
2 Non-marine waters



21 Lagoons

Saline or hypersaline coastal waters, often formed from sea inlets by silting and cut off from the sea by sand or mud banks. The presence of vegetation can be indicated by addition of codes 23.21 or 23.22.

22 Standing fresh water

Lakes, ponds and pools of natural origin containing fresh (i.e. non-saline) water. Man-made fresh water bodies, including reservoirs and canals.

- 22.1 FRESH WATERS**
The water body itself, regardless of vegetation belts.
- 22.11 LIME-DEFICIENT OLIGOTROPHIC WATERS**
Usually greenish to brownish clear waters poor in dissolved bases (pH often 5-6).
(Duvigneaud, 1980; Vanden Berghen, 1982; Ellenberg, 1988)
- 22.12 MESOTROPHIC WATERS**
Richer waters (pH often 6-7).
(Vanden Berghen, 1982)
- 22.13 EUTROPHIC WATERS**
Usually dirty grey to blue-green, more or less turbid, waters particularly rich in dissolved bases (pH usually > 7).
(Duvigneaud, 1980; Vanden Berghen, 1982; Ellenberg, 1988)
- 22.14 DYSTROPHIC WATERS**
Acidic waters with high humus content and often brown tinted (pH often 3-5).
(Duvigneaud, 1980; Vanden Berghen, 1982; Ellenberg, 1988)
- 22.15 LIME-RICH OLIGO-MESOTROPHIC WATERS**
Usually blue to greenish, very clear, waters poor (to moderate) in nutrients, base-rich (pH often > 7.5).
(Ellenberg, 1988)
- 22.2 UNVEGETATED MUDDS OR SHINGLES**
Unvegetated lake-bottoms or lake-shores and muds or shingle temporarily exposed by artificial or natural fluctuations of the water level, often important as feeding grounds for migrating waders.
- 22.3 AMPHIBIOUS COMMUNITIES**
Temporarily exposed lake bottoms or lake shores and other periodically or occasionally inundated muddy, sandy or stony basins colonized by phanerogamic vegetation (see also 22.432).
- 22.31 NORTHERN PERENNIAL AMPHIBIOUS COMMUNITIES**
Littorelletalia
Carpets of perennials submerged for a considerable part of the year in oligotrophic or mesotrophic lakes, ponds and pools of the Euro-Siberian zone.
(Lebrun *et al.*, 1949; Tüxen and Oberdorfer, 1958; Rivas-Martinez, 1963, 1975c; Duvigneaud, 1972, 1986; Guinochet and Vilmorin, 1973; Westhoff and den Held, 1975; Brasseur *et al.*, 1977; Schumacker *et al.*, 1977; Bournérias, 1979, 1984; Pignatti, 1982; Géhu, 1984; Nordiska ministerradet, 1984; Dupias, 1985; Ozenda, 1985; Duvigneaud *et al.*, 1986; Vigo and Ninot, 1987; Ellenberg, 1988; Oberdorfer, 1990)
- 22.311 Shoreweed lawns, lobelia ponds, quillwort swards**
Eleocharition acicularis p. (Littorellion), *Lobelion*, *Isoetion lacustris*
Littorella uniflora, *Lobelia dortmanna* and *Isoetes spp.* formations of oligotrophic waters.
- 22.3111 Shoreweed lawns**
Dense, almost monospecific *Littorella uniflora* lawns of lake shores subject to great annual variations of the water level and long emergence, and other *Littorella*-dominated associations.

