

Table S1. Ecology and distribution of *Nupela* species.

Species	Basionym	Ecology	Distribution (* type locality)	Reference
<i>Nupela astartiella</i> METZELTIN et LANGE-BERTALOT		an effluent stream from a spring	Brazil, Est. São Paulo, stream near Santos *	METZELTIN & LANGE-BERTALOT 1998, p. 157, pl. 72: 46–55
<i>Nupela brachystiroides</i> LANGE-BERTALOT		karstic wetlands	Borneo, Sarawak, Bako Park* Mexico	LANGE-BERTALOT 1993, p. 154, pl. 39: 1–5 NOVELO et al. 2007
<i>Nupela butterfassiana</i> (LANGE-BERTALOT) LANGE-BERTALOT	<i>Achnanthes butterfassiana</i> LANGE-BERTALOT	wet rocks, waterfalls, aerophilous	Australia, Mt. Wilson (Blue Mts) New South Wales*	LANGE-BERTALOT & KRAMMER 1989, p. 34, pls 71: 15–29; 72: 2–5
<i>Nupela carolina</i> POTAPOVA et CLASON		small, slow rivers, rich in dissolved organic matter and nitrogen	USA, North Carolina: Contentnea Creek near Evansdale, Wilson County (35°38'N, 77°53'W)*	POTAPOVA et al. 2003, p. 298, figs 45–69
<i>Nupela chilensis</i> (KRASSKE) LANGE-BERTALOT	<i>Anomoeoneis chilensis</i> KRASSKE 1939	springs, rivers, mosses, water of low conductivity; aerophilous diatom. aerophilous wet mosses, pools, pH 6.0–6.5, conductivity 80 µS.cm ⁻¹	Chile*, Brasil, widespread, Chile, Alto Vilches, Lago Riso Patron, Rio Pascua, Reloncavi Fjord near Puyhue Possession Island	LANGE-BERTALOT & MOSER 1994 RUMRICH ET AL. 2000 LANGE-BERTALOT et al. 1996 VAN DE VIVER et al. 2002
<i>Nupela comperei</i> MOSER		oligotraphentic, together with <i>Brachysira</i> , <i>Frustulia</i> , <i>Kobayasiella</i> .	New Caledonia, Plain des Lacs*	MOSER et al. 1998, p. 211, fig. 31: 1–4
<i>Nupela cymbelloidea</i> METZELTIN et LANGE-BERTALOT			Guyana, Essequibo River*	METZELTIN & LANGE-BERTALOT 1998, p. 158, pls 72: 39–42; 73: 5

<i>Nupela deformis</i> LANGE-BERTALOT	with <i>Nupela rumrichorum</i> , circumneutral, oligotrophic water of low conductivity extremely acidic running water	Venezuela, Río Marichal Largo* Agrido River in Costa Rica	LANGE-BERTALOT & MOSER 1994, p. 76, pls 49: 23–34; 51: 6 WYDRZYCKA & LANGE-BERTALOT 2001
<i>Nupela devilenis</i> (FOGED) HAMILTON, SIVER et ANTONIADES	freshwater, benthic, oligohalobous (indifferent), circumneutral waters	USA, Alaska, North Devil Mountain Lake (66°24'N, 164°30'W)* USA	FOGED 1981, p. 45, pl. 11: 13, 14 ANTONIADES et al. 2008
<i>Nupela encyonopsis</i> METZELTIN et LANGE-BERTALOT	creek rich in humic-matter (?)	Venezuela, Roraima Region, Avayan Tepui* Canada, Canadian Arctic, Alaska, Sweden Finland, circumpolar	METZELTIN & LANGE-BERTALOT 1998, p. 159, pls 72: 35–37; 74: 3–4 ANTONIADES et al. 2008
<i>Nupela exotica</i> MONNIER, LANGE-BERTALOT et BERTRAND	epilithon, acidic, nutrients and mineral richwaters, hypertrophy	France, Loiret: Mardie (in aquarium)*	MONNIER et al. 2003, p. 278, figs 1–8, 12–20
<i>Nupela fennica</i> (HUSTEDT) LANGE-BERTALOT	freshwater	Finland, small, deep lake, Suistamonjärvi*, West Germany	HUSTEDT 1962, p. 259, fig. 1387 LANGE-BERTALOT & METZELTIN 1996
<i>Nupela floridana</i> METZELTIN et LANGE-BERTALOT	peats and acidic lakes	USA, Florida Peat, Santa Rosa County, Florida*	METZELTIN & LANGE-BERTALOT 2007, p. 185, pl. 173: 11–15
<i>Nupela giluwensis</i> Vyverman et Compère	acidic waters	Papua New Guinea, small pond near Weri Weri, Mount Giluwe, subalpine tarn*, paleotropical diatom	VYVERMAN 1991, p. 178, figs 1–10
<i>Nupela gracillima</i> (HUSTEDT) LANGE-BERTALOT	with liverworts	Switzerland, Grialetschee (9°58' N, 46°43' W)*	HUSTEDT 1943, p. 154, figs 21–23

