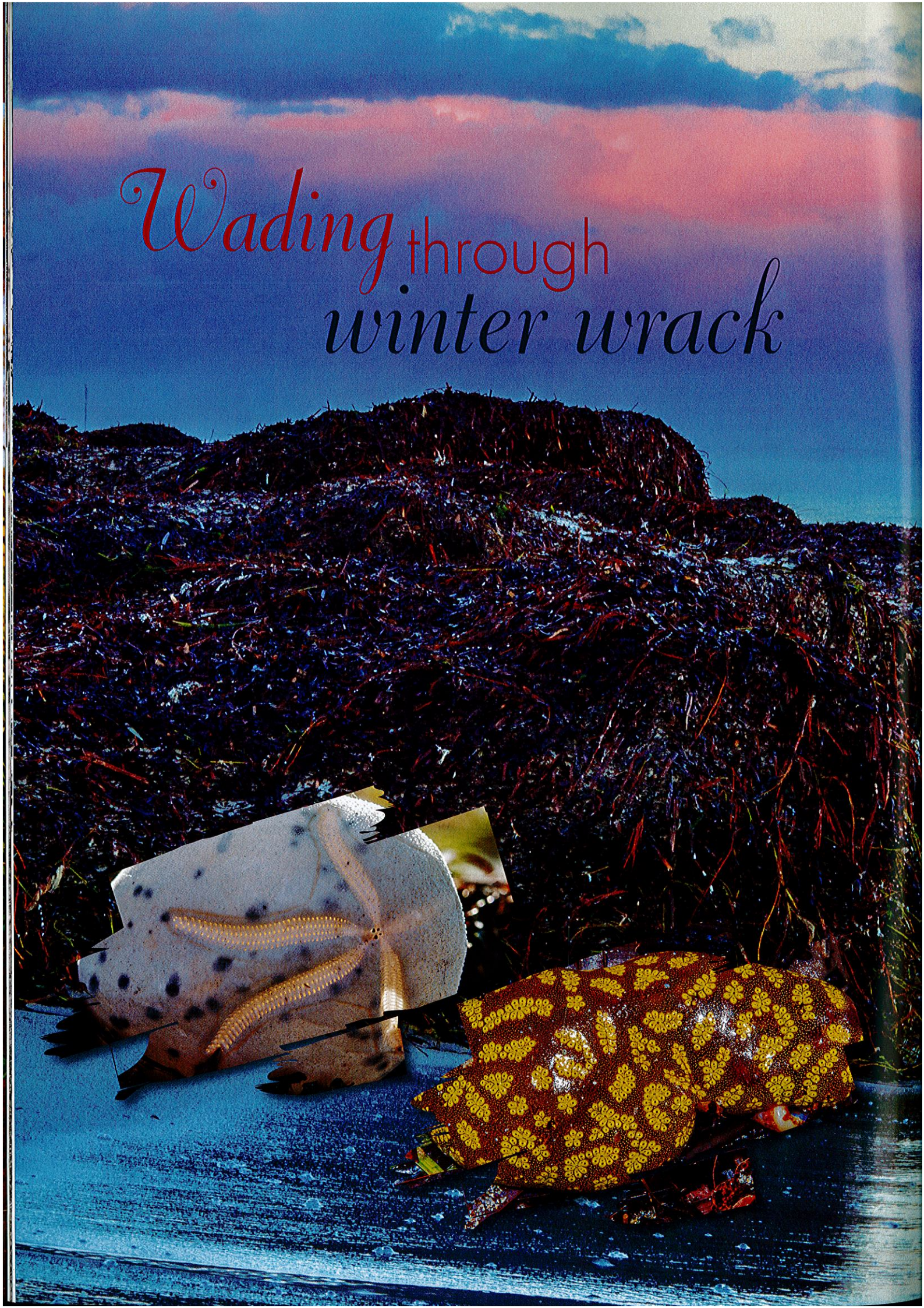
