

ALTERNATIVE KEY FOR ULVA
DRAFT KEY TO ~~ULVA~~ ULVA

BASED ON KOEMAN & VANDEN HOEK (1981)

1. Cells in middle and apical regions of blade rounded 2

1. Cells in middle and apical regions of blade not rounded 3

2(1) Pyrenoids usually 1 (-3) per cell; basally with longitudinal ribs formed by bundles of rhizoids; blade in middle regions 60-70µm thick; cell size in apical region in surface view 16 x 19µm. Ulva lactuca

2(1) Pyrenoids usually 2-4 (-6) per cell; basally without longitudinal ribs formed by bundles of rhizoids; blades in middle regions 50-60µm thick; cell size in apical region in surface view 13 x 13µ. Ulva Scandinavica *

3(1) Cells in middle and apical regions in long distinct rows; blade more than 70µm thick; non-rhizoidal cells in basal region spindle shaped; pyrenoids 2-4 (-6) per cell

Ulva rigida

3(1) Cells in middle and apical regions not in distinct rows; blade less than 50µm thick; non-rhizoidal cells in basal region cylindrical; pyrenoids 1 (-3) per cell

4

4(3) Basal region of blade without flat central cavity, with narrow wings of smaller cells; length/width ratio of cells in middle and apical regions 0.7/1.5

Ulva pseudocurvata *

4(3) Basal region of blade with flat central cavity, without narrow wings of smaller cells; length/width ratio of cells and apical region 0.7/2.2 Ulva curvata *

* Not in checklists for Britain

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NOMENCLATURE

We have adopted the nomenclature of Bliding (1968) for the following reasons: the names of his *Ulva*-species are well documented by herbarium specimens; Bliding's work is the best modern treatise of the taxonomy of Ulvales, and nomenclatural changes of names used by him should therefore be limited to a minimum to avoid confusion; such nomenclatural changes, if necessary according to the International Code of Botanical Nomenclature, should be limited to revisions for much larger areas including more taxa than our revision for the Dutch coasts.

KEY TO THE SPECIES OF *ULVA* OCCURRING IN THE NETHERLANDS

- 1a. Pyrenoids mostly one per cell (in the middle and apical regions of the blade two, rarely three per cell in 5-15% of the cells). 2
- b. Pyrenoids mostly two to four per cell in the middle and apical regions of the blade 4
- 2a. Basal region of the blade composed of normal vegetative cells which are interspersed with darker coloured rhizoidal cells; these rhizoidal cells are mostly larger than normal cells. Blades curved or not so. Lower part of basal region with or without a central cavity 3
- b. Basal region of the blade composed of normal vegetative cells and rhizoidal cells of similar form and size, the rhizoidal cells differing from vegetative cells mainly by their darker contents. Particularly in the upper boundary region of the basal zone, the rhizoidal cells closely resemble vegetative cells, which are irregularly polygonal, often more or less elongate in longitudinal direction, and arranged in often distinct longitudinal cell-groups in which the cells form short, longitudinal slightly curved cell-rows. Lower part of basal region without a central cavity. Blades mostly curved 1. *Ulva pseudocurvata*
- 3a. Lower part of the basal region with a flat central cavity (cross-section). The basal region without small-celled marginal wings. Normal vegetative cells in the basal region of the blade irregularly polygonal with often slightly rounded corners, arranged in indistinct cell groups whose cells form short, curved variously directed rows. Thickness of the blade in middle and apical regions mostly between 40-50 μm , but varying from 35-62 μm . Chloroplasts in the middle and apical regions having a distinct cap-like appearance in surface view. Blades mostly curved. 2. *Ulva curvata*
- b. Lower part of the basal region without a central cavity (cross-section). The basal region with small-celled marginal wings. Normal vegetative cells in the basal region irregularly polygonal with distinctly rounded corners, many of them united into two-to-four-celled rounded, and variously oriented groups which are separated from one another by relatively thick walls. Thickness of the blade in middle and apical regions mostly between 60-70 μm , but varying from 50-80 μm . Chloroplasts in the middle and apical regions without or with an indistinct cap-like appearance in surface view. Blades mostly not curved 3. *Ulva lactuca*

- 4a. Basal region of the blade with distinct longitudinal ribs. Cells in the middle and apical regions of the blade with distinctly rounded corners, arranged in distinct, mostly long, straight to curved rows with transverse and longitudinal, sometimes oblique orientations. Thickness of the blade in middle and apical regions mostly between 75-85 μm , but varying from 65-95 μm . Chloroplasts in the middle and apical region of the blade having a distinct cap-like appearance in surface view 4. *Ulva rigida*
- b. Basal region of the blade without distinct longitudinal ribs. Cells in the middle and apical regions of the blade irregularly polygonal, with slightly rounded corners, arranged without much order, or in indistinct groups whose cells may form short, often curved rows with diverse orientation. Thickness of the blade in middle and apical regions mostly between 50-60 μm , but varying from 42-78 μm . Chloroplasts in the middle and apical regions without a distinct cap-like appearance in surface view 5. *Ulva scandinavica*

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