- 22.3112 Lobelia ponds**
Lobelia dortmanna colonies of shallow oligotrophic, moderately acid ponds.
- 22.3113 Euro-Siberian quillwort swards**
Clear-water quillwort swards formed by the northern European and montane *Isoetes lacustris* and *I. echinospora* or by the very local endemics *I. tenuissima* of central-western France and *I. brochonii* of the eastern Pyrenees.
- 22.3114 Floating bur-reed communities**
Sparganium angustifolium formations of, in particular, subalpine ponds.
- 22.312 Spike-rush shallow-water swards**
Eleocharition acicularis (*Eleocharitetum acicularis* i.a.) p.
Eleocharis acicularis beds on more organic soils in mesotrophic waters.
- 22.313 Acid pool fringe shallow-water swards**
Hydrocotylo-Baldellion p. (*Helodo-Sparganion*)
Eleocharis multicaulis, *Scirpus fluitans*, *Juncus bulbosus*, *Hypericum elodes*, *Pilularia globulifera*, *Deschampsia setacea*, *Ranunculus flammula*, *R. ololeucos*, *Potamogeton polygonifolius*, *Apium inundatum*, *Littorella uniflora* communities of acid pools and their transition zones.
- 22.314 Peaty shores shallow-water swards**
Hydrocotylo-Baldellion p.
Baldellia ranunculoides and *Hydrocotyle* formations of peaty soils.
- 22.315 Shore hairgrass swards**
Deschampsion littoralis
Deschampsia littoralis agg. formations of peri-Alpine lakes.
- 22.3151 Peri-Alpine shore hairgrass swards**
Deschampsia littoralis swards of the shores of Lake Geneva and of a few lakes of the southern Alpine periphery (Lago di Poschiavo, Lago di Cavazzo).
- 22.3152 Lake Constance shore hairgrass swards**
Deschampsia rhenana swards of Lake Constance.
- 22.32 NORTHERN DWARF ANNUAL AMPHIBIOUS SWARDS**
Cyperetalia fusci (*Nanocyperetalia*)
Dwarf oligo-mesotrophic Euro-Siberian annual communities of recently emerged muds and sands.
(Lebrun *et al.*, 1949; Rivas-Martinez, 1963; Ellenberg, 1963, 1988; Braun-Blanquet, 1967; Duvigneaud, 1972; Westhoff and den Held, 1975; Bournérias, 1979, 1984; Géhu, 1984; Duvigneaud, 1986; Duvigneaud *et al.*, 1986; Oberdorfer, 1990)
- 22.321 Dwarf spike-rush communities**
Elatino-Eleocharitenion ovatae
Rare communities colonizing the fluid muds of drying ponds and characterized by *Eleocharis ovata*, *E. carniolica*, *Carex bohemica*, *Scirpus supinus*, *Lindernia procumbens*, *Limosella aquatica*, *Cyperus fuscus*, *Peplis portula*, *Juncus tenageia*, *Elatine hexandra*, *E. hydropiper*.
- 22.322 Dune-slack pioneer swards**
Juncenion bufonii p.: *Gentiano-Erythraetum littoralis*
Formations with *Centaureum* spp., *Blackstonia perfoliata*, *Samolus valerandi* of wet sands in dune slacks belong to this group of communities; they have been listed under 16 (16.32).

