

Aus dem Institut für Zoologie der Universität Wien

**SYNOPSIS ÜBER DRIFTENDE MAKROINVERTEBRATEN EUROPÄISCHER
FLIESSGEWÄSSER**

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Die Bezeichnung "Invertebratendrift" beschreibt die Flußabwärtsbewegung von Invertebraten, die normalerweise auf oder im Substrat innerhalb der Wassersäule von Fließgewässern leben. Bei einer erstmaligen Durchsicht der Driftarbeiten des europäischen Teils der Holarktis konnten über 500 Taxa aus den unterschiedlichsten Fließgewässertypen festgestellt werden. Dabei muß allerdings darauf hingewiesen werden, daß in vielen dieser Publikationen verschiedene Taxa nur auf ein höheres Niveau bestimmt wurden (siehe Tabelle 1) und somit die Anzahl der in der Drift gefundenen Arten größer sein müßte. Die Tendenz eines Taxons in der Drift aufzutreten, ist unter anderem abhängig von Umweltvariablen, wie z.B. Durchfluß, Licht, Strömungsgeschwindigkeit und O₂-Konzentration, aber auch von biotischen Faktoren, wie z.B. Schlüpfprozesse, Nahrungsangebot, Räuberdruck, Gewicht, Mobilität und Abundanz der Tiere. Weiters haben bestimmte taxonomische Gruppen eine höhere Tendenz in der Drift aufzutreten als andere (siehe Tabelle 1), wie auch verschiedene Taxa ein unterschiedliches Muster in ihrem zeitlichen Auftreten in der Drift zeigen.

Die große Anzahl an Taxa, die bei der Literaturdurchsicht erarbeitet wurden und die noch größere erwartete Zahl von Arten, ist ein Hinweis, daß praktisch sämtliche Taxa, die in einem bestimmten Fließgewässer vorkommen, auch der Drift auftreten und dies bei den meisten als eine normale Erscheinung in ihrem Lebenszyklus gewertet werden kann.

Um nähere Informationen über die in der Drift aufgetretenen Taxa zu erhalten, sind diese in der folgenden Tabelle, die sich auf 71 Arbeiten auf europäischem Gebiet bezieht, mit Literaturangaben zusammengefaßt.

Tab. 1: Übersicht über die Taxa in der Drift europäischer Fließgewässer [Nummern nach den Namen in der anschließenden Bibliographie; Nomenklatur, so nicht anders angegeben, nach ILLIES, J. (1978), *Limnofauna Europaea*, 2nd ed., G. Fischer Verlag, Stuttgart]

