FLORA

SALACIOUS SAMPHIRES

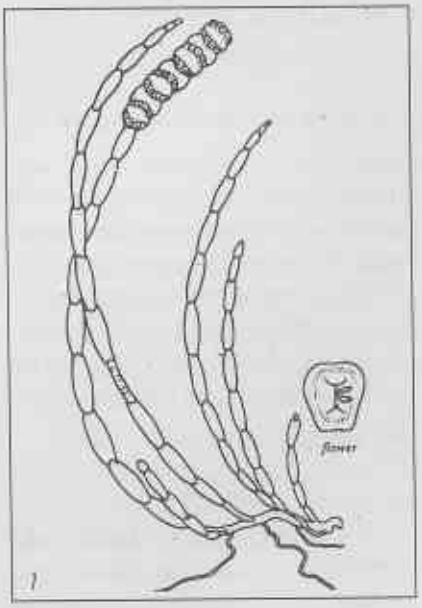
by Paul Wilson

SAMPHIRES do not arouse the degree of affection that is accorded to plants of brighter appearance such as banksias, wattles and the everlastings, but they have their admirers, and even those whose visual appetites are jaded by a surfeit of lovely flowers can appreciate the beauty of a saltpan in the evening light when it is covered with samphires of various shades of green and red; individually they can also be fascinating if time is taken to examine them closely.

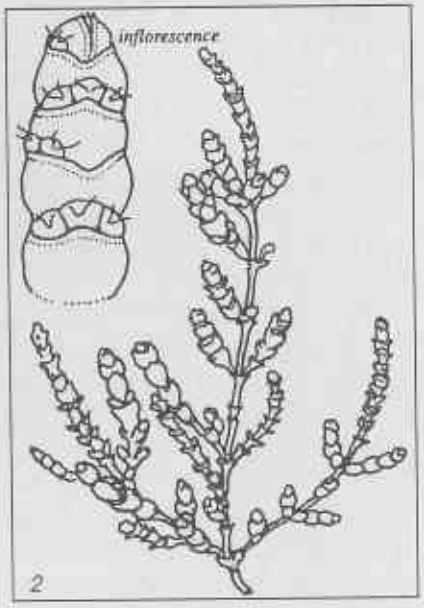
Shakespeare referred to the employment of gathering samphires as a 'dreadful trade', but his remark was directed to the picking of the European plant that inhabits rocky shores, which is a quite different species to the samphires of Australia even though they share the same common name. The word 'samphire' has itself an interesting history. Shakespeare spelt it 'sampire' which is close to the French name '(herbe de) St Pierre', St Peter being the patron saint of fishermen (with reference to the sea coast) and the plant grows among rocks, the 'petros' from which the name Pierre or Peter is derived. In Western Australia the word has taken on a further modification where a roadhouse between Port Hedland and Broome that sits in a huge samphire patch is called the Sandfire Roadhouse.

Another name for these plants is glasswort. This from their use in making glass. The dried plants were burnt and their ashes mixed with sand and fired. Fortunately for samphires this method of glass making is not employed in Australia.

