*Often misunderstood and overlooked, algae can be fascinating if you know what to look for. Here is a glimpse of this hidden world from an entirely different perspective.*

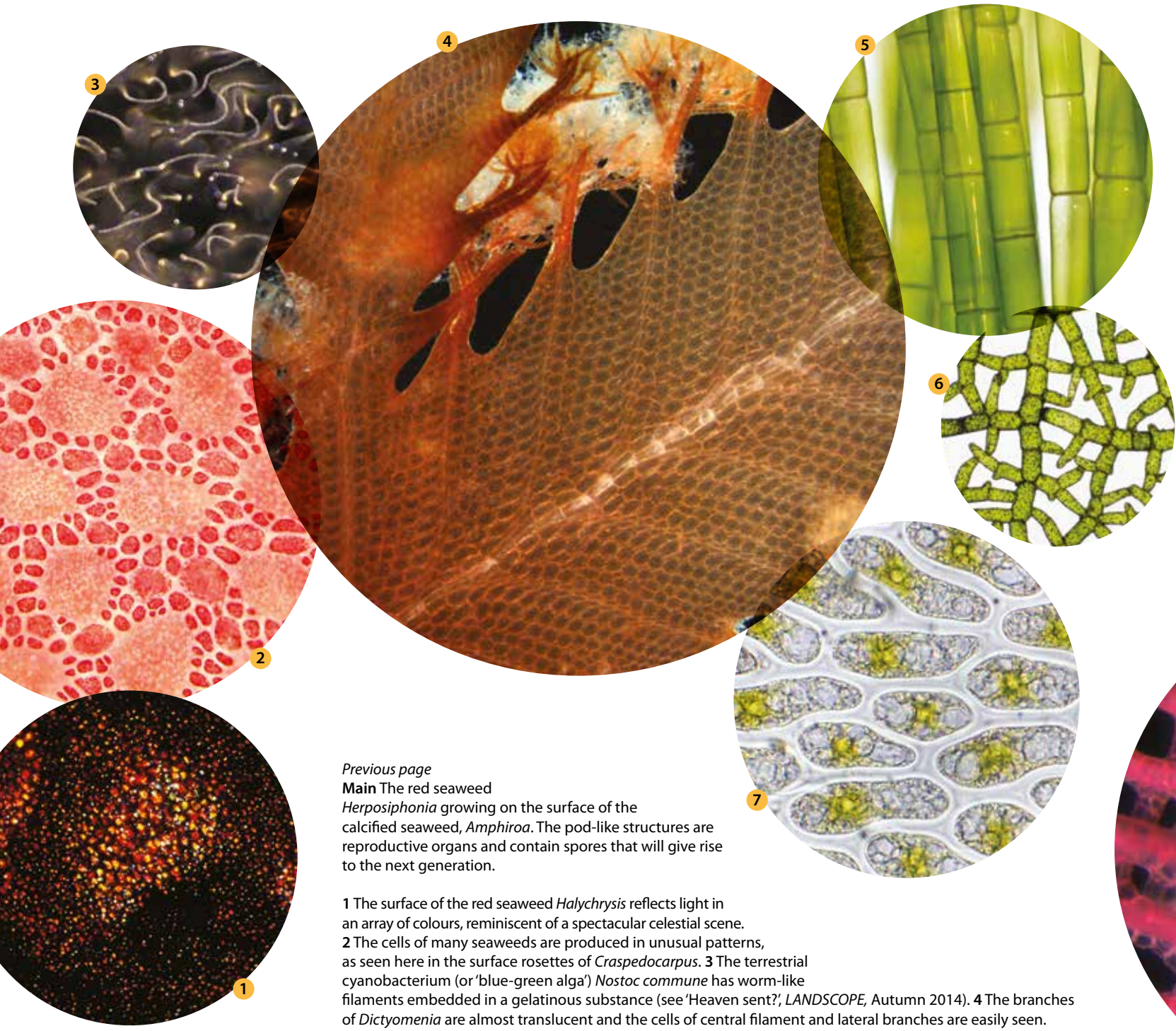
**photos and words by John Huisman**

# A hidden world

There's no question that seaweeds and freshwater algae have a bad reputation; whether they're piled high on the beach, forcing a careful navigation before you can reach the water and emitting a stench so powerful that it can drive down property values, or forming blooms in lakes and rivers that effectively poison the water, it is perhaps understandable that a positive appreciation of these plants is not widely held.