CNIDARIA

Hydrozoa

Hydroidea 42

Hydridae 35

Hydra oligactis PALLAS 44

H. vulgaris PALL. 4, 5

Hydra sp. 3, 8, 10, 11, 17, 20, 32, 41, 58

PLATHELMINTHES

Turbellaria 3, 50

Dalyellidae 68

Dendrocoelidae

Dendrocoelum lacteum (MÜLLER) 11

Dugesiiidae

Dugesia gonocephala (DUGÈS) 39, 49

D. lugubris (SCHMIDT) 15

D. tigrina (GIRARD) 11

PLANARIIDAE

Crenobia alpina (DANA) 39

Phagocata vitta (DUGÈS) 61

Planaria sp. 11, 68

Polycelis felina (DALYELL) 25, 27, 49

P. nigra (MÜLLER) 11, 26

GASTROTRICHA

Chaetonotus sp. 68

NEMATODA 8, 33, 35, 37, 41, 42, 45, 61, 68

MOLLUSCA

Gastropoda

Bithyniidae

Bithynia tentaculata LINN. 15

Hydrobiidae 54

Littoridininae

Potamopyrgus jenkinsi SMITH 3, 15, 58

Neritidae

Theodoxus fluviatilis LINN. 15

Valvatidae

Valvata piscinalis MÜLL. 3, 15

Ancyliidae 54

Ancylus fluviatilis MÜLL. 3, 4, 7, 8, 15, 20, 25, 35,
41, 61

Ancylus sp. 68

Lymnaeidae

Lymnea peregra MÜLL. 4, 8, 15, 28

L. truncatulus MÜLL. 15, 28

Physidae

Physa acuta DRAPARNAUD, 58

P. fontinalis LINN. 15

Physa sp. 8

Planorbidae

Gyraulus albus MÜLL. 15, 58

Planorbis carinatus MÜLL. 15

Bivalvia

Sphaeriidae

Pisidium spp. 8, 15

OLIGOCHAETA 7, 10, 11, 20, 26, 32, 33, 37, 58

Aelosomatidae

Aelosoma quaternarium EHRENBERG 68

Enchytraeidae 4, 35, 61, 68

Lumbricidae 15

Eiseniella tetraedra (SAVIGNY) 35, 61

Lumbriculidae

Lumbriculus variegatus (MÜLL.) 35, 61

Propappus volki (MICH.) 44, 45

Stylodrilus heringianus CLAP. 61

Naididae 8

Chaetogaster diaphanus (GRUITHAUSEN) 44

C. diastrophus (GRUIT.) 3, 68

Chaetogaster sp. 41, 42

Dero sp. 44

Nais alpina (SPERBER) 35, 61

N. barbata (MÜLL.) 3

N. behningi MICH. 44

N. bretscheri MICH. 3

N. communis PIGUET 35, 42, 68

N. elinguis MÜLL. 3, 35, 61

N. simplex FIG. 42

Nais spp. 4, 68

Ophidonais serpentina MÜLL. 44

Stylaria lacustris (LINN.) 35, 44, 58

Tubificidae 3, 41

Tubifex sp. 42

Limnodrilus spp. 42, 44

Peloscoides ferox (EISEN) 35

Hirudinea 32

Erpobdellidae

Erpobdella octoculata (LINN.) 11, 25, 28, 35, 58

Erpobdella sp. 8

Glossiphonidae

Glossiphonia complanata (LINN.) 11, 15, 28, 35

Glossiphonia sp. 8

Piscicolidae

Piscicola geometra (LINN.) 11, 15

TARDIGRADA 42

ARTHROPODA

ARACHNIDA

Acari

Hydracarina 4, 8, 11, 17, 20, 26, 29, 35, 41, 42, 49, 54

Aturidae

Aturus scaber KRAM. 68

Aturus sp. 68

Hygrobatidae

Atractides nodipalpis (THOR) 50, 68

A. octoporus PIERS 68

Atractides sp. 68

Hygrobatas calliger PIERS 68

Lebertiidae

Lebertia maglioi THOR 68

L. pulchella VIETS 58

Lebertia spp. 15, 61

Sperchonidae

Sperchon brevirostris KOEN. 68

S. clupeiifer PIERS. 68

S. glandulosus KOEN. 68

Sperchon spp. 68

Sperchonopsis verrucosa (PROTZ) 3

Torrenticolidae

Torrenticola brevirostris HALB 68

T. elliptica MAGLIO 68

Torrenticola spp. 63

Oribatei

Hydrozetes lacustris (MICH.) 41

CRUSTACEA 10

Isopoda

Asellidae

Asellus aquaticus LINN. 8, 11, 15, 28, 33

Jaera istri VEVILLE 3

Proasellus meridianus RACOVITZA 8, 15

Amphipoda 32

Corophiidae

Corophium curvispinum SARS 3, 44 45

Gammaridae 54

Chaetogammarus tenellus SOWINSKYI 3*Cragonyx pseudogracilis* BOUSF. 28*Dikerogammarus haemobaphes* EICHW. 44, 45*D.h. fluvialis* MARTINOV 3*Echinogammarus berilloni* CATTA 54*Gammarus balcanicus* SCHÄF. 39*G. fossarum* KOCH 8, 11, 33*G. pulex* LINN. 1, 2, 8, 15, 23, 25, 27, 28, 29, 36,
47, 48, 49, 50, 55, 58, 68*Gammarus* sp. 7*G. tigrinus* SEXTON 49*G. zaddachi* SEXTON 28*Niphargus aquilex* SCHIÖDTE 37, 49*Obesogammarus obesus* SARS 44*Pontogammarus abbreviatus* SARS 44*P. sarsi* SOW. 44

INSECTA

EPHEMEROPTERA 7, 10, 42, 45, 51, 62

Baetidae 16

Baetis alpinus PICTET 26, 68, 71*B. buceratus* EATON 58*B. fuscatus* LINN. 11, 32, 58, 66, 68*B. lapponicus* BGTSS. 50, 66*B. lutheri* M.-L. 32, 58, 68*B. macani* KIMM. 50*B. muticus* LINN. 4, 9, 20, 21, 26, 27, 29, 32, 35,
50, 66, 68, 71*B. niger* LINN. 8, 20, 21, 35, 50*B. rhodani* PICT. 1, 4, 8, 9, 17, 20, 21, 23, 25,
26, 27, 28, 29, 32, 34, 35, 46, 47,
49, 50, 58, 61, 63, 66, 68, 71.*B. scambus* ETN. 4, 20, 21, 27, 29, 35*B. sinicus* BOG. 58*B. subalpinus* BGTSS. 19, 50*B. vardarensis* IK. 32*B. vernus* CURTIS 35, 49, 50*Baetis* spp. 3, 8, 15, 18, 32, 33, 40, 41, 54, 63,
66.*Centroptilum luteolum* MÜLL. 15, 35*C. pennulatum* ETN. 58*Centroptilum* sp. 8, 11, 40, 68*Cloëon dipterum* LINN. 8, 15*Procloëon bifidum* BGTSS. 15

Caenidae 54

- Brachycercus harisella* CURT. 15
Caenis horaria LINN. 11
C. luctuosa BURM. 3, 11, 35
C. macrura STEPH. 11, 15, 71
C. rivulorum ETN. 3, 4, 17, 28, 35
Caenis spp. 8, 15, 58, 68

Ephemerellidae

- Ephemerella aurivillii* BGTSS. 66
E. ignita PODA 4, 11, 15, 17, 20, 21, 23, 25, 27,
28, 29, 32, 35, 54, 58, 61, 68, 71.
E. krieghoffi ULM. 32, 71
E. maior KLAP. 68, 71
Ephemerella sp. 13, 17

Ephemeridae

- Ephemera danica* MÜLL. 15, 58, 71
Ephemera sp. 68

Heptageniidae 15, 35

- Ecdyonurus angelieri* THOMAS 26
E. dispar CURT. 29, 32, 35
E. forcipula PICT. 26
E. lateralis CURT. 35, 58, 71
E. ruffii GRANDI 58
Ecdyonurus spp. 8, 11, 26, 71
E. subalpinus KLAP. 39
E. torrentis KIMMINS 35, 68
E. venosus FABRICIUS 20, 21, 25, 29, 35, 38, 68
Epeorus sylvicola PICT. 26, 68, 71
Epeorus spp. 26, 68
E. torrentium EATON 26
Heptagenia coeruleans ROST. 11
H. sulphurea MÜLL. 11, 15, 28, 35
Heptagenia sp. 3, 44
Rhithrogena diaphana NAV. 11
R. semicolorata CURT. 4, 20, 21, 25, 26, 27, 29,
32, 34, 35, 41, 61, 68, 71.
Rhithrogena spp. 8, 26, 58

