



Delta Environmental Consulting

From the desk with a view...

Special points of interest:

- Parafield clam shrimp has a name
- Diatom study provides additional evidence to support the benefits of environmental flow increases in the Onkaparinga River
- Find us on Facebook!
www.facebook.com/DeltaEnvironmentalConsulting

Happy New Year!

Well 2012 is now well and truly behind us and the New Year's vista is opening up in front. Last year was a varied as usual — we were knee deep in everything from examining doline-fed salt lakes on the Eyre Peninsula to analyzing diatom distribution in the Onkaparinga estuary, working with community groups, NRM Boards and the Commonwealth's EPBC Act staff to protect salt-marshes, and clambering over huge granite inselbergs to look for clam shrimps in gnamma holes.

Summer rain had filled the gnammas on Pildappa Rock when Prof Brian Timms and I passed that way early in March. It was too good an opportunity to miss, to collect late summer specimens from the pools. Different species come to life in these temporary pools depending on the time of year that the rain falls... We were lucky to catch the pools with water in them — only three days later they were completely dry.



Prof Brian Timms chases clam shrimps on top of Pildappa Rock

All the best and happy reading!

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Peri Coleman

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We have a name!

Some time ago I captured some tiny clam shrimps in the Parafield vernal pools north of Adelaide. Getting them identified to genus was relatively simple but beyond that things quickly became sticky. Professor Brian Timms undertook to determine what these little creatures were. After an intensive review of the entire genus, he determined the Parafield specimens to be *Lynceus tatei*, the least common and the smallest species of *Lynceus* found in Australia. It occurs in a few locations on coastal plains right across southern Australia. Coastal plains are the most heavily developed areas of Australia, and have been extensively modified (drained), so the locations the species is found are no longer numerous.

Identification was hampered by the fact that there was no "type" material remaining in any Museum, and the "type" location had been drained in the 1960s so no new material could be obtained from that location, however an excellent and very detailed drawing of the "type" remained.

Brian has been able to collect some from near Penola as well as the collection from Parafield and has been able to establish a "neotype" for the species and a new type locality, and these will be detailed in a paper he is writing, which also includes a new species he found in an "unsorted" bottle from the WA Museum!