- 22.323 Dwarf toad-rush communities**
Juncenion bufonii, *Radiolenion linoidis*
 Associations, often very limited in extent, appearing in the drying phase of temporary pools, flooded ruts of forest paths, wet heath paths, humid forest cuts, seeping mowed lawns and other sufficiently lit temporarily inundated, most often acidic, soils, characterized by *Juncus bufonius*, *Scirpus setaceus*, *Cyperus flavescens*, *Centunculus minimus*, *Spergularia segetalis*, *Centaureum pulchellum*, *Blackstonia perfoliata*, *Samolus valerandi*, *Cicendia filiformis*, *Radiola linoides* and *Illecebrum verticillatum*.
- 22.3231 Toad-rush swards**
 Communities dominated by *Juncus bufonius*.
- 22.3232 Small galingale swards**
Cyperetum flavescens, *Samolo-Cyperetum fusci* i.a.
 Medio-European communities dominated by the annual galingales *Cyperus flavescens*, *C. fuscus* and *C. michelianus*.
- 22.3233 Wet ground dwarf herb communities**
Centunculo-Anthocerotetum, *Stellario uliginosae-Scirpetum setaceae*, *Erythraeo-Blackstonietum*, *Ranunculo-Radioletum linoidis*, *Cicendietum filiformis*, *Spergulario-Illecebretrum verticillati* i.a.
 Varied communities, some very rare and threatened, of small annuals of wet ground.
- 22.33 BUR MARIGOLD COMMUNITIES**
Bidention tripartitae
 Taller annual communities colonizing nitrogen-rich muds of dry medio-European ponds and lakes, formed by *Bidens* spp., *Rorippa palustris* (*R. islandica*), *Chenopodium* spp., *Polygonum* spp., *Rumex maritimus*, *R. palustris*, *Ranunculus sceleratus*, *Senecio congestus*, *Catabrosa aquatica*, *Leersia oryzoides*.
 (Lebrun *et al.*, 1949; Ellenberg, 1963, 1988; Guinochet and Vilmorin, 1973; Westhoff and den Held, 1975; Schumacker *et al.*, 1977; Géhu, 1984; Duvigneaud, 1986; Duvigneaud *et al.*, 1986; Oberdorfer, 1990)
- 22.34 SOUTHERN AMPHIBIOUS COMMUNITIES**
Isoetalia
 Perennial and annual communities of Mediterranean, thermo-Atlantic and Macaronesian temporary ponds and river banks.
 (Bolos and Molinier, 1960; Braun-Blanquet, 1967; Aubert and Loisel, 1971; Guinochet and Vilmorin, 1973; Horvat *et al.*, 1974; Rivas-Martinez, 1975c; Bellot Rodriguez, 1979; Rivas-Martinez *et al.*, 1980; Molinier and Martin, 1980; Harant and Jarry, 1983; Géhu, 1984; Peinardo-Lorca *et al.*, 1984; Ladero *et al.*, 1984)
- 22.341 Short Mediterranean amphibious swards**
Isoetion
 Formations of Mediterranean, thermo-Atlantic and Macaronesian entirely or partially summer-dry ponds, pools and ditches with *Isoetes* spp., *Marsilea quadrifolia*, *M. strigosa*, *Pilularia globulifera*, *P. minuta*, *Mentha pulegium*, *Lythrum hyssopifolia* s.l., *Trifolium filiforme*, *Peplis erecta*, *Teucrium cravense*, *Serapias lingua*, *Juncus bufonius*, *J. capitatus*, *J. pygmaeus*, *J. fasciculatus*, *Scirpus savii*, sometimes (rocky edges of fast rivulets) *Spiranthes aestivalis* and *Anagallis tenella*.
- 22.3411 Terrestrial quillwort communities**
Isoetes histrix, *I. duriei* formations of ephemeral waters.
- 22.3412 Mediterranean aquatic quillwort swards**
 Communities formed by *Isoetes boryana*, *I. delilei*, *I. heldreichii*, *I. velata*, *I. azorica* or *I. malinverniana* in fluctuating waterbodies.
- 22.3413 Azorean quillwort swards**
 Endemic *Isoetes azorica* communities of pools and small lakes of the Azores.

