

# The North-Eastern Naturalist

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**IT IS THE MISSION OF THIS CLUB to encourage the study, appreciation and preservation of our natural and cultural environment, the animals, plants, geology and landforms, including those of the coastal and marine areas in the North East region of Tasmania.**

**The Club conducts outings on the second Saturday of the month.**

## **DECEMBER 8th**

### **BLUE TIER WALK / CAMP / END OF YEAR CELEBRATION.**

There are many walks on the Blue Tier and we propose to make a decision once we are there about which one/ones we will do. The grading will be "easy" for most of the choices, although the Mt. Michael choice is graded "medium". This outing is more of a social end-of-year-get-together. We will meet at Poimena at 10am, do some walking, then have a mid-to-late-afternoon barbeque. Bring own food/drink. Some will be camping the night, all are welcome to join us. Contact person: Lou.

## **FEBRUARY 9th**

### **JUST MOSSING AROUND—PARADISE PLAINS.**

Sean Blake retired Assessor for Forestry Tasmania will lead this walk to see moss fields and interesting forest. Grading is of "medium" difficulty, it will be a "bit scrubby" with no formed track, a distance of about 3km total on reasonably level ground. Meet at the Ringarooma Swimming Pool at 10am. Contact person : Ross

## **MARCH 15th & 16th**

**Note, this is not our usual monthly outing time.**

### **LAKE AUGUSTA—CENTRAL HIGHLANDS.**

The Tasmanian Field Nats., Hobart are hosting this Federation Weekend Get-together and we thought we would call it our outing for the month. They have booked the Tiger Hut at Liaweenee where the cost will be \$15-20 per person per night. There will be outings on both Saturday and Sunday and a talk or lecture in the evening. It's a wonderful opportunity to have this fascinating area interpreted whilst staying in sheltered accommodation. It is important to register an interest with the Secretary as it'll be first in who get the beds. Details will be sent to those interested as they are received from Hobart. Contact: Lou. You can do so at any time by phone or email. Contact person : Lou.

Please note !! Subscriptions were due in August, but because the weather hampered attendance at the A.G.M., not many members have renewed their subs. If there is a red dot on your address, your membership has expired. Subs can be paid at the next outing or posted to the treasurer Ross Coad, P.O. Box 275, Scottsdale 7260.

## REPORTS and NEWS.

### Opinion.

Its hard to find positive stories to fill a newsletter like ours. The newspapers and other media are full of the disappointing stories about abuse of environment.

“Daily, we are hearing stories about ecosystems and water catchments being trashed by personal and corporate greed.” says Fran, whose words I found on the Blue Tier website.

“Coming together as a cohesive community group takes the edge off feelings of impotency and despair.”

Some of us experienced brief moments of that recently along with 12 000 other people at the rally and march in Hobart. And hopefully, its what groups like ours is all about, too. L.B.

### Another sad story

I was working with a group of children at school a couple of weeks ago and someone came in and said “we’re going to see a spotted tailed quoll”. Naturally, I went too. I must admit I thought we were going to see a live one.

Standing in front of the class with a rabbit trap in his hand, was Scott Reader who works with Parks, and who by chance is the father of two children at our school. In front of him, laid out on a bench was a spotted tailed quoll. Dead.

He proceeded to tell the story of the quoll. It had been caught in the rabbit trap a few days before. It had dragged the trap into a barn, where a neighbour had found it with its leg almost severed.

It was such a vivid experience for those kids. They were mesmerised as Scott told them the story. Their questions indicated a real concern. And he was able to use them to educate their parents. It served to remind me of the importance of first hand experiences to make a difference. L.B.

### Parks Office Opened in Scottsdale.

It is heartening to see that Parks’ staff are becoming more accessible to the people of the North East. An old building has been refurbished in Alfred Street and is now used as a Parks and Wildlife office. It is open Wednesdays.

### The EucaFlip

Rob Wiltshire and Brad Potts of The School of Plant Science at UTas in conjunction with the CRC for Forestry have produced this life-size guide to the eucalypts of Tasmania. It is a portable, all-weather fold-up chart designed to be carried into the field by naturalists and botanists.

The EucaFlip enables the easy identification of all of Tasmania’s 29 endemic Tasmanian Eucalypt species. It contains life size photographs of the key diagnostic features: buds, fruit, bark and leaves.

