

# Notes of presentation by Neil Brougham, Ranger Lameroo to the Strathalbyn Garden Club, 27/07/2012, on the topic of Ferries McDonald Conservation Park

## Part one: The History Quick Facts

- Conservation area set in the context of cleared agricultural land
- In a part rain shadow of the Mt Lofty Ranges, 375mm rainfall annually
- Highest point 110m; lowest 20m; generally between 50-80m above sea level
- Dune and swale topography; coastal sands over a calcrete/limestone shelf; majority is non-wetting sandy soils with highly saline groundwater at considerable depth, although some sections are susceptible to waterlogging and saline discharge (there is even a small *sarcornia* saltpan area)
- Soil ranges from mildly acidic to moderately alkaline; depth of sand and ratio of clay-sand-calcrete determines the vegetation associations of a given area, creating vegetation mosaics
- Conserves typical Mallee vegetation of several species of gum, ti-tree, and wattles (more of which later)
- Over 60 species of birds including lots of Honeyeaters and parrots, wrens, pardolotes, babblers and many more; good chance to see raptors at the boundary of the park
- Conserves over 300 species of plants
- Nine species of conservation value at a state level; 24 species of significance at a regional level; and one species of significance at a National level
- Home to the Malleefowl
- Conservation area for the Short-Beaked Echidna and Western Grey Kangaroo and two species of marsupial mouse and several species of bats
- Haven for insects, the forgotten fauna that rule the world
- Habitat for more than 20 species of reptiles

## Pests!!

- Pest animals include: foxes, cats, hares and rabbits. Livestock rarely stays into the park
- Pest plants... are not a major problem in the park because of its dense and intact nature but include: Horehound, Salvation jane, Boxthorn, Lincoln Weed and Bridal Creeper, mostly on park edges and disturbed areas

## Human Influences...

- Access to Ferries McDonald is not difficult but there are not many facilities
- There is a 1hr walking trail beginning from the south-eastern corner carpark off Chauncey's Line Road
- There is an option for minimal interference bird-watching (i.e. walking into the scrub a short distance and sitting quietly) and plant-watching! Visit in Spring to see a display of wildflowers and birdlife
- No camping, no fires, no toilets and no drinking water; be prepared if you wish to stay more than an hour or two
- Neighbouring landowners often require destruction permits for kangaroos to protect crops and fences
- Does contain some cultural sites of the Ngarrindjeri
- There has been a Friend's of Ferries Mac group in the past but it is no longer active. Come and talk to me if you wish to get one started!
- Negative human activities have included: trailbike activity, illegal cutting of broombush, rubbish dumping in carparks and along roadsides, tampering with park infrastructure (bollards, signs etc.)

# Fire!!!

- Fire history not well known
- Some evidence of fires in the 1950s and 60s, but no record of fire since 1975
- Most Mallee areas have experienced fire in the last 40 years, often numerous times so...
- Long time since fire makes the park of special interest
- Unburnt areas of mallee can contain special habitat for wildlife including improved malleefowl breeding areas and more hollows for other species such as parrots
- However, eventually without fire ecosystem will senesce
- Big challenge for DEWNR to develop a fire management strategy for the park
- Danger that the entire park could burn in a single event: this would be a very bad outcome
- The risk of a bushfire starting in or adjacent to the park is identified as low to moderate, with threat to the park low
- It is possible some small controlled burns may take place in the future