But take a closer look. These are not 'weeds' in the true sense of the word, but a diverse assortment of unusual plants whose only connection with one another is, in many cases, that they have evolved in a watery environment, which presents a unique suite of evolutionary pressures.

The end result is that the algae have evolved with unique, and often strikingly beautiful set of colours, shapes and patterns, many of which do not have a terrestrial counterpart. Sometimes this beauty is only discovered in close-up, where the intricate patterns of cells and reproductive structures are revealed.




*Previous page*
**Main** The red seaweed *Herposiphonia* growing on the surface of the calcified seaweed, *Amphiroa*. The pod-like structures are reproductive organs and contain spores that will give rise to the next generation.

**1** The surface of the red seaweed *Halychrysis* reflects light in an array of colours, reminiscent of a spectacular celestial scene. **2** The cells of many seaweeds are produced in unusual patterns, as seen here in the surface rosettes of *Craspedocarpus*. **3** The terrestrial cyanobacterium (or 'blue-green alga') *Nostoc commune* has worm-like filaments embedded in a gelatinous substance (see 'Heaven sent?', *LANDSCOPE,* Autumn 2014). **4** The branches of *Dictyomenia* are almost translucent and the cells of central filament and lateral branches are easily seen. **5** When magnified, the green seaweed *Chaetomorpha* has a bamboo-like appearance with emerald green cells. **6** Cells of *Microdictyon* fuse with one another to form a delicate net. **7** The membranous blades of Porphyra (also known as nori) are only one-cell thick, seen here in surface view.

## *MARTENSIA* (Photos 8 and 9)

In 1854 Irish botanist William Henry Harvey commented that "among the marine algae, perhaps none are more curious and few more beautiful" in relation to the net-like red algae that include *Martensia*.

