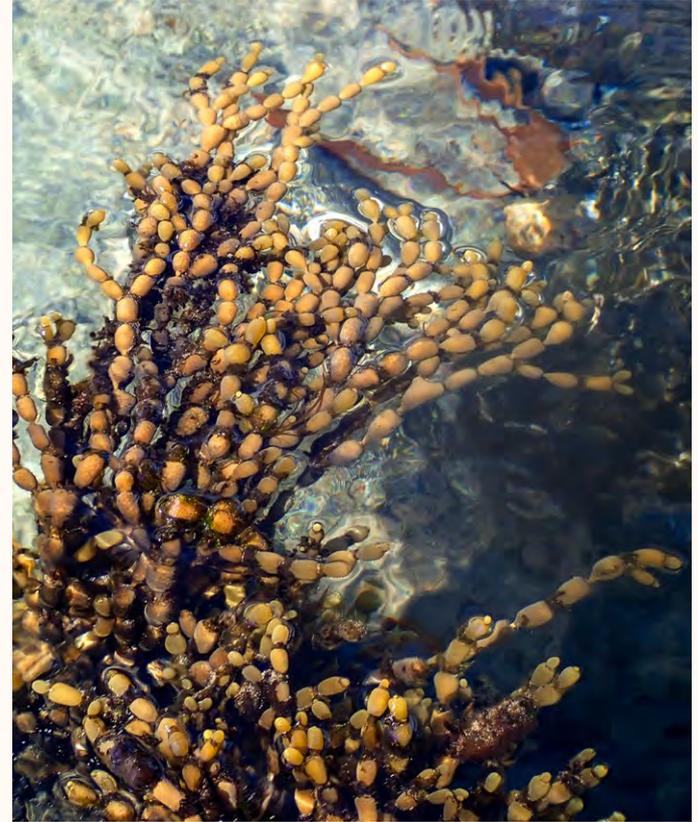




CARBON GARDENS OF THE SEA



Neptune Blue

Underwater worlds, coastal beaches and rock pools provide wonderful backdrops to explore and learn about the importance of seaweed for sequestering carbon and restoring oceans.

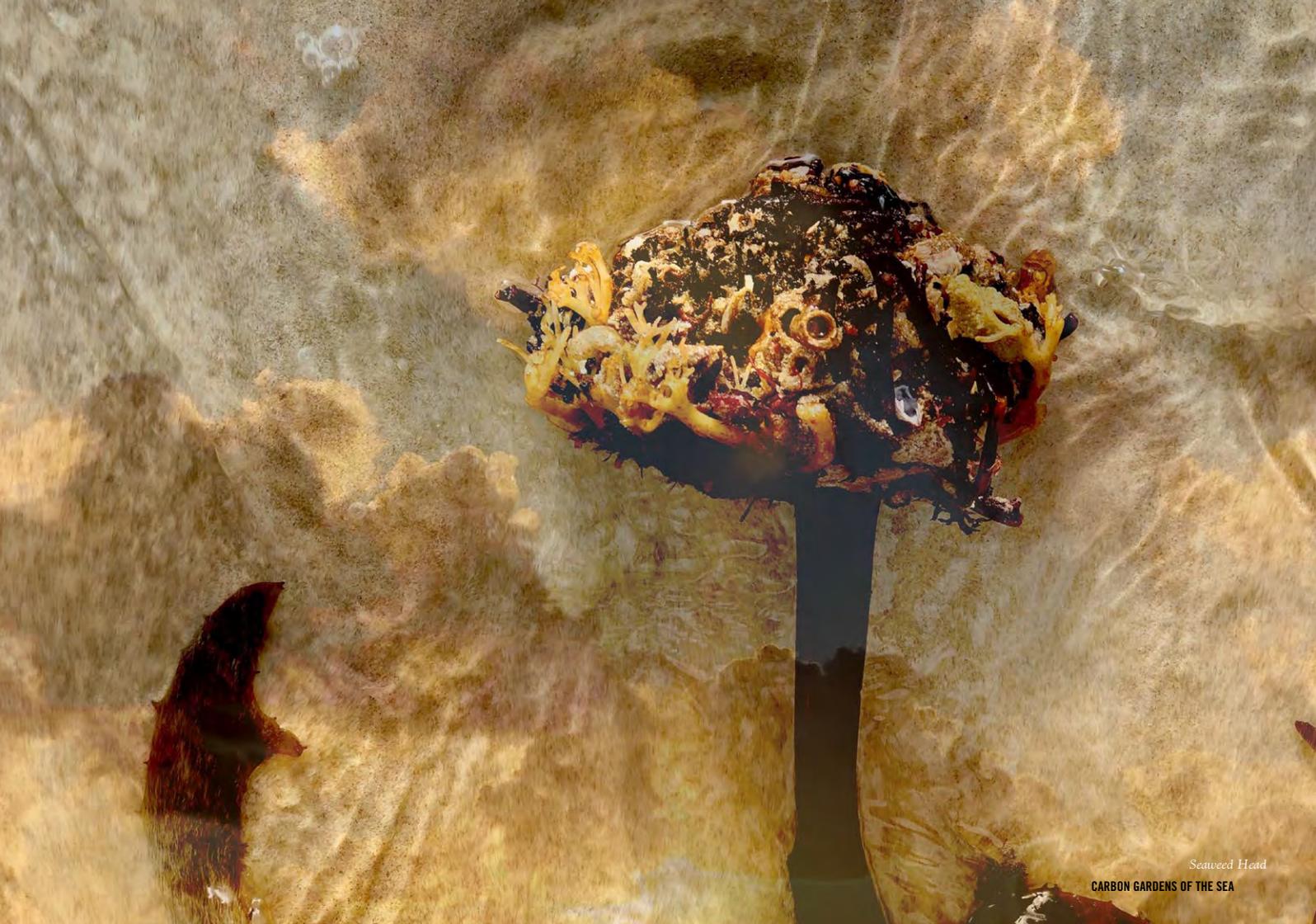


Seaweed In Sand

There is also an urgent need to protect and foster marine environments, in particular seaweeds. The recognition is growing that by developing marine permaculture through creating seaweed farms and