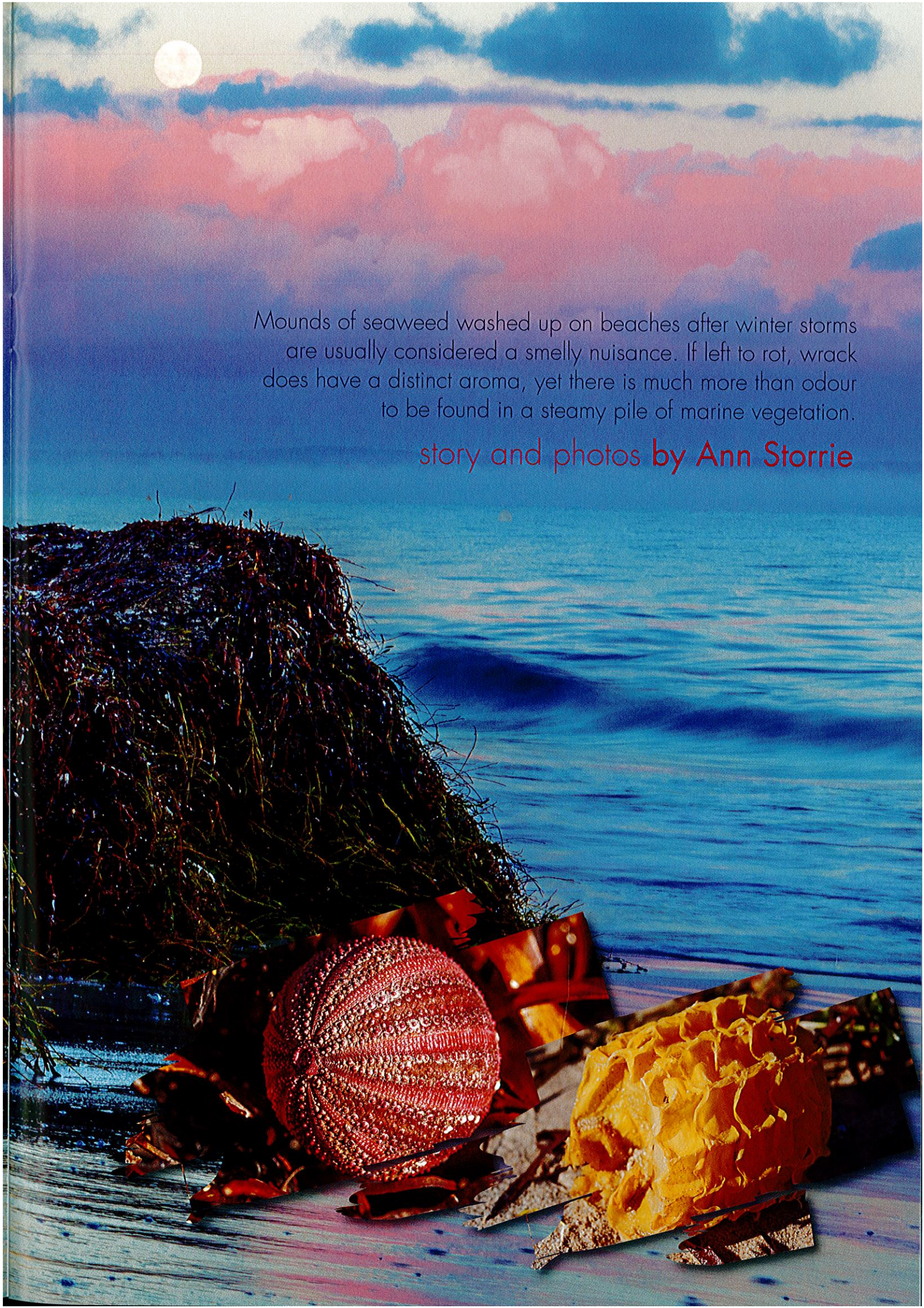
Wading through winter wrack