Leptophlebiidae

- Choroterpes picteti* ETN. 11
Leptophlebia marginata LINN. 35
L. vespertina LINN. 18, 20, 21, 29
Leptophlebia sp. 44
Habroleptoides berthelemyi THOMAS 26
H. modesta HAG. 63, 68, 71
Habrophlebia lauta ETN. 68, 71
Habrophlebia sp. 8, 11 58
Paraleptophlebia cincta RETZIUS 35
Paraleptophlebia sp. 8, 41, 68

- P. submarginata* STEPH. 15, 20, 21, 68
 Oligoneuriidae
Oligoneuriella rhenana IMH. 32, 58, 68
Oligoneuriella sp. 68

- Potamanthidae
Potamanthus luteus LINN. 11

- Siphonuridae
Ameletus inopinatus ETN. 66
Ameletus sp. 68
Siphonurus lacustris ETN. 14, 29, 35
Siphonurus sp. 8

PLECOPTERA 7, 10, 16, 19, 38, 40, 42, 49

- Capniidae 8
Capnia atra MORT. 6, 52, 64, 66
C. vidua KLP. 29

- Chloroperlidae
Chloroperla sp. 25, 61
C. tripunctata SCOPOLI 27, 35, 61
Siphonoperla burmeisteri PICT. 6, 64
S. torrentium PICTET 21, 26, 27, 28, 29, 34, 35, 61

- Leuctridae 54
Euleuctra geniculata STEPH. 11, 28, 35
Leuctra alosi NAVAS 26
L. fusca LINN. 4, 6, 11, 20, 21, 27, 29, 35, 47, 61, 64, 66
L. hippopus KMP. 6, 18, 20, 21, 29, 35, 47, 64, 66
L. inermis KMP. 4, 20, 21, 27, 28, 29, 35, 61
L. lamellosa DESPAX 26
L. moselyi MORTON 29
L. nigra OLIVER 29, 35, 65
L. prima KEMPNY 26
Leuctra spp. 3, 14, 15, 25, 26, 32, 61, 68

- Nemouridae 3
Amphinemura borealis MORTON 6, 66
Amphinemura sp. 8, 68
A. standfussi RIS 51, 64
A. sulcicollis STEPH. 4, 6, 20, 21, 23, 25, 26, 27, 28, 29, 32, 34, 35, 61
Nemoura cambrica STEPH. 20, 21, 29, 35
N. cinerea RETZ. 6, 15, 28, 35, 51
N. erratica CLASSEN 26, 35
N. flexuosa AUBERT 6
N. marginata PICT. 39
N. sahlbergi MORTON 51
Nemoura sp. 8, 32, 41, 68
Nemurella picteti KLP. 35, 51, 65
Protonemura beatensis DESPAX 26

- P. intricata* PICTET 26
P. meyeri PICT. 6, 20, 21, 25, 29, 35
P. montana KIMMINS 35, 39
P. praeco MORTON 29
P. pyrenaica MOSELY 26
Protonemura spp. 8, 26, 32, 58, 68

Perlidae

- Dinocras cephalotes* CURT. 52
Perla bipunctata PICT. 35, 68
P. marginata PANZER 26, 39
Perla sp. 11, 41, 68

Perlodidae 8

- Diura nanseni* KMP. 50, 51, 64, 66
Isoperla goertzi ILLIES 50
I. grammatica PODA 15, 20, 21, 28, 29, 32, 35, 61, 66
I. obscura ZETT. 51, 58
Isoperla spp. 13, 26, 68
Perlodes microcephala PICTET 15, 20, 21, 28, 35
Perlodes sp. 68

Taeniopterygidae

- Brachyptera risi* MORTON 6, 20, 21, 29, 35, 47
Brachyptera sp. 8
Taeniopteryx nebulosa LINN. 14, 35
Taeniopteryx sp. 68

ODONATA 35, 45

Calopterygidae

- Calopteryx splendens* (HARRIS) 15, 20, 58
Calopteryx sp. 68
C. virgo (LINN.) 68

Coenagrionidae 58

- Ischnura elegans* (LINDEN) 15
Pyrrhosoma nymphula (SULZER) 20

Cordulegasteridae

- Cordulegaster boltonii* (DONOVAN) 20

Gomphidae

- Onychogomphus forcipatus* (LINN.) 58

Libellulidae

- Sympetrum* spp. 15

HETEROPTERA 54

Nepomorpha

- Corixidae* 11, 35
Corixa spp. 8, 15, 20
Sigara dorsalis (LEACH) 28

Micronectinae

- Micronecta meridionalis* (COSTA) 58

- Micronecta poweri* (DOUGLAS & SCOTT) 15
 Naucoridae
Aphelocheirus aestivalis (FABRICIUS) 41
Aphelocheirus ssp. *montandoni* HORV. 15
 Notonectidae 35