Onkaparinga diatoms



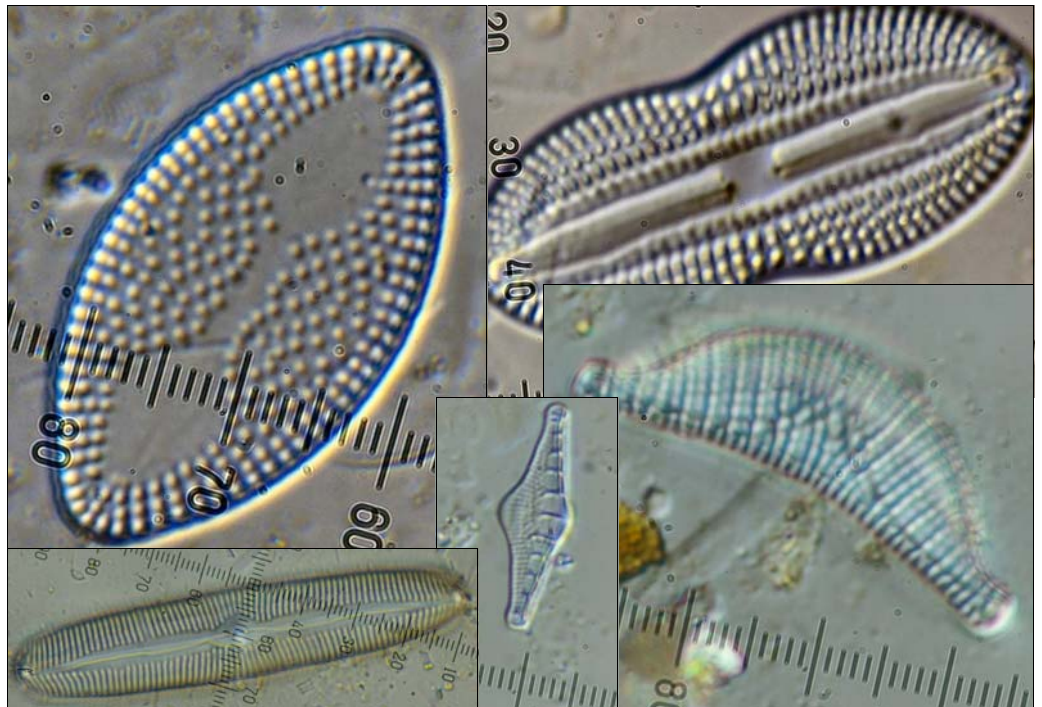
Old Noarlunga sampling site

In 2012 the AMLR NRM Board implemented increased environmental flows in several South Australian rivers. The Onkaparinga was one of these. The additional water allowed the river to develop a positive salinity gradient that was retained over the entire autumn-winter-spring period for the first time in many years. Ammonium concentrations in the river reduced, a fresh cohort of samphires sprouted along the shore, and Delta undertook a survey of diatoms along the estuary. Thomas had undertaken a survey in the mid to late 1970s, when the river had reasonable environmental flows. Many of the species he recorded had not been visible in regular water samples collected in the past few years.

One hundred and twenty-five periphytic diatom species (75 commonly encountered species) were recorded on periphytometers that were placed in the estuary for a two-week period. There was a clear order of magnitude difference in abundance between the “freshwater” site at Old Noarlunga and the other three sites, with the fresher site being the most productive. Increased productivity of the periphytic element of the habitat of the upper estuary would appear to be a positive outcome of the environmental flows trials being conducted in the river currently, as in the last few years all the upstream areas that became fresh this winter have been hypersaline.

We undertook a limited range of statistical analysis, and investigated the use of metrics such as diatom “indices” in the determination of estuarine “health”. Generic diatom indices showed potential to be a useful tool for bio-assessment of estuarine and other saline water bodies. The indices were readily able to separate out sites where organic loading to the waterway was high, where dissolved oxygen is often low and the indices also were able to detect the pH gradient that exists along the estuary.

“Increased productivity... of the upper estuary would appear to be a positive outcome...”



Collecting water samples during regular fortnightly monitoring

A set of differential interference contrast microscope photographs of all the species encountered was provided to the Adelaide and Mount Lofty Ranges NRM Board to form the basis of a diatom herbarium for the estuary, and a subset of the photographs (including the most beautiful ones!) can be viewed on our Facebook page, as an album.

<http://www.facebook.com/media/set/?set=a.537107179637548.141487.182592215089048&type=3>

Love that fresh Eyre!

When folks look at the photographs of some of the amazing sites we get to visit, they often say “And people pay you for that?!” in amazed tones. I would have to agree that fieldwork in stunning places in perfect weather is indeed a magnificent experience. It is less charming in rain or when the temperature is in the high 40’s... But our recent survey at doline-fed Seagull Lake on the Eyre Peninsula was picture perfect. Calm sunny days, clear star filled nights, soft sand under the tents to make sleeping conditions even the Princess and the Pea could enjoy.

Mind you, the deep sand had its own interesting denizens. When we packed up the expedition we found that a very large *Urodacus novaehollandiae*, or sand scorpion, had made its home under Brian Timms’ tent! It was more than 10cm long, and quite the most handsome beast.



Field camp site at Seagull Lake



Saltmarsh days...