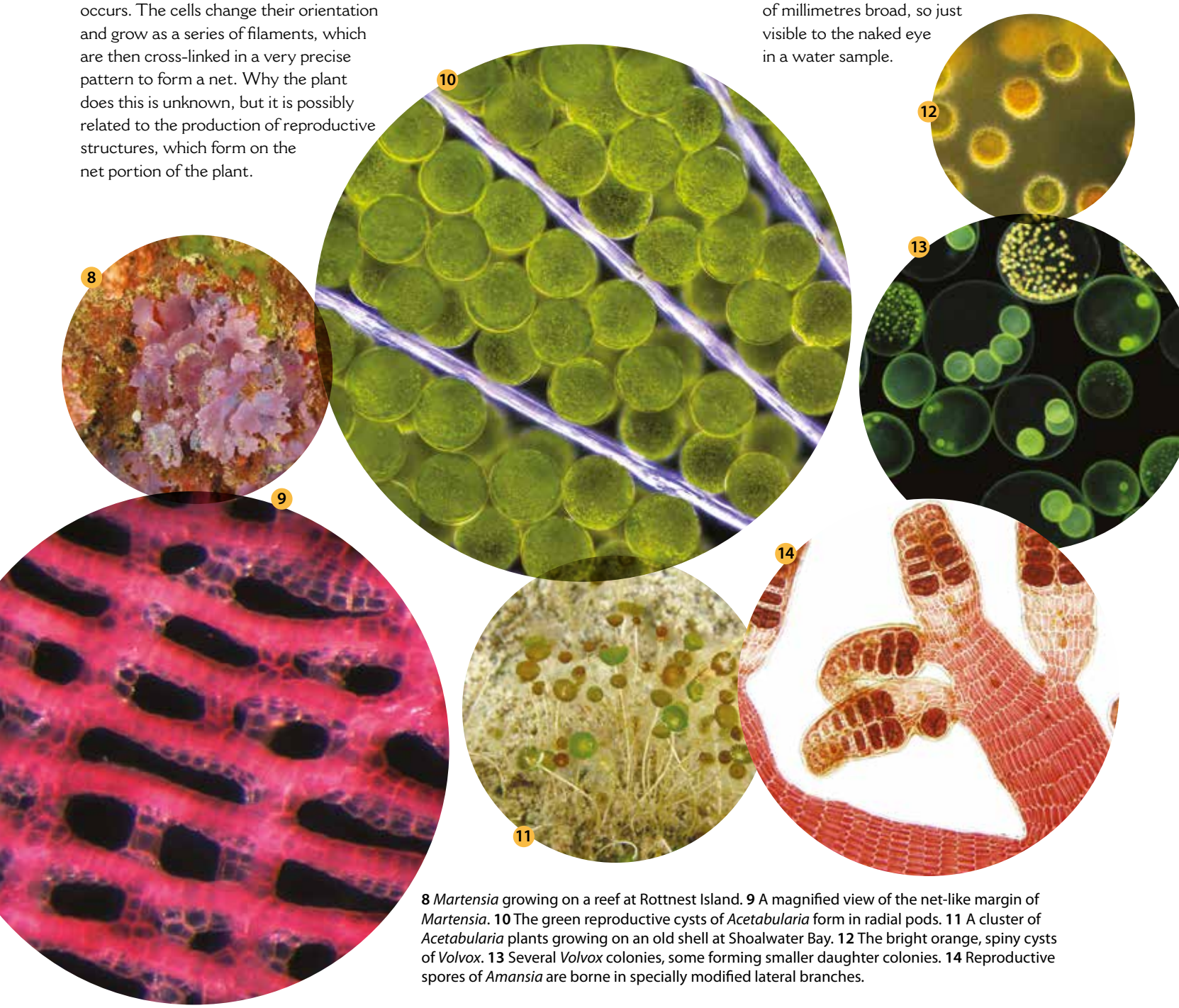
Of the seaweeds, *Martensia* is certainly the most unusual. It has light pink, very delicate fronds that are thin and membranous, only a few cells thick. Lower down the fronds are whole, but at the margins a striking transformation occurs. The cells change their orientation and grow as a series of filaments, which are then cross-linked in a very precise pattern to form a net. Why the plant does this is unknown, but it is possibly related to the production of reproductive structures, which form on the net portion of the plant.

## *ACETABULARIA* (Photos 10 and 11)

The name *Acetabularia* is taken from Latin and means 'saucer', and refers to the circular, green, cup-like structure that sits at the apex of the plant. This structure is actually composed of several reproductive pods, which each contain numerous cysts that in turn will release the plant's gametes. *Acetabularia* is commonly found in shallow sandy habitats, where it often grows in clusters on old bivalve shells. The genus sometimes goes by the common name 'mermaid's wineglass'.

## *VOLVOX* (Photos 12 and 13)

Not a seaweed, but a colonial freshwater green alga. The individual cells of *Volvox* all have two flagella and are joined laterally into a spherical colony with their flagella directed outwards. Occasionally these cells transform into male and female gametes, and once fertilisation has occurred a spiny, thick-walled cyst is formed that is a bright orange colour. The spherical colonies of *Volvox* can be common in lakes and larger colonies can be a couple of millimetres broad, so just visible to the naked eye in a water sample.




**8** *Martensia* growing on a reef at Rottnest Island. **9** A magnified view of the net-like margin of *Martensia*. **10** The green reproductive cysts of *Acetabularia* form in radial pods. **11** A cluster of *Acetabularia* plants growing on an old shell at Shoalwater Bay. **12** The bright orange, spiny cysts of *Volvox*. **13** Several *Volvox* colonies, some forming smaller daughter colonies. **14** Reproductive spores of *Amansia* are borne in specially modified lateral branches.