TRICHOPTERA 16, 42, 49, 51

- Beraeidae 15
Bereodes minutus LINN. 56
 Brachycentridae
Brachycentrus subnilus CURTIS 3, 4, 15, 33, 35
Oligoplectrum maculatum FOURCROY 3
 Goeridae
Silo pallipes FABR. 20, 56, 61
Silo spp. 15
 Glossosomatidae
Agapetus fuscipes CURTIS 25, 27, 28, 50
Agapetus spp. 68
Glossosoma boltoni CURTIS 11
G. conformis NEBOISS 27, 35
G. intermedium KLP. 66
Glossosoma sp. 8
 Hydropsychidae 54
Cheumatopsyche lepida PICTET 11
Hydropsyche bulgaromanorum MAL. 3
H. contubernalis McL. 3, 11
H. dissimulata KUM. & BOTS. oder
exocellata DUFOUR 58
H. exocellata DUFOUR 11, 59
H. instabilis CURTIS 20, 22, 23, 28, 29
H. modesta NAV. 11
H. ornatula McL. 45
H. pellucidula CURTIS 11, 26, 32, 35, 56, 61
H. siltalai DÖHLER 11, 34, 35
Hydropsyche spp. 4, 8, 10, 11, 12, 15, 25, 27, 44, 68
 Hydroptilidae 15, 35, 54
Hydroptila sp. 3, 11, 20
Oxyethira sagittifera RIS. 20
Oxyethira sp. 11
 Lepidostomatidae
Lepidostoma hirtum FABR. 3, 11, 15, 17, 20, 35
 Leptoceridae
Athripsodes albifrons LINN. 11, 35
Ceraclea dissimilis STEPH. 11
Leptocerus sp. 68
Mystacides (azurea?) LINN. 35
Oecetis sp. 11

- Triaenodes conspersus* RAMB. 15
 Limnephilidae 1, 2, 15, 28, 29, 35, 41, 61
Allogamus auricollis PICTET 67
Anabolia nervosa CURTIS 20, 24
Apatania sp. 66
A. stigmatella ZETT. 66
Chaetopteryx sp. 39
C. villosa FABR. 24, 56
Drusus annulatus STEPHENS 24
D. rectus McL. 26
Glyphotaelius pellucidus RETZ. 56
Halesus digitatus SCHRANK 56
H. radiatus CURTIS 56
Halesus sp. 68
Limnephilus centralis CURTIS 56
L. politus McL. 56
L. rhombicus LINN. 8, 56
Melamophylax mucoreus HAGEN 26
Micropterna lateralis STEPH. 56
M. sequax McL. 56
Potamophylax cingulatus STEPH. 56
P. latipennis CURTIS 26
P. nigricornis PICTET 56
Stenophylax permistus McL. 56
Stenophylax sp. 39
 Odontoceridae
Odontocerum albicorne SCOP. 20
O. hellenicum MAL. 39
 Philopotamidae 20, 29, 68
Philopotamus montanus DON. 22, 26
Wormaldia spp. 27
 Polycentropidae 18, 19, 54
Cyrnus trimaculatus CURTIS 35
Neureclipsis bimaculata LINN. 11
Plectrocnemia conspersa CURTIS 20, 22, 29, 35, 56, 65
P. geniculata McL. 29, 35
Plectrocnemia sp. 68
Polycentropus flavomaculatus PICTET 4, 11, 15, 20, 22, 35, 58, 61
P. kingi McL. 20, 22, 35
Polycentropus sp. 8, 11
 Psychomyidae
Psychomyia pusilla FABR. 3, 11, 28, 32, 35
Tinodes sp. 3
 Rhyacophilidae 7, 54
Rhyacophila dorsalis CURTIS 4, 11, 15, 20, 22, 28, 29, 35, 61

- R. evoluta* McL. 26
R. fasciata HAGEN 56
R. munda McL. 20, 22, 35
R. nubila ZETT. 31, 32, 66
Rhyacophila sp. 3, 8, 19, 68
R. tristis PICTET 26

Sericostomatidae

- Sericostoma personatum* K. & SP. 8, 20, 27, 35, 56, 68

Thremmatidae

- Tremma anomalum* McL. 39

COLEOPTERA 10, 32, 49

Colymbetidae

- Agabus* sp. 14
Platambus maculatus (LINN.) 15

Dryopidae

- Dryops luridus* ERICHSON 8
Dryops sp. 20
D. vienensis HEER 11
Helichus substriatus PH. MÜLLER 11, 58

Dytiscidae 4, 8, 11, 19, 28, 29, 35, 58

Elmidae 15, 25, 54, 68

- Elmis aena* PH. MÜLLER 4, 8, 11, 26, 27, 28, 35, 58, 61

- E. latreillei* BEDEL 41
E. maugetii LATREILLE 8, 11, 20, 29, 50, 58
E. rioloides KUWERT 8
Elmis spp. 3, 18

- Esolus parallelepipedus* MÜLLER 4, 8, 11, 17, 27, 35, 61

- E. pygmaeus* PH. MÜLLER 58
Limnius intermedius FAIRMAIRE 58
L. volckmari PANZER 11, 20, 35, 61
Macronychus quadrituberculatus MÜLLER 11
Oulimnius major REY 11

- O. tuberculatus* PH. MÜLL. 8, 11, 17, 20, 28, 29, 35, 50, 61

- Riolus cupreus* PH. MÜLL. 11
R. subviolaceus PH. MÜLL. 11, 58
Stenelmis canaliculata GYLLENHALL 11

Halipilidae 15

- Halipilus fluviatilis* AUBE 11
H. lineatocollis MARSHAM 8, 11, 20, 58

Helodidae

- Helodes minuta* LINN. 8
Helodes spp. 20, 26, 29, 39

Helophoridae

Helophorus sp. 58

Hydraenidae

Haenydra emarginata REY 26*H. gracilis* GERM. 27, 35*Hydraena riparia* KUGELAN 20*Hydraena* sp. 8, 29