The first step in the identification of a specimen, is to determine the maximum number of buds or capsules per umbel. This enables one to identify the group : white gums, black gums, peppermints etc. Then the adult and juvenile leaves, fruit and bark can be matched to the life-size pictures on the chart. As well as this, there is a distribution map and a silhouette of the tree’s shape.

The Flips will be extremely valuable to those who have found the identification of euc’s. formidable. They have

been distributed free to Tasmanian schools and are available from selected outlets to the public for a RRP of \$9.95.

### Bar-tailed Godwit’s Marathon Flight.

E7 - a female Bar-tailed Godwit fitted with a satellite transmitter at Miranda in New Zealand on February 6th returned to the place of tagging on the evening of September 7th after a logged flight of 29,181 kilometres and 500 hours of flying time.

During that time, she flew to the Yellow Sea, where she stayed for five weeks before flying to Alaska to breed, then flew 11,570 km back to her regular non-breeding site in New Zealand in about 84 days.

After disappointing results with satellite tracking in previous years - mainly due to battery failure - researchers are excited about the latest results. The improvement in technology now paves the way for studies of other migratory shorebirds for which we know very little about their migration routes and staging areas.

Source:www.shorebirdnetwork.org

### Burn-off - Meander

It’s the 6th November as I write this and Gunns/Forestry Tas. Are about to burn 400 acres of windrowed logs and stumps that was the habitat of the threatened spotted tail quoll. The site also contained *Eucalyptus ovata*, *E.viminalis* and *E.rodwayi*, all requiring 100% reservation under the Regional Forest Agreement.

This burn-off is in breach of the quoll remediation plan forming part of the dam permit, and will also cause an environmental nuisance with its emissions, another breach of the Environmental Protection conditions imposed on the dam.

In the light of all this, we have little hope expecting adherence to conditions laid down for the pulp mill.

### The Devils at South Sister.

Devil scats and dens have just been discovered at South Sister, St. Mary’s within Forestry Tasmania’s coupe boundaries.

Conservationists are calling for the Forest Practices Authority to rescind the Forest Practice Plan for South Sister until such time as a recovery plan for Tasmanian Devils is completed.

As a species, the devil is at high risk of becoming extinct in the wild, and should be protected by the Threatened Species Act 1995.

### “Recherche Bay Protected Forever”.

This was the heading atop the spring newsletter from the Tas. Land Conservancy. It was announcing the gift from Dick and Pip Smith of an additional \$1.37 million towards the acquisition of the land at Recherche Bay.

This gift concludes the fund raising campaign for the purchase of the reserve, by reducing the balance of their interest-free loan to zero.

The north-east peninsula of Recherche Bay is one of 70 sites in Australia listed for their significance to the nation’s heritage. The area played host to French scientific expeditions in 1792 and 1793 and was the site of Tasmania’s first European garden, significant botanical work, and extraordinarily friendly meetings between French explorers and local aboriginal people. It also has

## REPORTS and NEWS.

important natural values, providing an extension to the adjacent conservation area, a wilderness context for Recherche Bay, old growth forests, and an active nest site for white-bellied sea eagle.

Dick and Pip's outstanding generosity began in early 2006 following a long running community debate about plans to log the private land. When the owners agreed to sell the property to the community Dick and Pip offered to underwrite the project, making an initial gift and an interest-free loan.

Senator Bob Brown was instrumental throughout by bringing the history of the area to the attention of the public, and playing a key role in negotiating the purchase of the property and the campaign to raise funds. Senator Brown's generous personal gift and leadership provided inspiration to many of those who donated.

To date over 1000 people have contributed towards the acquisition of Recherche Bay. The Tasmanian state government also provided assistance with the acquisition by providing funds towards the purchase, to offset stamp duty, and to assist the TLC with administration.

For twelve months now, a dedicated community reference group has been assisting the TLC in forming a Management Plan which specifies the land be managed similarly to a National Park. Limited recreational access will be considered, ensuring that the values of the reserve are not compromised.

Source: TLC Newsletter, Issue 14, Spring 2007.

### **Biodiversity Hotspot**

Australia is one of 17 countries described as mega-diverse. These countries make up less than 10 per cent of the planet's surface, but support more than 70 per cent of the biological diversity on earth. Within Australia, Tasmania's midlands is one of 15 recognised biodiversity hotspots and is particularly renowned for its endemic grassland plants.

