Case Study –Sorrento Beach & Porteous Park – "Working with Nature's Tools"

Presentation by Mike Norman at the "Working with Weeds" Seminar– 15th May, 2015

"Friends of Sorrento Beach" is an unincorporated group being an affiliated coast care group of the "Joondalup Community Coast Care Forum, Inc" (JCCCF).

JCCCF is an incorporated umbrella organisation formed in 2000 for three coastcare Friends Groups actively rehabilitating large coastal reserves at Sorrento, Mullaloo and Iluka. I am the Chairman and Treasurer of JCCCF.

Community initiated coast care project……

The "Friends of Sorrento Beach" was formed in 2000 consisting mainly of a group of local residents interested in restoration of the dunes of Sorrento Beach, initially targeting the dunes south of the Sorrento SLSC. I took on the voluntary role as Project Coordinator. Some other members of the original group are still involved today.

A restoration project was considered worthwhile as these dunes were overall about 70% degraded (many informal paths, weed infested, a lot of litter) and high profile (adjacent to well used shared path and arterial road – West Coast Drive – that overlooks the dunes in this area).

The Land Manager (City of Joondalup) concurred with that view and provided a small grant to purchase indigenous coastal seedlings.

Initial Project Area and Work

The project has since been extended to over 2km of coastline – from the southern breakwater of the Hillarys Boat Harbour (in Sorrento) to Ozone Rd (in Marmion).

Preparation for a high seedling survival rate!

First (<u>and often only</u>) weed spraying on that part of the project area (by City of Joondalup staff)

Our contractor doing ground preparation by "pre-levering" the soil at ach planting spot

Removing unsprayed weeds + levering" (NOT digging out) the soil, marking each planting spot with a single bamboo stake

Pre- loosening seedlings in pots/
cutting root bound ones (not left to volunteers)

Planting seedlings at previously prepared planting spots (start late May - all planting completed by before mid July). Seedlings planted in deep (stems partially buried)

Manual weeding around seedlings during spring

Removing wind guards, when plants grow through (starting December)

eg North of Ross Ave - 12 months after planting –

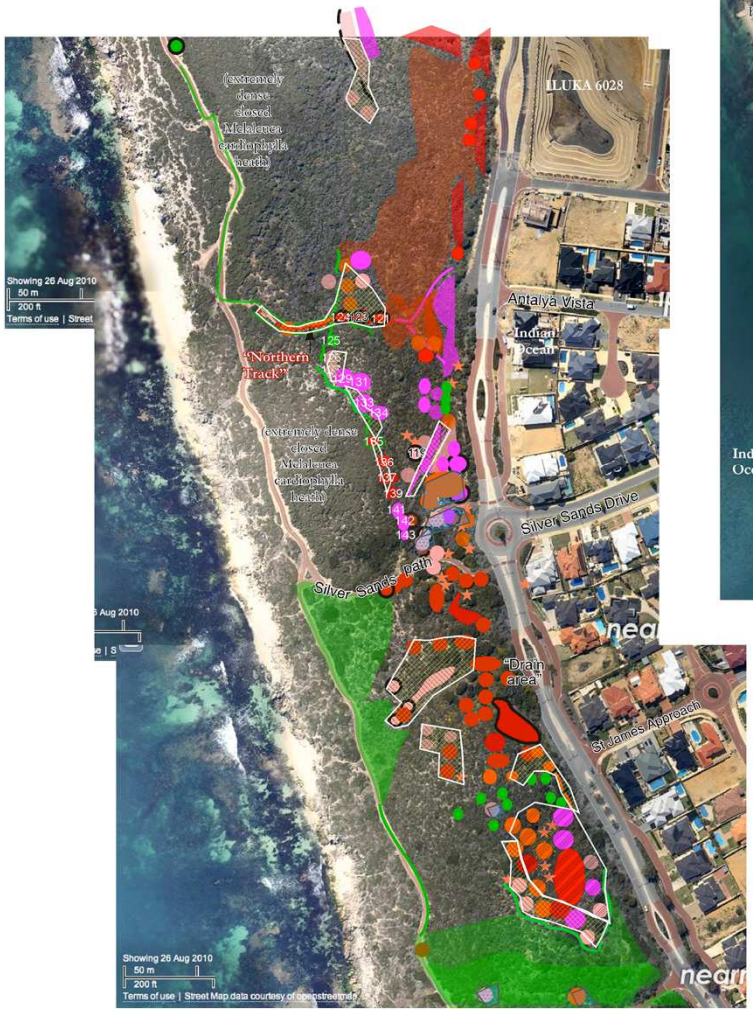
97% survival rate, excellent growth, no watering

eg North of Ross Ave – 3 years after planting –

looks natural - like it has always been like that!

Weeding… the biggest ongoing job…

(example from the Iluka foreshore project)



Friends of North Ocean Reef – Iluka Foreshore

a group under the umbrella of

Joondalup Community Coast Care Forum Inc.