22 Standing fresh water

- 22.3414** **Mediterranean small galingale swards**
Mediterranean and thermo-Atlantic formations dominated by *Cyperus fuscus*, *C. flavescens* or *C. michelianus*.
- 22.3415** **Mediterranean *Fimbristylis* swards**
Formations dominated by *Fimbristylis bisumbellata*, often with *Cyperus* spp..
- 22.3416** **Mediterranean *Chaetopogon* swards**
Formations dominated by *Chaetopogon fasciculatus*.
- 22.3417** **Bog pimpernel-summer lady's tresses communities**
Spiranthes-Anagallium tenellae
Formations of the sandy, rocky edges of rivulets of the Mediterranean region.
- 22.3418** **Mediterranean amphibious small herb communities**
Other, often highly ephemeral, annual communities of temporarily inundated or wet terrain.
- 22.342** **Tall Mediterranean amphibious swards**
Preslia cervinae
Vegetation of tall annuals of terrain covered by deep waters during long periods, with *Eryngium corniculatum* and *Mentha cervina*.
- 22.343** **Halo-nitrophile Mediterranean amphibious swards**
Heleochoilon
Slightly halophile and nitrophile post-estival vegetation of temporarily inundated terrains, with *Crypsis schoenoides*, *C. aculeata*, *C. alopecuroides* and *Centaureum spicatum*.
- 22.344** ***Serapias* grasslands**
Serapion
Meso-hygrophilic grasslands of crystalline Provence, with *Carex divisa* ssp. *chaetophylla*, often dominant, *Briza minor*, *Oenanthe lachenalii* and numerous *Serapias* (*S. lingua*, *S. neglecta*, *S. vomeracea*).
- 22.4** **AQUATIC VEGETATION**
Areas of lakes, ponds, pools or canals occupied by floating or permanently submerged vegetation.
- 22.41.** **FREE-FLOATING VEGETATION**
Lemnion minoris (Hydrocharition)
Free-floating surface communities of waters more or less rich in nutrients.
(Ellenberg, 1963, 1988; Duvigneaud, 1972; Guinochet and Vilmorin, 1973; Westhoff and den Held, 1975; Rivas-Martinez, 1975c; Noirefalise and Dethioux, 1977; Rivas-Martinez *et al.*, 1980; Vanden Berghen, 1982; Margot, 1983; Peinardo Lorca *et al.*, 1984; Géhu, 1984; Oberdorfer, 1990)
- 22.411** **Duckweed covers**
Communities of duckweed (*Lemna*, *Spirodela*, *Wolffia*), small ferns (naturalized *Azolla*) or liverworts (*Riccia*, *Ricciocarpus*).
- 22.412** **Frogbit rafts**
Formations rich in *Hydrocharis morsus-ranae*.
- 22.413** **Water-soldier rafts**
Formations dominated by *Stratiotes aloides*.
- 22.414** **Bladderwort colonies**
Formations of bladderworts (*Utricularia australis*, *U. vulgaris*).
- 22.415** **Salvinia covers**
Often dense and extensive mats dominated by the fern *Salvinia natans*.
- 22.416** **Aldrovanda communities**
Formations harbouring the carnivorous, free-floating Droseraceae *Aldrovanda vesiculosa*