These habitats and the many species they support are becoming increasingly rare. Grassy habitats that once covered nearly 100,000 hectares in the region now cover less than 10,000 hectares, and few remaining areas still retain their original species diversity.

Some of the plants which are now confined to only a few locations are: the black tipped and Lindley's spider orchids, the grassland paperdaisy, grassland Candles, the dwarf, the sandstone and the silky bush-pea, and various lilies, tiny legumes, greenhood orchids and sedges.

One of the TLC's latest projects is to support landowners in the midlands to place conservation covenants on their land and thus protect the biodiversity of these endemic grasslands.

Source: Tasmanian Land Conservancy Newsletter, Issue 14, Spring 07

### **Heavy Metals in the Derwent.**

It's no secret that the Derwent sediments are contaminated with heavy metals, but in July a Derwent Estuary Water Quality Improvement Plan for Heavy Metals was released. The Plan concluded that any disturbance of contaminated sediments could result in further damage to the estuary. Dredging and other sediment disturbing activities should be undertaken only where absolutely necessary.

Heavy metal levels in Derwent estuary shellfish are already in excess of Food and Safety Australia and New Zealand guidelines.

The Derwent Estuary Program which has had the plan prepared, has also released a leaflet warning about heavy metal

levels in marine life.

However, the estuary is slowly improving its health, and a canal estate at Ralphs Bay, where the sediments are among the estuary's most contaminated, would not only impact on the estuarine environment, but on the health of people who consume marine life.

### **Planting Natives ?**

There are many native plant nurseries in Tasmania. My favourite has always been the Plants of Tasmania Nursery at Ridgeway in the foothills of Mt. Wellington. They stock the largest range of Tasmanian native plants available.

There are the Redbreast Nurseries at Margate and Flowerdale. The Lesley Vale Nursery has Tasmanian and Australian plants and also has a stall at the Salamanca and the Kingston Markets.

And there's even the Scented Grove Nursery which specialises in scented and native plants. It's at Crabtree.

In the north and a bit closer to us at Liffey, is Habitat Plants who also specialise in Tasmanian Natives.

The Northern Group of the Australian Plants Society has a nursery at Lanena, near Exeter. Ring 63 944600 before visiting.

### **Use of Grey Water in the Garden.**

A couple of interesting points were made about the use of grey water on gardens by Kevin Handreck in an article printed in *Eucryphia*— the Newsletter of the Australian Plants Society recently.

The damaging components of laundry detergents are sodium, phosphorus, high alkalinity, and some may even contain boron. Powders quite often contain a lot of sodium and may eventually wreck the structure of the soil, so it is suggested liquids should be used to avoid that.

What happens with repeated applications of sodium to the soil, is that the sodium displaces the calcium and magnesium. The soil sets into hard clods when drying and hard crusts form on the surface when the soil dries, thus reducing the rate of infiltration of rain-water.

On this Lanfax Laboratories Website, can be found a list of the detergents containing the most and least sodium, and the analysis of the research conducted by the lab.

[www.lanfaxlabs.com.au/sodium.htm](http://www.lanfaxlabs.com.au/sodium.htm),

Source: *Eucryphia* Volume 17 No. 6 July 2007.

### **From the NorthEast Bioregional Network Website**

The group based around the St. Helens district is at present documenting cases where Forestry Tasmania, the Forest Practices Authority and the Threatened Species Unit are allowing destruction of threatened species and their habitat.

Their concerns include:

- Ongoing clearfelling and conversion of *Eucalyptus regnans* forest which has been severely depleted in the Ben Lomond Bioregion (30% in the last 10 years).
- Poor *Phytophthora cinnamomii* (root rot/dieback) management practices in PC susceptible forests and its potential impact on understorey species.
- Woodchipping of old growth *Eucalyptus amygdalina* (Black Peppermint) and *Eucalyptus sieberi* (Ironbark) forest.
- Logging of known Swift Parrot habitat
- Clearfelling and conversion of prime habitat for the threatened Simsons and Bornemisszas Stag Beetle and the Giant Velvet Worm.

Coastal Issues

## QUARRY RESERVE—BRIDPORT

This bush reserve of about 280 hectares is bounded by the Brid River to the south, 'Umtali' and Port Hills to the west, Sandy Points Road to the north and the southern part of the town of Bridport to the east.

