluviatilis O.F. Müller, 1774	95.7
Leuctra fusca (Linnaeus, 1758)	95.7
Elmis aenea (Müller, 1806)	95.7
Hydropsyche pellucidula (Curtis, 1834)	95.7
Hydropsyche siltalai Döhler, 1963	95.7
Lepidostoma hirtum (Fabricius, 1775)	95.7
Sericostoma personatum (Spence in Kirby & Spence, 1826)	95.7
Dicranota sp.	95.7
Lumbriculus group	91.3
Enchytraeidae (including Propappidae)	91.3
Hydracarina	91.3
Siphonoperla torrentium (Pictet, 1841)	91.3
Agapetus sp.	91.3
Simulium (Simulium) ornatum group	91.3
Brillia bifida (Kieffer, 1909)	91.3
Lumbricidae (incl. Glossoscolecidae)	87
Rhithrogena sp.	87
Ecdyonurus sp.	87

Legend

- ▲ End group Sites
- Other sites



End Group GB 26

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GB End Group 26

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	60	176.48	350	78.11
Slope (m km ⁻¹)	2.3	13.64	66.7	14.05
Discharge Category (1-10)	1	2.37	6	1.45
Distance from Source (km)	1	9.06	25	6.26
Alkalinity (mg/l CaCO ₃)	6.9	76.79	167.6	46.61
Mean Width (m)	1	6.53	27	5.43
Mean Depth (cm)	7	20.03	45.1	8.91
Boulders & Cobbles (%)	9	49.7	82	21.23
Pebbles & Gravel (%)	12	40.85	82	20.76
Sand (%)	0	5.48	32	6.65
Silt & Clay (%)	0	3.96	27	5.79
Mean Substratum (phi)	-6.64	-4.76	-1.97	1.37

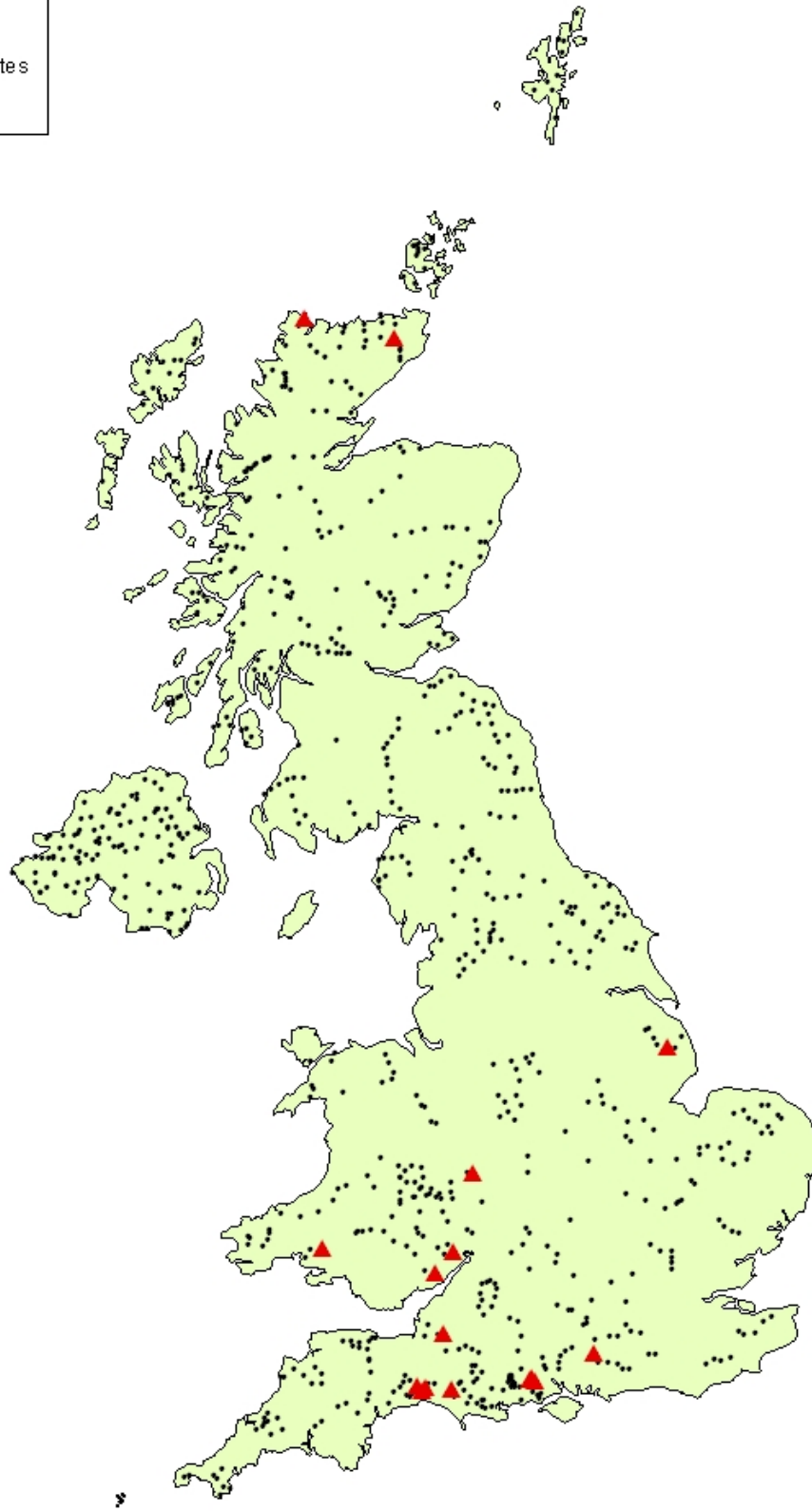
Number of sites =27

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Serratella ignita (Poda, 1761)	100
Leuctra fusca (Linnaeus, 1758)	100
Isoperla grammatica (Poda, 1761)	100
Limnius volckmari (Panzer, 1793)	100
Sericostoma personatum (Spence in Kirby & Spence, 1826)	100
Dicranota sp.	100
Gammarus pulex (Linnaeus, 1758)	96.3
Ecdyonurus sp.	96.3
Amphinemura sulcicollis (Stephens, 1836)	96.3
Elmis aenea (Müller, 1806)	96.3
Rhyacophila dorsalis (Curtis, 1834)	96.3
Polypedilum sp.	96.3
Micropsectra group	96.3
Eukiefferiella group	92.6
Lumbricidae (incl. Glossoscolecidae)	88.9
Brillia bifida (Kieffer, 1909)	88.9
Enchytraeidae (including Propappidae)	85.2
Alainites muticus (Linnaeus, 1758)	85.2
Cricotopus group	85.2
Simulium (Simulium) argyreatum group	81.5
Thienemannimyia group	81.5
Clinocerinae	81.5
Stylodrilus heringianus Claparède, 1862	77.8

Legend

- ▲ End group Sites
- Other sites



End Group GB 27

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GB End Group 27

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	27	77.44	220	47.07
Slope (m km ⁻¹)	1.7	9.86	20	5.13
Discharge Category (1-10)	1	1.19	2	0.4
Distance from Source (km)	0.6	3.22	13	3.06
Alkalinity (mg/l CaCO ₃)	6	102.92	247.5	72.26
Mean Width (m)	0.8	2.8	7	1.7
Mean Depth (cm)	4.7	16.61	44.4	10.85
Boulders & Cobbles (%)	1	30	80	27.08
Pebbles & Gravel (%)	20	54	89	22.02
Sand (%)	0	9.75	53	12.47
Silt & Clay (%)	0	6.31	20	6.17
Mean Substratum (phi)	-6.85	-3.38	0.05	1.92

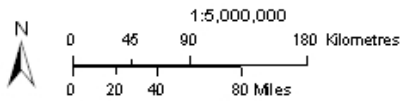
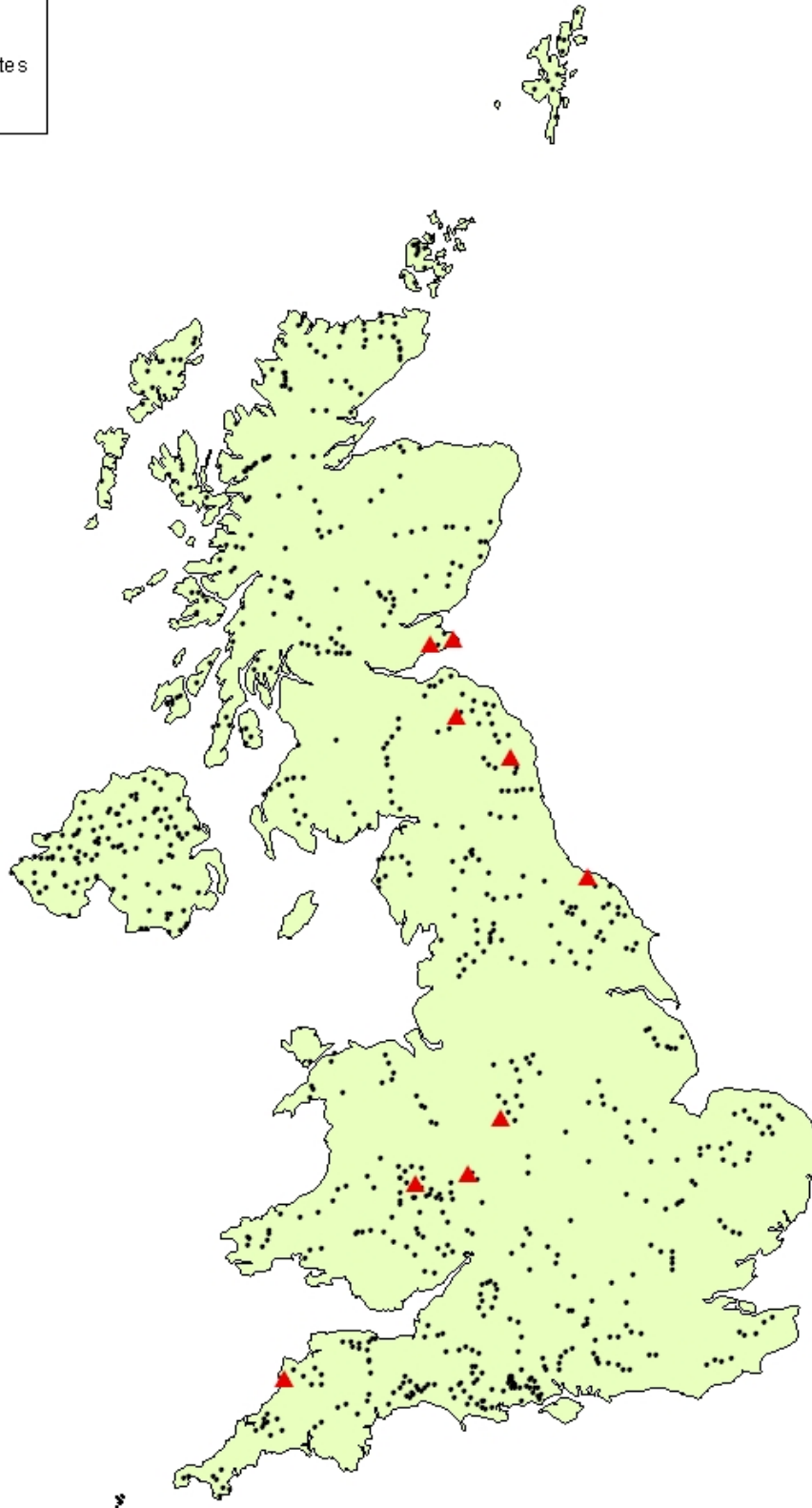
Number of sites =16

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Potamophylax group	100
Micropsectra group	100
Ecdyonurus sp.	93.8
Halesus sp.	93.8
Polypedilum sp.	93.8
Potamopyrgus antipodarum (J.E.Gray, 1843)	87.5
Gammarus pulex (Linnaeus, 1758)	87.5
Baetis rhodani (Pictet, 1843-1845)	87.5
Serratella ignita (Poda, 1761)	87.5
Isoperla grammatica (Poda, 1761)	87.5
Sericostoma personatum (Spence in Kirby & Spence, 1826)	87.5
Eloeophila sp.	87.5
Dicranota sp.	87.5
Brillia bifida (Kieffer, 1909)	87.5
Leuctra fusca (Linnaeus, 1758)	81.2
Platambus maculatus (Linnaeus, 1758)	81.2
Elmis aenea (Müller, 1806)	81.2
Limnius volckmari (Panzer, 1793)	81.2
Rhyacophila dorsalis (Curtis, 1834)	81.2
Ceratopogonidae	81.2
Simulium (Simulium) ornatum group	81.2
Macropelopia sp.	81.2
Thienemannimyia group	81.2
Ancylus fluviatilis O.F. Müller, 1774	75
Paraleptophlebia submarginata (Stephens, 1835)	75

Legend

- ▲ End group Sites
- Other sites



End Group GB 28

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GB End Group 28

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	35	99.44	225	61.43
Slope (m km ⁻¹)	0.1	18.26	40	14.26
Discharge Category (1-10)	1	1	1	0
Distance from Source (km)	1.5	3.98	7	1.86
Alkalinity (mg/l CaCO ₃)	32	105.31	224	60.74
Mean Width (m)	1.2	2.7	7	1.91
Mean Depth (cm)	7.8	10.66	17.8	3.4
Boulders & Cobbles (%)	17	51.22	75	21.49
Pebbles & Gravel (%)	15	39.11	70	18.65
Sand (%)	0	5.44	13	4.56
Silt & Clay (%)	0	4.33	17	6.46
Mean Substratum (phi)	-6.36	-4.78	-2.37	1.31

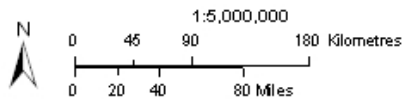
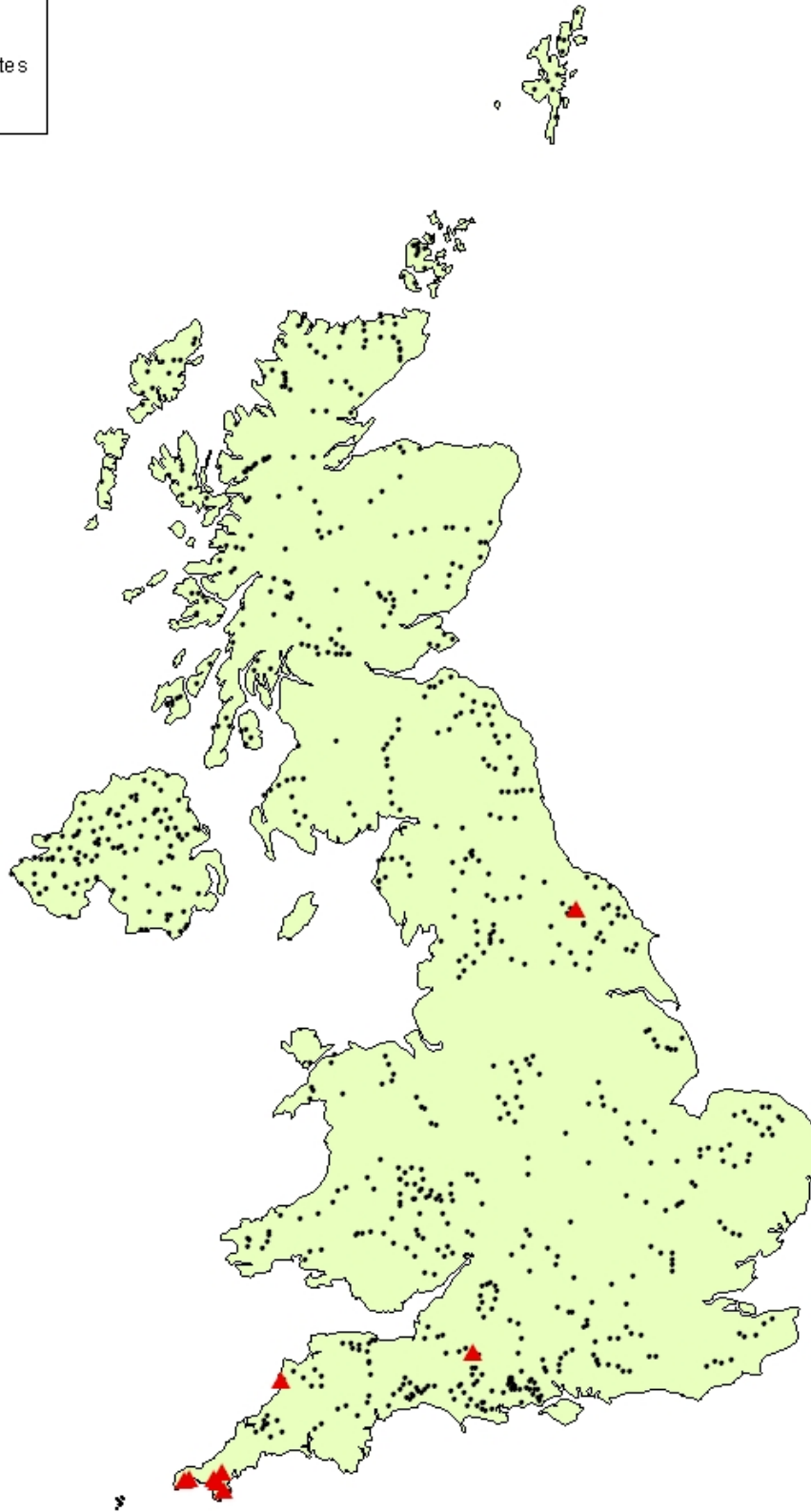
Number of sites =9

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Ancyclus fluviatilis</i> O.F. Müller, 1774	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Ecdyonurus</i> sp.	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Dicranota</i> sp.	100
<i>Eukiefferiella</i> group	100
<i>Gammarus pulex</i> (Linnaeus, 1758)	88.9
<i>Rhithrogena</i> sp.	88.9
<i>Serratella ignita</i> (Poda, 1761)	88.9
<i>Leuctra fusca</i> (Linnaeus, 1758)	88.9
<i>Isoperla grammatica</i> (Poda, 1761)	88.9
<i>Simulium</i> (<i>Nevermannia</i>) <i>cryophilum</i> group	88.9
<i>Brillia bifida</i> (Kieffer, 1909)	88.9
<i>Micropsectra</i> group	88.9
Lumbricidae (incl. Glossoscolecidae)	77.8
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	77.8
Hydracarina	77.8
<i>Drusus annulatus</i> (Stephens, 1837)	77.8
<i>Potamophylax</i> group	77.8
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	77.8
<i>Thienemannimyia</i> group	77.8
<i>Prodiamesa olivacea</i> (Meigen, 1818)	77.8
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	66.7
<i>Pisidium personatum</i> Malm, 1855	66.7
<i>Stylodrilus heringianus</i> Claparède, 1862	66.7

Legend

- ▲ End group Sites
- Other sites



End Group GB 29

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GB End Group 29

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	23	88.56	184	53.64
Slope (m km ⁻¹)	7.7	20.23	40	11.89
Discharge Category (1-10)	1	1	1	0
Distance from Source (km)	1	4.11	6.5	1.92
Alkalinity (mg/l CaCO ₃)	8.3	48.51	179	58.87
Mean Width (m)	0.8	2.21	3.2	0.68
Mean Depth (cm)	8	15.47	31	7.63
Boulders & Cobbles (%)	8	34.67	73	21.26
Pebbles & Gravel (%)	18	41.11	70	15.36
Sand (%)	2	11.56	23	6.78
Silt & Clay (%)	4	12.56	25	7.49
Mean Substratum (phi)	-5.76	-2.79	-1.07	1.74