Hydrobiidae

Anacaena globulus PAYK. 8*Laccobius alternus* MOTSCH 58

Hydrophilidae 20, 35

Hydroporidae

Deronectes latus (STEPHENS) 20*D. moestus* FAIRM. 8*Deronectes* spp. 14, 15*Hydroporus marginatus* (DUFT.) 8*Oreodytes rivalis* (GYLLENHALL) 20, 35,*O. septendrionales* GYLLENHALL, 20, 35*Stictonectes lepidus* (OLIV.) 8*Stictotarsus duodecimpustulatus* (FABRICIUS) 8, 11*Yola bicarinata* LATR. 58

Limnebiidae

Limnebius sp. 11*L. truncatellus* THUNBERG 20

Noteridae

Noterus clavicornis (DEG.) 8

MEGALOPTERA

Sialidae

Sialis fuliginosa PICTET 35*S. lutaria* LINN. 11, 20, 26*Sialis* sp. 8, 40

PLANIPENNIA

Sisyridae

Sisyrta fuscata FBR. 11

DIPTERA

Anthomyidae 8

Athericidae

Atherix ibis FABRICIUS 61*Atherix* sp. 35, 41*Ibisia marginata* (FABR.) 39, 53

Blephariceridae

Liponeura sp. 26, 68

Ceratopogonidae 11, 15, 35, 41, 68

Bezzia sp. 58, 61*Ceratopogon* sp. 68

Culicoides spp. 8, 44
Dasyhelea sp. 58
Palpomyia flavipes MEIGEN 20

Chironomidae¹ 4, 15, 19, 25, 26, 27, 29, 32, 34, 35, 46,
 47, 51, 54, 62, 66, 68

Chironominae 61
 Chironomini 11, 58, 61, 69
 Diamesinae 33, 41, 60
 Orthoclaadiinae-Diamesinae 11, 58
 Orthoclaadiidae 16
 Orthoclaadiinae 8, 16, 33, 41, 60, 61, 69
 Prodiamesinae 33, 69
 Tanypodinae 8, 11, 33, 58, 61, 69
 Tanytarsini 8, 11, 58, 69
Ablabesmyia gr. *lentiginosa* FRIES 42
Ablabesmyia sp. 41
Brillia gr. *modesta* (MG.) 41
B. longifurca KIEFFER 3
Chironomus spp. 8, 33
Cladotanytarus sp. 33
Cricotopus bicinctus (MEIGEN) 3
C. latidentatus 44
Cricotopus sp. 41
Cricotopus (Isocladius) sp. 33
C. gr. sylvestris (FABR.) 44
Cryptochironomus gr. *camptolabis* 44
C. gr. defectus K. 44
C. gr. fuscimanus 44
C. macropodus 44
C. rolli 44
C. demeijerei 44, 45
Diplocladius cultriger K. 41
Endochironomus sp. 44
Eukiefferiella bicolor 44
E. breviculcar (K.) 41
E. gracei (EDWARDS) 3
E. lobifera GOETGHEBUER 3
E. minor (EDWARDS) 3
E. similis G. 44
Eukiefferiella sp. 40, 41
Glyptotendipes sp. 44
Limnophyes gr. *hydrophilus* GTGH. 41
 Macropelopiini 65
Micropsectra atrofasciata -agg. KIEFFER 3
Odontomesa fulva (KIEFFER) 3
Orthocladus gr. *bathophilus* 44
O. (Euorthocladus) rivicola (KIEFFER) 3

- Orthocladius* sp. 41
Orthocladius sp. cf. *excavatus* (BRUNDIN) 3
O. s. str. saxicola (KIEFFER) 3
O. (Eu.) thienemanni (KIEFFER) 3
Paratanytarsus sp. 17
Paratanytarsus sp. cf. *inopertus* (WALKER) 3
Paratrachocladius rufiventris (MEIGEN) 3
Pentaneura sp. (PHILLIPPI) 20
Pentaneurini sp. 65
Polypedilum convictum (WALKER) 3
Polypedilum gr. *nubeculosum* (Mg.) 44
Polypedilum spp. 33, 41
Procladius sp. 40, 44, 45
Prodiamesa olivacea (MG.) 33, 40
Psectrocladius gr. *psilopterus* 44
Rheotanytarsus sp. 17
Rheotanytarsus sp. cf. *musculicola* KIEFFER 3
Synorthocladius semivirens K. 40
Tanytarsus gregarius K. 42
Tanytarsus sp. 42
Tendipes f. l. *thummi* 44
Thienemaniella flaviforceps K. 41
Thienemannimyia sp. cf. *laeta* (MEIGEN) 3
Trichocladius gr. *connectens* MG. 40
Culicidae 11
 Culicini 35
Dixidae 29
 Dixa dilatata STROBL 30
 D. nebulosa MEIG. 30, 53
 D. nubilipennis CURTIS 30
 D. puberula LOEW. 26, 30, 53
 Dixa sp. 8, 20
 D. submaculata EDWARDS 30
 D. tetrica PEUS 46
Dolichopodidae 53
Empididae 8, 11
 Chelifera praecatoria (FALLEN) 61
 Wiedemannia bistigma (CURTIS) 61
Limoniidae 68
 Antocha sp. 3
 A. vitripennis MEIG. 11, 58
 Dicranota bimaculata SCHUMM. 20
 Dicranota sp. 26, 35
 Eloeophila sp. 53
 Hexatoma bicolor MEIG. 58
 Hexatoma sp. 53
 Limnophila sp. 20
 Rhypholophus sp. 53

¹Da sich die Chironomidensystematik sehr schwierig gestaltet, sind hier die Originalart- und -unterfamiliennamen aus den jeweiligen Publikationen angegeben.