Much of it consists of dry forest dominated by Black Peppermint, *Eucalyptus amygdalina*; stringybark, *E. obliqua*; Bulloak, *Allocasuarina littoralis* and some White Gum, *E. viminalis*—often with an understorey of sword sedges, but sometimes with a heathy understorey. There is a profusion of beautiful Native Cherry trees, *Exocarpus cupressiformis*.

Amongst the heaths are Wedding Bush, *Ricinocarpus pinifolius*; Common Heath, *Epacris impressa*; Sweet Scented Wattle, *Acacia suaveolens*; Myrtle Acacia, *Acacia myrtifolia*; Parrot Pea, *Dillwynia sericea*; Showy Bossiaea, *Bossiaea cinerea*; Pink Beard Heath, *Leucopogon ericoides*; Black-eyed Susan, *Tetradlea pilosa*; Erect Guinea Flower, *Hibbertia riparia*; Smooth Parrot Pea, *Dillwynia glaberrima*; Bundled Guinea Flower, *Hibbertia prostrata* and Creeping Heath Myrtle, *Eurymyrtus ramosissima*.

Orchids seen in the reserve include the colourful Tiger Orchid, *Diuris sulphurea*, and the Eastern Wallflower *Diuris orientis*.

Poorly drained flats contain Swamp Gum, *Eucalyptus ovata*, and Blackwood, *Acacia melanoxylon*. Riparian verges have Dogwood, *Pomaderris apetala*; Swamp Paperbark, *Melaleuca ericifolia* and Silver Wattle, *Acacia dealbata*.

The endemic grasstree, *Xanthorrhoea bracteata* [a trunkless species] which is classified as vulnerable and the Juniper Wattle, *Acacia ulicifolia* which is rare in Tasmania, are features of the reserve. The Rough Tree Fern, *Cyathea australis* occurs in at least one gully. Sea Eagles, often seen over Bridport, nest in this reserve.

Few people visit the Quarry Reserve. It is the haunt of unscrupulous people such as firewood harvesters, who illegally fall trees, rubbish dumpers, builders of illegal huts, trail bike riders and hooners who dump and burn unwanted vehicles. The reserve is unallocated Crown Land and although it is nominally under the control of Parks and Wildlife, it receives no supervision. Recently, an illustrated dossier was given to Parks and Wildlife Service Rangers documenting the state of the Reserve.

On September the 8th, twenty four members and visitors undertook a six kilometre walk through the reserve to view the desecration wrought by 'traditional' bush users and to assess its potential for walking, mountain bike riding and field naturalist activities. Some trail bikes were seen, including one ridden by an adult with a toddler perched on the petrol tank.

M.D.

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"Be prepared for a bit of a surprise" Mike says in preparation for this walk. We are in the car park hearing some of the tales and a little about the history of the reserve. We get no further than twenty metres along the track and we are in the thick of it, rubbish lining both sides of the track. A pile of builder's rubble to the left, pieces of broken up cement path to the right. Further on, a heap of garden waste, then a mattress and after a while we come across a pile of scallop shells.

Mike takes a sudden turn at a fork in the track. "There's something up here I want to show you", and after a couple of hundred metres we come to 'the ritz' - an open-air cubby complete with an old car seat and a table. This is pretty organised!

Tongues are really wagging now, there's a real buzz of conversation. There is disagreement. Some are aghast at the way the council has turned a blind eye to this mess and we all seem to agree that the dumping of rubbish here should be banned. But many of us are remembering the places we played when we were young and even wondered whether a part of this reserve could be set aside for kids and their 'cubbies'. Its obvious the kids have had parents' support. Isn't that a positive thing?

And so the discussion went on. On past the dumped and burnt out car bodies, on past the pile of kangaroo carcasses swarming with flies, on past trees cut down for firewood, on to a significant shelter bigger than would be legal to build without permit and displaying the number plates of the dead cars. Welcome to "Hoonsville."

Luckily we didn't have to share the space with the pack of three domestic-gone-wild-dogs who paused briefly to observe us. Mike took us to a beautiful spot on the Brid River, where momentarily we could put aside the concerns of the morning and relax a little for lunch.

L.B.