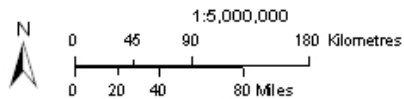
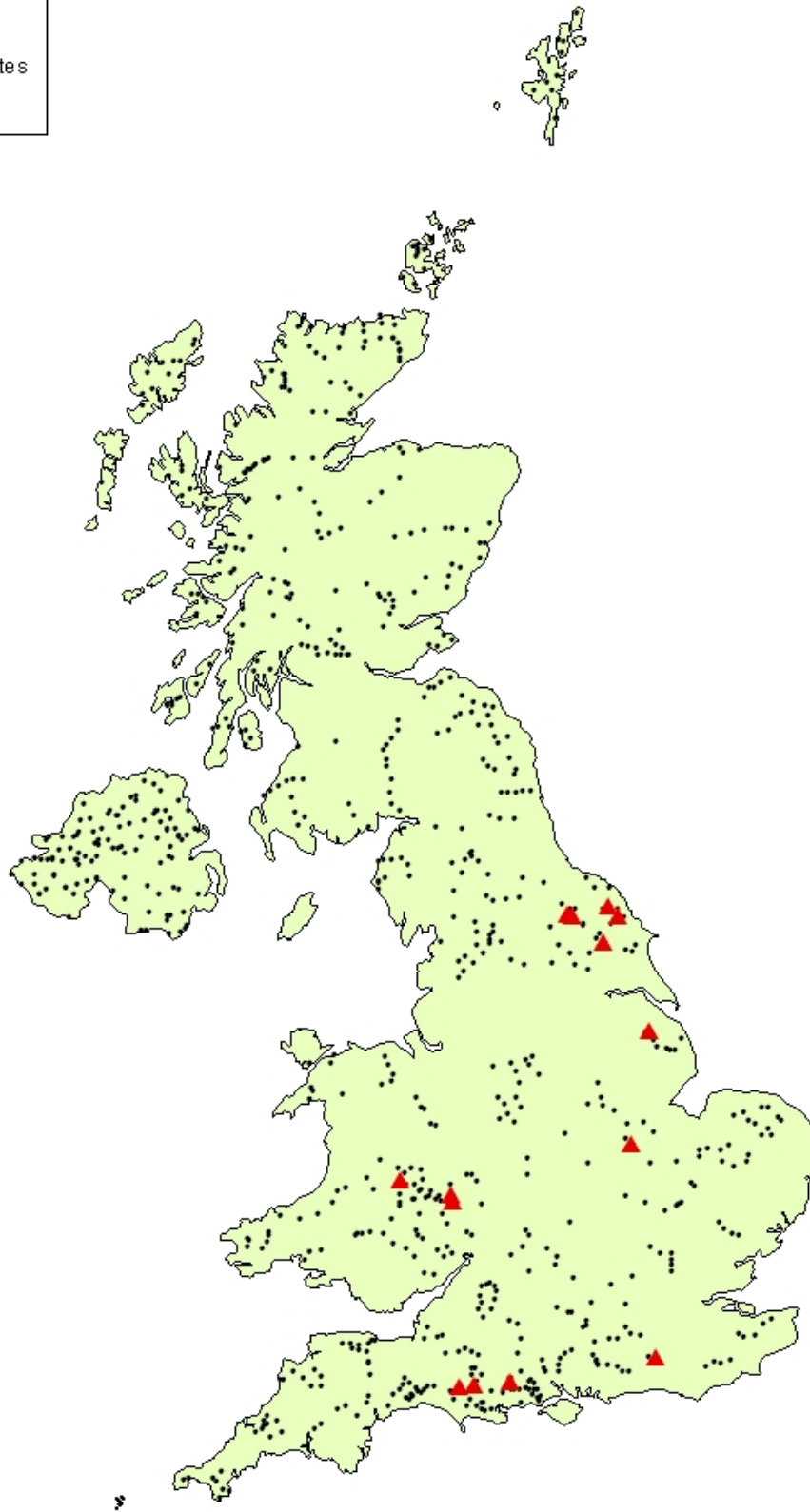
Number of sites =9

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Polycelis felina</i> (Dalyell, 1814)	100
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	100
<i>Rhyacodrilus coccineus</i> (Vejdovsky, 1876)	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	100
<i>Hydropsyche siltalai</i> Döhler, 1963	100
Potamophylax group	100
<i>Eloeophila</i> sp.	100
<i>Dicranota</i> sp.	100
<i>Brillia bifida</i> (Kieffer, 1909)	100
<i>Eukiefferiella</i> group	100
<i>Polypedilum</i> sp.	100
<i>Micropsectra</i> group	100
<i>Lumbriculus</i> group	88.9
<i>Hydracarina</i>	88.9
<i>Leuctra fusca</i> (Linnaeus, 1758)	88.9
<i>Siphonoperla torrentium</i> (Pictet, 1841)	88.9
<i>Hydraena gracilis</i> Germar, 1824	88.9
<i>Agapetus</i> sp.	88.9
<i>Halesus</i> sp.	88.9
<i>Silo pallipes</i> (Fabricius, 1781)	88.9
<i>Sericostoma personatum</i> (Spence in Kirby & Spence, 1826)	88.9

Legend

- ▲ End group Sites
- Other sites



End Group GB 30

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GB End Group 30

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	45	135.14	300	66.33
Slope (m km ⁻¹)	7.1	35.63	66.7	22.5
Discharge Category (1-10)	1	1	1	0
Distance from Source (km)	0.1	0.76	3	0.79
Alkalinity (mg/l CaCO ₃)	22.8	153.49	267	74.37
Mean Width (m)	0.4	0.75	1.3	0.3
Mean Depth (cm)	1.7	7.16	16.2	4.39
Boulders & Cobbles (%)	0	8.71	30	10.03
Pebbles & Gravel (%)	6	44.57	78	22.14
Sand (%)	0	11.36	30	11.32
Silt & Clay (%)	7	35.29	88	26.56
Mean Substratum (phi)	-2.89	0.93	6.65	3.31

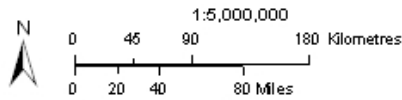
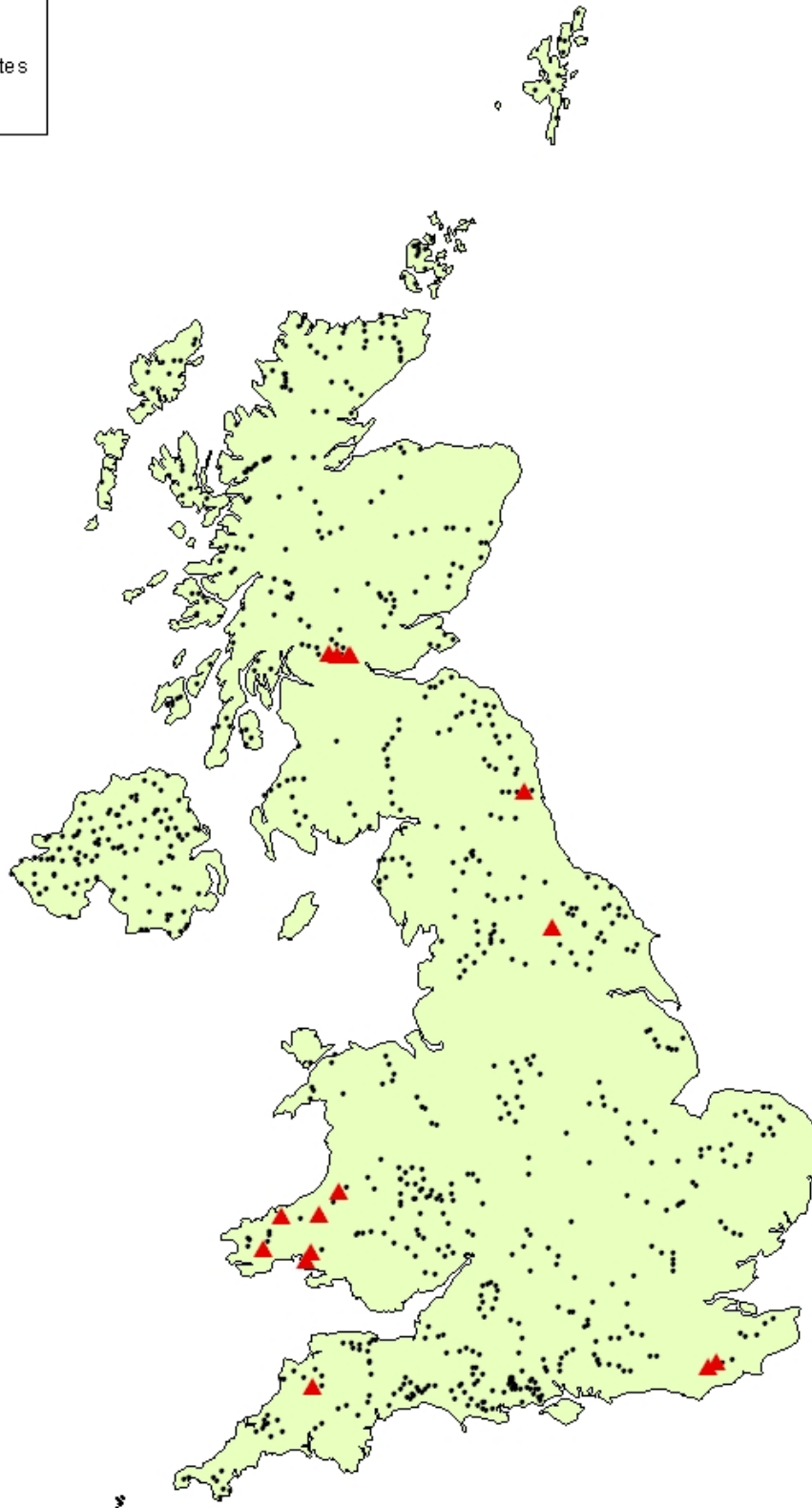
Number of sites =14

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Gammarus pulex</i> (Linnaeus, 1758)	100
<i>Brillia bifida</i> (Kieffer, 1909)	100
Micropsectra group	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	92.9
<i>Elodes</i> sp.	92.9
Potamophylax group	92.9
<i>Dicranota</i> sp.	92.9
Lumbricidae (incl. Glossoscolecidae)	85.7
<i>Ptychoptera</i> sp.	85.7
<i>Nemoura cambrica</i> group	78.6
<i>Elmis aenea</i> (Müller, 1806)	78.6
<i>Eloeophila</i> sp.	78.6
<i>Agapetus</i> sp.	71.4
<i>Plectrocnemia conspersa</i> (Curtis, 1834)	71.4
<i>Dixa maculata</i> complex	71.4
<i>Prodiamesa olivacea</i> (Meigen, 1818)	71.4
<i>Rheocricotopus</i> sp.	71.4
<i>Polypedilum</i> sp.	71.4
<i>Pisidium casertanum</i> (Poli, 1791)	64.3
<i>Stylodrilus heringianus</i> Claparède, 1862	64.3
<i>Isoperla grammatica</i> (Poda, 1761)	64.3
Micropterna group	64.3
<i>Silo pallipes</i> (Fabricius, 1781)	64.3
<i>Polycelis felina</i> (Dalyell, 1814)	57.1
<i>Pisidium personatum</i> Malm, 1855	57.1

Legend

- ▲ End group Sites
- Other sites



End Group GB 31

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GB End Group 31

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	37.6	160	41.89
Slope (m km ⁻¹)	0.2	1.81	6	1.93
Discharge Category (1-10)	2	5.8	8	1.74
Distance from Source (km)	5	35.59	94	25.36
Alkalinity (mg/l CaCO ₃)	11.5	66.92	141.7	49.84
Mean Width (m)	3	18.31	50.1	11.75
Mean Depth (cm)	8.3	36.24	100	23.76
Boulders & Cobbles (%)	0	40.47	88	30.93
Pebbles & Gravel (%)	6	36.13	98	24.25
Sand (%)	0	10.53	41	14.25
Silt & Clay (%)	0	12.93	84	21.42
Mean Substratum (phi)	-7.16	-3.07	5.8	3.32

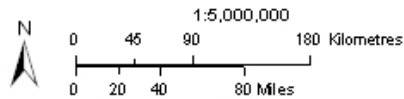
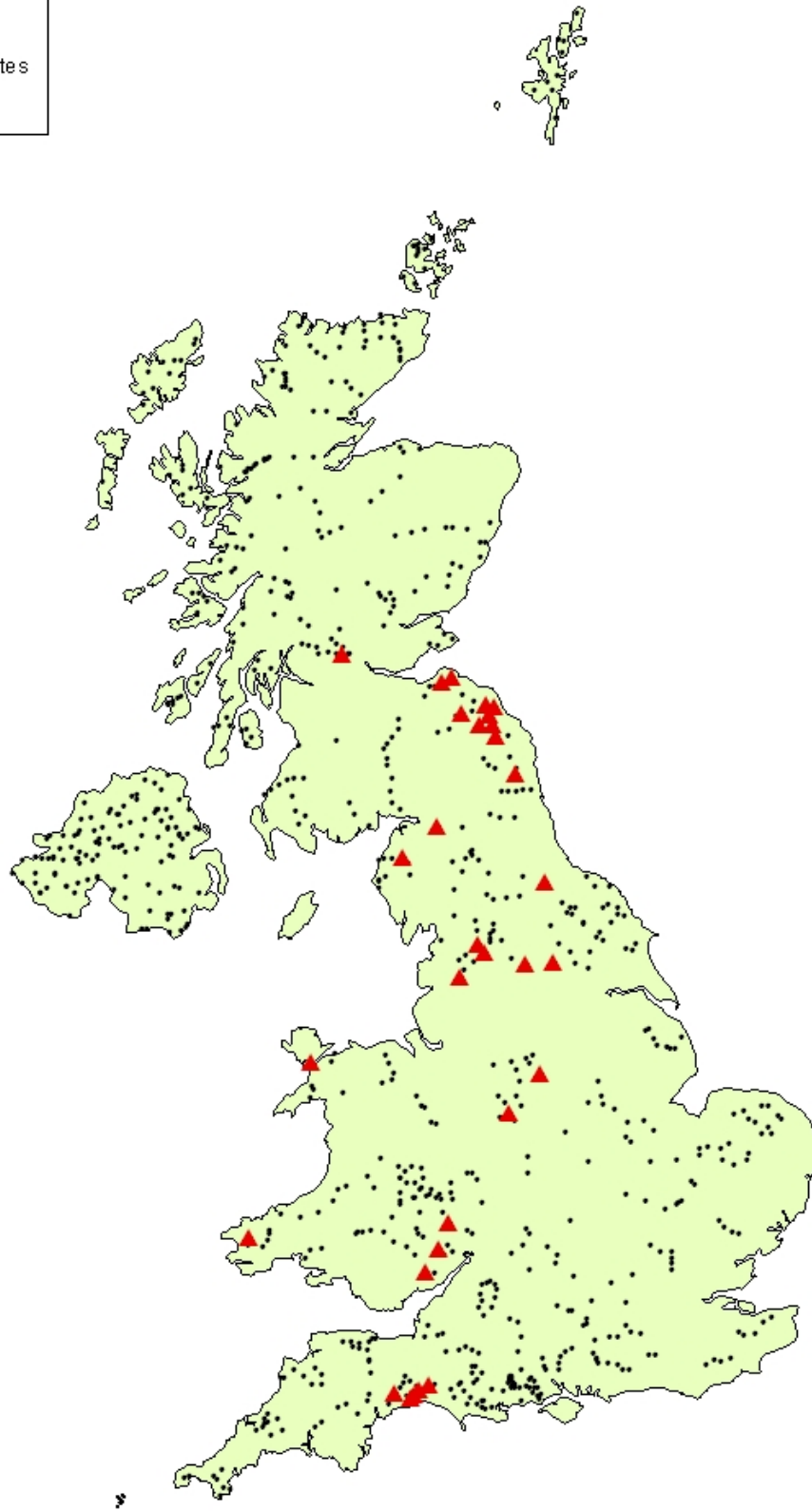
Number of sites =15

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Ecdyonurus sp.	100
Serratella ignita (Poda, 1761)	100
Isoperla grammatica (Poda, 1761)	100
Limnius volckmari (Panzer, 1793)	100
Oulimnius tuberculatus (Müller, 1806)	100
Ceratopogonidae	100
Thienemannimyia group	100
Eukiefferiella group	100
Microtendipes sp.	100
Micropsectra group	100
Potamopyrgus antipodarum (J.E.Gray, 1843)	93.3
Radix balthica (Linnaeus, 1758)	93.3
Ancylus fluviatilis O.F. Müller, 1774	93.3
Hydracarina	93.3
Gammarus pulex (Linnaeus, 1758)	93.3
Baetis scambus group	93.3
Leuctra fusca (Linnaeus, 1758)	93.3
Orectochilus villosus (O.F. Müller, 1776)	93.3
Elmis aenea (Müller, 1806)	93.3
Hydropsyche pellucidula (Curtis, 1834)	93.3
Cricotopus group	93.3
Paratanytarsus group	93.3
Nais alpina Sperber, 1948	86.7
Rhyacodrilus coccineus (Vejdovsky, 1876)	86.7

Legend

- ▲ End group Sites
- Other sites



End Group GB 32

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GB End Group 32

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	4	44.81	175	40.6
Slope (m km ⁻¹)	0.3	2	5	1.29
Discharge Category (1-10)	2	5.69	9	1.89
Distance from Source (km)	9	51.9	138	36.55
Alkalinity (mg/l CaCO ₃)	17.4	110.63	185.1	43.82
Mean Width (m)	3	23.82	70	16.34
Mean Depth (cm)	8.7	34.96	200	32.51
Boulders & Cobbles (%)	10	50.03	87	24.09
Pebbles & Gravel (%)	0	41.03	82	22.53
Sand (%)	0	5.94	27	6.39
Silt & Clay (%)	0	2.91	20	4.76
Mean Substratum (phi)	-6.82	-4.87	-1.48	1.54

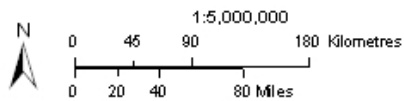
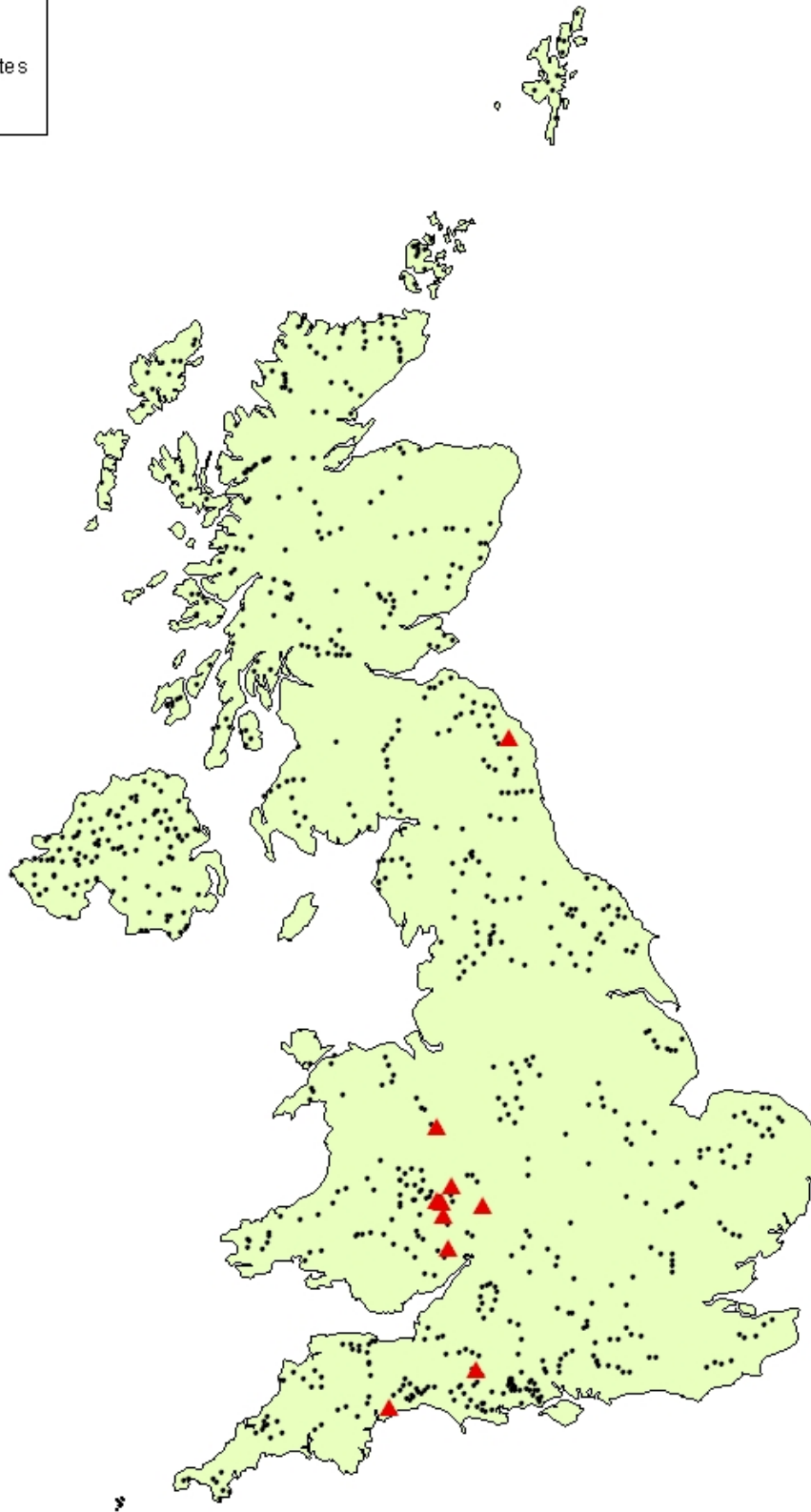
Number of sites =32