<i>Nupela hagensis</i> VYVERMAN	circumneutral waters of low conductivity	Papua New Guinea, Lake Kainga*	VYVERMAN 1991, p. 158, pl. 140b
<i>Nupela imperfecta</i> (SCHIMANSKI) LANGE-BERTALOT	moor soil springs	Germany, Bayern, Frankenwald, west from Kunreuth* Germany, Taunus Mts, Devonian sandstone	SCHIMANSKI 1978, p. 564, Fig. 1: 1–5 WERUM & LANGE-BERTALOT 2004
<i>Nupela impexiformis</i> LANGE-BERTALOT	oligotrophic, circumneutral water of low conductivity	Finland, near Mikkeli, Puulavesi Lake* North-west Siberia	LANGE-BERTALOT & KRAMMER 1989, p. 68, figs 74: 7–9; 75: 2–4 LANGE-BERTALOT & GENKAL 1999
<i>Nupela jahniae-reginae</i> LANGE-BERTALOT et METZELTIN	tolerant, oligo- eutraphentic	Venezuela, Laguna Negra*, Germany, Alpen, Taunus, canal in Berlin Central Europe, probably cosmopolitan	RUMRICH et al. 2000, p. 194, pl. 34: 1–8
<i>Nupela lapidosa</i> (KRASSKE) LANGE-BERTALOT	oligotrophic, circumneutral, low conductivity, acidic, springs, upper streams circumneutral spring streams, rivers and lakes river	Germany, Sachsen, Königstein, Elbsgebirge*, Sachsen, Hessen, Alps, Chile, Anden Germany southern Poland southern Poland, Tatra Mts Macedonia, Brajcinska River	KRASSKE 1929, p. 350, fig. 9 LANGE-BERTALOT et al. 1996 RUMRICH et al. 2000, WERUM & LANGE-BERTALOT 2004, SKALSKA 1966, KAWECKA 1970–1980, WASYLK 1971, KAWECKA & GALAS 2003 LEVKOV et al. 2007
<i>Nupela lesothensois</i> (SCHOEMAN) LANGE-BERTALOT	springs, streams	Lesotho, spring and its effluent stream at Paballong near 'Mamathe in the Berea district * Italy, Seychelles, Africa southern and south-western, Germany, Munich, Botanical Garden, probably cosmopolitan	SCHOEMAN & ARCHIBALD 1976, CSIR Special Report WAT 50, figs 1–29 RUMRICH et al. 2000

