

# GLASSWORT

## — A SALT-LOVING PLANT

by R. E. REDMANN\*

While driving through the prairies most people at one time or another have noticed a reddish tint to the shorelines of many of our saline sloughs. Those curious enough to examine more closely probably have found a strange little succulent and leafless plant, glasswort (*Salicornia rubra*). The species name, *rubra*, is Latin for red, and during the latter portion of the growing season the name is very appropriate. The common name, glasswort, is also apt, since the succulent stems have a glassy appearance and tend to crunch under the feet as if one were walking on delicate crystal.

Our species is a relative of a number of species of *Salicornia* found along the seacoasts of North America. An especially close relative is samphire (*Salicornia europaea*) which can be found in the salt marshes of both the east and west coasts of North America.

The culinary value of the samphire was recognized by the early settlers who recalled using the European samphire as a salad, pickle or pot-herb. Euell Gibbons discusses the use of samphire for food and includes his personal recipe for samphire pickles! I have substituted glasswort in the recipes and found the results quite palatable.

Glasswort adds a salty tang to a

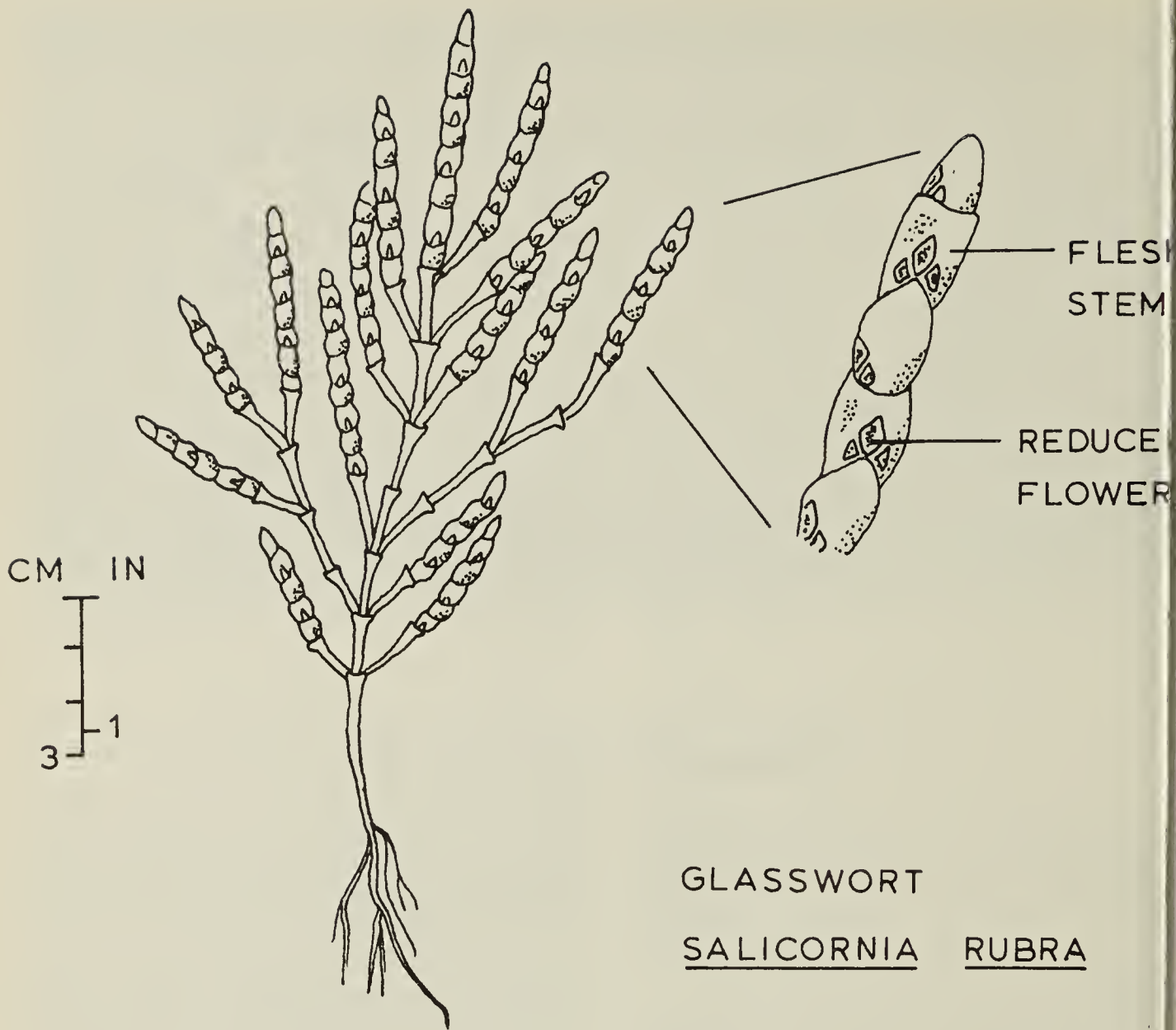
tossed salad, and the glasswort pickles are a unique treat. I have not bothered cooking it up as a pot herb — it is a member of the spinach family (*Chenopodiaceae*) and I have never overcome my childhood dislike of that vegetable. Whether the flavour is similar or not I cannot say.