## the ORCHIDS of MT. CAMERON.

Plants are slowly, ever so slowly colonising the slopes of Mt. Cameron. after the fires of last summer. Debbie Searle, our leader for the day had seen hundreds of leaves during her many walks there throughout the year. Its always difficult to plan an orchid hunt, and in the end you just see what's there. Those who keep records of what orchids they see where and when, can really only use them as a guide. The book\* talks about flowering times in terms such as: "early spring" or "late autumn", but Tasmania's topography and climatic conditions are so diverse that the 'peak' flowering times quoted in the book are not a useful indicator at all. And just lately, our seasons are even more unpredictable .

Orchids are influenced just like all other plants, by habitat, soil type and drainage. Most of our orchids occur in the dry sclerophyll forest, and in our heathlands and grasslands. They don't grow in saltmarshes, aquatic and littoral habitats and very few species are found in rainforest and buttongrass.

The dry sclerophyll is one of the richest orchid habitats with 25 of the 29 Tasmanian genera represented and about 100 species recorded from there. We should expect to see representatives from the *Acianthus*, *Caladenia*, *Pterostylis* and *Thelymitra* genera amongst many others. Because this habitat is particularly fire-prone most of the orchids in it are either fire-tolerant or respond with abundant flowering for the next and the following couple of seasons.

Debbie has decided to take us to two different areas, both dry sclerophyll sites, one slightly wetter than the other.

It takes a while to 'get your eye in' especially if the world of orchids is an unfamiliar one. We were delighted to have some new members with us this day and their excitement was catching. It wasn't difficult to spot the purple *Glossodia major*, Wax-lip orchid as we walked down the track towards the little waterfall. Soon after that there was *Acianthus caudatus*, the Mayfly orchid. Its cousin *Acianthus pusillus* the Mosquito, could be seen growing amongst the mosses. It was a B.F.G. though – bit far gone—its old flowers shrivelling on the stem.

The one orchid we expected to see here, considering all the circumstances, was the Fire orchid. Sometimes called Red Beaks, *Pyrorchis nigricans* has a strong flowering response to fire and disturbance. Its name is derived from pyr [fire] and orchis to indicate orchid. Although its leaves were common here, and its flowering time is scheduled for September to November, we didn't see a single flower.

A feature of the granite country and in full bloom here, is the Streaked Rock Orchid, *Dockryllia striolata*. It grows on the granite boulders and rock faces on east-facing sites so that the plant is exposed to moist winds. As it is not in direct contact with the soil, its roots spread into the rock crevices, and its round, tapered, leaves are fleshy in order to store moisture. Its spectacular !

Just 500 metres away, but in a slightly wetter gully than the one we were in before lunch, we saw five different orchids. Although only leaves at present, there was the Autumn Bird Orchid and the Helmet Orchid which both flower in the autumn. At the base of some of the large boulders, there were Nodding Greenhoods. In the more open Eucalypt forest were the striking yellow Eastern Wallflower *Diuris*, *D. orientis*, with its colourful yellow double tail. This orchid is another which is known to be strongly promoted by fires yet not dependent upon them.

I'm told by the serious orchid spotters that its permitted to allow leaves in the official 'count', as long as they have been identified positively. So if that's the case, I think we can include the new stem of the Hyacinth Orchid, *Dipodium roseum*. With no leaves, this brownish stem rises straight out of the ground like an asparagus and then blooms with 15—50 pink flowers in a loose open raceme.

Last of all the gnats. At first we only saw one or two, for their flowers are small and a fairly inconspicuous greeny-brown colour. Those gnats. with the better eye-sight spotted a whole colony under some fallen branches. They grow in colonies resulting from the formation of new tubers at the end of long slender roots. They are very similar to the Mayfly and the Mosquito all named in the early 1800's by Robert Brown, for their insect-like appearance.

Thanks Debbie, for an enjoyable day. We welcomed some new members that day, and the relaxed manner in which you led the walk gave us a great chance to get to know them. Welcome to our midst Fran, Jenny, Roz, Bill and Robert.

\* The Orchids of Tasmania, Jones, Wapstra, Tonelli and Harris. [definitive text]

## REPORTS and NEWS.

The North East Bioregional Network is putting in a submission and will be attending hearings, opposing the rezoning of land for urban development at Scamander. A hearing will be conducted by the Resource Planning and Development Commission (RPDC) later this year.

The land is of great scenic significance being located on the Scamander river. There is already a large surplus of subdivided and urban zoned land in the area. The North East Bioregional Network opposes urban sprawl and ribbon development in the coastal zone. Local and State Governments continue to support coastal development at any cost and in contravention of their own Planning Schemes and State Policies with recently approved East Coast developments such as Solas (near Triabunna) and Musselroe (near Mt William National Park).