## The Malleefowl

- The Malleefowl occurs in all mainland states except Queensland and is recognised as threatened wherever it occurs. The species is listed as Critically Endangered in the Northern Territory, Endangered in New South Wales and Victoria, Vulnerable in South Australia, and as Fauna That Is Rare Or Is Likely To Become Extinct in Western Australia. It is listed as Vulnerable at a Federal level and without conservation effort populations are likely to vanish and the animal become extinct
- The Malleefowl *Leipoa ocellata* belongs to the Megapode family: the incubators or mound builders. The group is unique amongst birds in using external sources of heat to incubate their eggs. 22 species, all of which are confined to the islands of south-east Asia, south-west Pacific, and Australia.
- The Malleefowl is the most southerly distributed species. It is restricted to the mainland and differs from all other megapodes in that it inhabits semi-arid and arid habitats rather than damp forests. These dry regions are not conducive to the incubation methods typically employed by megapodes, so the Malleefowl has developed the most sophisticated and elaborate technique of incubation of the family
- A sandy substrate and abundance of leaf litter are requirements for the construction of the birds' incubator-nests. Dense canopy cover is the most important feature associated with high breeding densities, closely followed by age class of vegetation – the older the better, up to 60-80 years. In particular, habitats on sandy substrates that support *Triodia* are of greatest importance.
- 6-9 months per year (autumn to spring) dedicated to building and maintaining a large incubation mound of soil, leaves and twigs.
- Early in the breeding season (early spring) the heat for incubation of the eggs is produced by microbial decomposition of the litter, but late in the season (early summer) heat from the sun is also utilised. Mounds can be 15+ metres in circumference and over one metre high
- Egg laying usually begins in September and an egg is laid every 5-7 days until mid to late summer. The incubation period of eggs varies with temperature, but is about 60 days
- Average clutch size is often 15-25 eggs of which about 80% hatch unless the nest was disturbed by predators or due to unseasonal weather conditions
- Malleefowl have a highly sophisticated method of temperature control for egg incubation. The birds maintain the mound temperature of 32-34 degrees by using their beak as a "thermometer" and adjusting soil cover to either retain or expel heat from the egg chamber
- Chicks typically begin hatching and emerging from mounds in November
- Chicks hatch buried with up to a metre of sand above them, and their unaided struggle to the surface may take up to 15 hours.
- Chicks receive no parental care after hatching, but can run and feed themselves almost immediately and fly within a day
- Mortality of chicks is very high over the first few weeks after hatching: about 80% over the first ten days or so with most chicks succumbing to predators or metabolic stresses such as starvation. Only 2% of hatchlings are estimated to reach breeding age. However, once birds reach breeding age (3-4 years) they are typically long lived (15 years)
- Malleefowl are generalist feeders. Diet consists of seeds, flowers and fruits of shrubs (especially legumes), herbs, invertebrates, tubers and fungi. In habitats bordering croplands, they will eat grain fallen at the edges of uncleared habitat and up to 100 m or so into cropland, and these foods may be crucial to the persistence of the birds in small reserves

## Helping out!

- There were FIVE ACTIVE MALLEEFOWL MOUNDS located in Ferries in 2011 out of a total of 44 monitored mounds (six in 2010)
- Considered to be the last population on the fleurieu peninsula
- Monitoring is carried out annually
- Fox baiting to reduce fox numbers around and inside the park (coordinated effort with landowners) – two of the mounds inside the park are monitored by remote cameras and there is footage of a fox digging up and eating Malleefowl eggs!

- Reducing grazing pressure in Malleefowl habitat; there is a direct correlation between grazing pressure and Malleefowl survival
- Reducing large wildfire in Malleefowl habitat – it can take 10-30 years for breeding to resume in a burnt area and the older the better
- Numerous community groups have been formed throughout southern Australia to help conserve the Malleefowl. There is an excellent group working in the Monarto area: Monarto Malleefowl
- Malleefowl eggs have been taken from Ferries and relocated to Monarto as part of a captive breeding program. Animals have been reared (4 in total in 2009/2010) and will protect the genetics of the ferries population in the case of a catastrophic wildlife in the park; there is the possibility of release back into the park

## The Road

- In February 2012 work began sealing Ferries McDonald Road that runs directly through the park
- This was a controversial decision and may have impacts on flora and fauna, especially Malleefowl
- There was a community consultation process with regard to the project
- More information can be found on the Rural City of Murray Bridge District Council Website

## Monarto Conservation Park

- Dedicated in 1983 and incorporates Braendlers Scrub
- Park is a result of the efforts of Mrs Bertha McDonald, who negotiated with the government to purchase the land
- 239 hectares
- A few minutes from Ferries but is in a successional stage following the cessation of grazing and clearing; Ferries is a climax ecosystem
- Also typical mallee scrub but different age class
- Does contain active and inactive Malleefowl mounds