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Hydropsyche siltalai</i> Döhler, 1963	100
Eukiefferiella group	100
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	96.9
Hydracarina	96.9
<i>Baetis rhodani</i> (Pictet, 1843-1845)	96.9
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	96.9
<i>Simulium</i> (<i>Wilhelmia</i>) sp.	96.9
<i>Cricotopus</i> group	96.9
<i>Gammarus pulex</i> (Linnaeus, 1758)	93.8
<i>Ecdyonurus</i> sp.	93.8
Ceratopogonidae	93.8
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	93.8
<i>Thienemannimyia</i> group	93.8
<i>Stylodrilus heringianus</i> Claparède, 1862	90.6
<i>Polypedilum</i> sp.	90.6
<i>Micropsectra</i> group	90.6
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	87.5
<i>Radix balthica</i> (Linnaeus, 1758)	87.5
<i>Erpobdella octoculata</i> (Linnaeus, 1758)	87.5
<i>Baetis scambus</i> group	87.5
<i>Pisidium nitidum</i> Jenyns, 1832	84.4
<i>Rhyacodrilus coccineus</i> (Vejdovsky, 1876)	84.4

Legend

- ▲ End group Sites
- Other sites



End Group GB 33

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Helpdesk ref: F 13 45288. Produced: 30/7/2012

GB End Group 33

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	12	43.6	69	20.58
Slope (m km ⁻¹)	0.3	1.01	2.7	0.72
Discharge Category (1-10)	4	6.3	9	1.57
Distance from Source (km)	18	74.13	173	48.81
Alkalinity (mg/l CaCO ₃)	61.2	133.92	236.5	50.63
Mean Width (m)	4	21.8	48.3	13.42
Mean Depth (cm)	28.3	54.66	87.2	18.81
Boulders & Cobbles (%)	0	27.6	81	29.98
Pebbles & Gravel (%)	0	49.6	78	30.73
Sand (%)	0	14.5	67	19.35
Silt & Clay (%)	2	8	33	9.02
Mean Substratum (phi)	-6.1	-2.83	3.98	2.86

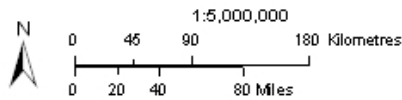
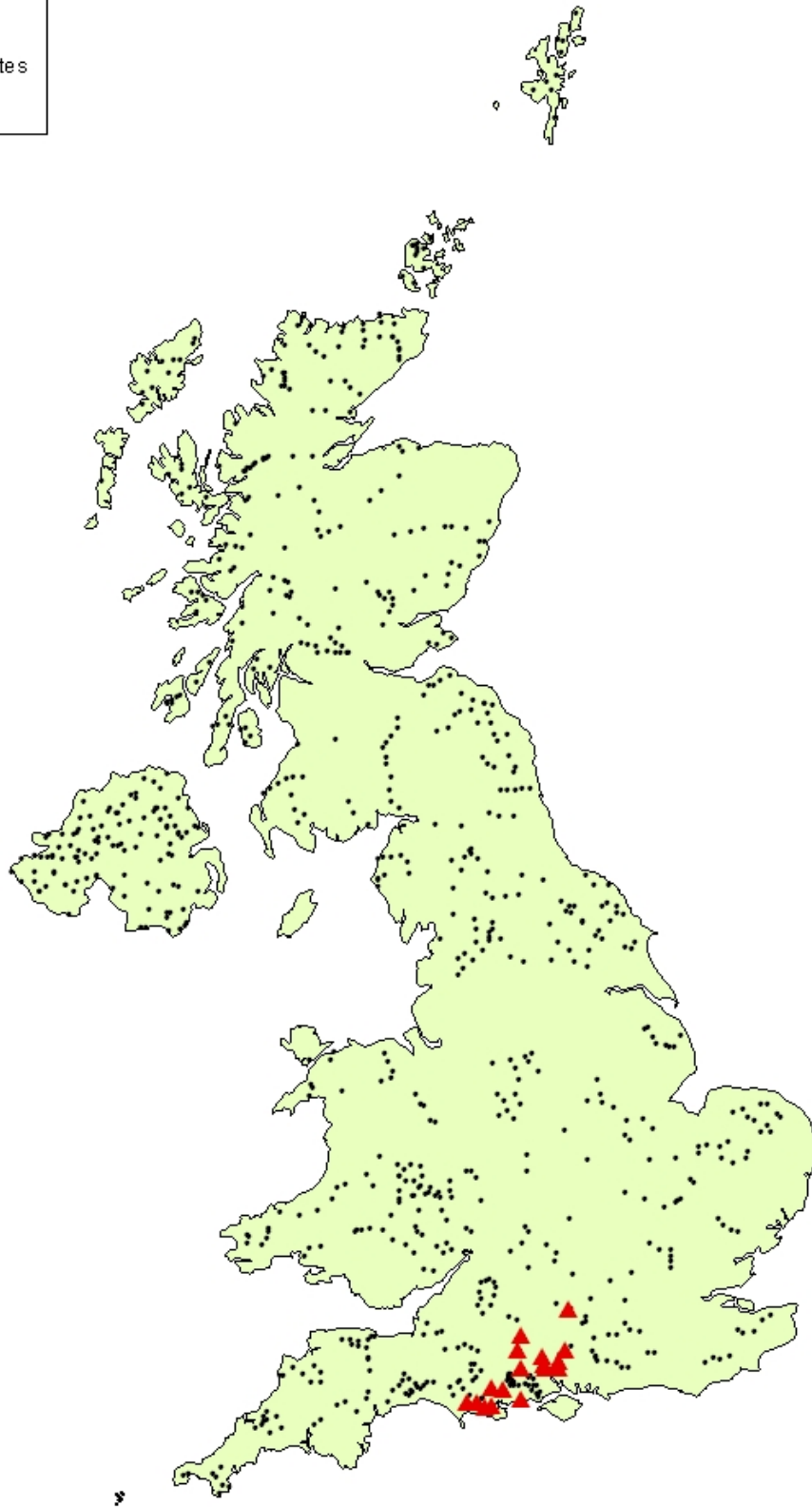
Number of sites =10

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	100
<i>Stylodrilus heringianus</i> Claparède, 1862	90
<i>Erpobdella octoculata</i> (Linnaeus, 1758)	90
<i>Asellus aquaticus</i> (Linnaeus, 1758)	90
<i>Gammarus pulex</i> (Linnaeus, 1758)	90
Baetis scambus group	90
<i>Serratella ignita</i> (Poda, 1761)	90
<i>Esolus parallelepipedus</i> (Müller, 1806)	90
<i>Simulium</i> (<i>Wilhelmia</i>) sp.	90
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	90
<i>Eukiefferiella</i> group	90
<i>Cricotopus</i> group	90
<i>Microtendipes</i> sp.	90
<i>Polypedilum</i> sp.	90
<i>Micropsectra</i> group	90
<i>Paratanytarsus</i> group	90
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	80
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	80
<i>Sphaerium corneum</i> (Linnaeus, 1758)	80
<i>Pisidium subtruncatum</i> Malm, 1855	80
<i>Lumbriculus</i> group	80
<i>Rhyacodrilus coccineus</i> (Vejdovsky, 1876)	80

Legend

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End Group GB 34

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GB End Group 34

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	2	28.12	74	21.18
Slope (m km ⁻¹)	0.7	1.89	10	2.15
Discharge Category (1-10)	4	5.59	7	1.12
Distance from Source (km)	14	42.21	94	19.52
Alkalinity (mg/l CaCO ₃)	171.9	213.51	246	26.35
Mean Width (m)	4	18.08	45.8	10.49
Mean Depth (cm)	25.2	51.79	107.1	25.25
Boulders & Cobbles (%)	0	7.65	22	7.25
Pebbles & Gravel (%)	24	60.35	90	17.32
Sand (%)	6	20.53	42	9.61
Silt & Clay (%)	0	11.35	39	11.07
Mean Substratum (phi)	-3.15	-1.24	2.66	1.74

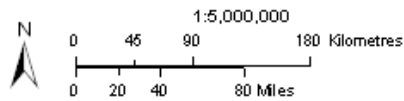
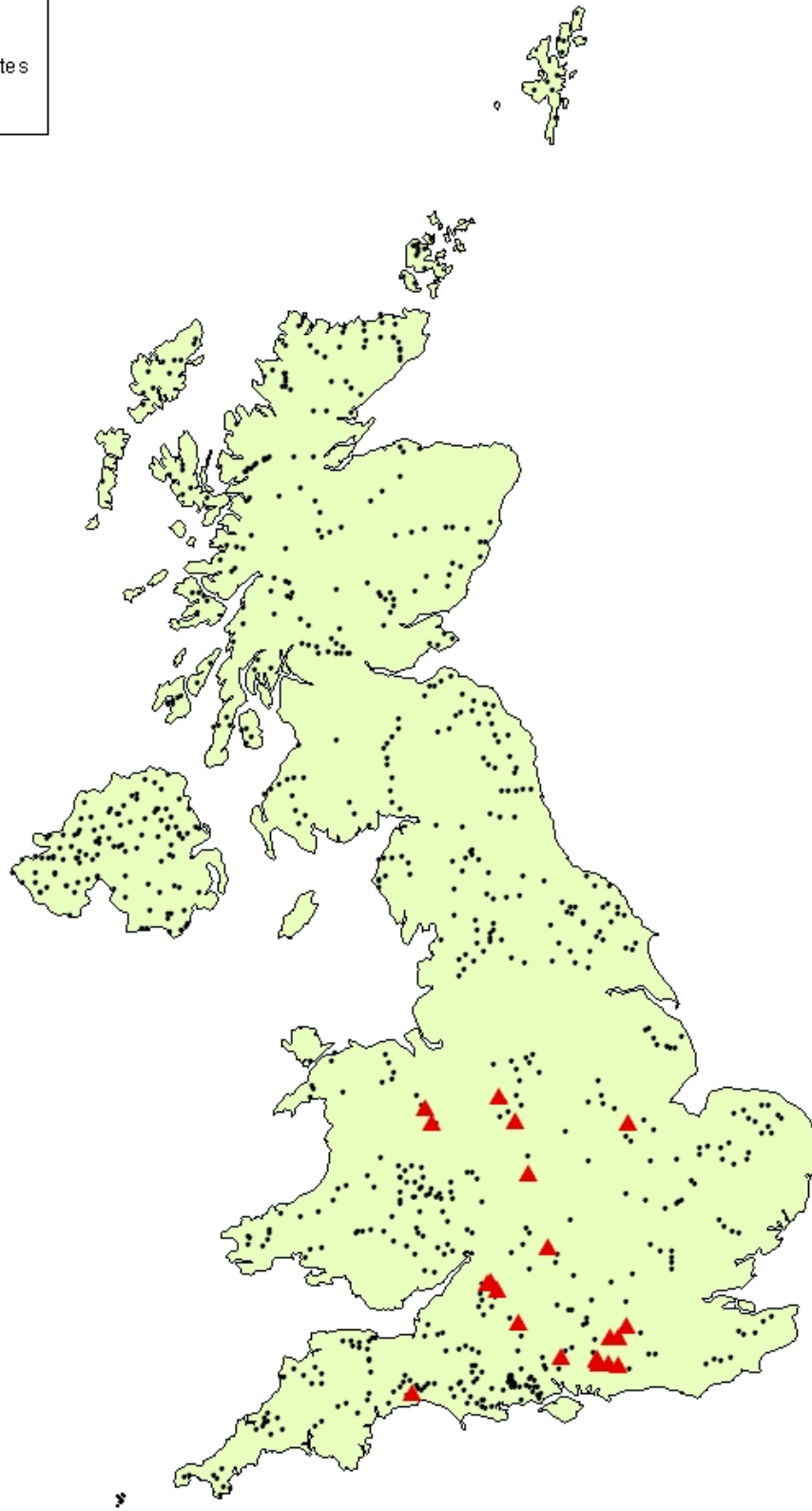
Number of sites =17

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Pisidium nitidum</i> Jenyns, 1832	100
<i>Psammoryctides barbatus</i> (Grube, 1891)	100
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	100
<i>Erpobdella octoculata</i> (Linnaeus, 1758)	100
<i>Asellus aquaticus</i> (Linnaeus, 1758)	100
<i>Gammarus pulex</i> (Linnaeus, 1758)	100
Baetis scambus group	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	100
Cricotopus group	100
<i>Physa fontinalis</i> (Linnaeus, 1758)	94.1
<i>Pisidium subtruncatum</i> Malm, 1855	94.1
<i>Stylodrilus heringianus</i> Claparède, 1862	94.1
<i>Baetis rhodani</i> (Pictet, 1843-1845)	94.1
Ceratopogonidae	94.1
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	94.1
<i>Eukiefferiella</i> group	94.1
<i>Polypedilum</i> sp.	94.1
<i>Micropsectra</i> group	94.1
<i>Theodoxus fluviatilis</i> (Linnaeus, 1758)	88.2
<i>Bithynia</i> (<i>Bithynia</i>) <i>tentaculata</i> (Linnaeus, 1758)	88.2
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	88.2
<i>Sphaerium corneum</i> (Linnaeus, 1758)	88.2

Legend

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- Other sites



End Group GB 35

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GB End Group 35

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	10	59.14	155	33.65
Slope (m km ⁻¹)	0.4	1.94	7.1	1.46
Discharge Category (1-10)	1	3.38	6	1.32
Distance from Source (km)	5	18.98	50	11.95
Alkalinity (mg/l CaCO ₃)	67	176.76	314.1	58.4
Mean Width (m)	3.3	8.4	20	3.79
Mean Depth (cm)	8.3	23.98	54.8	12.18
Boulders & Cobbles (%)	0	25.38	77	26.15
Pebbles & Gravel (%)	15	52.67	95	21.91
Sand (%)	2	14.05	43	11.17
Silt & Clay (%)	0	8.1	24	8.16
Mean Substratum (phi)	-6.45	-2.75	1.26	2.15

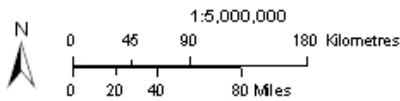
Number of sites =21

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Ancyclus fluviatilis</i> O.F. Müller, 1774	100
Hydracarina	100
<i>Gammarus pulex</i> (Linnaeus, 1758)	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Baetis scambus</i> group	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Eukiefferiella</i> group	100
<i>Cricotopus</i> group	100
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	95.2
<i>Stylodrilus heringianus</i> Claparède, 1862	95.2
<i>Baetis vernus</i> Curtis, 1834	95.2
<i>Serratella ignita</i> (Poda, 1761)	95.2
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	95.2
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	95.2
<i>Micropsectra</i> group	95.2
<i>Pisidium subtruncatum</i> Malm, 1855	90.5
<i>Oulimnius tuberculatus</i> (Müller, 1806)	90.5
<i>Hydroptila</i> sp.	90.5
<i>Hydropsyche siltalai</i> Döhler, 1963	90.5
<i>Thienemannimyia</i> group	90.5
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	85.7
Ceratopogonidae	85.7
<i>Nais elinguis</i> Müller, 1773	81
<i>Limnodrilus hoffmeisteri</i> Claparède, 1862	81
<i>Ephemera danica</i> Müller, 1764	81

Legend

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- Other sites



End Group GB 36

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GB End Group 36

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	31.25	125	31.82
Slope (m km ⁻¹)	0.3	1.09	3	0.76
Discharge Category (1-10)	2	4.65	7	1.63
Distance from Source (km)	9	38.35	92.9	23.77
Alkalinity (mg/l CaCO ₃)	94.6	190.85	267.7	50.98
Mean Width (m)	3	11.38	21.7	6.01
Mean Depth (cm)	11.9	57.14	183.3	51.86
Boulders & Cobbles (%)	0	11.25	68	17.75
Pebbles & Gravel (%)	2	52.75	82	26.85
Sand (%)	2	21.2	53	15.72
Silt & Clay (%)	0	14.95	77	21.45
Mean Substratum (phi)	-4.1	-0.96	5.94	2.81

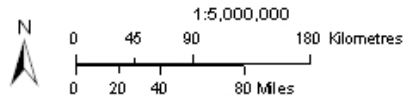
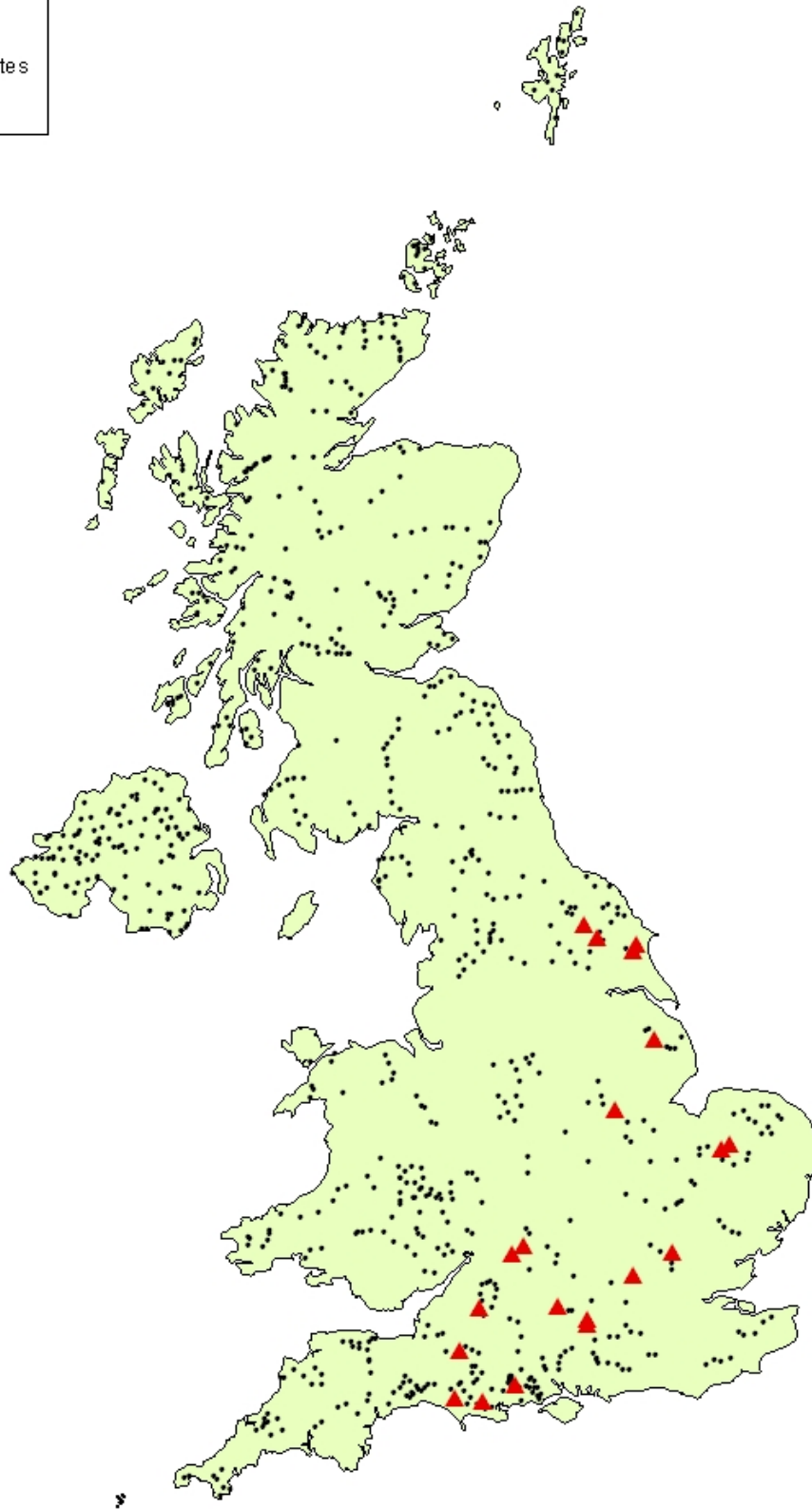
Number of sites =20