The salty taste of glasswort is a simple clue to the intriguing physiology and ecology of this species. It is one of the most salt tolerant plants to be found in the whole world. In the saline sloughs and lakes of the prairies it is found closest to the center of dry saline depressions where no other vascular plant can grow. Salt concentrations as high as 5 percent have been measured in soils where glasswort grows; one can frequently observe salt crystals around the base of the plant and a white salt crust on the soil surface between the scattered plants. (The most important salt is sodium chloride, common table salt.) As the salinity decreases away from the center of the saline area, distinct bands of vegetation dominated by other salt-tolerant species can be observed: sea blite, *Suaeda depressa*; salt-grasses, *Puccinellia nutalliana* and *Distichlis stricta*, and a few others.

The question of just how plants such as *Salicornia rubra* are able to tolerate extremely high levels of salts has been studied by botanists for many years. The approach of the plant is basically to fight fire with fire, or more precisely, to fight salt with salt. The

---

Department of Plant Ecology,  
University of Saskatchewan, Saskatoon.



salty tang of the plant indicates that glasswort accumulates salt in its tissue. It does this in order to maintain a proper gradient for water uptake. Salts dissolved in water decrease the ability of water to diffuse. An ordinary plant growing in saline soils could actually lose water to the soil because the activity of the water in the plant (i.e., its ability to diffuse) is greater than that in the soil. The plant wilts and then dies of drought. Glasswort gets around this problem by accumulating salts until the balance is such that water must diffuse into the plant. Salt contents as

high as 30 percent have been found in the tissue of plants like glasswort. This is not the complete solution to the problem, however. Too much salt disrupts the functioning of ordinary plant cells by disturbing enzymes (the compounds basic to the chemistry of life). Glasswort has evolved enzymic systems that are tolerant of salts, and also has the means of localizing salt by accumulating them in out-of-the-way corners of the cells and tissue. The stored salt may eventually be eliminated by simply shedding shoot segments where it has accumulated.

These are the basic problems of salt tolerance in plants. Of course the actual mechanisms are much more complex than I have indicated — plant ecologists and physiologists are still trying to understand them fully. Think about the problems of salt tolerance again when you eat your glasswort salad or munch your samphire pickles.

#### Recipe for Samphire (Glasswort) Pickles<sup>1</sup>

Wash freshly picked glasswort. Pack in pint jars with stems straight and vertical.

Make a pickle of: 1 qt. vinegar, 1/2 cup sugar, 3 tablespoons mixed pickling spices, 1 slice onion and 6 bayberry leaves.

Boil together for 10 min. Pour boiling hot over glasswort until jars are full. Seal and store 3 weeks before broaching.

<sup>1</sup>Euell Gibbons, *Stalking the Blue-Eyed Scallop*, David McKay Co., Publ., N.Y. 1964.



## TADPOLE SHRIMPS IN BEAVER CREEK, SASKATCHEWAN

by JOHN R. LAWRENCE\*

Tadpole shrimps (Class Crustacea, Division Eubranchipoda, Order Notostraca) are characteristic inhabitants of temporary ponds and pools. They are not considered to occur in large water bodies and flowing systems. Two specimens of *Lepidurus ouesi* (Packard), were found in a flowing stream, Beaver Creek, Saskatchewan, about 10 miles south of Saskatoon, on June 28, 1974. (Figs. 1 and 2) This observation is noted and the life history of the Eubranchipods — tadpole shrimps, fairy or brine shrimps and clam shrimps are discussed, based on Pennak except where noted otherwise.<sup>6</sup>

Tadpole shrimps get their name from their resemblance to tadpoles when swimming. According to Pennak, they may be gray, blue, green, and orange or reddish. Green and reddish tones predominated in the collected specimens. Colour is largely dependent on the food ingested.

Notostraca have sessile, compound eyes, a large shield-like carapace covering most of the body, and 35 to 71 pairs of legs (Fig. 3). Neither the number of legs nor the number of segments is constant within a species.<sup>4</sup> The head forms a well defined body region; the trunk however, is not clearly divisible into thorax and abdomen. So difficult is it to define segments in these shrimps that they are referred to as to body rings.<sup>4</sup>

---

\*Department of Biology,  
University of Saskatchewan,  
Saskatoon, Saskatchewan.