- Psychodidae 11, 53
 Pericoma sp. 8, 26
 Psychoda sp. 8, 11
 Ptychoderidae 58
 Rhagionidae 53
 Chrysopilus torrentium THOMAS 58
 Sciomyzidae 58
 Simuliidae 4, 11, 15, 32, 33, 35, 40, 41, 44, 47, 53,
 54, 62, 66, 68
 Boophthora erythrocephala de GEER 57
 Eusimulium costatum (FRIED.) 49, 50
 E. rubzovianum SERBAN 58
 Metacnephia tredecimata (EDW.) 70
 M. trigonia (LDSTR.) 43
 Odagmia frigida RZ. 43
 O. ornata (MG.) 50, 57
 Prosimulium sp. 8
 Schoenbaueria annulitarsis (ZETT.) 70
 Simulium argyreatum MG. 57
 S. (Eusimulium) azorense CARLSSON 46
 S. galeratum EDWARDS 3
 S. intermedium ROUBAUD 46
 S. laetipes MEIGEN 20
 S. morsitans EDWARDS 57
 Simulium spp. 8, 13, 18, 19, 20, 23, 25, 26, 27, 28,
 29, 49, 61
 S. sublacustre DAVIES 57
 S. truncatum (LDSTR.) 70
 S. verecundum RZ. 43?, 42
 Tetisimulium bezzii (CORTI) 58
 Stratiomyidae 58
 Tabanidae 8
 Tipulidae 8, 27, 28, 29, 35
 Tipula lateralis MG. 20
 Tipula sp. 11, 39, 53

BRYOZOA 42

Zusammenfassung

Makroinvertebraten, die in der Drift europäischer Fließgewässer auftraten, wurden zum ersten Mal in einer Tabelle übersichtlich zusammengefaßt.

Es wurden dabei über 500 Taxa festgestellt, wobei bestimmte Taxa häufiger in der Drift auftraten als andere. Weiters kann die große Anzahl von Taxa als Hinweis gewertet werden, daß Drift eine normale Erscheinung im Lebenszyklus vieler Spezies ist.

In Tabelle 1 wurden hinter den Taxa Nummern gesetzt, die sich auf die anschließende Bibliographie beziehen und das Auffinden von näheren Informationen zum Driftverhalten des betreffenden Taxons erleichtern sollen.

SUMMARY

A synopsis of macroinvertebrates in the drift of European streams and rivers

Drifting macroinvertebrates of European running waters are summarized for the first time in a table.

500 Taxa have been recorded, and some occur more often in the drift than others. Furthermore, the large number of macroinvertebrates detected in the drift could be interpreted as a normal phenomenon in the life cycle of many species.

In Table 1, numbers, which refer to the following bibliography, are provided with the names of the taxa and can be used to provide more information about the drifting behaviour of each taxon.

Bibliographie

- (1) ALLAN, J. D., MALMQVIST, B. (1989): Diel activity of *Gammarus pulex* (Crustacea) in a South Swedish stream: comparison of drift catches vs baited traps.- *Hydrobiol* 179, 73-80.
- (2) ANDERSSON, K.G., BRÖNMARK, C., HERRMANN, J., MALMQVIST, B., OTTO, C., SJÖRSTRÖM, P. (1986): Presence of sculpins (*Cottus gobio*) reduces drift and activity of *Gammarus pulex* (Amphipoda).- *Hydrobiol* 133, 209-215.
- (3) ANDERWALD, P.H., KONAR, M., HUMPECH, U.H. (1991) Continuous drift samples of macroinvertebrates in a large river, the Danube in Austria.- *Freshw Biol* (in press)
- (4) ARMITAGE, P.D. (1977): Invertebrate drift in the regulated river Tees, and an unregulated tributary Maize Beck, below Cow Green Dam.- *Freshw Biol* 7, 167-183.
- (5) ARMITAGE, P.D., CAPPER, M.H. (1976): The number, biomass and transport of micro-crustacea and *Hydra* from Cow Green Reservoir (Upper Teesdale).- *Freshw Biol* 6, 425-432.
- (6) BENEDETTO, L.A. (1976): Annual and diurnal periodicity of stonefly-drift at the arctic circle.- *Limnologica* 11, 47-55.
- (7) BOURNAUD M., THIBAUT, M. (1973): La dérive des organismes dans les eau courantes.- *Ann Hydrobiol* 4, 11-49.
- (8) BOURNAUD, M., MAUCET, D., CHAVANON, G. (1984): Méthode pratique de mesure de la dérive des macroinvertébrés dans un cours d'eau application à la détection de perturbations du milieu.- *Bull Ecol* 15, 199-210.
- (9) CAMPBELL R.M.B. (1985): Comparison of the drift of live and dead *Baetis* nymphs in a weakening water current.- *Hydrobiol* 126, 229-236.
- (10) CELLOT, B. (1989a): Macroinvertebrate movements large European river.- *Freshw Biol* 22, 45-55.
- (11) (1989b): Rythme nyctéméral et distribution verticale de la dérive des macroinvertébrés benthique dans une grande rivière européenne.- *Arch Hydrobiol* 115, 265-286.