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Sphaerium corneum</i> (Linnaeus, 1758)	100
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	100
Hydracarina	100
<i>Gammarus pulex</i> (Linnaeus, 1758)	100
<i>Baetis vernus</i> Curtis, 1834	100
<i>Caenis luctuosa</i> group	100
<i>Oulimnius tuberculatus</i> (Müller, 1806)	100
Hydroptila sp.	100
<i>Athripsodes cinereus</i> (Curtis, 1834)	100
<i>Eukiefferiella</i> group	100
<i>Cricotopus</i> group	100
<i>Micropsectra</i> group	100
<i>Paratanytarsus</i> group	100
<i>Pisidium subtruncatum</i> Malm, 1855	95
<i>Stylodrilus heringianus</i> Claparède, 1862	95
<i>Erpobdella octoculata</i> (Linnaeus, 1758)	95
<i>Asellus aquaticus</i> (Linnaeus, 1758)	95
<i>Elmis aenea</i> (Müller, 1806)	95
Ceratopogonidae	95
<i>Simulium</i> (<i>Wilhelmia</i>) sp.	95
<i>Microtendipes</i> sp.	95
<i>Psammoryctides barbatus</i> (Grube, 1891)	90
<i>Serratella ignita</i> (Poda, 1761)	90
<i>Polycentropus flavomaculatus</i> (Pictet, 1834)	90
<i>Thienemannimyia</i> group	90

Legend

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- Other sites



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GB End Group 37

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	8	48.85	120	33.95
Slope (m km ⁻¹)	0.3	2.38	6.7	1.5
Discharge Category (1-10)	1	2.8	4	1.11
Distance from Source (km)	5	15.37	34.5	7.41
Alkalinity (mg/l CaCO ₃)	133.3	203.81	263.5	40.55
Mean Width (m)	1.7	7.18	13	3.59
Mean Depth (cm)	16	32.64	53	11.78
Boulders & Cobbles (%)	0	19.1	63	19.65
Pebbles & Gravel (%)	9	46.55	73	17.33
Sand (%)	3	18.6	38	10.93
Silt & Clay (%)	2	15.65	74	15.35
Mean Substratum (phi)	-4.67	-1.37	6.01	2.44

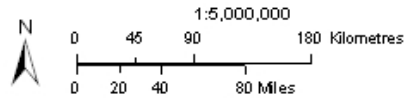
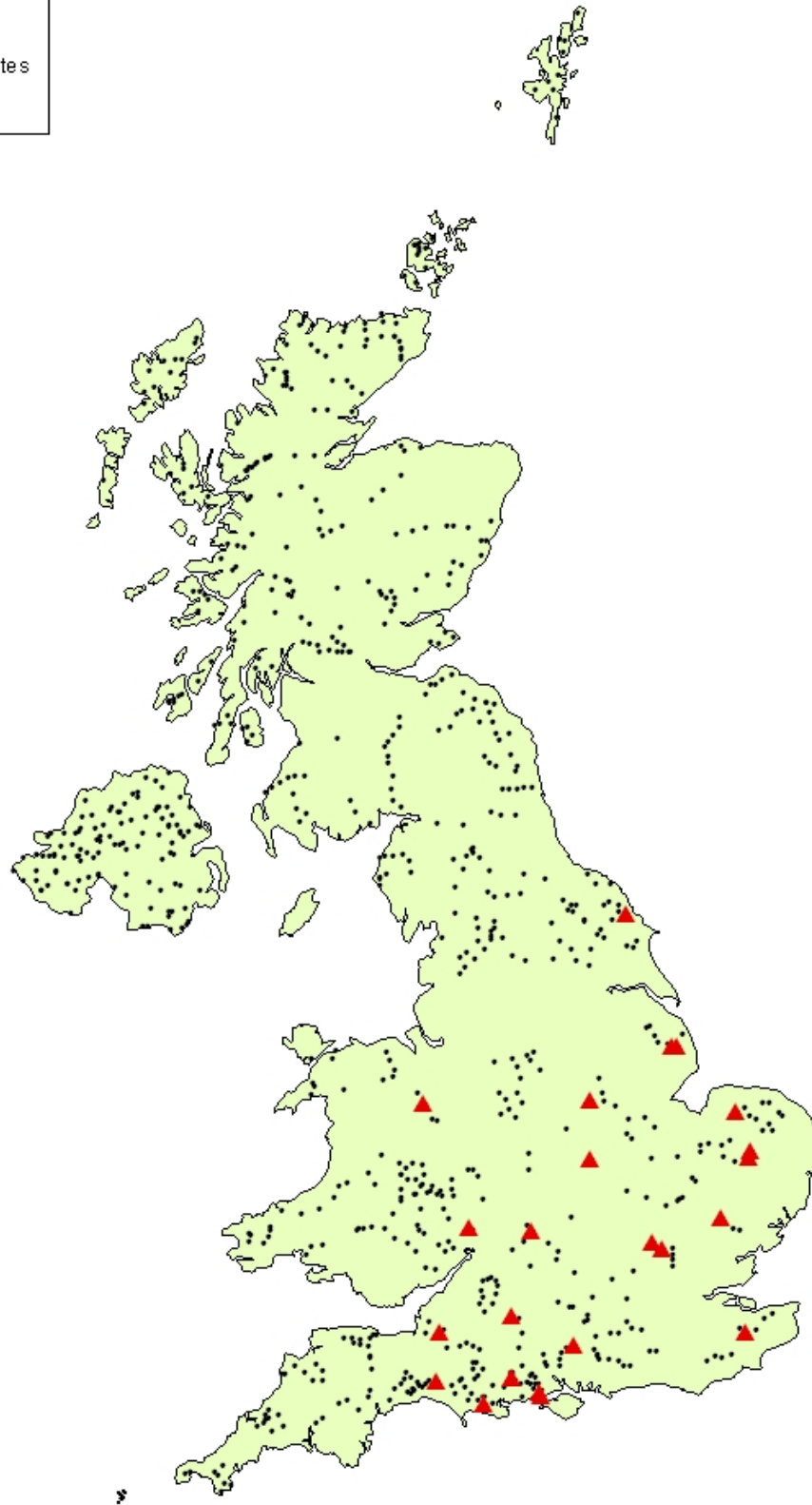
Number of sites =20

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Pisidium nitidum</i> Jenyns, 1832	100
<i>Psammoryctides barbatus</i> (Grube, 1891)	100
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	100
<i>Erpobdella octoculata</i> (Linnaeus, 1758)	100
Hydracarina	100
<i>Gammarus pulex</i> (Linnaeus, 1758)	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Dicranota</i> sp.	100
Ceratopogonidae	100
<i>Eukiefferiella</i> group	100
<i>Cricotopus</i> group	100
<i>Radix balthica</i> (Linnaeus, 1758)	95
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	95
<i>Baetis vernus</i> Curtis, 1834	95
<i>Micropsectra</i> group	95
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	90
<i>Pisidium subtruncatum</i> Malm, 1855	90
<i>Limnodrilus hoffmeisteri</i> Claparède, 1862	90
<i>Sialis lutaria</i> (Linnaeus, 1758)	90
<i>Hydropsyche siltalai</i> Döhler, 1963	90
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	90
<i>Thienemannimyia</i> group	90
<i>Paratanytarsus</i> group	90

Legend

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End Group GB 38

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GB End Group 38

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	6	47.57	115	32.41
Slope (m km ⁻¹)	0.7	2.6	6.7	1.46
Discharge Category (1-10)	1	1.91	4	0.79
Distance from Source (km)	0.9	9.69	23	5.65
Alkalinity (mg/l CaCO ₃)	44	207.94	265.8	55.11
Mean Width (m)	1.4	4.54	9.7	2.06
Mean Depth (cm)	7.2	24.3	61.7	15.09
Boulders & Cobbles (%)	0	10.91	77	20.26
Pebbles & Gravel (%)	1	53.7	94	24.96
Sand (%)	0	18.83	49	14.34
Silt & Clay (%)	0	16.57	60	18.2
Mean Substratum (phi)	-5.87	-0.89	4.08	2.56

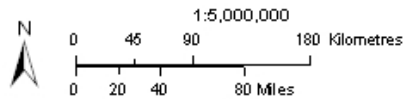
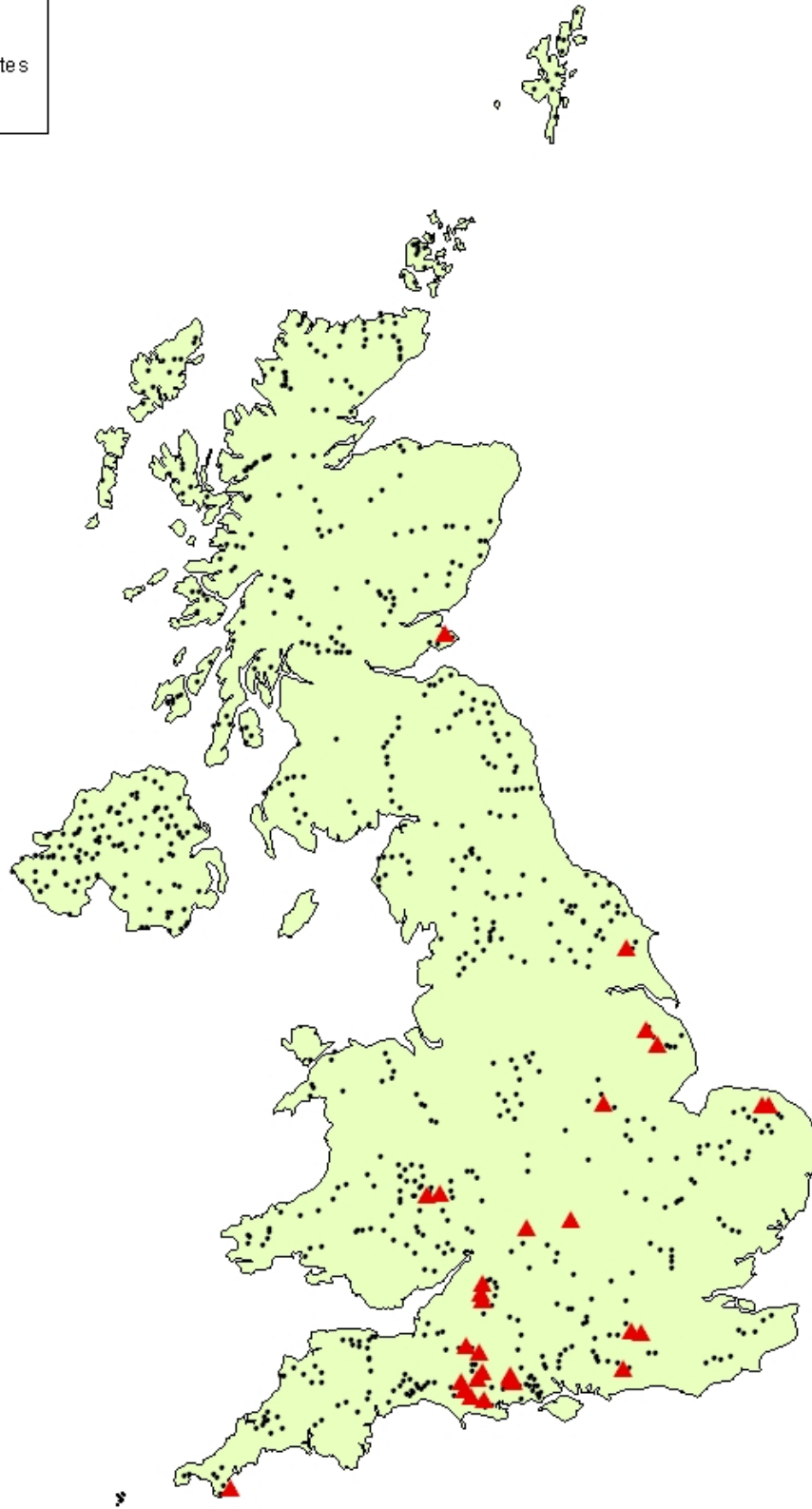
Number of sites =23

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Glossiphonia complanata (Linnaeus, 1758)	100
Hydracarina	100
Elmis aenea (Müller, 1806)	100
Ceratopogonidae	100
Micropsectra group	100
Pisidium nitidum Jenyns, 1832	95.7
Pisidium subtruncatum Malm, 1855	95.7
Gammarus pulex (Linnaeus, 1758)	95.7
Baetis rhodani (Pictet, 1843-1845)	95.7
Thienemannimyia group	95.7
Cricotopus group	95.7
Limnodrilus hoffmeisteri Claparède, 1862	91.3
Psammoryctides barbatus (Grube, 1891)	91.3
Erpobdella octoculata (Linnaeus, 1758)	91.3
Baetis vernus Curtis, 1834	91.3
Dicranota sp.	91.3
Simulium (Simulium) ornatum group	91.3
Eukiefferiella group	91.3
Asellus aquaticus (Linnaeus, 1758)	87
Serratella ignita (Poda, 1761)	87
Hydroptila sp.	87
Ancylus fluviatilis O.F. Müller, 1774	82.6
Stylogdrilus heringianus Claparède, 1862	82.6
Helobdella stagnalis (Linnaeus, 1758)	82.6
Oulimnius tuberculatus (Müller, 1806)	82.6

Legend

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- Other sites



End Group GB 39

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GB End Group 39

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	6	66.6	137	35.22
Slope (m km ⁻¹)	1.7	9.48	50	10.25
Discharge Category (1-10)	1	1.3	3	0.65
Distance from Source (km)	0.6	7.83	45	9.72
Alkalinity (mg/l CaCO ₃)	41.5	185.28	270	58.95
Mean Width (m)	0.5	3.21	9.8	2.23
Mean Depth (cm)	4.2	22.65	58.2	12.72
Boulders & Cobbles (%)	0	9.33	50	12.33
Pebbles & Gravel (%)	6	44.6	78	20.64
Sand (%)	0	14.43	42	10.34
Silt & Clay (%)	0	31.53	87	27.44
Mean Substratum (phi)	-4.08	0.64	6.9	3.29

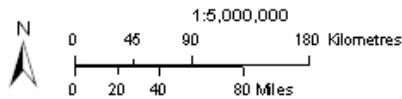
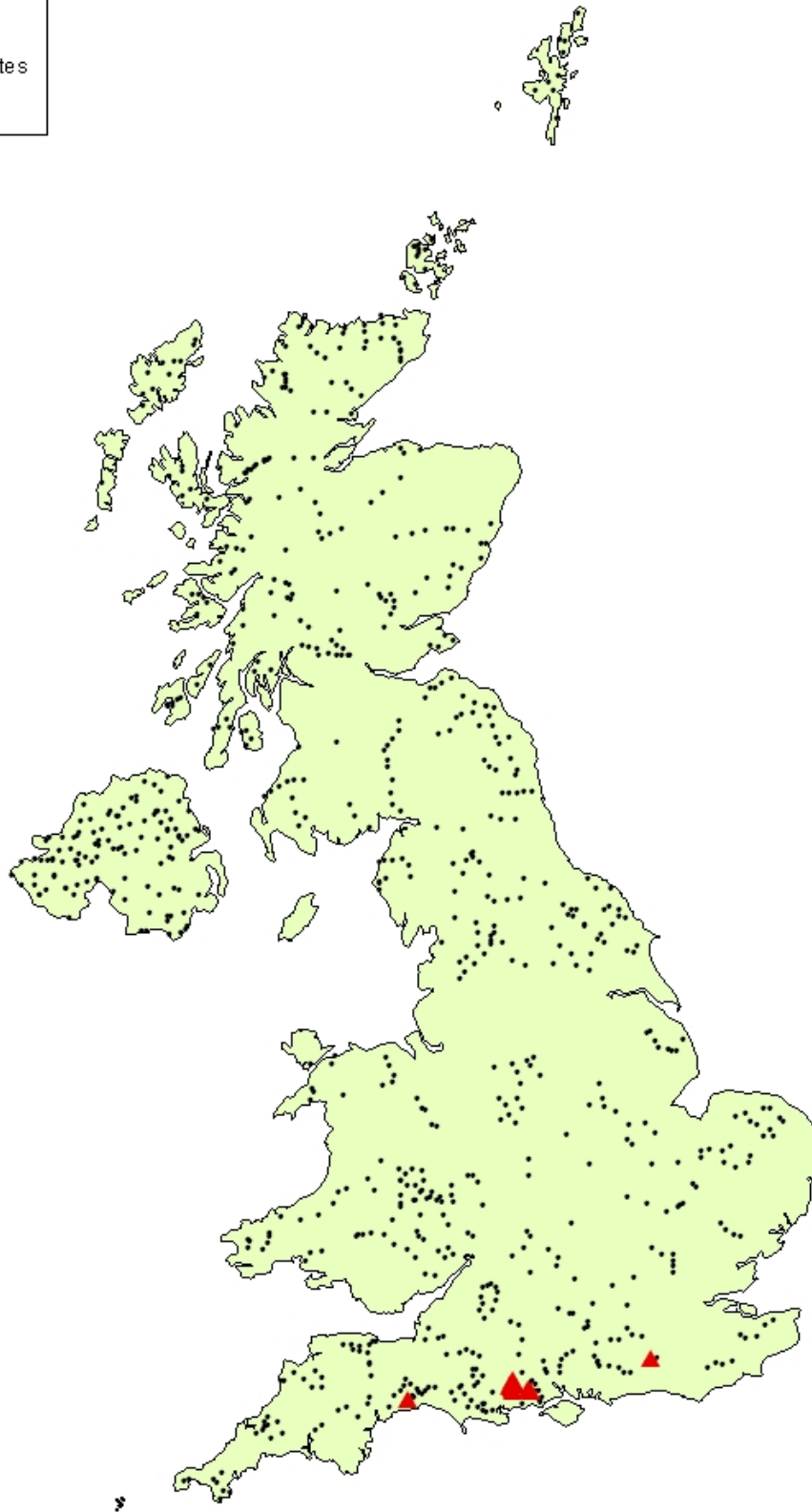
Number of sites =30

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Potamopyrgus antipodarum (J.E.Gray, 1843)	100
Hydracarina	100
Baetis rhodani (Pictet, 1843-1845)	96.7
Elmis aenea (Müller, 1806)	96.7
Ceratopogonidae	96.7
Brillia bifida (Kieffer, 1909)	96.7
Gammarus pulex (Linnaeus, 1758)	93.3
Micropsectra group	93.3
Glossiphonia complanata (Linnaeus, 1758)	90
Dicranota sp.	86.7
Limnodrilus hoffmeisteri Claparède, 1862	83.3
Simulium (Simulium) ornatum group	83.3
Thienemannimyia group	83.3
Eukiefferiella group	83.3
Pisidium subtruncatum Malm, 1855	80
Serratella ignita (Poda, 1761)	80
Ephemera danica Müller, 1764	73.3
Limnephilus lunatus Curtis, 1834	73.3
Macropelopia sp.	73.3
Prodiamesa olivacea (Meigen, 1818)	73.3
Cricotopus group	73.3
Ancylus fluviatilis O.F. Müller, 1774	70
Hydropsyche siltalai Döhler, 1963	70
Halesus sp.	70
Potamophylax group	70

Legend

- ▲ End group Sites
- Other sites



End Group GB 40

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GB End Group 40

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	16	35.64	60	11.64
Slope (m km ⁻¹)	1.7	3.92	8.3	1.93
Discharge Category (1-10)	1	1.09	2	0.3
Distance from Source (km)	1.8	6.57	10.5	2.89
Alkalinity (mg/l CaCO ₃)	12	120.42	218.3	75.56
Mean Width (m)	1.8	3.56	6.7	1.42
Mean Depth (cm)	8.6	24.15	41	11.23
Boulders & Cobbles (%)	0	4.64	19	7.34
Pebbles & Gravel (%)	15	50.18	88	25.67
Sand (%)	3	17.82	44	12.8
Silt & Clay (%)	4	27.18	58	19.44
Mean Substratum (phi)	-3.34	0.53	4.69	2.87