The State Coastal Policy review is still to be completed. Tasmania is running out of time to enact legislation which will protect the coastline.

### Mining.

Break O'Day Council has been mining in the Mt. Pearson State Reserve. The North East Bioregional Network and the Bay of Fires Coastal Preservation Lobby have succeeded in pressuring Mineral Resources Tasmania to act on this environmental disaster. The Council has completed a rehabilitation plan for the illegal quarry and must comply with a number of conditions. Problems with the quarry go as far back as 1991. The aim is to incorporate the revegetated quarry back into the Mt. Pearson State Reserve.

Source: [www.northeastbioregionalnetwork.org.au](http://www.northeastbioregionalnetwork.org.au)

### Buried book brought to life.

A chance discovery has helped ensure the publication of an historic Tasmanian manuscript more than half a century after it was written.

Three years ago the unfinished manuscript was discovered among the papers of the late UTAS Professor of Botany, Bill Jackson.

The Tasmanian Herbarium and the University of Tasmania's School of Plant Science combined to publish *Janet Somerville's Botanical History of Tasmania [1642—1820]*

Janet, who was born in Lilydale in 1887 and was one of the first students to study botany at the University, started work on the manuscript in 1958, but died before it could be published. Dr. Winifred Curtis also attempted to publish the book during her retirement years, but, unfortunately, she did not survive to achieve the goal either.

The book includes charts from expeditions visiting the island and has more than 50 photos of landscapes where the first major botanical explorations took place.

It is an interesting read, providing a different perspective on the early explorations in Tasmania.

It is available for loan from the secretary.

Source: UniTas issue 308 : 3rd May 2007.

### About Lake Augusta.

If you look for it on the map, you'll see its very close to Liaweenee, that place that so often has a minus value for its overnight temperature.

Up there on the Central Plateau lies a unique area consisting of glacio-fluvial lakes and parabolic dunes, the only alpine dunes in Australia.

Lake Augusta is the largest of the lakes with seven sand dune communities surrounding it. The dunes called lunettes, were formed on the leeward side of the lake after the last glacial period.

The area has considerable conservation significance with some species endemic to the area.

### Wood chip counter.

You hear figures like 4.5 million tonnes of woodchips per annum needed for the pulp mill and a log truck every three minutes to feed it. And those statements alone make a big enough impact on us.

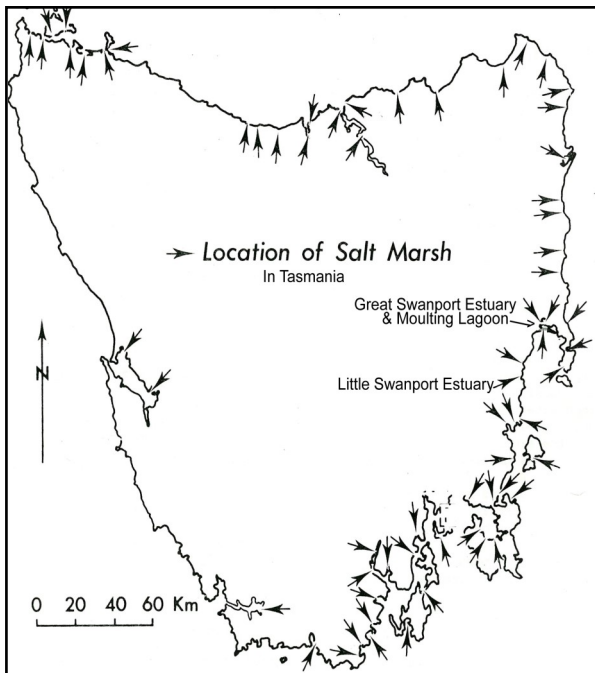
But the other day I was on a web-site which featured a counter measuring the rate of forest being reduced by the tonne. The figure on the counter was this : 4, 896, 484, 392 and as I watched, the digits flicked over at the rate of 0.175 tonnes per second. That made an even greater impact on me. L.B.