<i>Nupela marvianii</i> WOJTAŁ	Epipelon, oligotrophic small, shaded spring-fed pool, water slightly humic, acidic, of low alkalinity, conductivity	Poland, Tatra Mts, (66°24'N, 164°30'W)	KULIKOVSKIY et al. <i>in press</i>
<i>Nupela matroschka</i> KULIKOVSKIY, LANGE-BERTALOT et WITKOWSKI	<i>Sphagnum</i> bogs, aerophilous, low pH,	Russia, Polistovo-Lovatsky <i>Sphagnum</i> bogs, Novogorod region	KULIKOVSKIY et al. <i>in press</i>
<i>Nupela neglecta</i> PONADER, LOWE et POTAPOVA	streams, small creeks, moderate conductivity, high silica and organic matter concentration, submerged or wet rocks, woody debris, soils	USA, New Jersey: Coles Brooks, Hackensack, Bergen County, urban areas, (40°54'N, 70°02'W)*	POTAPOVA et al. 2003, p. 294, figs 1–44
<i>Nupela neogracillima</i> (HUSTEDT) KULIKOVSKIY et LANGE-BERTALOT	epipelon	Japan, Aokiko lake, Japan*	HUSTEDT 1927, p. 161, figs 5: 10–11
<i>Nupela neotropica</i> LANGE- BERTALOT	low conductivity, oligotrophic-dystrophic water	Venezuela, Río Kukurital*tropical zone	LANGE-BERTALOT & MOSER 1994, p. 77, pls 49: 7–9; 51: 1–3
<i>Nupela obliqua</i> METZELTIN et LANGE-BERTALOT	stream rich in humic-matter (?)	Venezuela, Roraima Region, Avayan Tepui*	METZELTIN & LANGE-BERTALOT 1998, p. 160, pls 72: 42–45; 73: 2–4
<i>Nupela pallavicinii</i> (KRASSKE) LANGE-BERTALOT	mosses, aerophilous	Colombia, spring near Chapinero near Bogota, c.a. 2800 m a.s.l., <i>Sphagnum</i> from watercourse banks near El Boqueron 3400 m asl.	LANGE-BERTALOT et al. 1996, p. 135, fig. 11: 20, 21

<i>Nupela paludigena</i> (SCHERER) LANGE-BERTALOT	<i>Anomoeoneis paludigena</i> SCHERER 1988	dystrophic swamp oligotrophic, acidic, low conductivity water	USA, Georgia: Okefenokee Swamp*, New York and Florida acidic lakes boreal and alpine areas, North America, also fossil	SCHERER 1988, p. 149, figs 42–45, 72 LANGE-BERTALOT 1993
<i>Nupela praecipua</i> (REICHARDT) REICHARDT	<i>Achnanthes praecipua</i> REICHARDT 1988	tychoplankton, small river extremely acidic river cloud forest streams, moderate conductivity and alkalinity	Mexico, Custepec River* Venezuela, Laguna Negra, Costa Rica Costa Rica, Agrio River Boliwia, streams near Coroico	REICHARDT 1988, p. 391, figs 1–24 RUMRICH et al. 2000 WYDRZYCKA & LANGE-BERTALOT 2001 MORALES & VIS 2007
<i>Nupela rhetica</i> (WUTHRICH) LANGE-BERTALOT	<i>Anomoeoneis rhetica</i> WUTHRICH 1975		Switzerland, Swiss National Park: region of Macun; Sellasee, Massif du Gotthard*	Index Nominum Algarum, http:// ucjeps.berkeley.edu/INA.html
<i>Nupela rumrichorum</i> LANGE- BERTALOT		circumneutral, oligotrophic, waters of low conductivity	Venezuela, Río Morichal Largo*, tropical zone	LANGE-BERTALOT & MOSER 1994, p. 79, figs 49: 14–22; 50
<i>Nupela schoemaniana</i> LANGE- BERTALOT		slightly acidic up to circumneutral running waters, of low conductivity	Borneo, South Africa, Dimade River*, Borneo, Sarawak	LANGE-BERTALOT 1993, 156, figs 36: 1–9; 37: 1–6.
<i>Nupela scissura</i> SIVER, HAMILTON & MORALES		acidic, oligotrophic to mesotrophic waters poor in dissolved salts, with a slightly humic colour	USA, North Carolina: Bay Tree Lake, Bladen County (34°40'59.36"N, 78°24'58.77"W)*	SIVER et al. 2007, 127, figs 1 A-M, 2, 3
<i>Nupela silvahercynia</i> (LANGE- BERTALOT) LANGE-BERTALOT		oligotrophic, acidic waters of specific conductivity lower than 100 µS/cm. common in springs common in springs on basaltic and granitic rocks	Germany, spring Reichenbachs near Tilsmanweg*, Hochtaunus, Schwarzwald, Germany, Hochtaunus near Königsstein	LANGE-BERTALOT & KRAMMER 1989, p. 139, Figs 56: 11–12', 71: 30–37, 73: 30–37, 98: 45–50 WERUM & LANGE-BERTALOT 2004