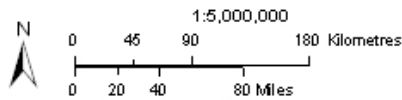
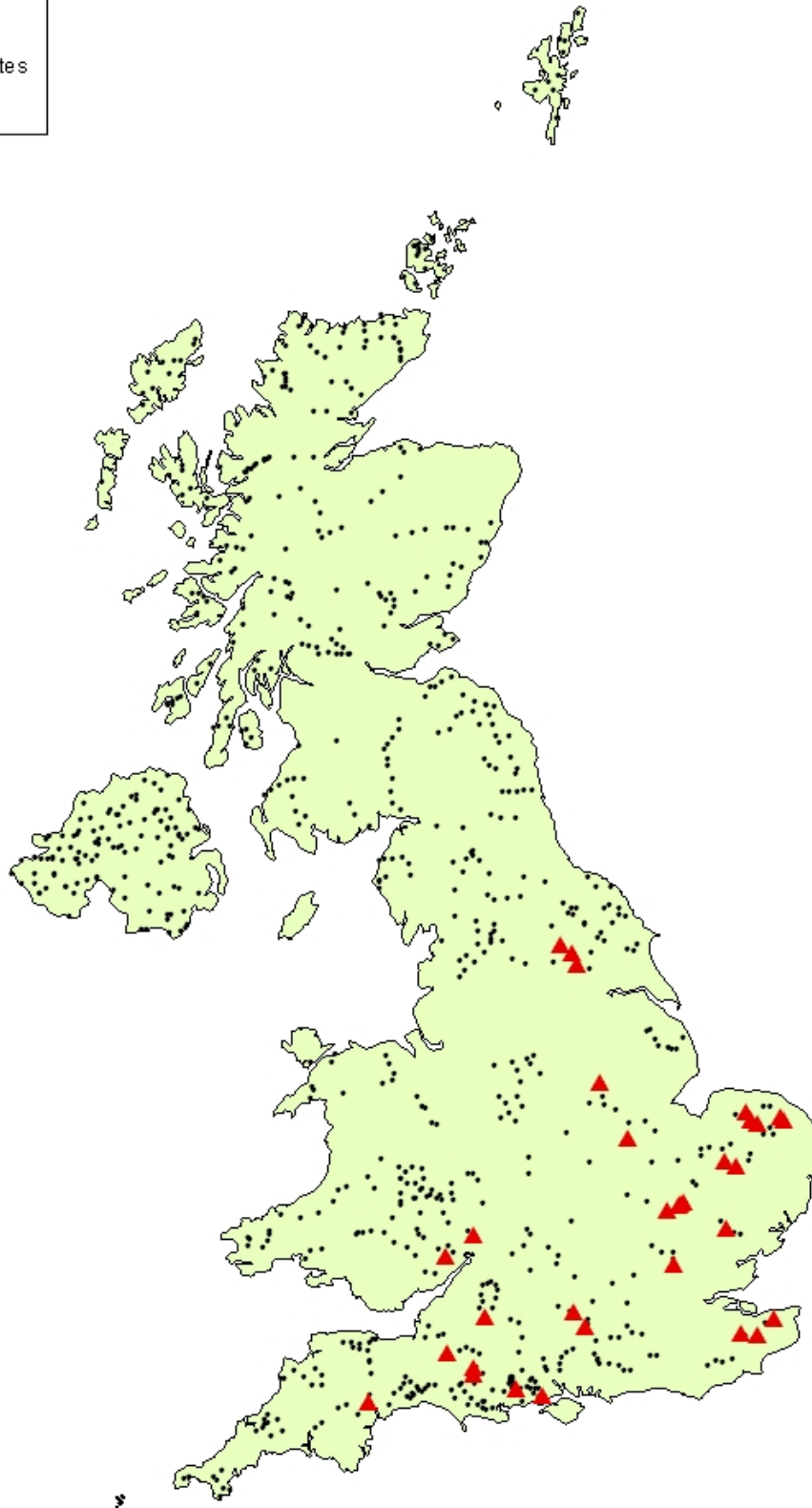
Number of sites =11

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Aulodrilus plurisetus</i> (Piguet, 1906)	100
<i>Erpobdella octoculata</i> (Linnaeus, 1758)	100
<i>Gammarus pulex</i> (Linnaeus, 1758)	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Leuctra fusca</i> (Linnaeus, 1758)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Sericostoma personatum</i> (Spence in Kirby & Spence, 1826)	100
<i>Eloeophila</i> sp.	100
<i>Dicranota</i> sp.	100
Ceratopogonidae	100
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	100
<i>Thienemannimyia</i> group	100
<i>Micropsectra</i> group	100
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	90.9
<i>Limnodrilus hoffmeisteri</i> Claparède, 1862	90.9
<i>Psammoryctides barbatus</i> (Grube, 1891)	90.9
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	90.9
<i>Ephemera danica</i> Müller, 1764	90.9
<i>Serratella ignita</i> (Poda, 1761)	90.9
<i>Elmis aenea</i> (Müller, 1806)	90.9
<i>Sialis lutaria</i> (Linnaeus, 1758)	90.9
<i>Lepidostoma hirtum</i> (Fabricius, 1775)	90.9
<i>Halesus</i> sp.	90.9
<i>Brillia bifida</i> (Kieffer, 1909)	90.9
<i>Rheocricotopus</i> sp.	90.9

Legend

- ▲ End group Sites
- Other sites



End Group GB 41

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GB End Group 41

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	1	22.44	76	19.31
Slope (m km ⁻¹)	0.2	1.08	5	1.02
Discharge Category (1-10)	1	4.44	9	2.24
Distance from Source (km)	0.2	42.21	160	39.99
Alkalinity (mg/l CaCO ₃)	51.8	199.8	284	58.43
Mean Width (m)	2.1	17.52	80	19.76
Mean Depth (cm)	14.8	88.86	200	60.87
Boulders & Cobbles (%)	0	9.22	68	15.37
Pebbles & Gravel (%)	0	28.81	86	25.72
Sand (%)	0	24.5	80	23.25
Silt & Clay (%)	0	37.53	100	31.15
Mean Substratum (phi)	-5.79	1.84	8	3.72

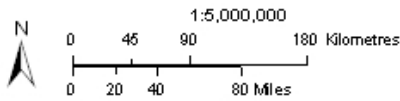
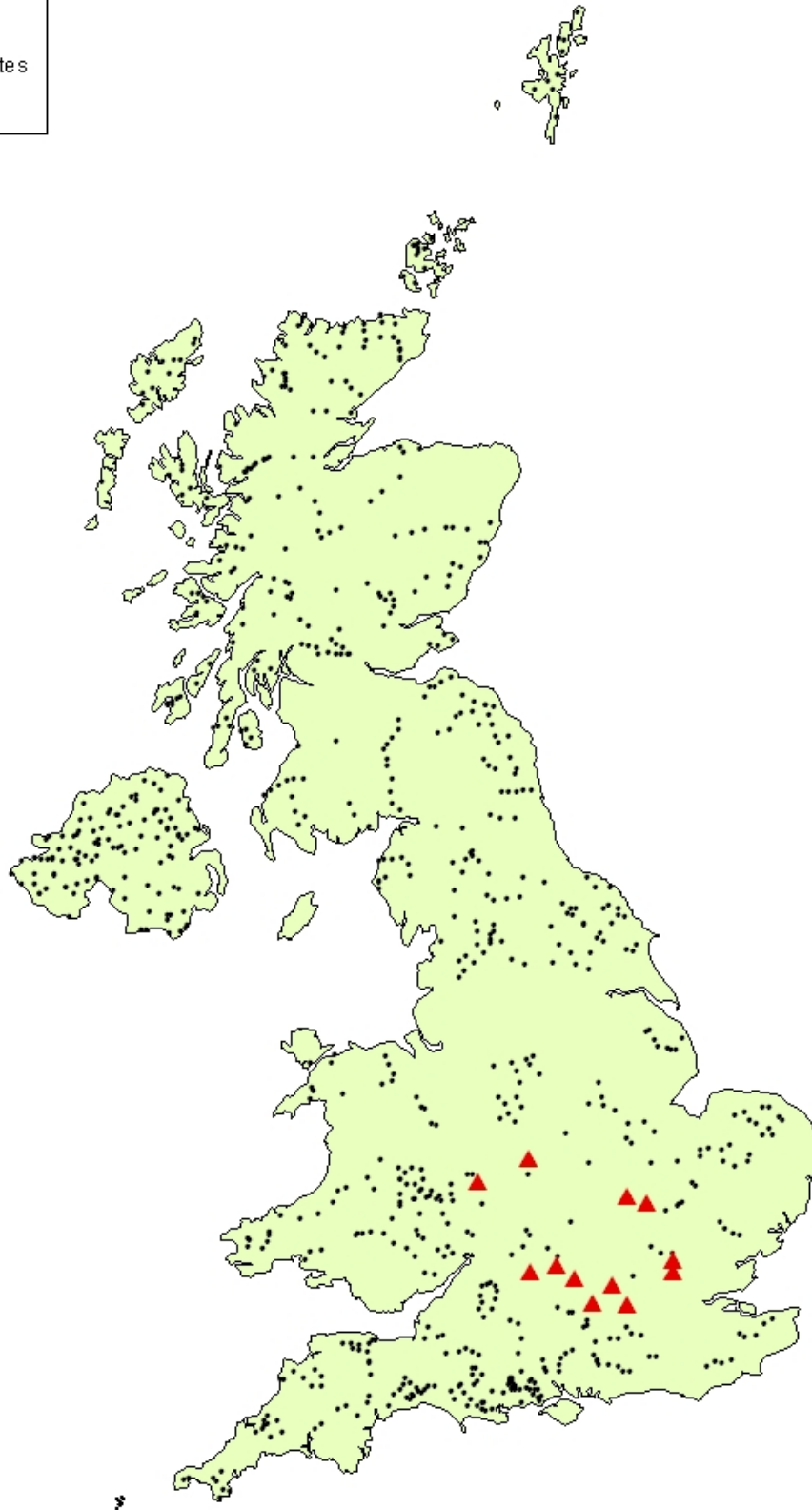
Number of sites =32

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Cricotopus group	100
Glossiphonia complanata (Linnaeus, 1758)	96.9
Hydracarina	96.9
Sphaerium corneum (Linnaeus, 1758)	93.8
Erpobdella octoculata (Linnaeus, 1758)	93.8
Asellus aquaticus (Linnaeus, 1758)	93.8
Gammarus pulex (Linnaeus, 1758)	93.8
Micropsectra group	93.8
Paratanytarsus group	93.8
Potamopyrgus antipodarum (J.E.Gray, 1843)	90.6
Pisidium subtruncatum Malm, 1855	87.5
Elmis aenea (Müller, 1806)	87.5
Pisidium nitidum Jenyns, 1832	84.4
Psammoryctides barbatus (Grube, 1891)	84.4
Helobdella stagnalis (Linnaeus, 1758)	84.4
Caenis luctuosa group	84.4
Procladius sp.	84.4
Thienemannimyia group	84.4
Bithynia (Bithynia) tentaculata (Linnaeus, 1758)	81.2
Radix balthica (Linnaeus, 1758)	81.2
Stylaria lacustris (Linnaeus, 1767)	81.2
Sigara (Sigara) sp.	81.2
Nebrioporus depressus (Fabricius, 1775)	81.2
Polypedilum sp.	81.2
Limnodrilus hoffmeisteri Claparède, 1862	78.1

Legend

- ▲ End group Sites
- Other sites



End Group GB 42

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GB End Group 42

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	7	37.25	75	22.22
Slope (m km ⁻¹)	0.3	0.52	1.4	0.31
Discharge Category (1-10)	4	7	9	1.65
Distance from Source (km)	32	105.97	202.8	65.37
Alkalinity (mg/l CaCO ₃)	132.3	204.07	252	35.98
Mean Width (m)	12.3	38.84	70	18.98
Mean Depth (cm)	36.9	154.61	238.9	56.79
Boulders & Cobbles (%)	0	6	21	7.66
Pebbles & Gravel (%)	0	47.75	89	35.87
Sand (%)	0	8.58	35	9.82
Silt & Clay (%)	0	37.5	100	36.87
Mean Substratum (phi)	-2.68	1.15	8	4.15

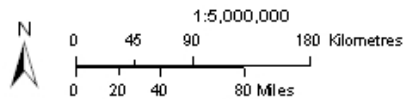
Number of sites =12

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Bithynia</i> (<i>Bithynia</i>) <i>tentaculata</i> (Linnaeus, 1758)	100
<i>Radix balthica</i> (Linnaeus, 1758)	100
<i>Gyraulus</i> (<i>Gyraulus</i>) <i>albus</i> (O.F. Müller, 1774)	100
<i>Sphaerium corneum</i> (Linnaeus, 1758)	100
<i>Stylaria lacustris</i> (Linnaeus, 1767)	100
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	100
<i>Helobdella stagnalis</i> (Linnaeus, 1758)	100
<i>Erpobdella octoculata</i> (Linnaeus, 1758)	100
<i>Asellus aquaticus</i> (Linnaeus, 1758)	100
<i>Caenis luctuosa</i> group	100
Ceratopogonidae	100
<i>Ablabesmyia</i> sp.	100
<i>Thienemannimyia</i> group	100
<i>Cricotopus</i> group	100
<i>Dicrotendipes</i> sp.	100
<i>Microtendipes</i> sp.	100
<i>Micropsectra</i> group	100
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	91.7
<i>Pisidium henslowanum</i> (Sheppard, 1823)	91.7
<i>Pisidium nitidum</i> Jenyns, 1832	91.7
<i>Pisidium subtruncatum</i> Malm, 1855	91.7
<i>Limnodrilus hoffmeisteri</i> Claparède, 1862	91.7
<i>Crangonyx pseudogracilis</i> Bousfield, 1958	91.7
<i>Sigara</i> (<i>Sigara</i>) sp.	91.7
<i>Sigara</i> (<i>Subsigara</i>) <i>falleni</i> (Fieber, 1848)	91.7

Legend

- ▲ End group Sites
- Other sites



End Group GB 43

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GB End Group 43

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	0	2.15	5	1.52
Slope (m km ⁻¹)	0.1	0.56	2.5	0.66
Discharge Category (1-10)	1	3.46	7	1.94
Distance from Source (km)	4	37.72	80	24.16
Alkalinity (mg/l CaCO ₃)	102.4	230.39	365.5	63.35
Mean Width (m)	5.3	15.42	40	11.4
Mean Depth (cm)	70.2	138.9	300	62.11
Boulders & Cobbles (%)	0	2.62	15	4.75
Pebbles & Gravel (%)	0	5.85	20	7.1
Sand (%)	0	0.85	4	1.34
Silt & Clay (%)	73	90.77	100	10.31
Mean Substratum (phi)	4.65	6.88	8	1.31

Number of sites =13

25 most frequently occurring taxa in end group

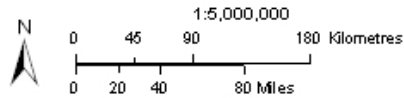
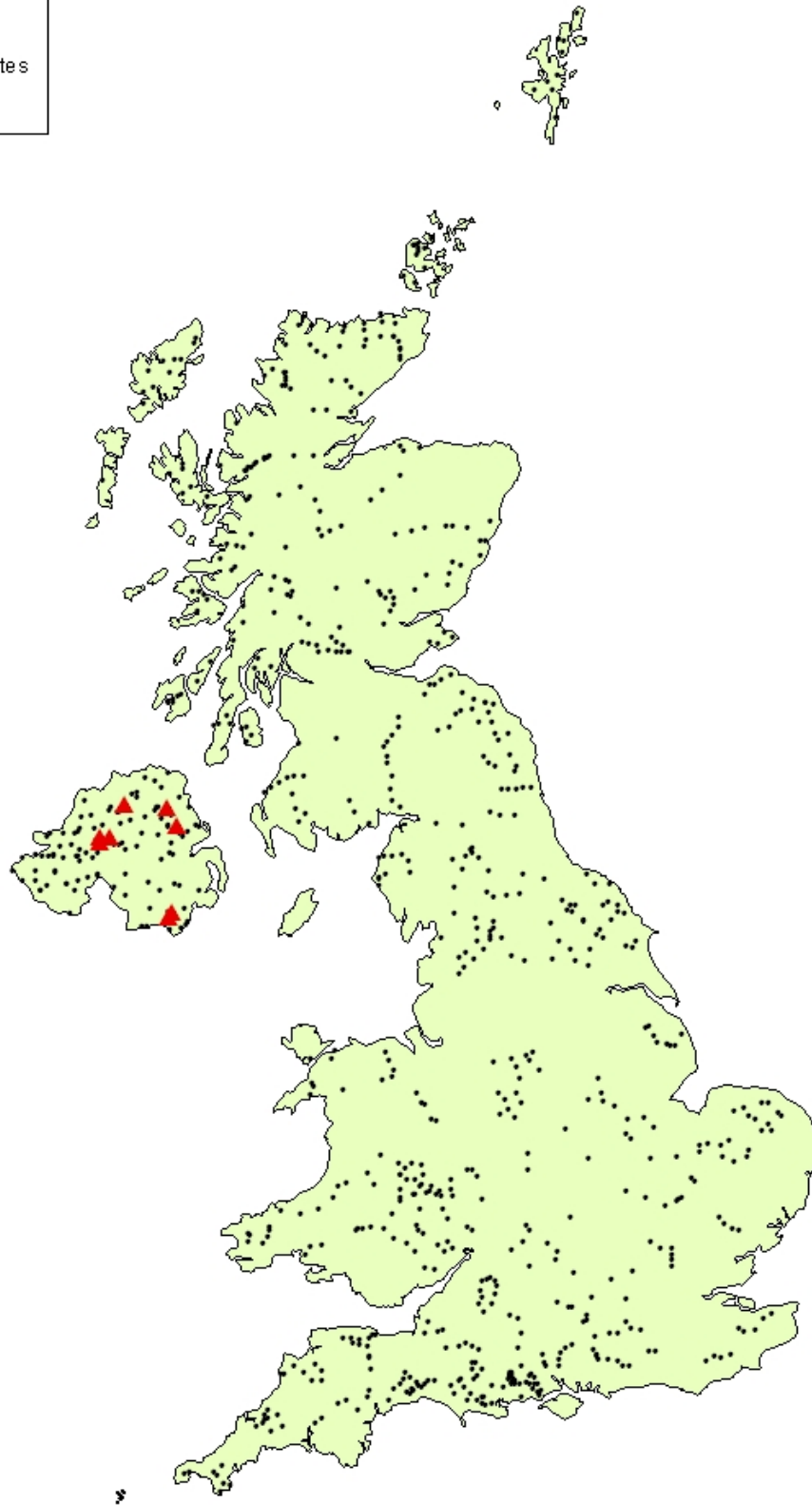
Taxon	Frequency of occurrence
<i>Bithynia</i> (<i>Bithynia</i>) <i>tentaculata</i> (Linnaeus, 1758)	100
<i>Radix balthica</i> (Linnaeus, 1758)	100
<i>Limnodrilus hoffmeisteri</i> Claparède, 1862	100
<i>Piscicola geometra</i> (Linnaeus, 1761)	100
<i>Helobdella stagnalis</i> (Linnaeus, 1758)	100
<i>Asellus aquaticus</i> (Linnaeus, 1758)	100
<i>Cloeon dipterum</i> (Linnaeus, 1761)	100
<i>Sigara</i> (<i>Sigara</i>) sp.	100
<i>Microtendipes</i> sp.	100
<i>Polypedilum</i> sp.	100
<i>Valvata</i> (<i>Cincinna</i>) <i>piscinalis</i> (O.F. Müller, 1774)	92.3
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	92.3
<i>Physa fontinalis</i> (Linnaeus, 1758)	92.3
<i>Sphaerium corneum</i> (Linnaeus, 1758)	92.3
<i>Hydracarina</i>	92.3
<i>Crangonyx pseudogracilis</i> Bousfield, 1958	92.3
<i>Sigara</i> (<i>Subsigara</i>) <i>falleni</i> (Fieber, 1848)	92.3
<i>Haliphus fluviatilis</i> Aubé, 1836	92.3
<i>Anisus</i> (<i>Disculifer</i>) <i>vortex</i> (Linnaeus, 1758)	84.6
<i>Pisidium nitidum</i> Jenyns, 1832	84.6
<i>Pisidium subtruncatum</i> Malm, 1855	84.6
<i>Lumbriculus</i> group	84.6
<i>Stylaria lacustris</i> (Linnaeus, 1767)	84.6
<i>Potamothrix hammoniensis</i> (Michaelsen, 1901)	84.6
<i>Caenis horaria</i> (Linnaeus, 1758)	84.6

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3. Northern Ireland (NI) 11 End-Group Descriptions

Legend

- ▲ End group Sites
- Other sites



End Group NI 01

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Replaces ref: F1345288. Produced: 30/7/2012