- (12) CELLOT, B., BOURNAUD, M., TACHET, H. (1984): The movements of the larvae of *Hydropsyche* (Trichoptera) in a large river.- Proceedings of the 4th International Symposium on Trichoptera (ed. J.C.MORSE). Dr.W. JUNK Publishers, The Hague, The Netherlands.- Ser Ent 30, 57-68.
- (13) CHASTON, I. (1968): Endogenous activity as a factor in invertebrate drift.- Arch Hydrobiol 64, 324-334.
- (14) CRISP, D.T. (1966): Input and Output of minerals for an area of Pennine Moorland: The importance of precipitations, drainage, peat erosion and animals.- J Appl Ecol 3, 327-348.
- (15) CRISP, D.T., GLEDHILL, T. (1970) A quantitative description of the recovery of the bottom fauna in a muddy reach of a mill stream in Southern England after draining and dredging.- Arch Hydrobiol 67, 502-541.
- (16) DÉCAMPS, H., ROUCH, R. (1973): Recherches sur les eaux souterraines. 19. Le système karstique du Baget. I. Premières estimations sur la dérive des invertébrés aquatiques d'origine épigée.- Ann spél 28, 89-110.
- (17) EDWARDS, R.W., BROOKER, M.P. (1982): The ecology of the Wye.- Monogr Biol 50.
- (18) ELLIOTT, J.M. (1965a): Daily fluctuations of drift invertebrates in a Dartmoor stream.- Nature 205, 1127-1128.
- (19) (1965b): Invertebrate drift in a mountain stream Norway.- Norsk Entomol T 13, 95-97.
- (20) (1967a): Invertebrate drift in a Dartmoor stream.- Arch Hydrobiol 63, 202-237.
- (21) (1967b): Life histories and drifting of the Plecoptera and Ephemeroptera in a Dartmoor stream.- Journ Anim Ecol 36, 343-362.
- (22) (1968): The life histories and drifting of Trichoptera in a Dartmoor stream.- Journ Anim Ecol 37, 615-625.
- (23) (1969): Diel periodicity in invertebrate drift and the effect of different sampling periods.- Oikos 20, 524-528.
- (24) (1972a): Life histories and drifting of three species of Limnephilidae (Trichoptera).- Oikos 22, 56-61.

- (25) -(1971b): The distances travelled by drifting invertebrates in a Lake District Stream.- *Oecologia* 6, 350-379.
- (26) (1973): The food of Brown Trout and Rainbow Trout (*Salmo trutta* und *S. gairdneri*) in relation to the abundance of drifting invertebrates in a mountain stream.- *Oecologia* 12, 329-347.
- (27) ELLIOTT, J.M., BAGENAL, T.B. (1972): The effects of electrofishing on the invertebrates of a Lake District Stream.- *Oecologia* 9, 1-11.
- (28) ELLIOTT, J.M., CORLETT, J. (1972): The ecology of Morecambe Bay. IV. Invertebrate drift into and from the river Leven.- *J Appl Ecol* 9, 195-205.
- (29) ELLIOTT, J.M., MINSHALL G.W. (1968): The invertebrate drift in the river Duddon, English Lake District.- *Oikos* 19, 39-52.
- (30) ELLIOTT, J.M., TULLETT, P.A. (1977): The downstream drifting of larvae of *Dixa* (Diptera: Dixidae) in two stony streams.- *Freshw Biol* 7, 403-407.
- (31) FJELLHEIM, A. (1980): Differences in drifting of larval stages of *Rhyacophila nubila* (Trichoptera).- *Holarct Ecol* 3, 99-103.
- (32) FLEITUCH, T. (1985): Macroinvertebrate drift in the middle course of the River Dunajec (Southern Poland).- *Acta Hydrobiol* 27, 49-61.
- (33) GRZYBKOWSKA, M., PAKULSKA, D., JAKUBOWSKI, H. (1987) Benthos and drift of invertebrates, particularly Chironomidae, in a selected cross-section profile of the River Widawka (Central Poland).- *Acta Hydrobiol* 29, 89-109.
- (34) HEMSWORTH, R.J., BROOKER, M.P. (1979): The rate of downstream displacement of macroinvertebrates in the upper Wye, Wales.- *Holarct Ecol* 2, 130-136.
- (35) HEMSWORTH, R.J., BROOKER, M.P. (1981): Macroinvertebrate drift in the upper Wye catchment, Wales.- *Hydrobiol* 85, 145-155.
- (36) HUGHES, D.A. (1970): Some factors affecting drift and upstream movements of *Gammarus pulex*.- *Ecol* 51, 301-305.
- (37) HUSMANN, S. (1976): Studies on subterranean drift of stygobiont Crustacea (*Niphargus*, *Crangonyx*, *Graeteriella*) *Int Journ Speleol* 8, 81-92.

- (38) KELLER, A. (1975): Die Drift und ihre ökologische Bedeutung. Experimentelle Untersuchung an *Ecdyonurus venosus* (Fabr.) in einem Fließwassermodell.- Schw Z Hydrol 37, 294-331.
- (39) KOVACHEV, S., UZUNOV, Y. (1987): Natural and compulsory biological drift in a system of mountain streams under urea top-dressing of the water catchment areas.- Limnologica 18, 269-278.
- (40) KUBICEK, F. (1968): Die organische Drift des Svratka-Flusses im Abschnitt zwischen zwei Talsperren (Vir, Kninicky).- Acta Hydrobiol Hydrograph Protistol 31, 402-416.
- (41) (1969) On the drift in the Loucka Creek.- Facultas Scientiarum Naturalium Universitatis Purkynianae Brunensis 10, 45-53.
- (42) (1970) On the drift of a brook running through a pond.- Acta Soc Zool Boh 33, 219-226.
- (43) KURECK, A. (1969): Tagesrhythmen lappländischer Simuliiden (Diptera).- Oecologia 2, 385-410.
- (44) LIAKHOV, S.M. (1961) Benthos runoff in the Volga near Kuibyshev prior to the regulation of the river runoff.- Trudy Vsesoyuznogo Gidrobiologicheskogo obshchestva 11, 150-161.
- (45) LIAKHOV, S.M., ZHIDKOV, L.P. (1953): Bottom tray sampler, an apparatus for studying the benthic organisms, carried down by the river current.- Zool Zhurn 32, 1020-1024.
- (46) MALMQVIST, B. (1988) Downstream drift in Madeiran Levadas: Test of hypotheses relating to the influence of predators on the drift of insects. Aquat Ins 10, 141-152.
- (47) MALMQVIST, B., SJÖSTRÖM, P. (1987): Stream drift as a consequence of disturbance by invertebrate predators.- Oecologia 74, 396-403.
- (48) MÜLLER, K. (1965a): An automatic stream drift sampler.- Limnol Oceanogr 10, 483-485.
- (49) (1965b): Die Tagesperiodik von Fließwasserorganismen. Z M Oe 56, 93-142.
- (50) (1970): Tages- und Jahresperiodik der Drift in Fließgewässern in verschiedenen geographischen Breiten.- Oikos Suppl 13, 21-44.