Mounds of seaweed washed up on beaches after winter storms are usually considered a smelly nuisance. If left to rot, wrack does have a distinct aroma, yet there is much more than odour to be found in a steamy pile of marine vegetation.

story and photos **by Ann Storrie**

'Wrack' is the term used to describe piles of marine vegetation that have washed ashore. It may consist of both seaweeds (macroscopic algae) and seagrasses. Numerous marine animals, their skeletons, shells and eggs wash up with the plant life, while land scavengers hunt for tasty morsels within the wrack. Wading through this wrack after a good winter storm can prove a beachcomber's delight.

Western Australian waters are blessed with abundant species of marine algae and seagrass beds. Algae are structurally simple plants that do not have roots, stems, leaves, flowers or fruit. They reproduce by means of spores that are released directly into the water, and most anchor to hard surfaces with holdfasts. Some also grow as epiphytes, living on the fronds of other plants. There are four groups of marine algae, based on their colour; red (*Rhodophyta*), brown (*Phaeophyta*), green (*Chlorophyta*) and blue-green algae (*Cyanophyta*). Unfortunately, the actual colour of the weed is not always a reliable guide to its division. Red algae often appear brown or yellow while blue-green algae may appear almost black. Dried specimens in the wrack are sometimes very hard to identify by colour, although some are very obvious.

Previous page
Main Wrack at moon set.
Insets from left to right Compound ascidian, heart urchin test, test of a sea urchin and an egg case of the Australian trumpet (*Syrinx aruanus*).

Above Ann Storrie wading through wrack.

Below Common kelp.

Not holding fast

Common kelp (*Ecklonia radiata*) is, not surprisingly, one of the most common brown seaweeds found along our coast and it forms a major component of wrack. It is also our largest local species of marine algae and is very easily identified. Holdfasts, that look a little like roots, anchor the round stem to solid rock or reef. This stem broadens gradually into a flattened blade bearing numerous side branches that can grow to two metres in length. In rough, shallow waters, these side branches often have ridges and small spine-like projections on their surface, but in deeper waters the fronds are usually smoother. Kelp is an incredibly tough and leathery, yet handsome plant that is extremely difficult to pull from its anchor point. The power of waves should never be underestimated.

Have you ever popped a sargassum ball? These round, air-filled floats of the brown sargassum weed are the plant's own buoyancy system, holding it upwards towards the sun—its main source of food. When washed up in the wrack, the floats are tempting to squeeze. There are up to 200 species of sargassum found in tropical and temperate Australian waters. Some species attach to underwater surfaces while others float free, often accompanied by a flotilla of small fish

Right Red seaweeds.

Below right Strapweed seed pods.

and crustaceans. The Leeuwin Current, for example, carries some larval and juvenile tropical invertebrates and fish species from the north-west coast to the southern coast in this manner. All species of sargassum have distinct stems and complex branching structures, the fronds of which resemble leaves.

Red algae are the most numerous of the seaweed groups and have an amazing range of colour and form. Several species stay bright red for many days after washing ashore, when they are finally bleached white in the sun. Some species are more brown or yellow than red. One interesting species that stands out in the wrack is red tumble weed (*Dicranema revolutum*). As with algae, many seaweeds need to grow on rock or reef where their holdfasts can adhere strongly to a stable surface. Some, however, are epiphytes that grow on other plants. Tumble weed is an epiphyte that is very selective; it only grows on the stems of wireweed seagrasses. Most of its branches grow to a regular length so that it often takes the shape of a ball.

Strange sausage-like, slimy, viscous-filled sacs are often avoided because they look like used condoms! A closer inspection may reveal a tiny holdfast at one end that sometimes joins several of these sacs, or fronds, together. Appropriately called 'slimy bags' (*Gloiosaccion brownii*), this red alga can grow to 30 centimetres high. It is often green or yellow and lives in sub-tidal areas along southern Australian shores where it adheres to rocks or other hard objects that are often buried in sand.