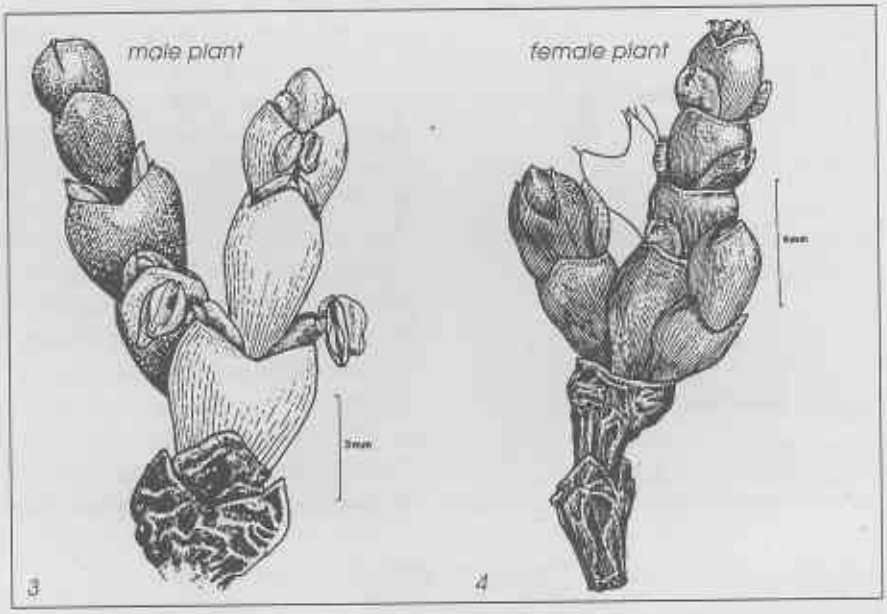
Australian samphires belong to the family Chenopodiaceae, principally to the genus *Halosarcia*. The family includes the beetroot and such native plants as the bluebushes, saltbushes, and goosefoot that are usually found in slightly saline areas. Samphires are also predominantly plants of saline areas as well as estuarine tidal flats but they reach their greatest luxuriance around inland saltlakes.



Sarcocornia. *Flowers in groups of 3-7, all fertile, with two stamens. Seeds without perisperm (the food reserve). Three species.*



Halosarcia. *Flowers in threes, all fertile, with one stamen. Seed with perisperm. 23 species.*



Tegicornia. *Plants dioecious (male and female flowers on separate plants). Flowers solitary; male flower with one stamen. Seed with perisperm. One species.*

Australian species.

In Australia there are 36 named species of samphire, of which all except 4 are found in Western Australia, while several more are

FLORA

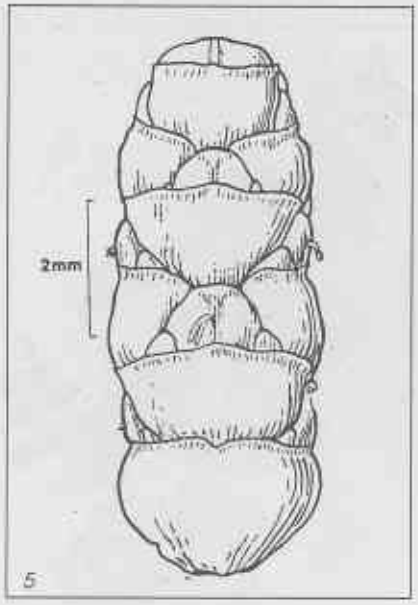
known but have not yet been formally described and, in fact, a very distinct undescribed species was discovered around some salt lakes in the wheatbelt only last year. They are divided into six genera all of which are represented in WA. This State is therefore the home of the samphire since not only does it have more species, and a greater abundance of plants, than are found in any other State, it also has far more species of samphire than in any other country in the world.

The six Australian genera of samphires look superficially similar, although a close examination will indicate some differences, but the principle distinction is in the flowers, fruits, and seeds.

Appearance

Those who have looked closely at samphires will have noticed that the young branches are fleshy and appear to be segmented. At the apex of each segment are a pair of short lobes. The segments are the internodes and the apical lobes are the free portion of the leaves. The lobes fuse at their base, pass down the internode, and surround the stem to form a cylindrical fleshy sheath. Therefore what one sees when looking at a young samphire plant are modified leaves that completely ensheath the branches. This novel leaf-form has the advantage that the surface available for transpiration is much reduced and the products of photosynthesis can be rapidly transferred to the main body of the plant.

