

## **Table 1. The life forms of vascular hydrophytes**

### **A. Hydrophytes attached to the substrate**

#### **(1) EMERGENT HYDROPHYTES:**

Occur on exposed or submerged soils, from where the water table is 50 cm or more beneath the soil surface to where the soil is covered by 150 cm or more of water; mainly rhizomatous or cormous perennials; in heterophyllous species submerged and/or floating leaves precede the mature aerial leaves, many species may exist as (usually sterile) submerged forms; all produce aerial reproductive organs.

e.g., *Butomus*, *Eleocharis*, *Glyceria*, *Ludwigia*,  
*Phragmites*, *Saururus*, *Schoenoplectus*, *Typha*, *Zizania*.

#### **(2) FLOATING-LEAVED HYDROPHYTES:**

Occur on submerged soils in water depths of about 0-25 to 3-5 m; some species may exist as reduced land forms; in heterophyllous species submerged leaves precede or accompany the floating leaves; many species produce aerial leaves in crowded habitats; reproductive organs floating or aerial.

(i) Rhizomatous or cormous types, with floating leaves on long flexible-petioles.

e.g., *Aponogeton distachyos*, *Nymphaea*, *Nuphar*.

(ii) Stoloniferous types, with trailing stems ascending through the water and producing floating leaves on relatively short petioles.

e.g., *Brasenia*, *Luronium*, *Nymphoides*, *Potamogeton natans*.

#### **(3) SUBMERGED HYDROPHYTES:**

Occur on submerged soils at all water depths to about 10 to 11 m; foliage entirely submerged; leaves often filiform, ribbon-shaped, broad and *Ulva*-like, fenestrated or finely divided; a few species may produce land forms; reproductive organs aerial, floating or submerged.

(i) Caulescent types, with or without a rhizome, the long

flexuous leafy stems rooting from the nodes.

e.g., *Elodea*, *Hydrilla*, *Lagarosiphon*, *Najas*,  
*Potamogeton pectinatus*.

(ii) Rosette types, with radical leaves arising from a condensed, often tuberous rootstock or a rhizome; often Stoloniferous.

e.g., *Aponogeton fenestralis*, *Cryptocoryne affinis*,  
*Isoetes*, *Littorella*, *Sagittaria subulata*, *Vallisneria*.

(iii) Thalloid types, with the plant body reduced to a more or less cylindrical or flattened, creeping or floating, polymorphic thallus, often bearing erect or trailing secondary branches.

e.g., the Podostemaceae, such as *Hydrobryum*,  
*Podostemum*, *Terniola*, *Tristicha*, *Zeylanidium*.

## **B. Free-floating hydrophytes**

Occur mainly in sheltered sites on standing and slow-flowing waters; all are typically unattached, but some species with extensive root systems may become anchored in shallow water; numerous species may produce land forms when stranded on marginal wet soil; very diverse in form and habit, ranging from large stoloniferous plants, with rosettes of aerial and/or floating leaves and well-developed submerged roots (e.g., *Ceratopteris cornuta*, *Eichhornia crassipes*, *Hydrocharis*, *Limnobium*, *Pistia*, *Trapa*), to minute surface-floating or submerged plants, with a reduced assimilatory thallus having few or no roots (e.g., *Lemna*, *Wolffia*); reproductive organs floating or aerial, very rarely submerged (e.g., *Ceratophyllum*, *Salvinia*); numerous submerged taxa rise to the surface to flower, and may sink to the substrate to perennate (e.g., *Lemna trisulca*, *Stratiotes*, aquatic species of *Utricularia*).