Most green algae are, as the name suggests, green, and many species are easily recognised in the wrack. *Caulerpa cactoides* has large, club-shaped fronds that arise from a horizontal stem, or stolon, that creeps across the sea bed. All species of *Caulerpa* have this stem which is also obvious in sea grapes and sea berries (*C. racemosa* and *C. cylindracea*). Sea lettuce (*Ulva* spp.) attaches to almost any hard surface, but is easily detached in storms. When freshly washed up, its bright green, shiny 'sheets' glisten in the wrack. Like most seaweeds, sea lettuce is edible and, in many parts of the world, is consumed in salads and soups.

Velvet golf balls (*Codium mamillosum*) are a favourite for playing catch. If you look closely at the velvety surface, you'll see it is made up of tiny tubes that are swollen ends of filaments that comprise the interior of the plant. Freshly washed up balls are soft, squishy and irresistible to throw. Some *Codium* species look like green sponges, others like long, flexible tubes, while still others like leathery kelp. All, however, are composed of filaments that become inflated at the ends and develop into balloon-like structures called utricles.

Wracks of wireweed and ribbons

Unlike seaweeds, seagrasses are true flowering plants with roots, stems, leaves, flowers and seeds. Western Australia is fortunate to have extensive seagrass beds that provide breeding habitats, safe havens and food for many species of marine life. Seagrasses also help to stabilise the sea bed. Twenty-six of the 60 known species of seagrass occur in WA.

In areas where seagrasses form extensive beds, such as Geographe Bay, the wrack is composed mainly of those species. Strapweeds, wireweeds and paddleweeds are all seagrasses (not weeds) that are easily identified. Strapweeds (*Posidonia* spp.) form

Left Wireweed.

Below left Portuguese man o' war swarm onshore.

Bottom left Crab in sargassum weed.

ribbon-like leaves that can grow more than a metre long. When strapweed decays, the tough fibre of these plants is often washed around by wave action and forms the fibre balls that are often seen in the wrack.

Wireweeds (*Amphibolis* spp.) have long stems with short leaves and are often hosts to epiphytes such as tumble weed. These sometimes weigh down the wireweed so much that their branches are more easily torn off in storms. The seedlings of wireweeds have a small grappling apparatus, or hook, at the end that can catch onto large plants. They can then germinate and grow roots ready to stabilise quickly in the sand. The hook at the end of a short stem with leaves is often found in the wrack.

Paddleweeds (*Halophila* spp.) have bright green, small, paddle-shaped leaves that look like leaves from land plants when they are freshly washed up. Paddleweeds tend to grow in sparse areas of sand in shallow water to 10 metres deep. Although their creeping branches, called stolons, are partially submerged in the sand they may be quickly uprooted in storms. However, they are often the first of the seagrasses to recolonise these areas after disturbances.

Washed up in wrack

Sponges of all shapes, sizes, textures and colours are the most visible invertebrates to wash up with the wrack. Most lose their colour quickly and the dried skeletons belie the fact that they are animals. They are the simplest of the multicellular animals and do not possess true tissues or organs. Water passing through tiny holes, or pores, in their outer cells is filtered through an internal network of canals where food particles are extracted. Sponges can filter their own volume of water every 10 to 12 seconds, thus playing an important role in filtering bacteria and organic particles from the water. Next time you tread on a sponge

Above Wrack at sunset.

on the beach, spare a thought for the amazing work that this humble animal has achieved in its lifetime.

If you are treading barefoot on the beach, watch out for the Portuguese man o'war, or blue bottle (*Physalia* sp.). Its trailing tentacles may still sting. The part of the creature that many people think of as the body is actually a gas-filled float that supports a colony of animals (polyps) living underneath and along the tentacles. Each polyp is specialised for a certain function, such as feeding, reproduction, producing gas for the float or for catching prey. Jellyfish, on the other hand, are individual animals with a stomach and reproductive organs inside the 'bell' or medusa. Sense organs are located around the edge of the bell and their stinging tentacles may also fire when out of the water.

