
Type 6:

Small fine substrate dominated calcareous high-land rivers

Distribution in river landscapes and regions according to Briem (2003):

Loess regions, upper Triassic rocks, Permian rocks (sandstone, claystone, conglomerate rocks), middle and lower Jurassic (sandstone, claystone and marl)

Picture:



Fischbach (Baden-Württemberg) LfU (1998). Photograph: R. Bostelmann

Short description of morphology:

Sinuate to meandering streams, dominated by fine substrate. As a result of erosion in soft sediments, the streams are cut-in and run in entrenched channels often exhibiting undercut banks or eroding cliffs. Channel substrate is dominated by silt, loess, clay or fine sand. Occasional cobbles and boulders and gravel-dominated sections can occur. The palette is completed by organic substrates like coarse woody debris or coarse particulate organic matter, e.g. leaf packs. The muddy, sandy sections are covered by a varying degree of gravel and loess, resulting in a diverse mosaic of fine sediments. Streams of this type are often rich in nutrients and suspended matter. A distinct interstitial zone is usually missing.

Abiotic profile:

Size class: 10 - 100km² catchment area
Slope of the valley floor: 4 - 30 ‰
Flow category: calm to quickly flowing
Channel substrates: loam, clay and sand dominate; gravel, rocks and occasional cobbles or boulders occur.

Physico-chemical water conditions:

calcareous
Conductivity [μS/cm]: 450 - 800
pH-value: 7,0 - 8,5
Alkalinity [°dH]: 8 - 40
Total hardness [°dH]: 10 - 50

Flow regime & hydrology:

Large fluctuations in discharge over the year.

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Characterisation of the macroinvertebrate community:	<p>Functional groups: Rheophilic hard substrate dwellers and fine substrate dwellers occur in equal parts. Most species are euryoecious stream species, while specialists are rare. The proportion of fine substrate or macrophyte inhabiting species is high. Many species are biocoenotically considered metarhithral. Some species are found, which also occur in lowland streams.</p> <p>Selection of type-specific species: Characteristic for the fine channel sediments is the burrowing mayfly <i>Ephemera danica</i>. Other typical inhabitants include the mayfly <i>Siphonurus aestivalis</i>, the caddis fly <i>Hydropsyche siltalai</i> and <i>H. pellucidula</i>-Gr., and the Snipe fly <i>Atherix ibis</i>. Typical is also the frequent occurrence of <i>Gammarus roeseli</i>.</p>
Characterisation of macrophyte and phytobenthos communities:	<p>Mosses are the most prominent macrophytes, while other water plants play a lesser role or are completely absent. Stable hard substrates, e.g. alder roots and larger rocks are colonised by the mosses <i>Fontinalis antipyretica</i> and <i>Rhynchostegium riparioides</i>.</p>
Characterisation of the fish fauna:	<p>Characteristic fish are those common in all highland streams: brook trout, bullhead, and brook lamprey. Suitable habitat for ammocoete of brook lamprey, which prefer sandy or muddy substrates with high organic content, is abundant.</p>
Comments:	<p>Possible confusion with other stream types: The highland loess-loam streams of this type are morphologically similar to those of the lowland stream type 18 (Loess and loam dominated Lowland streams). Faunistically however, stream type 6 is dominated by highland species, although some species occur, which are also often found in lowland streams.</p>
Examples of typical streams	<p>Macroinvertebrates: Brettach, Rot, Wieslauf (Baden-Württemberg) Macrophytes and phytobenthos: Schweinenaab, Dachsgaben (Bavaria)</p>
Comparative literature (selection):	<p>FORSCHUNGSGRUPPE FLIESSGEWÄSSER (1993) „Die Berg- und Hügelland-Gewässer des Keupers“, LfU (1998) „Keuperbäche“</p>