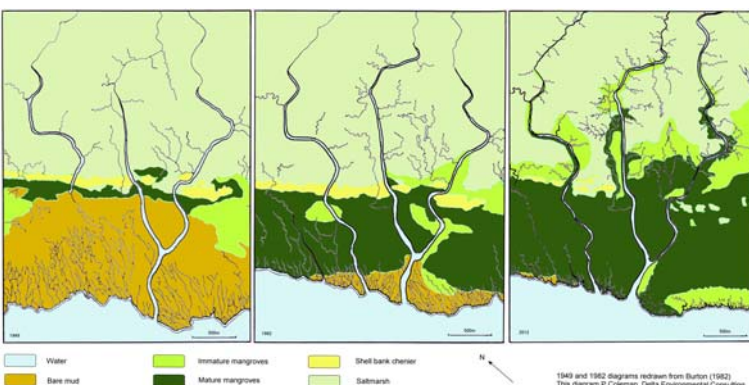
Saltmarshes were the flavor of the year in 2012. Early in the year Delta finished mapping the distribution of the endangered samphire *Tecticornia flabelliformis* along the eastern coast of Gulf St Vincent, and put together a management report that compiled all existing surveys and identified the major threats to the species in the Adelaide & Mount Lofty Ranges Natural Resource Management region.

In late autumn we were invited by the Friends of Sceale Bay Parks to undertake a samphire identification workshop at Port Lincoln. This was a really exciting day and it was inspiring to see so many folk get together with a swag of microscopes and hand lenses to master the trickier aspects of identifying samphires. The weather outside was chilly but the warmth and enthusiasm inside was wonderful.

The year wore on and Delta attended the technical workshop held by Commonwealth Environment Australia staff, who are developing a Conservation Advice for the Minister on *Subtropical and Temperate Coastal Saltmarshes*. The Conservation Advice will, hopefully, recommend that this ecological association be protected under the auspices of the Commonwealth *Environment Protection and Biodiversity Conservation Act*.

“... and quite the most handsome beast”

Galloping mangroves



For those of you talking to people who think sea level rise is not happening, here is a picture you can show them. These mangroves at the River Light don't read the papers, but they are not hanging around while we argue about it — they are migrating inland, as fast as they can!

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Wet? Salty? Arid? Muddy?
Our element...

Delta Environmental Consulting is an independent South Australian consulting business. We offer services including sampling, monitoring and discharge monitoring programmes for waterways, tidal areas, saline lakes and wetlands, assessment of revegetation projects, flora and fauna biodiversity surveys of terrestrial, shallow aquatic (fresh, brackish and haline) and stygian habitats, site environmental surveys, evaporation basin modelling, GIS habitat change assessments, land use histories, compliance audits and research programs.

Delta Environmental Consulting has a policy of continuous improvement in the areas of :

- Providing a quality product to our clients,
- Providing ongoing training and development opportunities for our consultants (we have InSkill SA certification),
- Maintaining high standards in the areas of health, safety and the environment both within Delta and while working with our clients.

The company's quality assurance management system has been third-party certified to the international Q-base standard by The certification wing of Standards Australia, SAI Global A copy of the scope of certification is available on request.



Directions for 2013

Work in the laboratory has taken off in a rush this year and it looks as if laboratory services will be in higher than normal demand over the next few months. The lab's "bread and butter" will remain regular analyses of water samples from the Onkaparinga estuary, along with discharge analyses for several winemakers and hypersaline samples from solar saltfields, but we hope to extend our testing to include samples from several other South Australian estuaries this year.

The lab offers a fairly narrow range of analytes, but its turnaround times are fast, so if you are looking for a local laboratory, check out the parameters, methods and method resolutions we offer online, at <http://www.deltaenvironmental.com.au/index.php?p=testing>

Another field trip to the Eyre Peninsula is planned for this winter. Brian Timms and I have won a small grant from the Royal Society of SA to continue the study of Seagull Lake. The replacement vehicle for the old green Mitsubishi utility should come into its element for this project — it is a converted Mercedes commercial van kitted out as an expedition vehicle, with camping and work space inside as well as an awning to make an outdoor work area. No sand scorpions under the tent this time round!

Queensland also calls, with several trips scheduled to the solar saltfields of the Fitzroy River delta. The impacts of recent flooding on these facilities is still being evaluated, but looks to be significant.

And, as I said last year, we have our novice Facebook page up and running. Let me know if there is anything you would like to see on the page. We also have albums of photos linked to the page, including field trip photographs, samphire species photos, the flora of the delta of the Ai Sissa in Flores, diatoms from the Onkaparinga. Log in and leave a comment!



Field filtration kit for chlorophyll