NI End Group 1

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	127	148.88	168	15.25
Slope (m km ⁻¹)	2.6	11.54	25	7.95
Discharge Category (1-10)	1	2.12	5	1.46
Distance from Source (km)	2.5	7.18	18	4.89
Alkalinity (mg/l CaCO ₃)	2.5	43.3	80.7	31.59
Mean Width (m)	2	5.75	13	4.06
Mean Depth (cm)	15	24.88	35	7.06
Boulders & Cobbles (%)	10	72.5	95	27.65
Pebbles & Gravel (%)	5	13.75	35	10.61
Sand (%)	0	13.75	80	26.83
Silt & Clay (%)	0	0	0	0
Mean Substratum (phi)	-7.52	-5.79	0.5	2.6

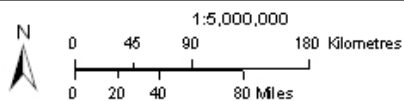
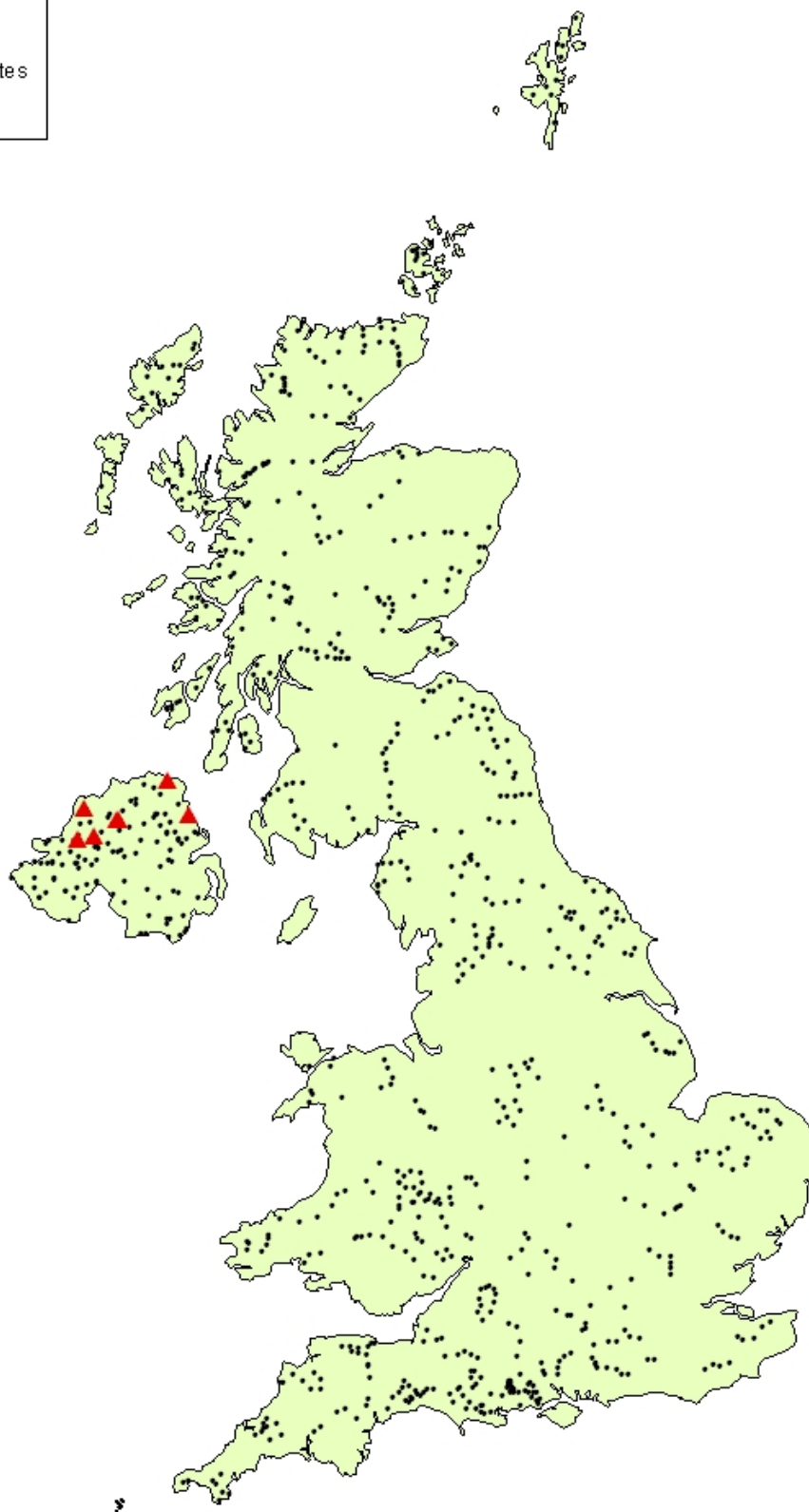
Number of sites =8

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Lumbriculus group	100
Hydracarina	100
Baetis rhodani (Pictet, 1843-1845)	100
Ecdyonurus sp.	100
Serratella ignita (Poda, 1761)	100
Amphinemura sulcicollis (Stephens, 1836)	100
Leuctra fusca (Linnaeus, 1758)	100
Siphonoperla torrentium (Pictet, 1841)	100
Hydraena gracilis Germar, 1824	100
Elmis aenea (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Dicranota sp.	100
Brillia bifida (Kieffer, 1909)	100
Eukiefferiella group	100
Cricotopus group	100
Polypedilum sp.	100
Micropsectra group	100
Paratanytarsus group	100
Ancylus fluviatilis O.F. Müller, 1774	87.5
Rhyacodrilus coccineus (Vejdovsky, 1876)	87.5
Enchytraeidae (including Propappidae)	87.5
Lumbricidae (incl. Glossoscolecidae)	87.5
Gammarus duebeni Liljeborg, 1852	87.5
Baetis scambus group	87.5

Legend

- ▲ End group Sites
- Other sites



End Group NI 02

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NI End Group 2

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	3	79.14	175	75.98
Slope (m km ⁻¹)	3.3	6.83	14.4	4.32
Discharge Category (1-10)	1	4.29	7	1.98
Distance from Source (km)	4.6	18.73	41	12.58
Alkalinity (mg/l CaCO ₃)	18.5	52.29	74	21.9
Mean Width (m)	4	14.34	31.1	8.79
Mean Depth (cm)	15	31.43	54	13.21
Boulders & Cobbles (%)	30	60.43	83	21.52
Pebbles & Gravel (%)	13	28.14	55	14.17
Sand (%)	0	8.86	35	11.91
Silt & Clay (%)	0	2.43	17	6.43
Mean Substratum (phi)	-6.86	-5.24	-2.76	1.73

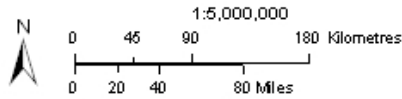
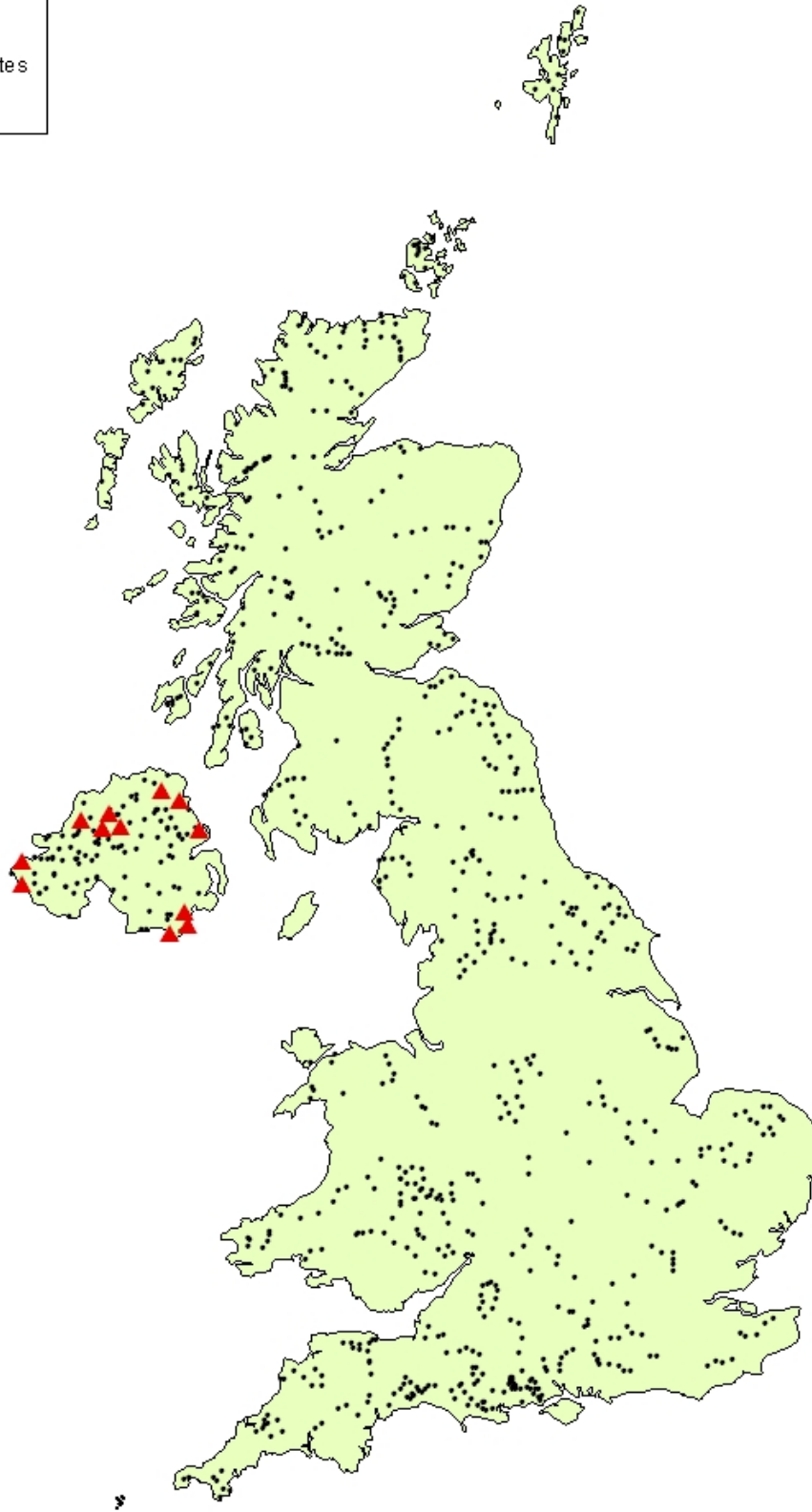
Number of sites =7

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Ancyclus fluviatilis O.F. Müller, 1774	100
Hydracarina	100
Gammarus duebeni Liljeborg, 1852	100
Baetis rhodani (Pictet, 1843-1845)	100
Baetis scambus group	100
Rhithrogena sp.	100
Ecdyonurus sp.	100
Serratella ignita (Poda, 1761)	100
Caenis rivulorum Eaton, 1884	100
Leuctra fusca (Linnaeus, 1758)	100
Siphonoperla torrentium (Pictet, 1841)	100
Oreodytes sanmarkii (C.R. Sahlberg, 1826)	100
Elmis aenea (Müller, 1806)	100
Esolus parallelepipedus (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Hydropsyche pellucidula (Curtis, 1834)	100
Hydropsyche sitalai Döhler, 1963	100
Simulium (Simulium) ornatum group	100
Brillia bifida (Kieffer, 1909)	100
Eukiefferiella group	100
Cricotopus group	100
Polypedilum sp.	100
Clinocerinae	100
Enchytraeidae (including Propappidae)	85.7
Lumbricidae (incl. Glossoscolecidae)	85.7

Legend

- ▲ End group Sites
- Other sites



End Group NI 03

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NI End Group 3

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	5	63.08	180	49.59
Slope (m km ⁻¹)	2	20.18	50	15.6
Discharge Category (1-10)	1	2.42	4	1.08
Distance from Source (km)	3.2	7.32	13.5	2.95
Alkalinity (mg/l CaCO ₃)	4.9	44.41	148	38.15
Mean Width (m)	3	7.18	10	2.36
Mean Depth (cm)	15	23.75	35	5.22
Boulders & Cobbles (%)	40	76.67	95	16.42
Pebbles & Gravel (%)	5	15.17	35	8.96
Sand (%)	0	8.17	40	11.22
Silt & Clay (%)	0	0	0	0
Mean Substratum (phi)	-7.52	-6.27	-2.95	1.28

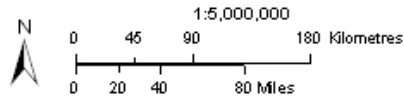
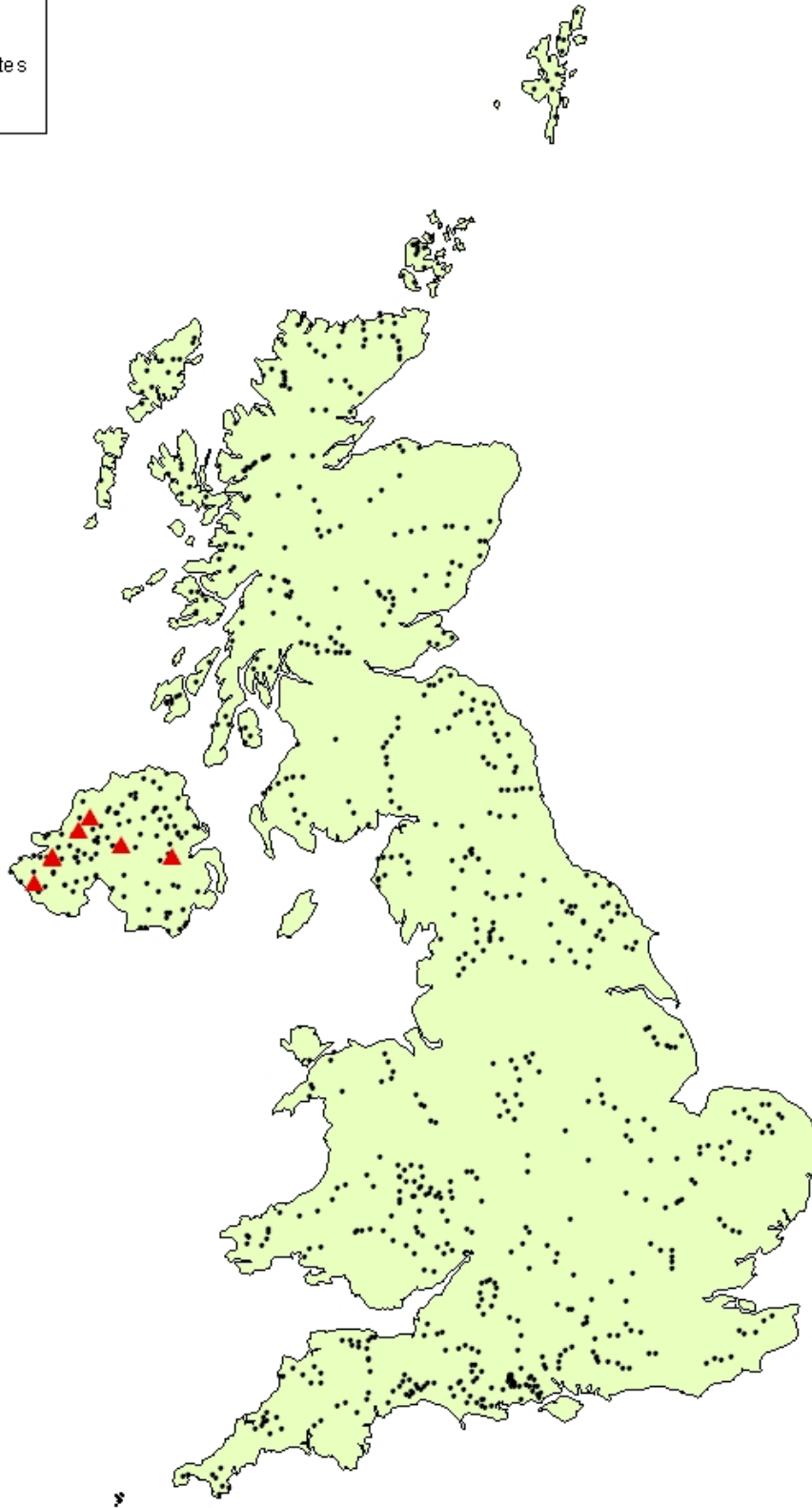
Number of sites =12

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Baetis rhodani (Pictet, 1843-1845)	100
Rhithrogena sp.	100
Leuctra fusca (Linnaeus, 1758)	100
Isoperla grammatica (Poda, 1761)	100
Elmis aenea (Müller, 1806)	100
Hydropsyche siltalai Döhler, 1963	100
Simulium (Simulium) argyreatum group	100
Brillia bifida (Kieffer, 1909)	100
Cricotopus group	100
Hydracarina	91.7
Gammarus duebeni Liljeborg, 1852	91.7
Serratella ignita (Poda, 1761)	91.7
Leuctra inermis Kempny, 1899	91.7
Limnius volckmari (Panzer, 1793)	91.7
Rhyacophila dorsalis (Curtis, 1834)	91.7
Eukiefferiella group	91.7
Ecdyonurus sp.	83.3
Amphinemura sulcicollis (Stephens, 1836)	83.3
Siphonoperla torrentium (Pictet, 1841)	83.3
Hydraena gracilis Germar, 1824	83.3
Sericostoma personatum (Spence in Kirby & Spence, 1826)	83.3
Dicranota sp.	83.3
Simulium (Nevermannia) cryophilum group	83.3
Diamesa sp.	83.3
Ancylus fluviatilis O.F. Müller, 1774	75

Legend

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- Other sites



End Group NI 04

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NI End Group 4

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	54	89.29	127	29.1
Slope (m km ⁻¹)	0.8	9.24	16.7	5.01
Discharge Category (1-10)	1	1.43	3	0.79
Distance from Source (km)	2.2	4.33	7.8	1.78
Alkalinity (mg/l CaCO ₃)	22	75	128.5	38.69
Mean Width (m)	2	3.57	6.9	1.89
Mean Depth (cm)	15	23.29	34	6.13
Boulders & Cobbles (%)	60	74.29	95	16.44
Pebbles & Gravel (%)	5	15.71	30	10.97
Sand (%)	0	10	30	11.18
Silt & Clay (%)	0	0	0	0
Mean Substratum (phi)	-7.52	-6.07	-4.38	1.24

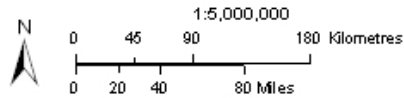
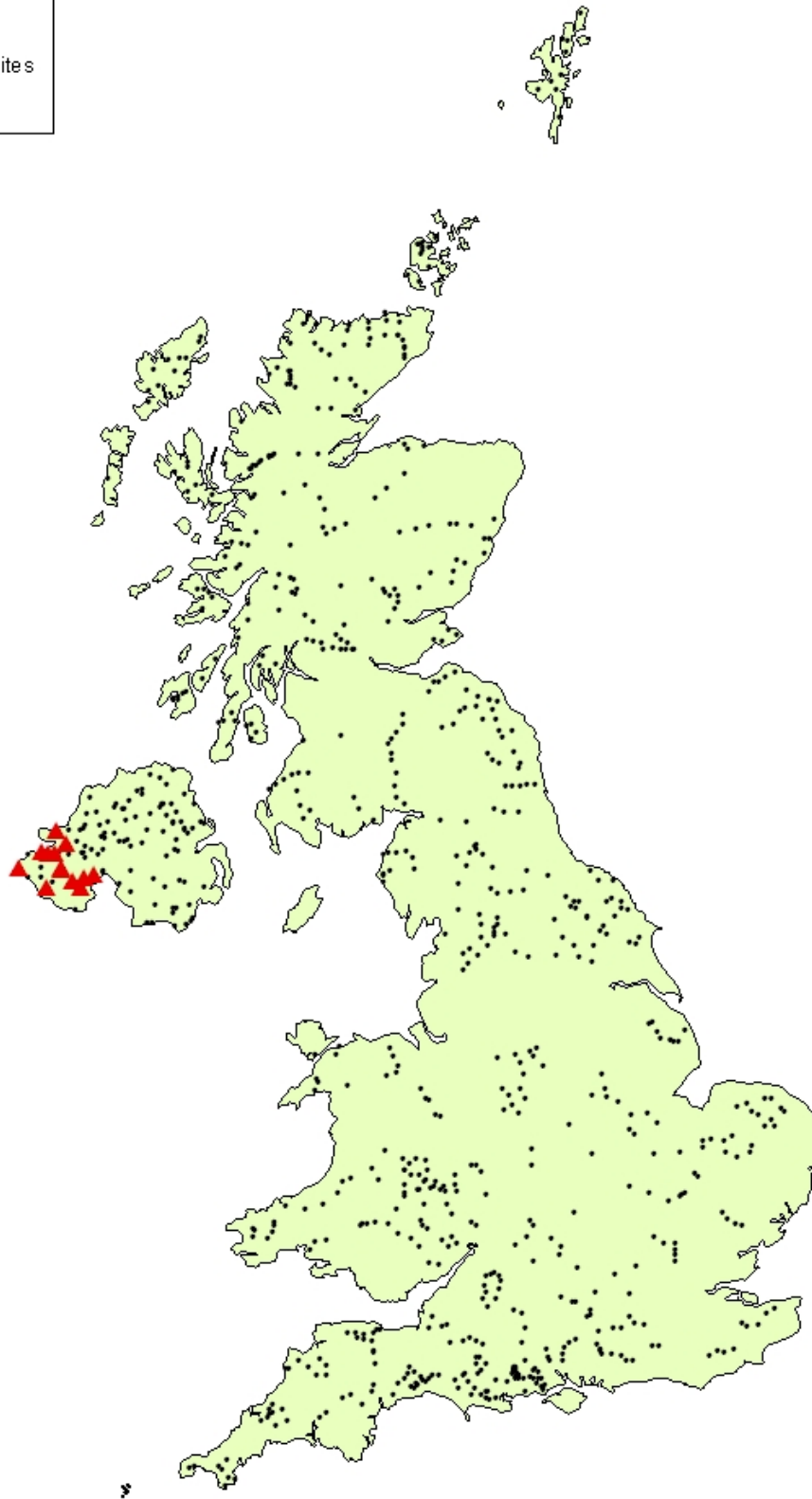
Number of sites =7