Hard coral skeletons may also wash up in the wrack. They often look like white 'rocks' with holes where the individual coral polyps once lived. Bryozoans, although often called lace corals, are unrelated, but some species look similar to hard corals. The tiny animals that leave holes in bryozoan skeletons are called zooids. Other types of bryozoans grow on seagrasses, while still others look similar to clumps of weed.

Crustaceans such as crabs, shrimps and barnacles also wash up with the wrack. Most barnacles are found on floating debris, cuttlefish bones and shells such as the Ram's horn shell (*Spirula spirula*). One species, the blue barnacle (*Lepas fascicularis*), can secrete its own raft of bubbles and does not have to attach to another floating object. Although many small crustaceans are brought up with and die in the wrack, other land crustaceans such as tiny jumping beach hoppers and ghost crabs take advantage of the banquet on the beach. Insects such as beetles, midges and flies swarm in the wrack and provide food for birds and other land creatures.

Mollusc shells are prolific on the beaches, with or without the wrack. Bivalves such as scallops and cockles and univalves such as turban shells, cowries and bubble shells have been collected since humans walked the Earth. Although the mollusc has probably died, its shell may have been taken over by a hermit crab. If you find a shell with one of these residents, toss it back as the hermit crab often survives for some time out of the water and may live happily in the shallows.

Cuttlefish and squid are also molluscs called cephalopods. They have an internal shell which, when the animal dies, washes up on the beach. Cuttlebones are often collected as food for caged birds. The squid shell (referred to as a quill or pen) is less obvious. It is a thin, transparent, delicate-looking structure that is made of cartilage.

Horseshoe-shaped, jelly-like blobs found on the beach are usually egg masses laid by molluscs. Tiny sand snails lay these gelatinous masses that contain hundreds of tiny eggs. Most are transparent and it is difficult to see the individual eggs. Occasionally, you may find pink or red eggs that are more obvious.

Left Mollusc eggs laid in a gelatinous mass.

Below A segment of a pencil urchin test.

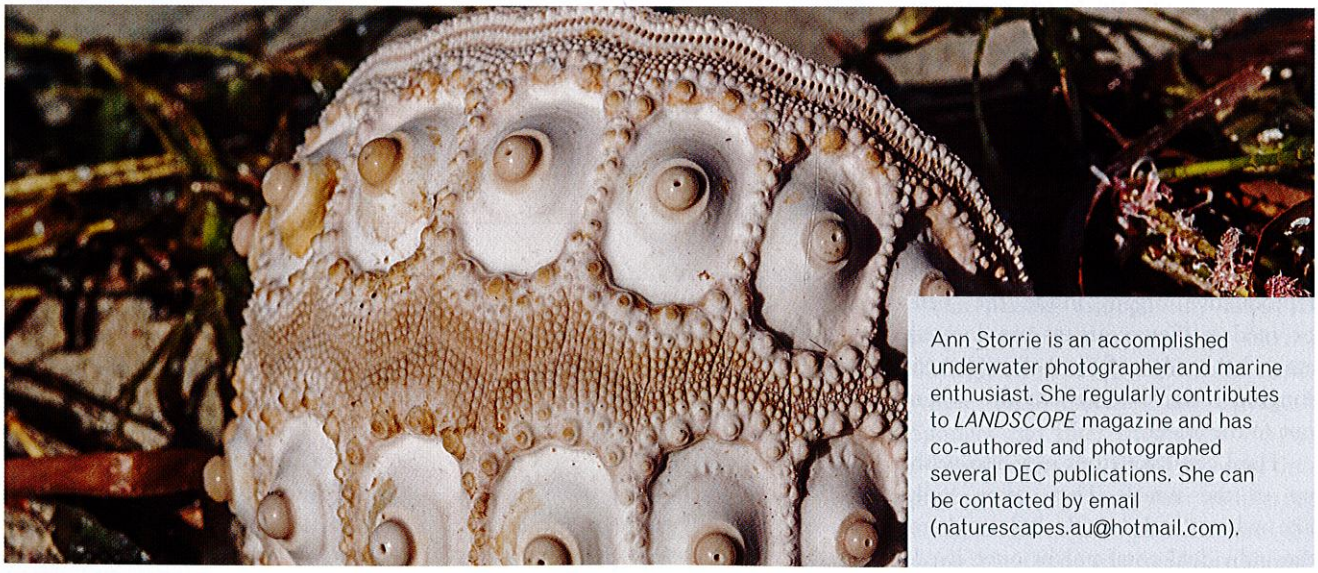
White, hard worm tubes stand out in the wrack. They were homes to polychaete worms that, when alive, had tentacles extending from the top of the tube. These tentacles may be beautifully coloured, flower-like blooms that collect plankton. When disturbed, the worm can quickly retract its tentacles back into the tube.