Mapping Cape Tulip at Iluka – then manually removing it on Invasion front – July to September

Our approach to weeding…

- Remove about 22 weed species manually.
- Aim for "zero tolerance" of seed shed for the top priority weed species. Timing is critical. The weed seed bank in the soil is like an iceberg – need to run it down over a number of years, and you don't want to add to it!
- Ask the Land Manager to spray only those species that cannot be effectively removed manually. On this site, sour sob, annual veldt grass, couch grass (in rocky areas), lachenalia (one small patch), vetch (one small patch)
- Use the best tools we can get for the weed species/ size to be removed.
- Don't bag weeds if you don't have to (ie if no viable seed present) – just scatter the weeds on the site to desiccate!
- Land Manager picks up bagged weeds.

Our own design of tools make manual weeding more efficient

Videos showing use of the the tools

1. Weeding out re-seeded “dune onion weed” (*Trachyandra divaricata*) using a small levering tool

2. Weeding mature “sea spinach” (*Tetragonia decumbens*) using a large levering tool (NOTE: in the primary dunes, when this weed is deeply covered in sand, it is more efficient to do a once-off spray, with manual weeding follow-up).

3. How not to weed manually! (Could you harvest a crop of grapes at this rate?)

4. Planting technique for high seedling survival rate using the same tools

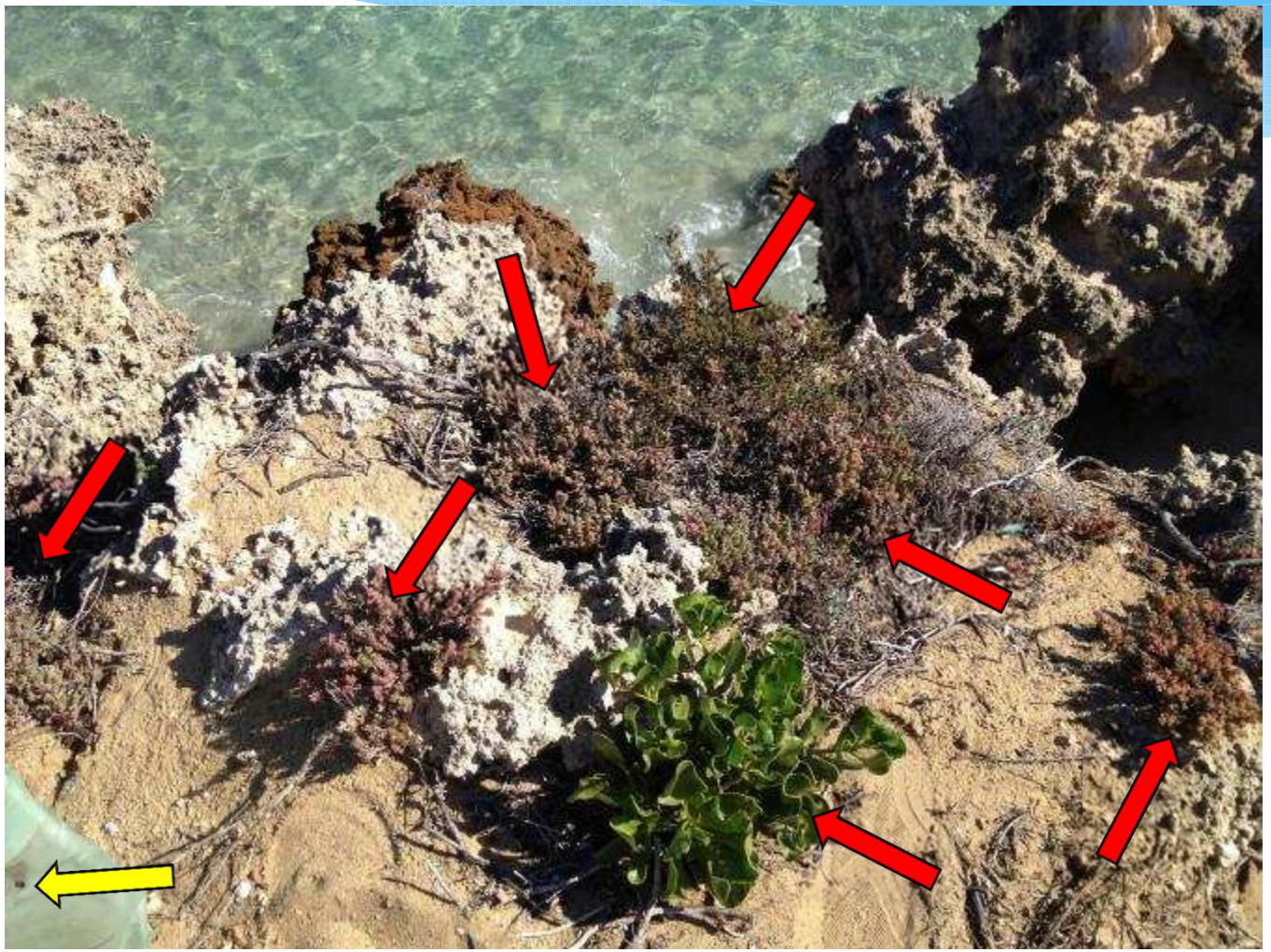
For weeding, timing is critical….