- 22.42** ROOTED SUBMERGED VEGETATION
Potamogetonion (Potamion)
 Pondweed (*Potamogeton*)-dominated formations of submerged, rooted, perennial phanerogams with often emerging flower spikes.
 (Ellenberg, 1963, 1988; Duvigneaud, 1972; Horvat *et al.*, 1974; Westhoff and den Held, 1975; Rivas-Martinez, 1975c; Brasseur *et al.*, 1977; Bellot Rodriguez, 1979; Bournérias, 1979, 1984; Margot, 1983; Géhu, 1984; Peinado Lorca *et al.*, 1984; Delescaille, 1987; Oberdorfer, 1990)
- 22.421** Large pondweed beds
Magnopotamion
 Associations of large pondweeds (*Potamogeton lucens*, *P. praelongus*, *P. zizii*, *P. perfoliatus*) characteristic of deep, open waters.
- 22.422** Small pondweed communities
Parvopotamion
 Formations of smaller pondweeds, waterweed, hornwort, and other submerged rooted vegetation (*Potamogeton crispus*, *P. filiformis*, *P. pusillus* group, *Groenlandia densa*, *Ranunculus circinatus*, *Ceratophyllum*, *Elodea*, *Najas*, *Zannichellia*, *Vallisneria*, *Hydrilla*) that colonize shallower, more sheltered waters.
- 22.43** ROOTED FLOATING VEGETATION
Nymphaeion albae, *Callitricho-Batrachion*, *Potamion graminei*
 Formations dominated by rooted aquatic plants with floating leaves.
 (Ellenberg, 1963, 1988; Westhoff and den Held, 1975; Rivas-Martinez, 1975; Noifalaise and Dethioux, 1977; Brasseur *et al.*, 1977, 1978; Bournérias, 1979, 1984; Bellot Rodriguez, 1979; Margot, 1983; Géhu, 1984; Peinado Lorca *et al.*, 1984; Oberdorfer, 1990)
- 22.431** Floating broad-leaved carpets
Nymphaeion albae
 Formations of rooted aquatic plants with large floating leaves, often with a stratum of submerged species (*Ceratophyllum*, *Myriophyllum*, *Potamogeton*) and occasionally free-floating *Utricularia*, characteristic of large, permanent water bodies.
- 22.4311** Waterlily carpets
 Formations of *Nymphaea alba*, *N. candida*, *Nuphar lutea* or *N. pumila*.
- 22.4312** Water chestnut carpets
 Formations of *Trapa natans*.
- 22.4313** Fringed waterlily carpets
 Formations of *Nymphoides peltata*.
- 22.4314** Broad-leaved pondweed carpets
 Formations of *Potamogeton natans*.
- 22.4315** Bistort carpets
 Formations of *Polygonum amphibium*.
- 22.432** Shallow-water floating communities
Callitricho-Batrachion
 Communities dominated by water starworts (*Callitriche*) or water crowfoots (*Ranunculus peltatus*, *R. aquatilis*, *R. baudotii*, *R. hederaceus*) with both submerged and floating leaves, or by *Hottonia palustris*, characteristic mostly of shallow waters with fluctuating water levels, susceptible to occasional drying.
- 22.433** Oligotrophic pondweed communities
Potamion graminei
 Sparse formations of narrow-leaved floating pondweeds (*Potamogeton polygonifolius*, *P. gramineus*, *P. alpinus*), water starworts (*Callitriche*), water crowfoots (*Ranunculus ololeucos*, *R. omiophyllum*), floating water plantain (*Luronium natans*), least bur-reed (*Sparganium minimum*) of shallow, oligotrophic, clean, fluctuating, but usually permanent, often small, waterbodies.

22.44

CHANDELIER ALGAE SUBMERGED CARPETS

Charetea fragilis

Charophyte, *Chara* and *Nitella*, algal carpets of the bottom of unpolluted lime-rich lakes. (Westhoff and den Held, 1975; Peinado Lorca *et al.*, 1984; Ellenberg, 1988; Oberdorfer, 1990)

22.441

Chara carpets

22.442

Nitella carpets

22.45

PEATMOSS-BLADDERWORT BOG POOLS

Sphagno-Utricularion (Utricularion intermedio-minoris)

Floating formations of *Sphagnum*, *Scorpidium*, *Utricularia minor*, *U. intermedia*, *U. ochroleuca*, typical habitat of *Sparganium minimum*. (Ellenberg, 1988; Oberdorfer, 1990)

22.5

TEMPORARY WATER BODIES

Bodies of water that are completely and recurrently emptied of water for part of the time such as Irish furloughs. The characteristics of each stage of the cycle can be defined by use of codes of 22.1, 22.2, 22.3, 22.4, and, if appropriate 37, 38, 53, 54, or 8.

23 Standing brackish and salt water

Brackish, saline or hypersaline lakes, pools and ditches.

- 23.1 UNVEGETATED BRACKISH AND SALT WATERS**
Open water with no (or no detected) floating or submerged vegetation other than algae.
- 23.11 OPEN WATER WITHOUT CHAROPHYTE CARPETS**
- 23.12 CHAROPHYTE ALGAL CARPETS**
- 23.2 VEGETATED BRACKISH AND SALT WATERS**
Expanses of water with submerged or emergent vascular vegetation.
- 23.21 SUBMERGED FORMATIONS**
- 23.211 Tasselweed communities**
Ruppion maritimae p.
Ruppia, *Zannichellia* and *Najas* beds with associated *Ranunculus baudotii*, *Potamogeton pectinatus* and *Callitriche* spp.
(Westhoff and den Held, 1975; Molinier and Martin, 1980; Rivas-Martinez *et al.*, 1980; Nordiska ministerradet, 1984; Polunin and Walters, 1985; Peinado Lorca and Rivas-Martinez, 1987)
- 23.212 Lagoon communities of marine vegetation**
Zostera, *Posidonia*, *Cymodocea* beds of coastal lagoons.
- 23.22 LAGOON DWARF SPIKE-RUSH BEDS**
Scirpion parvuli p.
Emergent formations of *Eleocharis parvula*.
(Nordiska ministerradet, 1984)

24 Running water

All rivers and streams.