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Ancyclus fluviatilis</i> O.F. Müller, 1774	100
<i>Rhyacodrilus coccineus</i> (Vejdovsky, 1876)	100
Hydracarina	100
<i>Gammarus duebeni</i> Liljeborg, 1852	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Alainites muticus</i> (Linnaeus, 1758)	100
<i>Rhithrogena</i> sp.	100
<i>Ecdyonurus</i> sp.	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Brachyptera risi</i> (Morton, 1896)	100
<i>Leuctra fusca</i> (Linnaeus, 1758)	100
<i>Oreodytes sanmarkii</i> (C.R. Sahlberg, 1826)	100
<i>Hydraena gracilis</i> Germar, 1824	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Limnius volckmari</i> (Panzer, 1793)	100
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	100
Dicranota sp.	100
<i>Simulium</i> (<i>Simulium</i>) <i>argyreatum</i> group	100
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	100
<i>Brillia bifida</i> (Kieffer, 1909)	100
<i>Eukiefferiella</i> group	100
<i>Rheocricotopus</i> sp.	100
<i>Micropsectra</i> group	100
<i>Leuctra inermis</i> Kempny, 1899	85.7
<i>Siphonoperla torrentium</i> (Pictet, 1841)	85.7

Legend

- ▲ End group Sites
- Other sites



End Group NI 05

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NI End Group 5

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	30	68.54	120	22.44
Slope (m km ⁻¹)	0.6	6.65	21.1	5.81
Discharge Category (1-10)	1	2.54	4	1.2
Distance from Source (km)	4.3	9.73	17	4.44
Alkalinity (mg/l CaCO ₃)	21	83.09	192	42.77
Mean Width (m)	2	7.56	16.1	4.96
Mean Depth (cm)	15	23.77	44	6.91
Boulders & Cobbles (%)	1	60.08	95	35.92
Pebbles & Gravel (%)	5	22.69	80	22.04
Sand (%)	0	14.23	50	18.21
Silt & Clay (%)	0	3	30	8.29
Mean Substratum (phi)	-7.52	-4.87	0.35	2.89

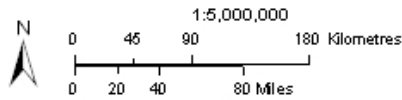
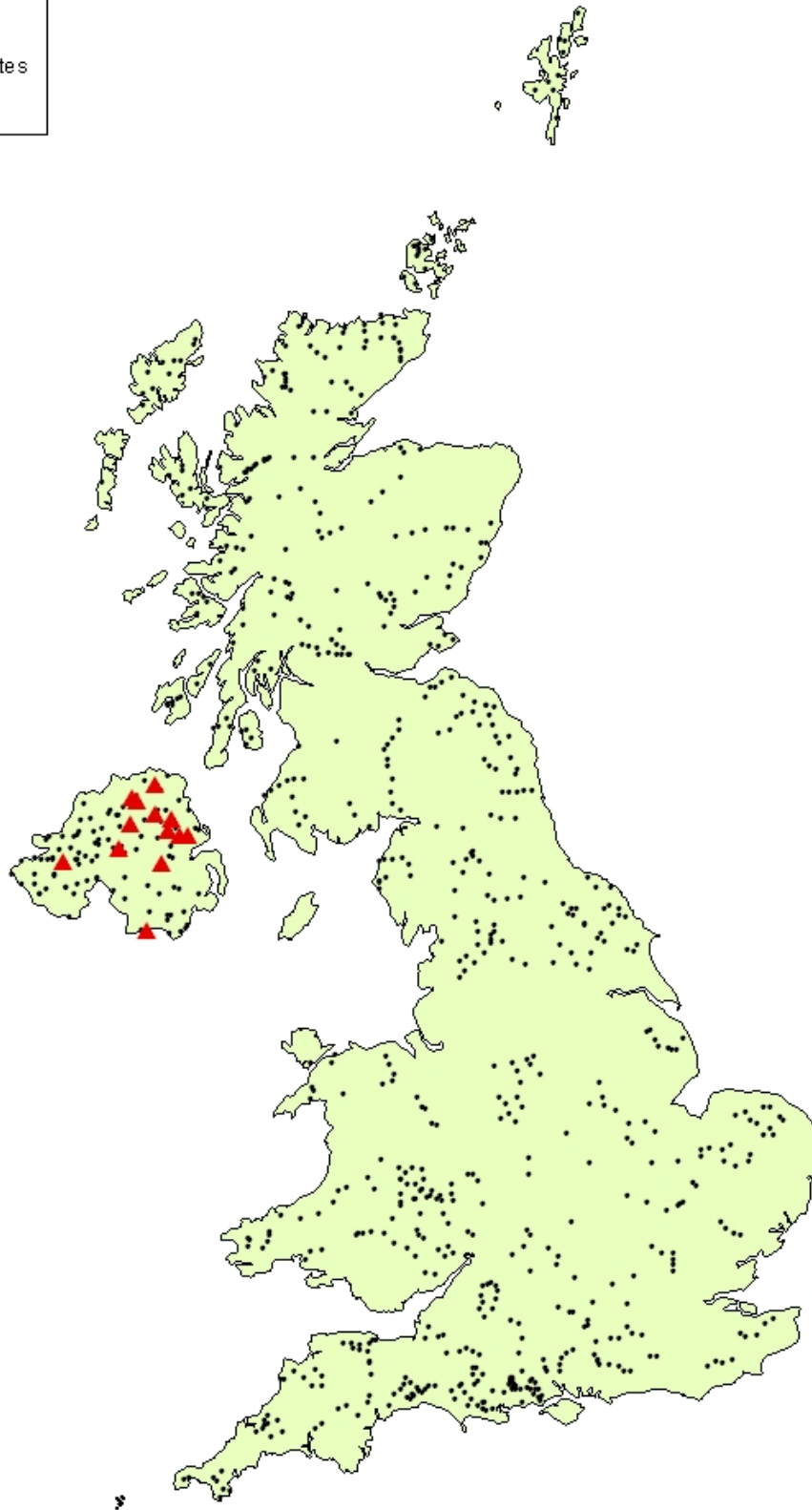
Number of sites =13

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Rhyacodrilus coccineus</i> (Vejdovsky, 1876)	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Alainites muticus</i> (Linnaeus, 1758)	100
<i>Rhithrogena</i> sp.	100
<i>Ecdyonurus</i> sp.	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Eukiefferiella</i> group	100
<i>Micropsectra</i> group	100
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	92.3
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	92.3
<i>Hydracarina</i>	92.3
<i>Gammarus duebeni</i> Liljeborg, 1852	92.3
<i>Serratella ignita</i> (Poda, 1761)	92.3
<i>Leuctra fusca</i> (Linnaeus, 1758)	92.3
<i>Dicranota</i> sp.	92.3
<i>Brillia bifida</i> (Kieffer, 1909)	92.3
<i>Polypedilum</i> sp.	92.3
<i>Hydraena gracilis</i> Germar, 1824	84.6
<i>Limnius volckmari</i> (Panzer, 1793)	84.6
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	84.6
<i>Polycentropus flavomaculatus</i> (Pictet, 1834)	84.6
<i>Hydropsyche pellucidula</i> (Curtis, 1834)	84.6
<i>Hydropsyche siltalai</i> Döhler, 1963	84.6
<i>Halesus</i> sp.	84.6
<i>Thienemannimyia</i> group	84.6

Legend

- ▲ End group Sites
- Other sites



End Group NI 06

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NI End Group 6

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	12	67.62	125	31.36
Slope (m km ⁻¹)	1.6	8.47	19.1	5.82
Discharge Category (1-10)	1	1.38	3	0.65
Distance from Source (km)	4.4	7.88	12.3	2.43
Alkalinity (mg/l CaCO ₃)	50	92.38	131.4	28.03
Mean Width (m)	2	3.96	7.5	1.78
Mean Depth (cm)	15	26.69	90	19.4
Boulders & Cobbles (%)	5	56.92	95	31.33
Pebbles & Gravel (%)	5	25	60	17.91
Sand (%)	0	13.85	65	20.12
Silt & Clay (%)	0	4.23	20	7.6
Mean Substratum (phi)	-7.52	-4.61	-0.06	2.49

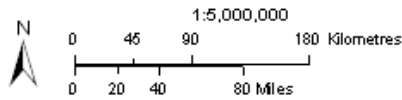
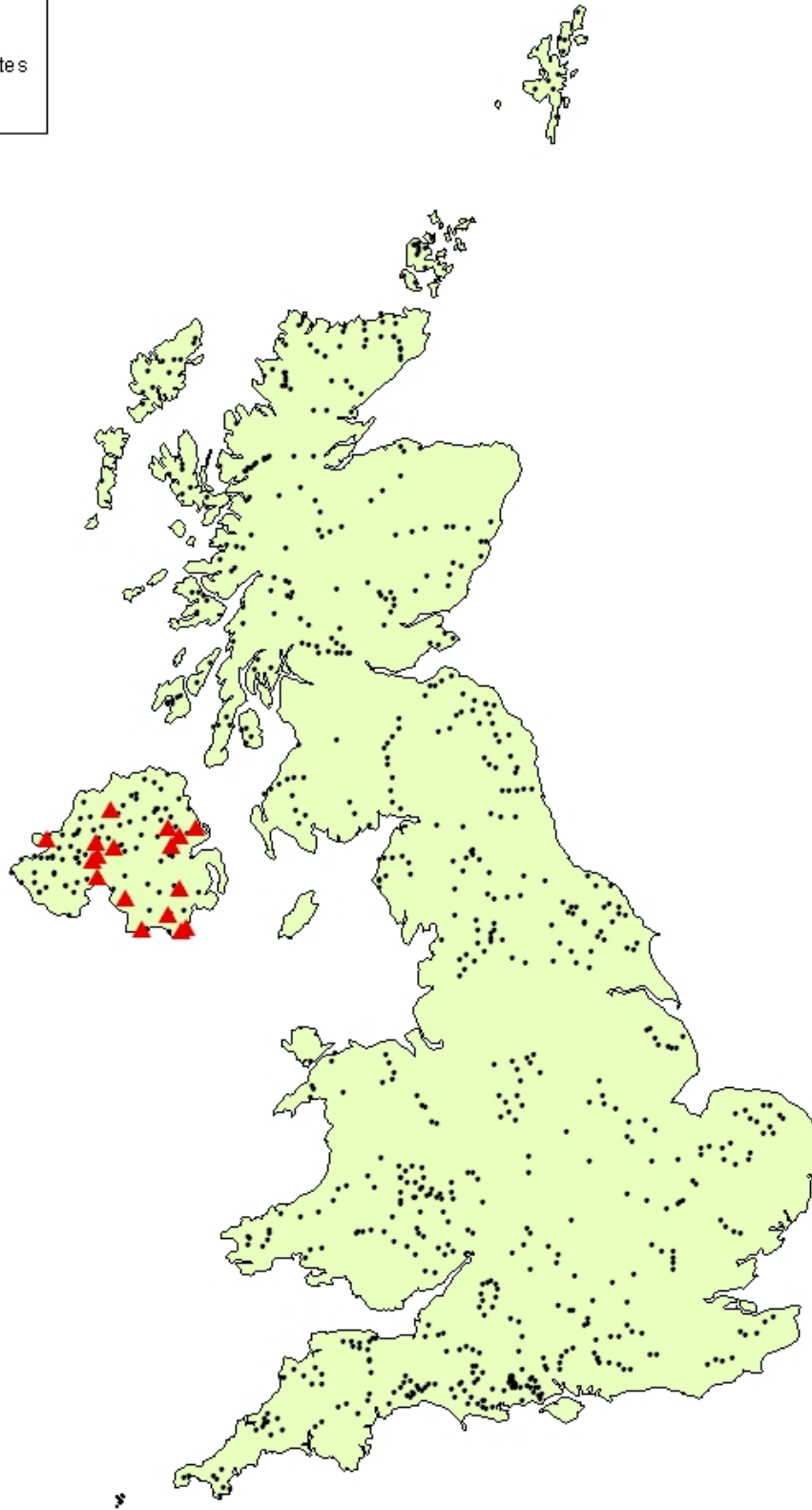
Number of sites =13

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Ancyclus fluviatilis</i> O.F. Müller, 1774	100
<i>Lumbriculus</i> group	100
<i>Rhyacodrilus coccineus</i> (Vejdovsky, 1876)	100
<i>Hydracarina</i>	100
<i>Gammarus duebeni</i> Liljeborg, 1852	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Ecdyonurus</i> sp.	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Oreodytes sanmarkii</i> (C.R. Sahlberg, 1826)	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	100
<i>Dicranota</i> sp.	100
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	100
<i>Thienemannimyia</i> group	100
<i>Brillia bifida</i> (Kieffer, 1909)	100
<i>Eukiefferiella</i> group	100
<i>Cricotopus</i> group	100
<i>Rheocricotopus</i> sp.	100
<i>Polypedilum</i> sp.	100
<i>Micropsectra</i> group	100
<i>Clinocerinae</i>	100
<i>Nais elinguis</i> Müller, 1773	92.3
<i>Alainites muticus</i> (Linnaeus, 1758)	92.3
<i>Rhithrogena</i> sp.	92.3
<i>Caenis rivulorum</i> Eaton, 1884	92.3

Legend

- ▲ End group Sites
- Other sites



End Group NI 07

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NI End Group 7

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	8	77.53	120	34.99
Slope (m km ⁻¹)	1.4	7.95	20	5.35
Discharge Category (1-10)	1	3.12	6	1.32
Distance from Source (km)	2.6	11.46	20	4.67
Alkalinity (mg/l CaCO ₃)	11	72.85	155	46.14
Mean Width (m)	3	8.22	18.3	4.38
Mean Depth (cm)	20	29.21	47	6.92
Boulders & Cobbles (%)	0	70.71	95	29.64
Pebbles & Gravel (%)	0	16.29	67	18.48
Sand (%)	0	11.18	40	11.65
Silt & Clay (%)	0	1.88	20	5.27
Mean Substratum (phi)	-7.52	-5.63	-1.36	2.1

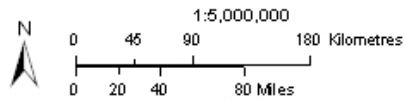
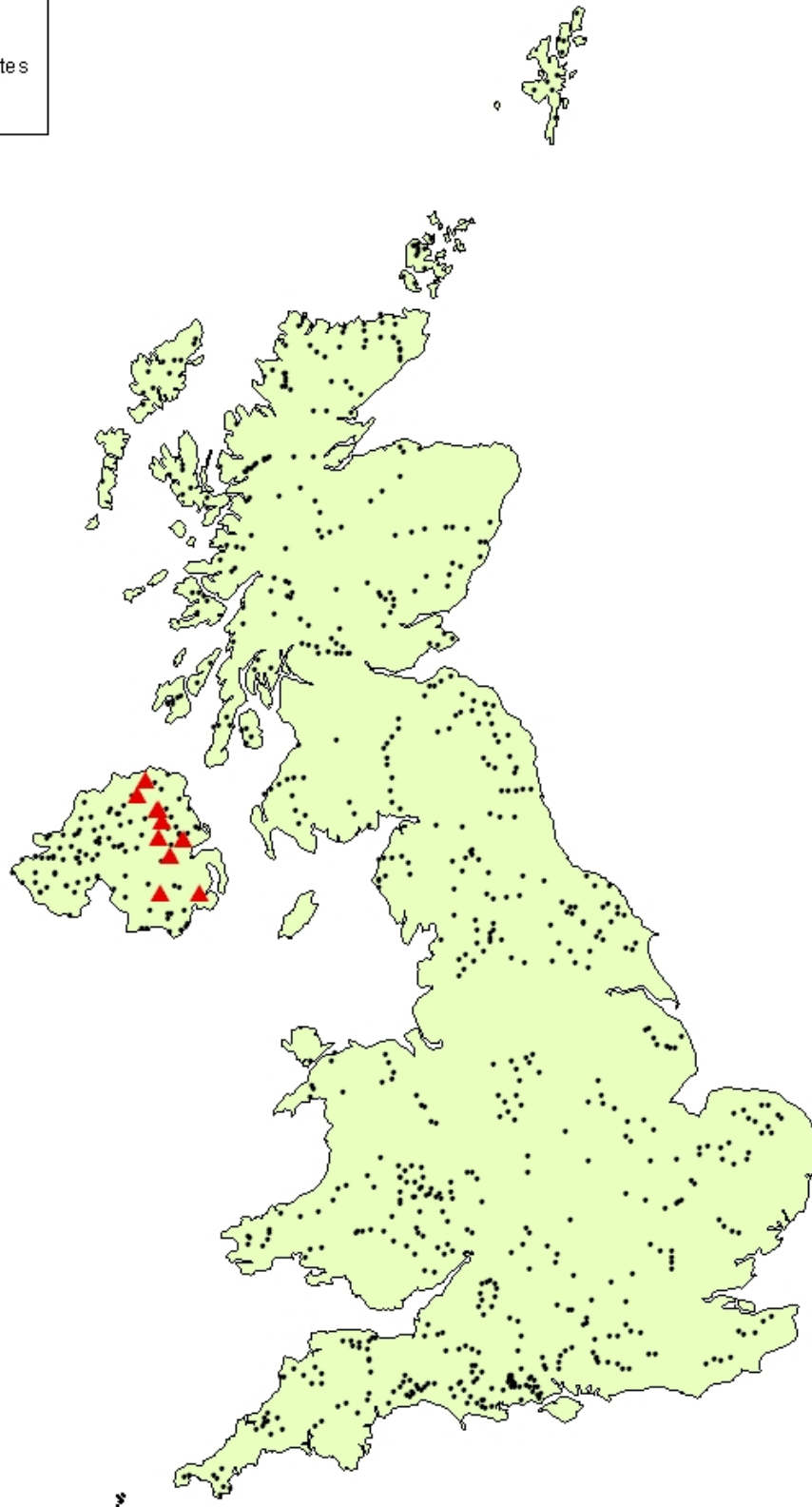
Number of sites =17

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	100
Hydracarina	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Ecdyonurus</i> sp.	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Hydraena gracilis</i> Germar, 1824	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Hydropsyche siltalai</i> Döhler, 1963	100
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	100
<i>Eukiefferiella</i> group	100
<i>Polypedilum</i> sp.	100
<i>Micropsectra</i> group	100
<i>Lumbriculus</i> group	94.1
<i>Rhyacodrilus coccineus</i> (Vejdovsky, 1876)	94.1
Enchytraeidae (including Propappidae)	94.1
<i>Gammarus duebeni</i> Liljeborg, 1852	94.1
<i>Caenis rivulorum</i> Eaton, 1884	94.1
<i>Limnius volckmari</i> (Panzer, 1793)	94.1
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	94.1
<i>Cricotopus</i> group	94.1
<i>Rhithrogena</i> sp.	88.2
<i>Amphinemura sulcicollis</i> (Stephens, 1836)	88.2
<i>Polycentropus flavomaculatus</i> (Pictet, 1834)	88.2
<i>Dicranota</i> sp.	88.2
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	82.4