replanting giant underwater kelp beds, we can capture and sink carbon to help ameliorate climate change. Seaweeds absorb half of the carbon dioxide recaptured from the atmosphere, which causes

acidification, and over 90 percent of the heat from global warming. Expanded seaweed farming will also encourage biodiversity and renew marine ecosystems.



Seaweed Head

CARBON GARDENS OF THE SEA

"I believe that by 2050 our ever-sickening oceans will also have begun the long journey back to health. Mid-ocean kelp farming will be supplying vast volumes of high-quality protein. The kelp will be absorbing so much CO₂ that the rate of ocean acidification is slowing.

Locally, where kelp farms are being used to help restore ecosystem health, sensitive and hard-pressed ecosystems such as coral reefs will have a little breathing space. We are so very close, yet so far from my 2050. But wisdom, vision and determination can take us there."

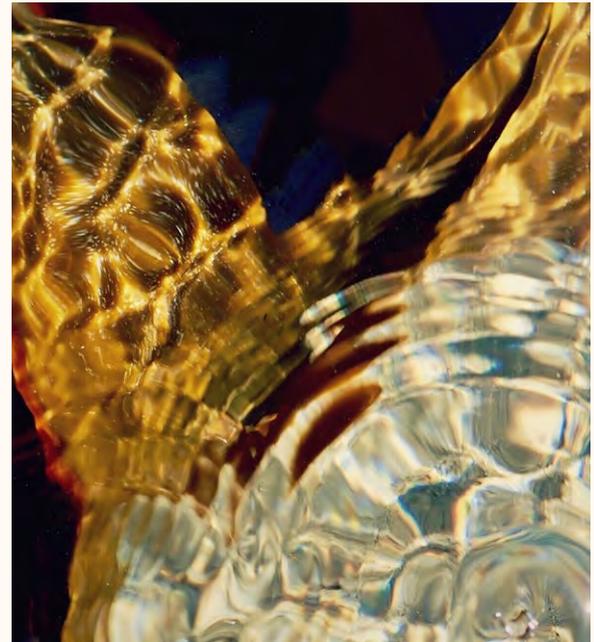
Excerpted from *Sunlight and Seaweed: An Argument for How to Feed, Power and Clean Up the World* by Tim Flanagan



Fucus Vesiculosus Algae

In Australia, kelp forests are the foundation of the Great Southern Reef, a continental-scale temperate reef system that sustains high levels of biodiversity and productivity. Kelp forests in Australia support numerous species of importance, including weedy seadragons, grey nurse sharks,

rock lobsters and abalone. Kelp forests similar to those in Australia dominate coastal environments in temperate and subpolar latitudes around the world and, much like terrestrial forests, create complex habitats that support diverse and productive food webs.



Kelp Ripple

Unfortunately, kelp forests in many locations around Australia and in other parts of the world are experiencing habitat loss due to climate change, overgrazing from herbivores, coastal development and pollution. Dense giant kelp (*Macrocystis pyrifera*) forests were previously an iconic feature of the Tasmanian coast. Now a loss of up to 95% of these giant kelp forests has seen them listed by the Australian Government as an endangered marine community – the first such listing for a marine community in Australia. The decline of giant kelp forests in eastern Tasmania is associated with increased influence of warm and nutrient-poor East Australian Current water.

Kelp Field



UNDERWATER WONDERS: SEAWEED STORIES

Seaweeds are essential ecosystems for marine life

Seaweed sequesters high levels of carbon and oxygenates waters - contributing up to 80% of oxygen in the atmosphere

It also helps to reduce acidification of ocean waters

Seaweed is a sustainable solution to many challenges including biofuel, food production and regenerative ocean farming

Edible, nutrient-rich seaweeds are found in coastal waters and some deeper waters around the world

Seaweed is an organic, rich fertiliser for gardens and aids in composting food waste

Common edible seaweeds include wrack, kelp (golden and bull), laver (nori), sea lettuce, crayweed and dulse

Foraging for seaweed can be a seasonal adventure and way to connect with nature

Encourage marine regeneration by learning more and supporting seaweed farming



Sea Lettuce



Golden Kelp



Wakame



Bull Kelp

SEAWEED FORAGING

SEAWEEDES OF EASTERN
AUSTRALIA

COURTESY KIRSTEN BRADLEY
& BRENNA QUINLAN |
MILKWOOD PERMACULTURE

Never harvest seaweeds that are still alive and attached to their rocks, or anything in a protected area. In some areas, however, harvesting live sea lettuce is allowed.

Once you know which seaweeds to look for, it's time to go looking. Forage for seaweed only in clean waters, just before low tide. Identify and experiences different landscapes and habitats.

By the seaside, seaweeds provide food for turtles, crabs, fish and more. Even when seaweed is dead and washed up on the beach, it's still vital to the seaside ecosystem as food and habitat, and it's useful to us, too.