## DEWNR Management Actions

- Draft fire plan, fire management
- Closing off illegal tracks
- Monitoring for illegal dumping
- Fox baiting stations throughout the park (commencing Sept 2012)
- Malleefowl surveying
- Acacia rhotinocarpa monitoring
- Relationships with adjoining landowners
- Relationships with volunteer groups
- Weed control (Horehound)
- Consultation process re: road development
- Installation of signage i.e. Malleefowl ahead signs

## Part 2: how Ferries Mac can improve our gardens

- Inspiration for garden plants

- Source of seed for revegetation
- Helps to understand what birds and reptiles want from us
- Attracting butterflies
- Using plant families for direction

## Fabaceae

- Known as the “Pea” “bean” or “Legume” family
- Third largest plant family with over 700 genera and 19,500 species (how many do you have in your garden?!) from small herbs to large trees
- Economically important for food with a long history of human use and cultivation
- Many Fabaceae host bacteria in their roots within structures called root nodules. These bacteria, known as rhizobia, have the ability to take nitrogen gas out of the air and convert it to a form of nitrogen that is usable to the host plant. This process is called nitrogen fixation.

## Acacias of Ferries-Mac

- 12 species (almost 1000 species in Australia)
- Many are excellent for cultivation
- Most are easy to source or grow from seed
- Most are adaptable to a variety of soil types and will thrive in clay loam to sand and limestone
- Most would have grown where our gardens are now.
- Will grow to a variety of sizes for any size of garden
- Can be used in revegetation and erosion control; most species require very little supplementary irrigation after planting, but will benefit during the first year
- Will improve soil nutrition due to nitrogen fixing
- From Ferries-Mac consider:
  - *A. calamifolia* – caterpillar food for the Icilius Blue butterfly
  - *A. farinosa* – caterpillar food for the Two-spotted line-blue butterfly
  - *A. hakeoides*
  - *A. microcarpa*
  - *A. myrtifolia*
  - *A. pycnantha* – caterpillar food plant for the Wattle Blue butterfly (and Icilius Blue, Two-spotted line-blue and Tailed Emperor)
  - *A. sclerophylla* – caterpillar food for the Two-spotted line-blue butterfly
  - *A. rigens* – caterpillar food for the Two-spotted line-blue butterfly

## The odd-bod Beans

- *Hardenbergia violaceae* – important component to the ecosystem in many parts of SA; will climb or grow as a bush; food for the caterpillar of the common grass-blue butterfly; very hardy and adaptable to soil types, can withstand moderate frost, adds detail to the garden; forms a dense habitat for small birds; can cover unsightly walls, tanks etc. very easy to source or grow from seed; many cultivars or can source or grow one of local provenance. Popular garden plant in the US!
- *Eutaxia microphylla* – food for the caterpillar of the heath-blue butterfly. Attractive small shrub. Adaptable to all soil types. Responds well to pruning
- *Kennedia prostrata* – beautiful sprawling groundcover for dry areas, rockeries, borders etc. hardy but need to be kept free of excessive competition from weeds

## The Myoporaceae

- Small family of predominantly Australian species, so well adapted to our conditions and fauna

- May be amalgamated with Scrophulariaceae, a cosmopolitan family
- Often glaucous or hairy, adding interest
- Very hardy and adaptable
- Very attractive to birds, especially honeyeaters and insects such as bees
- Some species easy to source but difficult to grow from seed – can be propagated by cuttings and will grow true to type