Legend

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- Other sites



End Group NI 08

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NI End Group 8

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	8	48.3	95	30.75
Slope (m km ⁻¹)	0.7	2.46	5.6	1.65
Discharge Category (1-10)	1	4.5	7	1.84
Distance from Source (km)	9	26.22	55	14.47
Alkalinity (mg/l CaCO ₃)	42	93.5	128	29.95
Mean Width (m)	7.3	16.35	36	9.81
Mean Depth (cm)	26	57.2	129	31.21
Boulders & Cobbles (%)	3	41.5	95	40.59
Pebbles & Gravel (%)	0	27.3	85	31.42
Sand (%)	0	16	70	23.07
Silt & Clay (%)	0	15.2	85	25.76
Mean Substratum (phi)	-7.52	-2.57	6.61	4.53

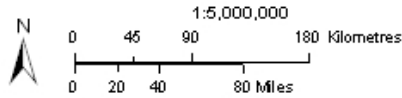
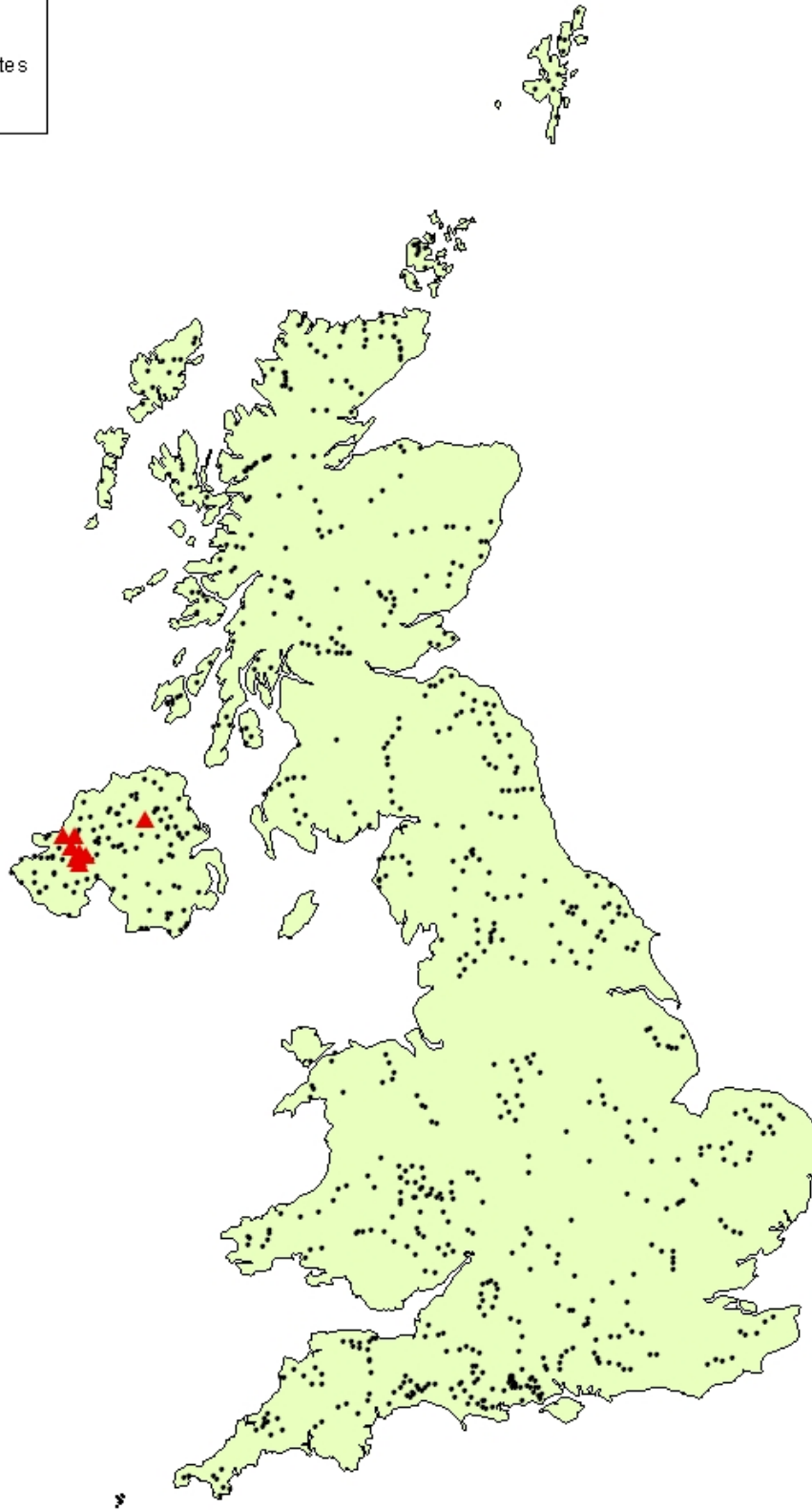
Number of sites =10

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
<i>Radix balthica</i> (Linnaeus, 1758)	100
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	100
<i>Glossiphonia complanata</i> (Linnaeus, 1758)	100
Hydracarina	100
<i>Baetis rhodani</i> (Pictet, 1843-1845)	100
<i>Ecdyonurus</i> sp.	100
<i>Serratella ignita</i> (Poda, 1761)	100
<i>Caenis rivulorum</i> Eaton, 1884	100
<i>Elmis aenea</i> (Müller, 1806)	100
<i>Hydropsyche siltalai</i> Döhler, 1963	100
<i>Simulium</i> (<i>Simulium</i>) <i>ornatum</i> group	100
<i>Eukiefferiella</i> group	100
<i>Cricotopus</i> group	100
<i>Microtendipes</i> sp.	100
<i>Paratanytarsus</i> group	100
<i>Potamopyrgus antipodarum</i> (J.E.Gray, 1843)	90
<i>Lumbriculus</i> group	90
Lumbricidae (incl. Glossoscolecidae)	90
<i>Helobdella stagnalis</i> (Linnaeus, 1758)	90
<i>Asellus aquaticus</i> (Linnaeus, 1758)	90
<i>Caenis luctuosa</i> group	90
<i>Rhyacophila dorsalis</i> (Curtis, 1834)	90
<i>Polycentropus flavomaculatus</i> (Pictet, 1834)	90
<i>Simulium</i> (<i>Wilhelmia</i>) sp.	90
<i>Micropsectra</i> group	90

Legend

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- Other sites



End Group NI 09

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NI End Group 9

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	20	61	88	24.74
Slope (m km ⁻¹)	0.6	1.61	4	0.99
Discharge Category (1-10)	4	5.44	8	1.33
Distance from Source (km)	16.4	27.38	55	11.96
Alkalinity (mg/l CaCO ₃)	24.8	82.17	112.5	25.17
Mean Width (m)	9	17.83	35.5	9.22
Mean Depth (cm)	18	32.89	57	11.91
Boulders & Cobbles (%)	3	37.78	92	30.07
Pebbles & Gravel (%)	3	39.78	78	26.58
Sand (%)	3	20.56	42	16.28
Silt & Clay (%)	0	2	5	1.73
Mean Substratum (phi)	-7.13	-3.65	-1.22	2

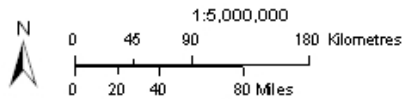
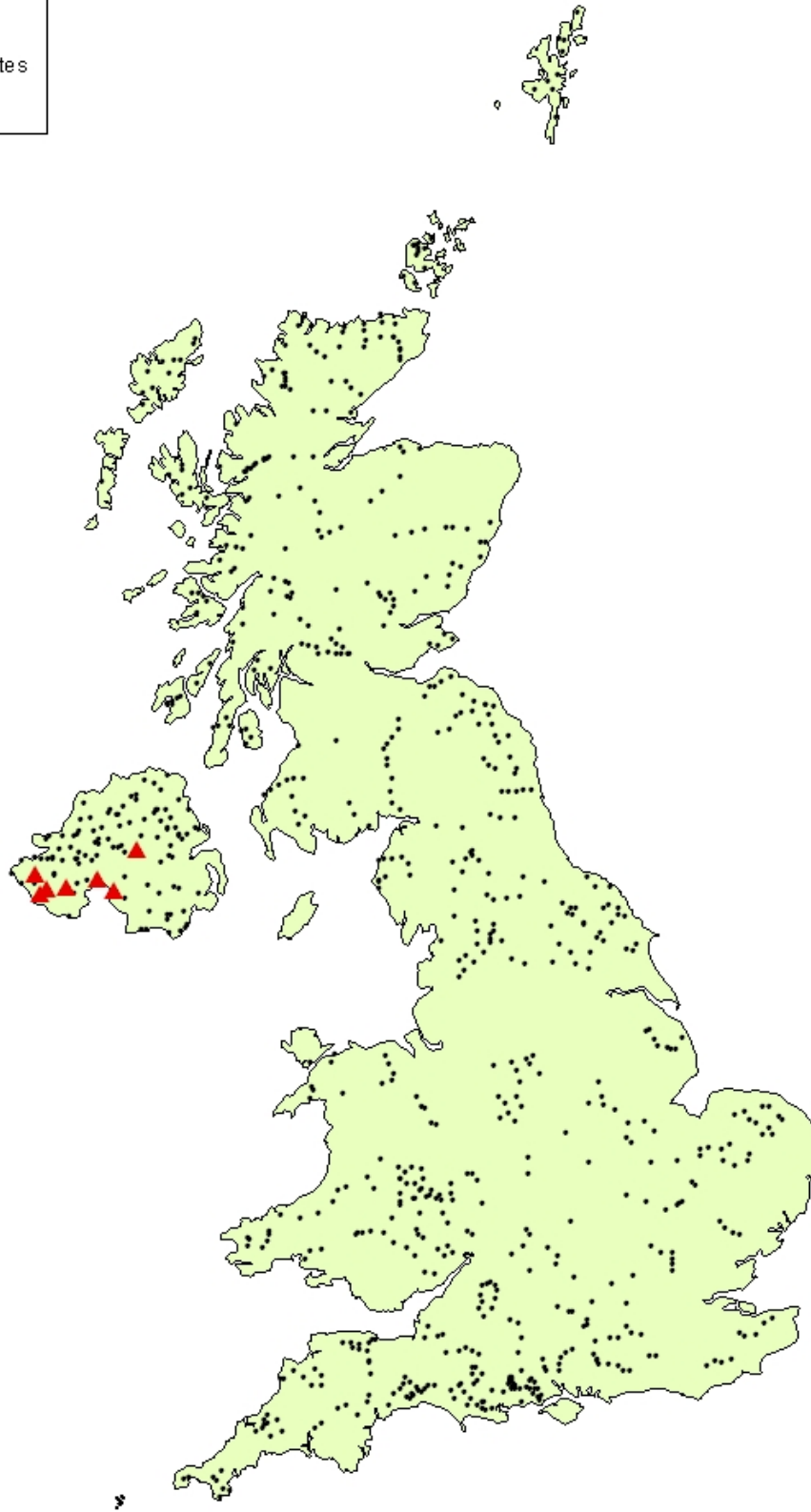
Number of sites =9

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Potamopyrgus antipodarum (J.E.Gray, 1843)	100
Radix balthica (Linnaeus, 1758)	100
Ancylus fluviatilis O.F. Müller, 1774	100
Lumbriculus group	100
Lumbricidae (incl. Glossoscolecidae)	100
Hydracarina	100
Gammarus duebeni Liljeborg, 1852	100
Baetis rhodani (Pictet, 1843-1845)	100
Ecdyonurus sp.	100
Serratella ignita (Poda, 1761)	100
Caenis rivulorum Eaton, 1884	100
Caenis luctuosa group	100
Nebrioporus depressus (Fabricius, 1775)	100
Orectochilus villosus (O.F. Müller, 1776)	100
Elmis aenea (Müller, 1806)	100
Limnius volckmari (Panzer, 1793)	100
Oulimnius tuberculatus (Müller, 1806)	100
Hydropsyche pellucidula (Curtis, 1834)	100
Lepidostoma hirtum (Fabricius, 1775)	100
Simulium (Simulium) ornatum group	100
Thienemannimyia group	100
Eukiefferiella group	100
Cricotopus group	100
Polypedilum sp.	100
Micropsectra group	100

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End Group NI 10

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NI End Group 10

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	12	45	69	18.96
Slope (m km ⁻¹)	0.3	0.97	2.4	0.76
Discharge Category (1-10)	1	4.71	7	1.89
Distance from Source (km)	18	33.71	52	12.26
Alkalinity (mg/l CaCO ₃)	53	126.07	193.5	53.79
Mean Width (m)	8	17.51	33	9.18
Mean Depth (cm)	30	58	93	20.95
Boulders & Cobbles (%)	4	46.29	85	39.2
Pebbles & Gravel (%)	5	19.29	60	19.02
Sand (%)	5	25.86	75	25.3
Silt & Clay (%)	0	8.57	50	18.42
Mean Substratum (phi)	-6.32	-3.01	3.99	4.22

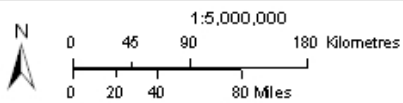
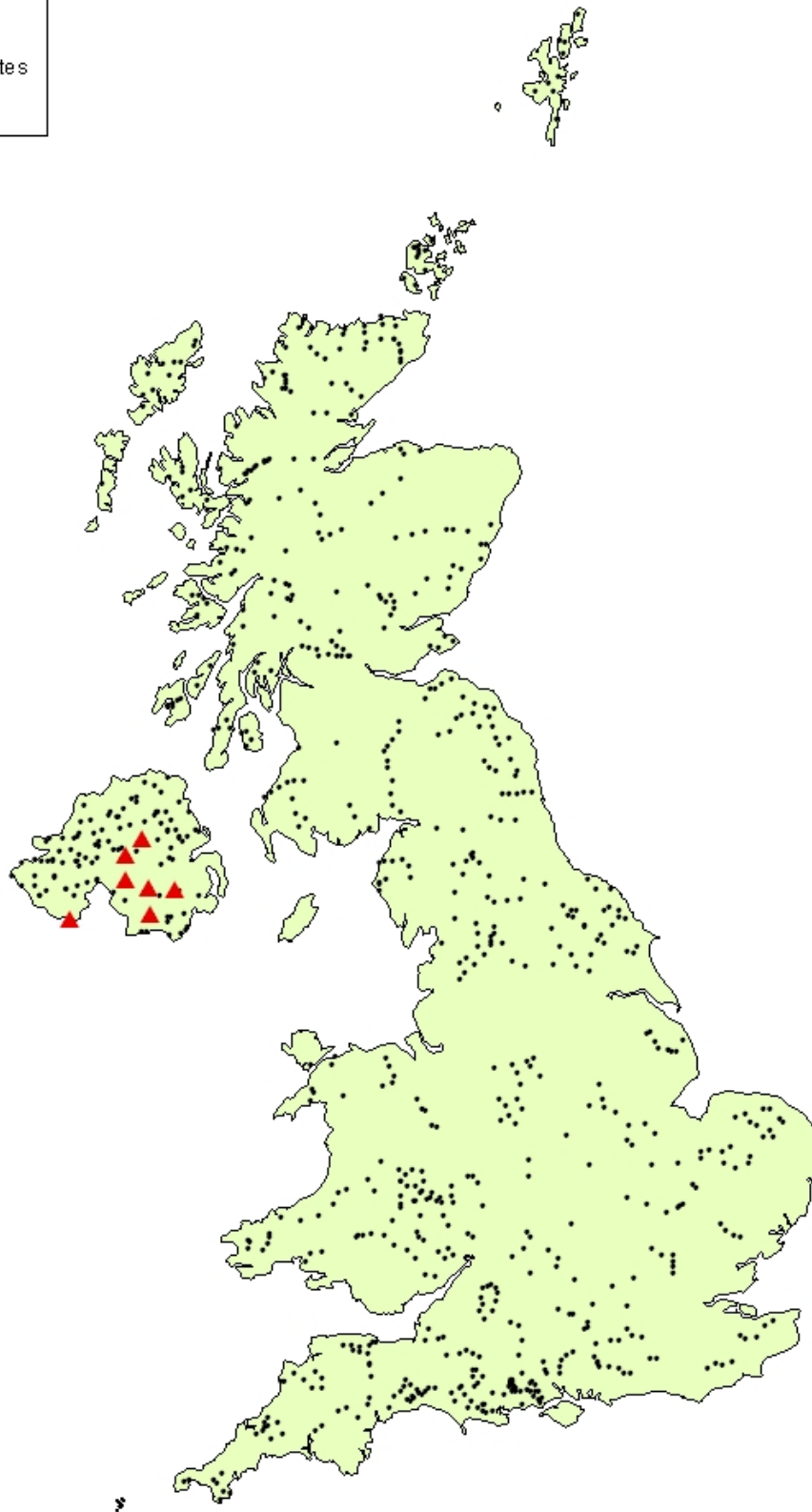
Number of sites =7

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Ancylus fluviatilis O.F. Müller, 1774	100
Hydracarina	100
Baetis rhodani (Pictet, 1843-1845)	100
Serratella ignita (Poda, 1761)	100
Caenis luctuosa group	100
Elmis aenea (Müller, 1806)	100
Oulimnius tuberculatus (Müller, 1806)	100
Rhyacophila dorsalis (Curtis, 1834)	100
Polycentropus flavomaculatus (Pictet, 1834)	100
Halesus sp.	100
Simulium (Simulium) ornatum group	100
Eukiefferiella group	100
Cricotopus group	100
Potamopyrgus antipodarum (J.E.Gray, 1843)	85.7
Radix balthica (Linnaeus, 1758)	85.7
Glossiphonia complanata (Linnaeus, 1758)	85.7
Asellus aquaticus (Linnaeus, 1758)	85.7
Nebrioporus depressus (Fabricius, 1775)	85.7
Limnius volckmari (Panzer, 1793)	85.7
Hydroptila sp.	85.7
Hydropsyche pellucidula (Curtis, 1834)	85.7
Athripsodes cinereus (Curtis, 1834)	85.7
Dicranota sp.	85.7
Simulium (Wilhelmia) sp.	85.7
Polypedilum sp.	85.7

Legend

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End Group NI 11

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NI End Group 11

Summary of environmental variables in end group

Variable	Minimum	Mean	Maximum	St. Dev.
Altitude (m)	10	34.29	92	28.89
Slope (m km ⁻¹)	0.1	1.1	3.1	1.38
Discharge Category (1-10)	1	5	7	2
Distance from Source (km)	14	35.64	75	19.57
Alkalinity (mg/l CaCO ₃)	75	111.29	176	42.26
Mean Width (m)	5.7	18.83	37.2	10.9
Mean Depth (cm)	35	96.14	183	60.55
Boulders & Cobbles (%)	0	35.71	100	42.66
Pebbles & Gravel (%)	0	14.29	55	19.88
Sand (%)	0	35	95	34.61
Silt & Clay (%)	0	15	67	23.8
Mean Substratum (phi)	-7.75	-1.33	5.27	4.68

Number of sites =7

25 most frequently occurring taxa in end group

Taxon	Frequency of occurrence
Hydracarina	100
Asellus aquaticus (Linnaeus, 1758)	100
Baetis rhodani (Pictet, 1843-1845)	100
Elmis aenea (Müller, 1806)	100
Micropsectra group	100
Polycelis nigra group	85.7
Radix balthica (Linnaeus, 1758)	85.7
Ancylus fluviatilis O.F. Müller, 1774	85.7
Sphaerium corneum (Linnaeus, 1758)	85.7
Pisidium subtruncatum Malm, 1855	85.7
Aulodrilus plurisetia (Piguet, 1906)	85.7
Glossiphonia complanata (Linnaeus, 1758)	85.7
Gammarus pulex (Linnaeus, 1758)	85.7
Caenis luctuosa group	85.7
Sigara (Sigara) sp.	85.7
Sigara (Subsigara) falleni (Fieber, 1848)	85.7
Haliphus sibericus Motschulsky, 1860	85.7
Nebrioporus depressus (Fabricius, 1775)	85.7
Ilybius sp.	85.7
Helophorus (Rhopalohelophorus) brevipalpis Bedel, 1881	85.7
Simulium (Simulium) ornatum group	85.7
Cricotopus group	85.7
Paratanytarsus group	85.7
Valvata (Cincinna) piscinalis (O.F. Müller, 1774)	71.4
Potamopyrgus antipodarum (J.E.Gray, 1843)	71.4