- 24.1 RIVER COURSE**
River courses, regardless of submerged vegetation. The subdivisions are based on slope, width and water temperature according to usual ichthyological practice. Classifications based on flora, such as that of Holmes (1983) for British streams, give broadly similar results. For each of the divisions below, subdivisions can be introduced to take into account the morphodynamics of the stream as proposed, for instance, by Malavoi (1989). (Lelek, 1980; Philippart and Vranken, 1983; Holmes, 1983; Malavoi, 1989)
- 24.11 RIVULETS**
The highest reaches of mountain rivulets. Crenon zone.
- 24.12 TROUT ZONE**
Upper and middle (epirhithral and metarhithral) zones of mountain and hill creeks. 'Group D' rivers of Holmes (1983).
- 24.13 GRAYLING ZONE**
Lower (hyporhithral) zone of mountain and hill creeks. 'Group C' rivers of Holmes (1983).
- 24.14 BARBEL ZONE**
Upper (epipotamal) zone of lowland rivers. 'Group B' rivers of Holmes (1983).
- 24.15 BREAM ZONE**
Middle and lower (metapotamal and hypopotamal) zones of lowland rivers. 'Group A' rivers of Holmes (1983).
- 24.16 INTERMITTENT STREAMS**
Watercourses of which the flow is interrupted for part of the year, leaving a dry bed or pools; conditions during the period of flow can be indicated by one of the previous codes.
- 24.2 RIVER GRAVEL BANKS**
Small stone deposits of river beds.
- 24.21 UNVEGETATED RIVER GRAVEL BANKS**
Gravel banks devoid of vegetation.
- 24.22 VEGETATED RIVER GRAVEL BANKS**
Epilobietalia fleischeri (*Myricarietalia germanicae*) *i.a.*
Gravel banks of rivers occupied by specialized pioneer vegetation, at least in alpine and Mediterranean water courses, as well as any subsequent stages in the colonization sequence.
(Lebrun *et al.*, 1949; Ellenberg, 1963, 1988; Archiloque *et al.*, 1969; Guinochet and Vilmorin, 1973; Braun-Blanquet, 1973b; Molinier and Martin, 1980; Vanden Berghen, 1982; Géhu, 1984; Polunin and Walters, 1985; Oberdorfer, 1990)
- 24.221 Subalpine willowherb stream community**
Epilobietum fleischeri
Subalpine and abyssal stations of herbaceous or suffrutescent vegetation with *Epilobium fleischeri*, *Saxifraga aizoides*, *S. caerulea*, *Gypsophila repens*, *Dryas octopetala*.
- 24.222 Alpine gravel bed community**
Chondriletum chondrilloidis
Open and unstable groupings of alpine and subalpine plants colonizing the downstream edge of gravel islands in mountain streams, including *Chondrilla chondrilloides*.