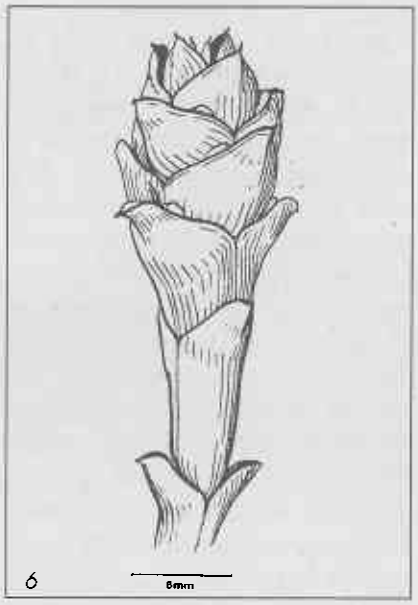
The flowers of *Halosarcia* are small and are embedded in the fleshy inflorescence axis in opposite groups of three. The calyx is succulent, there are no petals, and there is only one stamen and a single 1-seeded ovary. In some species the ripe seed falls away from the plant while in others it persists until the branch breaks off and falls to the ground, which may take many years.



Sclerostegia. *Flowers in threes, one female flower with a male flower with one stamen united to it on each side. Seed with perisperm. Five species.*

One species, *Halosarcia indica*, is found along parts of our tropical coast and also around the coasts of other tropical countries that border the Indian Ocean. It is a prostrate perennial plant that appears to produce only female plants, although it is possible that the male plant is so inconspicuous that it has not been observed. All other species of *Halosarcia* are found only in Australia and their flowers are bisexual.

While *Halosarcia* plants are nearly all adapted to saline habitats, and in most the sap has a high salt content, the closely related genus *Tecticornia* is found in inland fresh-water clay pans, and while *Halosarcia* species are shrubs or herbaceous perennials, *Tecticornia* species are erect annuals or biennials. The flowers of *Tecticornia* are in groups of 3 or 5 in opposite bracts that are free from each other while the calyx consists of two laterally placed succulent sepals that are also free from each other when mature. The ripe seed is relatively large and eventually falls from the inflorescence along with the sepals and bracts.



Pachycornia. *Flowers as in* Sclerostegia *but sunken into a wooden stem. One species. Very rare in WA.*

Food value

In Britain the young succulent branch tips of coastal species are still collected and used as a pickle or are cooked and eaten with fish. Charles and Diana are recorded as breakfasting on their wedding day on samphire that was collected from the Crown estates in the Norfolk marshes, but as to what recipe was used, and whether they enjoyed the dish, we do not know.

The fleshy tips of some coastal Australian samphires can be eaten if suitably prepared but for real nourishment one has to turn to the seed. This seed is most easily obtained from *Tecticornia* species, and these, being so rare, are now seldom used for food. However, until quite recently aboriginal groups that had a *Tecticornia* claypan in their territory would gather together when the seed was ripe and hold a corroboree while at the same time living off the samphire crop. They gathered their harvest by using a wooden collecting dish over which they would shake the *Tecticornia* branches and out would come the bracts, sepals and seed. In

continued on page 8

FLORA

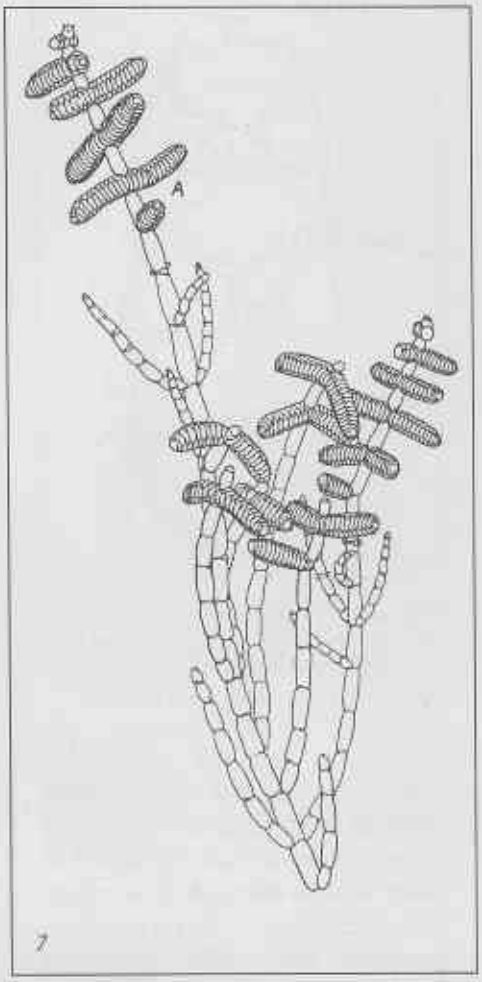
Salacious Samphires continued from page 7

