On Perth's doorstep, seaweeds in the Swan-Canning Estuary

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Mr. Editor,

I, as a citizen, felt extremely obliged to you last week for calling the attention of the Inspector of Nuisances to the fact of the existence of a large collection of seaweed in the river near Mill Street jetty, from which arose a most abominable stench, to the annoyance of the dwellers in the neighbourhood and even to many residing as far back as Murray Street.

'Perthite.'

As can be seen from the above, the seaweeds of the Swan-Canning Estuary have not always been viewed in a favourable light. Being relatively simple plants, many react to increased nutrient input, such as can often be found in waterways adjacent to suburban or industrial areas, by rapid growth, typically followed by accumulation on shorelines and the 'abominable stench' as it decomposes that so annoyed the correspondent. In 1922, options presented to ameliorate this problem included dredging the estuary to increase the depth, regular gathering and disposal of algae that has accumulated on the shoreline, and, rather drastically and thankfully only proposed as an emergency measure, to 'kill the algae growths throughout the shallow waters and to prevent them from prolific development by means of chemical treatment'. These beliefs prompted Bob Royce of the Western Australian Herbarium to come out in defence of algae in a 1955 report: 'It cannot be too strongly emphasised that algae are essential to the river, and without them life in the river would cease. The rotting of their organic remains is just as natural as is the decay of gum leaves in the forest.'

Thankfully education, better management of effluent, and awareness of the importance of algae has prevailed, and the Swan-Canning can be regarded as a relatively healthy waterway, certainly given its proximity to a major city.

Over the years there have been several studies documenting the species that are found in the estuary, beginning with lists reporting seaweeds only incidentally, and the report by Royce in 1955 that listed 21 species. The most significant of works was that by Bruce Allender in 1981, who listed 63 species. Allender's study incorporated seasonal observations, and noted how the presence of some species waxed and waned as the winter rains diluted the estuary's water. Some of the species names used in the Allender study are no longer current, but fortunately his specimens were lodged with the WA Herbarium and can be re-examined and updated. Comparing the older specimens with more recent collections also gives an indication of how the estuary's flora might have changed over the decades.

One outcome concerns a species of the red algal genus *Gracilaria*. This species was described by Royce (1955) as '… the most abundant, and grows thickly over the river bed'. Initially the estuary's species was called *G. confervoides*, a European species, then a succession of names, none entirely appropriate. Finally in 2023 a DNA sequence study revealed that the estuary's *Gracilaria* matched the New Zealand and eastern Australia species *Gracilaria transtasmanica*. There is no suggestion that this is an introduction, as the species is known from the Perth region based on reports dating back to 1855, and specimens in the Herbarium from the 1940s.

DBCA scientists are surveying the estuary's algal flora and re-assessing the earlier reports. We now have close to 90 species recorded, including new additions such as the introduced *Codium fragile* (originally described from Japan), and new records of common species such as *Caloglossa leprieurii*. Adding specimens to the WA Herbarium will also allow future workers to monitor changes and assess impacts of environmental variations.

Above *Caloglossa leprieurii*, an inconspicuous red alga that shows its beauty under the microscope.
Photo – John Huisman/DBCA