Aim is to continuously reduce the weed seed bank in the soil.
Eg dune onion weed – if short of resources, we just break off and bag the seed heads during "peak weed season" in spring and later on, use levering tools to actually remove the plants during summer and autumn.

Careful manual weeding promotes natural regeneration

eg recently, after 2 years of weeding out a section of the of the Marmion Coastal Reserve south of the MAAC building in Marmion.

natural regeneration **planted**



Volunteer + Contractor Model

Volunteers do most of the work, but we apply for grants (mainly Coastwest, State NRM or City of Joondalup) to also employ contractors under our direct supervision.

Volunteers at work!

Our contractors at work!

Sorrento Beach – primary dune restoration….manual removal of "sea wheat" (*Thinopyrum junceiforme*) and "marram grass" (*Ammophila arenaria*)

Sorrento Beach – primary dune restoration….Sea Spinach & Dune Onion Weed removal/ regeneration

Most recent project area expansion....
(into the Marmion Coastal Reserve, looking south)

Nothing but weed species on upper bank, so initially all sprayed and densely planted a few weeks afterwards. No jute matting used. All subsequent weeding performed manually.

Marmion coastal reserve – looking north….

July 2013

February 2015

Community initiated bushland restoration project…..

The "Friends of Porteous Park" was formed in 2002 consisting mainly of a group of local residents interested in restoration of the bushland at Porteous Park. I took on the voluntary role as the Project Coordinator. Some other members of the original group are still involved today.

The park was very biodiverse for urban bushland park, with a range of orchid species. But it was also badly infested with weedy grass species, cape tulip, gladiolus and fumatory following a series of deliberately lit fires in the 90's and garden rubbish dumping.

The Land Manager (City of Joondalup) concurred with that view and provided assistance with the provision of local provenance seedlings.

“Friends of Porteous Park” is an unincorporated group restoring the bushland remnant of Porteous Park, surrounded by housing in Sorrento.

In banksia woodland, 70% of the floral biodiversity is “below the knee”. Careful manual removal of multiple weed species will eventually be necessary in many bushland reserves on the Swan Coastal Plain to save it.

Above are a few photos of the understorey flora in Porteous Park. Go to www.porteouspark.org.au to see a pictorial catalogue of the flora, fauna and fungi photograped there by friends group member Shiela Rowlands.

Manual weeding used to remove most of the invasive weed species….including cape tulip, gladiolus, veldt grass, guildford grass etc.

Have not been able to beat freesia (*Freesia alba x leichtlinii*) manually (too many corms that cannot be levered out of rocky soil), but the City of Joondalup staff spot spraying/ wiping of them with herbicide over the last three years has not killed them either …..

In the meantime, each spring, we have pulled off and bagged the seed heads to stop them from spreading through the bushland.

My conclusions….

- Natural areas should not be continually flooded with herbicides, forever!
- Active Friends Groups can use manual methods to manage/ eliminate invasive weed species from their project sites, at least on the Swan Coastal Plain (sandy soils). Land Manages should aim to do the same.
- The "volunteer + contractor model" can be used by friends groups that are active in seeking grants, as this allows faster progress in restoring degraded sites and reduces the coordinator's supervision time over head.
- Where weeding tools are needed, the best tools must be found/ developed to remove the targeted weed species efficiently.
- Multiple weed species and litter can be tackled in a single pass.
- Only bag the weeds that have been removed if seed set or bulbs (leave all others on site to desiccate – ideally, remove most winter seeding weeds in July/ August). Bagging reduces weeding productivity and creates land fill!
- Manual weeding must be done with a reasonable degree of productivity (ie such as that needed to pick a fruit crop), especially if by paid contractors (there is not much money available for weeding, as weeding has no political profile, so any money allocated to it must be used very effectively!)

My conclusions….continued

- Herbicide application may be needed on some weed species were it is found manual methods are unsuccessful. But the right herbicide needs to be applied at the right time in the right manner (and with the right attention to detail, not to miss any) to avoid an excessive number of repeat applications and potential collateral damage to native plants.
- The weed seed bank in the soil must be run down as quickly as possible (ie "zero tolerance weeding"), especially for those weed species that require herbicide application, so the use of herbicide can be phased out as soon as possible. So timing is critical if weed control is to be successful, either by manual methods or the use of herbicides.
- Observe carefully to see what works and what doesn't. If it doesn't, look for another way. Call on the experts/ any scientific research. Liaise with other groups and attend seminars (such as this!) to learn of better ways to achieve you vision for your coastal / bushland reserve.
- A higher level of alternative methods to herbicide use needs to be considered for other public areas by local/ state governments, especially in public parks and on school ovals. Vegetable dye should be always used to guide its application and so the public know where herbicide has been applied.

Thank you….