<i>Nupela subinvicta</i> (KRASSKE) LANGE-BERTALOT	<i>Navicula subinvicta</i> KRASSKE 1939	aerophilous, occurs in mosses and wet rocks	Chile, Ufer des Rio Pasqua, Chusqueaquila, near Lago Riso Patron, Reloncavi Fjord	LANGE-BERTALOT et al. 1996, p. 147, fig. 11: 16–19
<i>Nupela subpallavicinii</i> METZELTIN et LANGE-BERTALOT		stream rich in humic-matter (?)	Venezuela, Roraima Region, stream on a peak of Avayan Tepui*	METZELTIN & LANGE-BERTALOT 1998, 161, figs 72: 23, 24; 73: 1; 74: 5
<i>Nupela tenuicephala</i> (HUSTEDT) LANGE-BERTALOT	<i>Navicula tenuicephala</i> HUSTEDT 1942		Sweden, Lappland, near Abisko*, Schwarzwald, Germany	Index Nominum Algarum, http://ucjeps.berkeley.edu/INA.html
<i>Nupela tenuistriata</i> (Hust.) METZELTIN et LANGE-BERTALOT	<i>Achnanthes tenuistriata</i> HUSTEDT 1937	rivers	Guyana, Demerara River*	METZELTIN & LANGE-BERTALOT 1998, p. 161, fig. 71: 1–10
<i>Nupela thurstonensis</i> (KACZMARSKA) KULIKOVSKIY, LANGE-BERTALOT et WITKOWSKI	<i>Navicula thurstonensis</i> KACZMARSKA 1984	aerophilous diatom, resistant to light deficiency, mucilage on wet wall, bryophytes	Hawaii, Thurston Lava Tube, Hawaii Volcanoes National Park, Hawaii County wet lava walls*	RUSHFORTH et al. 1984, p. 145, figs 81–83, 107–110, 125
<i>Nupela tristis</i> (KRASSKE) LANGE-BERTALOT	<i>Navicula tristis</i> KRASSKE 1939	oligotrophic, low conductivity springs spring and its effluent, mosses, rocks overgrown by Chlorophyta	Southern Chile* Germany, Spessart Mts Chile, near Coral, La Vega	LANGE-BERTALOT & MOSER 1994, WERUM & LANGE-BERTALOT 2004 LANGE-BERTALOT et al. 1996
<i>Nupela tropica</i> (HUSTEDT) LANGE-BERTALOT	<i>Achnanthes tropica</i> HUSTEDT 1937	spring, spring-fed pool, pond, probably creophilous diatom, pH about 7.5	Java, Ranu Lamongan, Ufer near Sindanglaja*, Indonesia	HUSTEDT 1937, p. 200, fig. 13: 28–32

<i>Nupela vitiosa</i> (SCHIMANSKI) SIVER et HAMILTON	<i>Navicula vitiosa</i> SCHIMANSKI 1978.	aquatic environment ponds, pH 5.1–7.1, conductivity 92 to 206 $\mu\text{S cm}^{-1}$; total phosphorus 8– 30 $\mu\text{g L}^{-1}$	Germany, Bavaria, Frankenwald, Ebersreuth* central and northern Europe northeastern USA, Cape Cod, , Quebec-Labrador, in temperate to subpolar regions	SCHIMANSKI 1978, p. 592, fig. 8: 1, 2 MONNIER et al. 2003 SIVER & HAMILTON 2005
<i>Nupela vyvermanii</i> LANGE- BERTALOT		volcanic rocks, an effluent stream from a spring	New Caledonia, Thio* Thaiti and Moorea Islands, French Polynesia, South Pacific	MOSER et al. 1998, p. 213, fig. 31: 7–10 WERUM & LANGE-BERTALOT 2004
<i>Nupela wellneri</i> (LANGE- BERTALOT) LANGE-BERTALOT	<i>Navicula wellneri</i> LANGE-BERTALOT 1987	α -meso- up to polysaprobic waters	Germany, Elbufer, Dresden Cuile, Patagonia, Laguna Las Melliaz	LANGE-BERTALOT & KRAMMER 1987, p. 123, fig. 40: 28–31 RUMRICH et al., 2000.
<i>Nupela zizkae</i> METZELTIN et LANGE-BERTALOT		acidic, rich in humic matter waters of low conductivity	Venezuela, Roraima Region, Rio Kukenan*, tropical southeastern	METZELTIN & LANGE-BERTALOT 1998, 162, pl. 71: 11–19