a good year the seed could be gathered in abundance. It would first be winnowed by tossing in a kangaroo skin and then ground to make flour for use in dampers. The seed was considered very good tucker. Since the claypans were so far apart most aboriginal groups were aware of only one population of *Tectornia* and to this they gave a distinctive name. Near Cue the claypan, the plant, and the seed were all referred to as 'bullibulli', and in the Leonora – Laverton area as 'kurami', both of these sites held *Tecticornia arborea* which has a smooth egg-shaped seed. In the Rawlinson Range district *Tecticornia verrucosa* was used where it was called 'mungiba', this has a lens-shaped seed. William Moyle, who visited the Warburton to Rawlinson Range area in 1958 recorded that "the fleshy bulbs containing small seeds are eaten directly from the plant and have a pleasant, slightly salty flavour".

The seeds of many samphires are eaten by birds. The orange-bellied parrot on its annual migration from south-west Tasmania to the coasts of South Australia and Victoria, has as its preferred food source one small remnant patch of *Halosarcia halocnemoides* in Pt Phillip Bay. Unfortunately the patch is on land owned by a chemical company which may wish to extend its activities into the samphires. In WA the hard fruits of several *Sclerostegia* species are eaten by parrots, and probably by other birds. In fact the fruit of *Sclerostegia disarticulata* is particularly adapted for bird consumption since it can be freely removed from the spike when ripe.

Cultivation

In Mexico, California, Kuwait, and Saudi Arabia experimental plantations of samphires are currently the vogue since their cultivation does not require fresh water. The samphires are planted in fields similar to the manner in which rice is grown but they are irrigated with sea water. The whole plant can be harvested for hay or the crop can be first threshed and the seed crushed for its oil. If used for hay, since it has a high salt content, it is first passed through rollers which squeeze out the salty sap before being dried and fed to stock. Similar experimental plantations are to be found in Victoria where some of our native species are being tested. At this stage it would appear that the total cost of producing samphire hay, which includes irrigation with sea-water, harvesting, and crushing, does not compare favourably with the cost of making conventional hay, although the protein content of samphire hay (with the included seed) is higher.



Tecticornia. *Flowers in threes or fives; sepals 2, laterally placed; stamen one. Bracts free from each other. Seed with perisperm. One species.*

Salinisation

One's first assumption is that with the increasing salinisation of our wheatbelt lands the samphire population will expand, and while this is probably correct it only applies to a few species. Most of our samphire species appear to occupy rather narrow ecological niches and they are not able to withstand a surge in salt content of the soil. This may result in the loss of several species and the concomitant extinction of other life forms that occupy the same environments.

When you next pass a samphire patch take time to look at the plants, study the flowers, see how many different species are present, observe where they grow in relation to each other, and find out which genera they represent. If you persist, in time you also will become a lover of samphires, and the title of this article may then be appropriate.

Paul Wilson is a consultant botanist at the Herbarium. He specialises in the taxonomy of Chenopodiaceae, Asteraceae and Rutaceae, among others. He can be contacted on ph. 9334 0509.

***Illustrations**: 1 & 2 by Margaret Wilson from 'Native vegetation of estuaries and saline waterways in south Western Australia'. 1997. WRC. 3, 4, 5 & 6 by Margaret Menadue or Bryony Wilson from 'A revision of the Australian species of Salicornieae (Chenopodiaceae)'. 1980. Nuytsia, 3. CALM. 7 by Margaret Menadue from 'Flora of Australia' Vol 4. 1984. AGPS.*