## The Eremophilas of Ferries-Mac

- 214 species; the name Eremophila comes from the Greek words for "desert" and "to love", i.e. "desert loving", referring to the natural habitat of many of the species
- There are two groupings of Eremophilas, those with flowers designed to attract insects and those designed to attract birds. Approximately 75% of Eremophilas are insect pollinated with the remainder being bird pollinated.
- Flowers of insect pollinated species tend to be bluish-purple or white and the lower lips of the flower project forward to provide a landing area for the insects
- The bird-pollinated species have red, orange, yellow or green flowers with lower lobes that point downwards to discourage insects that feed on nectar. They have longer stamens to brush pollen onto the bird's head as the bird's beak reaches down the floral tube toward the nectar.
- Long history of ethnobotanical use by aboriginals including medicine (colds, coughs) and ceremonial purposes (initiation and burial)
- Try from Ferries-Mac:
- Eremophila crassifolia – compact small shrub perfect for rockeries and borders; blue, white or pale pink flowers
- E. deserti – can grow up to 4m. Food plant for the caterpillar of the Rayed Blue butterfly. Uncommon in strathalbyn area and would be good to add to gardens
- E. glabra – adaptable, attractive small shrub with yellow, orange or red flowers that attracts birds to the garden; could be used in place of common Mediterranean cottage plants; this is the one you would choose to most attract birds and strikes readily from cuttings
- Myoporum platycarpum – very hardy but can grow into a tree up to 10m, so needs space. Will grow in very poor soils including limey soils and heavy clay. Moderately fast, could be used to create shade in a difficult area

## The Myrtaceae

- over 5650 species, occurring in some 130-150 genera.
- wide distribution in tropical and warm-temperate regions of the world, and are typically common in many of the world's biodiversity hotspots.
- Genera with capsular fruits such as Eucalyptus, Corymbia, Angophora, Leptospermum, Melaleuca, Metrosideros are absent from the Americas
- All species are woody, with essential oils, and flower parts in multiples of four or five. One notable character of the family is that the phloem (transports products of photosynthesis (sugars) from the leaves to the roots) is located on both sides of the xylem (minerals and water to the leaves from the roots), not just outside as in most other plants
- Contains Eucalyptus, Ti-trees as well as Clove, Feijoa, Allspice, Guava and the NZ Christmas Bush
- Often have medicinal uses due to the essential oils and are excellent plants for honey production

## The Gums of Ferries-Mac

- There are eight species of Eucalyptus found in Ferries-Mac
- E. oleosa (Red Mallee), E. porosa (Mallee Box), E. socialis (Red-beaked Mallee), E. dumosa, E. fasciculosa (Pink Gum), E. foecunda, E. gracilis (Yorrell), E. incrassata (Yellow Mallee)
- Most of these plants would have grown originally in the Strathalbyn area and are perfect for revegetation of small to large blocks (in conjunction with suitable understory plants) and windbreaks
- Require no irrigation when used in reveg (in most years)
- Highly adaptable to soil type; some will handle very limey soil or heavy clay
- Will compete well with weeds due to lateral root systems in many species (Mallees)
- Not very suitable for small gardens and should not be planted close to houses
- Very popular with birds: parrots, honeyeaters, cockatoos
- Can be used to produce honey and will bring insects to the garden
- Easy to source and/or grow from seed
- Consider using in place of Sugar Gum and other introduced species of Gum
- Most will respond well to coppicing

## The Ti-Trees

- There are three species of Leptospermum and three species of Melaleuca in the park; the melaleucas are slow growing and long lived and will encourage birds into your garden. Most will grow from cuttings or seed
- L. coriaceum – 2x2m spreading shrub, fast growing and suitable as a windbreak; L. myrsinoides – smaller and more leggy than L. coriaceum, also from cuttings or seed

- *M. acuminata* – slow growing but very hardy. Up to 2.5m. Attractive pale yellow flower (some varieties may be pink). Adaptable to a wide range of soil types. Important nectar plant for birds in the Strathalbyn area
- *M. uncinata* – The famous broombush, used to make broom fences, often illegally harvested. Often grow in sandy regions under irrigation for fence material, up to \$30 a bundle! Slow growing and prefers sandy soils but will tolerate saline and waterlogged sites. Can be used as a cash crop in very poor and dry areas. Key component of Mallee scrub and important for Malleefowl breeding
- *M. lanceolata* – stately slow growing tree up to 10m, so be careful when selecting a site. Requires no care and very adaptable. Can be grown in poor sites. Best grown from seed.
- Melaleucas are an indispensable part of any revegetation project in our area

## The Sapindaceae

- about 140–150 genera with 1400–2000 species, including maple, horse chestnut and lychee
- Grow worldwide in a variety of habits, from trees to herbaceous plants or lianas
- Sapindaceae includes many species of economically valuable tropical fruit, including the lychee, longan, pitomba, guinip, korlan, rambutan, mamoncillo and ackee. Other products include Guarana, soapberries and maple syrup.