### P.S. Litterbugs of Scottsdale:

It gave me pleasure to read a report in the North Eastern Advertiser on October 17 stating that a person who had dumped their rubbish 500 metres from the Scottsdale Waste Transfer Station had been issued with an infringement notice. The report contained a photograph of a pile of rubbish similar to those we saw in the Reserve at Bridport. The person was required to remove their rubbish. Other illegal dump sites in the municipality are being investigated, so it might not be long before this practice stops. L.B.

# SALTMARSH ECOLOGY and RISING SEA LEVELS.

A discussion paper delivered by Brigid Morrison to our club at it's A.G.M. on the 11th August 2007.



Location of salt marshes in Tasmania [Kirkpatrick and Glasby 1988].

Tasmania's salt marshes are globally unique and floristically diverse. More so than their mainland counterparts. The diagram indicates the relationship between soil volume and elevation. And elevation, in turn determines zonation. Tasmania's salt marshes are mainly meso to micro-tidal; they are not inundated on a daily basis. In fact, they are exposed most of the time and subjected to periodic flooding.

Salt marshes are generally divided into three zones depending on the amount of inundation they receive. These zones run in belts parallel to the shore line. Each zone has its own associated macro and micro invertebrates, and its own flora. The lowest zone will have maximum contact with salt water. The highest zone might be inundated only two or three times a month.

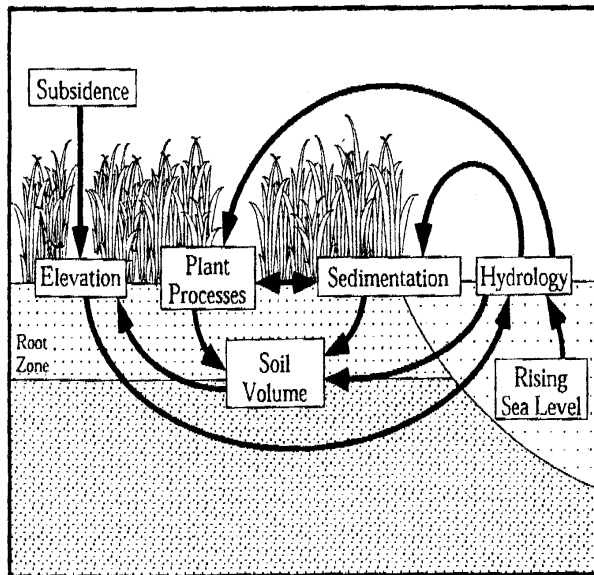
The zones are vegetated by halophytic plant species, grasses and low shrubs. The most prolific plant of the salt marsh is the beaded glasswort, *Sarcocornia quinqueflora*. It has the potential to grow in all three zones. Its bead-like segmented stems are recognised as food for the Orange bellied parrot. There is the round leafed pig-face, *Disphyma crassifolium* usually found at the more elevated margins of the salt marsh. Other common salt marsh species include *Suaeda australis* and *Sclerostegia arbuscula*, two woody shrubs growing in the middle zone.

The coastal geomorphology of the Tasmanian coastline is dominated by barrier lagoon systems. These have evolved as a result of a period of reasonably stable sea levels—at least for some 6000 years. Salt marshes may border these saline water bodies. They seem to occur on more highly indented coastlines, where they are sheltered. Within these lagoon systems there exist different wetland ecosystems which are a result of salinity gradients interacting with sediment type.

Salt marshes are the environmental equivalents of mangroves in higher latitudes. In fact on the mainland, they exist in association with them. They act as nurseries for juvenile fishes; they are a breeding ground and habitat for migratory sea birds and are strongly linked to other aquatic plant communities such as sea grasses.

Their evolution requires more gentle wave movements. With the slowing down of water velocity comes the dropping of sediments. The salt marsh must have a sediment supply to maintain its integrity and elevate itself.

In the conceptual diagram below an attempt is made to show the interactions between sediment delivered by the tides, plant processes, hydrology and sea levels, soil volume and salt marsh elevation. Plant processes and sedimentation both affect peat formation, hence elevation.



Source: Cahoon *et al.*, 1999.

Extensive evidence exists from regions such as Chesapeake in USA where there is a much faster rate of sea level rise, that such rapid rates cause extensive marsh break-up and loss to the open ocean. It is anticipated that Tasmania will attain similar rates of sea level rise within the next century.

As the sea level rises, the salt marsh moves inland. Sea level rise will be slow in Tasmania and at the moment our salt marshes are keeping pace with sea level rise, but this can only occur while they have the space to move inland and a sediment supply.