Sea stars and the tests, or skeletons, of sea urchins are the most common echinoderms you'll find on the beach. Sea stars and their skeletons are very obvious. Sea urchin tests are usually round, hollow balls with a hole in the middle. In live specimens, the animal's spines cover the test. Heart urchins often have a star-shaped pattern on their oval or heart-shaped tests. Sand dollars are flat and round and also bear a star-shaped pattern.

Ascidians, or sea squirts, are complex marine animals that may look like sponges, but which possess a nervous system and digestive system. Some are large, individual animals such as sea tulips that look like a lobulated ball on a stalk. Others look more like a cow's udder. Compound ascidians are made up of many tiny individual ascidians that often encrust over surfaces, or grow on seagrasses and other plants. Some are very colourful and, if freshly washed up, may even move slightly when touched—a result of their syphons closing in response to stimuli.

Shark egg cases are interesting structures. Cat shark egg cases are about six centimetres long and shiny brown with two tendrils, or pointy bits, at one end. A hole at the other end is where the baby shark escaped. Port Jackson sharks (*Heterodontus portusjacksoni*) lay dark brown envelopes with pronounced phalanges, or wide ridges, that spiral around the case.

In among these curiosities may be the bodies of fish, octopuses, and other sea creatures that have recently died. The pile of wrack becomes a banquet which brings the beach to life by providing nutrients, moisture and protection for many animals including shore birds, crabs and insects. It also stabilises windblown sand and provides plant nutrients. Wrack on the beach may not look as aesthetically pleasing as clean sand, but has many attributes. Think of these when you next wade through a pile of rotting seaweed, and consider how uninteresting the beach would be without it.



Ann Storrie is an accomplished underwater photographer and marine enthusiast. She regularly contributes to *LANDSCOPE* magazine and has co-authored and photographed several DEC publications. She can be contacted by email (naturescapes.au@hotmail.com).

Volume 28 Number 3 AUTUMN 2013

contents

Regulars

Publishing credits

Executive editor Madeleine Clews.

Editors Samille Mitchell, Joanna Moore.

Scientific/technical advice Kevin Thiele, Lachie McCaw, Keith Morris, Michael Rule.

Design and production Gooitzen van der Meer, Lynne Whittle, Peter Nicholas, Natalie Curtis.

Illustration Gooitzen van der Meer.

Cartography Promaco Geodraft.

Marketing Cathy Birch.
Phone (08) 9334 0296 or *fax* (08) 9334 0432.

Subscription enquiries
Phone (08) 9219 8000.

Prepress and printing GEON, Western Australia.

ISSN 0815-4465

Please do not send unsolicited material, but feel free to contact the editors.

Published by the Department of Environment and Conservation (DEC), 17 Dick Perry Avenue, Kensington, Western Australia.

Visit DEC online at www.dec.wa.gov.au to search the *LANDSCOPE* catalogue.

Department of
Environment and Conservation