## The Hop-Bushes of Ferries

- *Dodonaea* is a genus of about 70 species with a cosmopolitan distribution in tropical, subtropical and warm temperate regions of Africa, the Americas, southern Asia and Australasia. By far the highest species diversity is in Australia.
- Drought and frost tolerant and can be used to rehabilitate difficult sites; pollen is valuable to apiarists; propagate from seed or cuttings
- Hop bushes' three dimensional, twiggy and leafy frameworks promote wheel webbing spiders to weave webs to capture unsuspecting passing insect prey. These webs are diligently collected for binding the fibrous grass strands during nest building by insect and seed feeding birds such as Brown Thornbills, Flame, Scarlet and Dusky Robins, Welcome Swallows, Strong-Billed and Black Headed Honey Eaters, Grey Fantails, Eastern Spine Bills and Dusky Wood Swallows. Other large seed eaters such as Bronze winged Pigeon, Beautiful Firetail, Musk Lorikeet and Green and Eastern Rosella devour the nutritious winged seed clusters before they are either feasted on by seed weevils or glide to ground. Mid-storey bushes like hop bush and native box (*Bursana spinosa*) planted into the park style urban landscapes and gardens provide an important role in helping to attract these seed and insect eating birds at the expense of the aggressive domineering nectar feeders such as New Holland Honey Eaters, Noisy Miners and Wattle Birds.
- Have a symbiotic relationship with ants, who bury and "larder" the seeds, which protects them from fire and predation
- *Dodonaea* form a symbiotic relationship with mycorrhizal fungi. These fungi act as 'soil postmen' supplying (posting) water and nutrients to the plant's roots which in turn provide, via their ability to photosynthesise, a supply of carbohydrates to the fungi.
- Seven species are found in Ferries. For our gardens:
- *D. viscosa* – grows in africa, americas, asia and australia (same species!) , which shows its age! Was used medicinally wherever it grows, often topically to speed wound healing; used by aborigines to treat ear-ache. Early settlers, in Australia, used the winged fruits as a substitute for hops in beer making, hence the name. Seed pods make an attractive sight in the garden. This is a large species (up to 8m), consider using other varieties in a small garden. There is a purple variety to add colour to the garden (*D viscosa* var *purpurea*)
- *D. baueri* – up to 1m, small and attractive species; can be grown as an understory plant in established gardens or in exposed area
- *D. humilis* - up to 1m, small and attractive species; can be grown as an understory plant in established gardens or in exposed area
- *D. stenozyga* – erect round shrub up to 1.5m, makes an attractive alternative to *viscosa*, adaptable to soil type and easy to source and/or grow from seed

## Some other Ferries plants to consider

- *Carpobrotus* – succulent ground cover easy to grow from cuttings
- *Hakea rostrata* and *carinata* – excellent for birds
- *Banksia marginata* – large *Banksia* that will grow in neutral to mildly alkaline soil

- *Adriana klotzchii* – Bitterbush Blue Butterfly
- *Dianella revoluta* – clumping lily flowers in summer
- *Clematis microphylla* – climbing plant
- *Pomaderris* – attractive and uncommon shrub for small gardens
- *Correa* – attracts birds
- *Phebalium*
- *Westringia rigida* – Rayed Blue Butterfly, good alternative to rosemary
- Saltbush (*rhagodia*, *enchylaena*, *atriplex*) – very hardy, produce small fleshy berries popular with birds and reptiles