- 24.223 **Willow-tamarisk brush**
Salici-Myricarietum
Myrica germanica and *Salix* spp. formations of montane or dealpine river gravels (44.111).
- 24.224 **Gravel bank thickets and woods**
Salix, *Hippophae*, *Alnus* or *Betula* thickets or woods on stream gravels, which can be further described by use of the codes of 44.
- 24.225 **Mediterranean gravel beds**
Glaucion flavi
Formations with tamarisk (*Myricaria germanica*), rocket (*Erucastrum nasturtifolium*), yellow horned-poppy (*Glaucium flavum*), evening primrose (*Oenothera biennis*) of Mediterranean gravel beds.
- 24.226 **Lowland river gravels**
Less specialized communities of lowland and hill river gravels (e.g. *Filipendulo-Petastion*).
- 24.3 **RIVER SAND BANKS**
Sand deposits in river beds, particularly significant in large river systems such as the Loire.
- 24.31 **UNVEGETATED RIVER SAND BANKS**
River sand banks devoid of vegetation.
- 24.32 **VEGETATED RIVER SAND BANKS**
Sparsely-vegetated to wooded sand banks of large rivers. Appropriate codes from 22.3, 31 and 44 can be used to specify habitats.
- 24.4 **SUBMERGED RIVER VEGETATION**
Ranunculion fluitantis
Beds of water crowfoots, pondweeds, water starworts and other aquatic vegetation of streams comprising in particular *Butomus umbellatus* f. *vallisneriifolius*, *Callitriche cophocarpa*, *C. hamulata*, *C. obtusangula*, *C. stagnatilis*, *Groenlandia densa*, *Potamogeton coloratus*, *P. helveticus*, *P. natans* var. *prolixus*, *P. nodosus*, *Ranunculus fluitans*, *R. penicillatus*, *R. trichophyllus*, *Sagittaria sagittifolia* var. *vallisneriifolia*, *Schoenoplectus lacustris* var. *fluitans*, *Sparganium emersum* ssp. *fluitans*. For fringing vegetation use codes of 53.
(Ellenberg, 1963, 1988; Noirfalise and Dethioux, 1977; Haslam, 1978; Bournérias, 1979, 1984; Haslam and Wolseley, 1982; Mériaux, 1982; Holmes, 1983; Polunin and Walters, 1985; Wolff, 1987; Peinado Lorca and Rivas-Martinez, 1987; Oberdorfer, 1990)
- 24.41 **ACID OLIGOTROPHIC RIVER VEGETATION**
Communities characterized in particular by *Myriophyllum alternifolium*, *Potamogeton polygonifolius*, *Callitriche hamulata*, *Littorella uniflora*.
- 24.42 **LIME-RICH OLIGOTROPHIC RIVER VEGETATION**
Communities characterized in particular by *Potamogeton coloratus* and *Chara hispida*.
- 24.43 **MESOTROPHIC RIVER VEGETATION**
Communities characterized in particular by *Sium erectum* f. *submersa*, *Mentha aquatica* f. *submersa*, *Groenlandia densa*, *Ranunculus peltatus*, *R. penicillatus*, *R. trichophyllus*, *Callitriche truncata*, *C. stagnalis*.
- 24.44 **EUTROPHIC RIVER VEGETATION**
Communities characterized in particular by *Ranunculus fluitans*, *Zannichellia palustris* f. *fluviatilis*, *Potamogeton nodosus*, *Callitriche obtusangula*, *Fontinalis antipyretica*.
- 24.5 **RIVER MUD BANKS**
Alluvial muds exposed by stream level fluctuations (see also 37.7).
- 24.51 **UNVEGETATED RIVER MUD BANKS**
Bare alluvial muds.

24 Running water

24.52

EURO-SIBERIAN ANNUAL RIVER MUD COMMUNITIES

Bidention p., *Chenopodium rubri p.*

Pioneer formations of annuals on nitrogen-rich muds of middle European rivers (*Bidens spp.*, *Rorippa spp.*, *Chenopodium spp.*, *Polygonum spp.*, *Xanthium spp.*).

(Lebrun *et al.*, 1949; Ellenberg, 1963; Guinochet and Vilmorin, 1973; Géhu, 1984; Duvigneaud, 1986; Oberdorfer, 1990)

24.53

MEDITERRANEAN RIVER MUD COMMUNITIES

Paspalo-Agrostidion

Nitrophilous annual and perennial grass and sedge formations of the alluvial banks of great Mediterranean rivers, with *Paspalum paspaloides*, *P. vaginatum*, *Polypogon viridis* (= *Agrostis semiverticillata*), *Cyperus fuscus*.

(Guinochet and Vilmorin, 1973; Bellot Rodriguez, 1979; Molinier and Martin, 1980; Alcaraz Ariza and Peinado Lorca, 1987)