- (51) (1982): The colonization cycle of freshwater insects.- *Oecologia* 52, 202-207.
- (52) MÜLLER, K., BENEDETTO, L.A. (1970): Die lokomotorische Aktivität der Larven von *Dinocras cephalotes* Curtis (Plecoptera).- *Oikos Suppl.* 13, 69-74.
- (53) NEVEU, A. (1974): La dérive des stades aquatiques de quelques familles de Diptères torrenticoles.- *Ann Hydrobiol* 5, 15-42.
- (54) (1980): Relation entre le benthos, la dérive, la rythme alimentaire et le taux de consommation de truites communes (*S. trutta* L.) en canal experimental.- *Hydrobiol* 76, 217-228.
- (55) NILSSON, L.M., SJÖSTRÖM, P. (1977): Colonization of im-
planted substrates, by differently sized *Gammarus pulex* (Amphipoda).- *Oikos* 28, 43-48.
- (56) OTTO, C. (1971): Growth and population movements of *Potamophylax cingulatus* (Trichoptera) larvae in a South Swedish stream.- *Oikos* 22, 292-301.
- (57) PEGEL, M. (1980): Zur Methodik der Driftmessung in der Fließgewässerökologie unter besonderer Berücksichtigung der Simuliidae (Diptera).- *Z A Ent* 89, 198-214.
- (58) PREVOT, G., PREVOT, R. (1986): Impact d'une crue sur la communauté d'invertébrés de la Moyenne Durance. Rôle de la dérive dans la reconstitution du peuplement du chenal principal.- *Ann Limnol* 22, 89-98.
- (59) RIERADEVALL, M., PRAT, N. (1986): Diel pattern of chironomid drift in the Llobregat River (N.E. Spain).- *Oecol aquat* 8, 61-70.
- (60) SANDLUND, O.T. (1982): The drift of zooplankton and microzoobenthos in the river Strandaelva, western Norway.- *Hydrobiol* 94, 33-48.
- (61) SCULLION, J., SINTON, A. (1983): Effects of artificial freshets on substratum composition, benthic invertebrate fauna and invertebrate drift in two impounded rivers in mid-Wales.- *Hydrobiol* 107, 261-269.
- (62) STEINE, I. (1972): The number and size of drifting nymphs of Ephemeroptera, Chironomidae, and Simuliidae by day and night in the River Stranda, Western Norway.- *Norsk Entomol T* 19, 127-131.
- (63) THIBAUT, M. (1970): Le déplacement vers l'aval des invertébrés benthiques dans les cours d'eau à salmonides.- *Plaisirs de la Pêche*, 135, 13-16.

- (64) THOMAS, E. (1970): Die Drift von Plecopterenlarven in Beziehung zum larvalen Wachstum und zur Schlüpfzeit.- *Oikos Suppl* 13, 65-69.
- (65) TOWNSEND, C.R., HILDREW, A.G. (1976): Field experiments on the drifting, colonization and continuous redistribution of stream benthos.- *Journ Anim Ecol* 45, 759-772.
- (66) ULFSTRAND, S. (1968): Benthic animal communities in Lapland streams.- *Oikos Suppl* 10, 1-120.
- (67) WARINGER, J.A. (1989): Resistance of a cased caddis larva to accidental entry into the drift: the contribution of active and passive elements.- *Freshw Biol* 21, 411-420.
- (68) WENINGER, G. (1968): Vergleichende Driftuntersuchungen an niederösterreichischen Fließgewässern (Flysch-, Gneis- und Kalkformation).- *Schw Z Hydrol* 30, 137-185.
- (69) WILLIAMS, C.J. (1989): Downstream drift of the larvae of Chironomidae (Diptera) in the River Chew, S.W. England.- *Hydrobiol* 183, 59-72.
- (70) WOTTON, R.S., FRIBERG, F., HERRMANN, J., MALMQVIST, B., NILSSON, L.M., SJÖSTRÖM, P. (1979): Drift and colonization of three existing species of blackfly larvae in a lake outlet.- *Oikos* 33, 290-296.
- (71) ZELINKA, M. (1976): Mayflies (Ephemeroptera) in the drift of trout streams in the Beskydy Mountains.- *Acta Ent Bohem* 73, 94-101.

Anschrift des Verfassers: Mag. Martin KONAR, Gymnasiumstr. 85/C 566, A-1190 Wien.

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Zeitschrift/Journal: [Wasser und Abwasser](#)

Jahr/Year: 1990

Band/Volume: [1990](#)

Autor(en)/Author(s): Konar Martin

Artikel/Article: [Synopsis über driftende Makroinvertebraten europäischer Fließgewässer 31-53](#)