## Mmm, Delicious Bushfoods in our park

- There are three species in Ferries-Mac that were important bushfood for the Ngarrindjeri; two you can grow successfully for your table in Strath
- *Santalum acuminatum*
- *Microseris lanceolata*
- *Kunzea pomifera*

## Muntries, yum yum

- *Kunzea pomifera* – member of the Myrtaceae; very delicious, taste somewhat like blueberries crossed with an apple
- high in antioxidants and can be eaten fresh or used in your favourite pies, sweets, desserts, jams or salads
- Like free draining soil, mildly acidic to alkaline
- Can be grown along the ground or up onto a trellis
- Likely to become a popular bushfood economically; will benefit from watering if berry production is the aim
- Can be grown from cuttings, easily sourced
- Will self-layer and spread along the ground

## The delectable Quandong

- *Santalum acuminatum* - hemiparasitic. This means that the plant is partially parasitic and relies on host plants for only water and soil nutrients, not for sugars, which is why such parasites have green leaves. These parasites produce a modified root structure called a haustorium, which attaches to a host root and extracts xylem sap. In a natural situation, *Santalum* seems to rely on nitrogen fixing trees such as *Acacia* and *Casuarina*, though it's known to parasitise many other legumes, shrubs, herbs and grasses. Quandong normally has more than one host at a time.
- Will attach to many of the species listed previously, especially acacias
- Drought, frost and salt tolerant; attractive tree up to 4 metres; fast growing once attached to a host tree
- Plant near already established acacias or grasses
- Can be eaten raw, or made into jam or a glaze for meat dishes. Kernel is also edible. If you are ever in Quorn try the amazing quandong pie from the bakery/café. Highly nutritious with twice the vitamin C of Oranges
- Also consider growing *S. spicatum*, Sandalwood which has an edible and delicious kernel and after 10-15 years can be harvested for the essential oil
- Potential for large scale commercial orchards
- Feature strongly in Aboriginal mythology; the hard wood was used in making traditional bowls
- Not as difficult to germinate as expected
- One of the oldest non-adulterated fruits on the planet

## Yum Daisy, Yam Daisy

- *Microseris lanceolata*: has a starchy but tasty large tuber that was important for aboriginals
- Once very widespread but has suffered dramatically from land clearance and over grazing in rangelands
- quick growing plant suitable for a rockery or cottage garden; grows well in full sun to part shade, all soil types and well-drained to dry conditions. It is drought and moderately frost tolerant
- Grows readily from seed but may be difficult to source

## Growing endangered plants from Ferries in your garden

- *Allocasuarina pusilla* – listed as rare at a regional level; would be a very valuable addition to gardens in Strathalbyn. This is a dwarf sheoak so would make an excellent substitute for drooping sheoak, a large tree, in smaller gardens. Sheoak nuts are valuable food for parrots, including the Yellow-tailed Black-Cockatoo. Hardy plant that will grow readily from seed
- *Acacia rhetinocarpa* – endangered in south australia and vulnerable at a national level. Ferries McDonald is a stronghold for this species and the park is monitored annually for a population count. There is a Threatened Species Recovery Plan for this species which can be found on the internet. Consider adding one or two of this small plant to your gardens to help conserve the species. Likes to grow in sand but likely to be adaptable to any moderately free draining soil. May be difficult to acquire
- *Myoporum parvifolium* – listed as rare at a regional level. Makes an excellent and hardy ground cover and is easy to source. Possibly the most effective initial host for santalum species
- *Callistemon rugulosus* – listed as rare at a regional level but once very widespread in our region. Easy to source and to grow from seed. Adaptable to a range of soil types and situations and very attractive to birds. Add one or two plants to a small or medium garden or mass plant in large gardens as a substitute for exotic callistemon species. A must have in any regional revegetation project

## Getting your plants: where to source species from Ferries-Mac

- Join Trees for Life to get access to free seed of many of the species mentioned, especially larger shrubs and trees for revegetation work
- Visit State Flora in Murray Bridge or Belair to select varieties of near local provenance; you will find many species discussed here