

# **The Story of our Knowledge of Salinity**

**A Science Journey -  
Growing our Knowledge of our Land and  
Water**

# No salt in Creek

Before the  
1850s

Wimmera

## Native people

- Know the land thoroughly.
- Science learnt by walking it and living off its bounty.
- Know pigface can be sucked on hot days to replace salt.

# No salt in Creek

1848

Yarriambiack

## Squatter Robert Scott

- Getting to know the land on his squatting run at Warracknabeal and the Yarriambiack.
- Science learnt by walking and riding across it and running sheep on it
- Has just gone for the nearest salt (for preserving food) at the 'Salt Lake' (Tyrrell?)

# No salt in Creek

1851

Yarriambiack

## Surveyor C.J. Russell

- Making a detailed map of the Yarriambiack Creek.
- Science learnt by walking and riding down it taking measurements all the way.
- Records that Saltbush and Pigface appear on the plains only north of Beulah.

# No salt in Creek

1880s  
to  
1890s

Yarriambiack

## Selectors McKenzie

- Getting to know the land as the first selector to take up Mallee land in Beulah from the Squatters Bell and McGuinness in 1882.
- Science learnt by walking and riding across it and starting a farm on it.
- Government rules are that to keep the land the native plants have to be removed to create a farm.

# Warning – places can go salty

1892

South Australia

## Walter Ernest Wood

- Getting to know the land by growing up on a farm cleared from the Mallee bush on the Eyre Peninsula.
- Science learnt by walking and riding across it and noticing changes - especially in water
- Realises that the Mallee Trees on the land are somehow linked to good water.

# Warning – places can go salty

1905

West Australia

## Steam Train Drivers

- Getting to know the land by driving on the railroad in south west W.A.
- Science learnt by driving their steam trains across it and replacing water at dams.
- Notice that when the farms come and the trees are removed the water in their dams become too salty to use for the steam engines.
- Railway engineer Robert Bleesby solves problems by replanting trees in 1917.

# Warning – places can go salty

1917

West Australia

## Royal Commissioner Chairman Charles Edward Dempster

- Getting to know the land by leading the investigation into how best to develop the Mallee lands of south west W.A.
- Science learnt by investigation of what many people who know the land have seen, know and researched.
- Declares that 1/3<sup>rd</sup> of the Mallee Land that will be cleared for farming will suffer salt problems, but the farms are needed.

# Can't see any salt

After  
WW1

Southern  
Australia

## Soldier Settlers

- Getting to know the land as they are given land to farm after World War 1 (eg Sunraysia)
- Science learnt by walking and riding across it and starting a farm on it.
- Government rules are that to keep the land the native plants have to be removed to create a farm.

# Science – don't clear all the trees!

1924

West Australia



**New discovery!  
First to tell  
about trees and salt!**

## Government engineer/surveyor Walter Ernest Wood

- Has observed and investigated salinity problems now over a couple of decades.
- Is sure of the Science that when Mallee trees are fully removed, nearby water places go salty.
- Puts it into the *Journal of the Royal Society of Western Australia*.
- But people don't want to hear, accept, or act on his warning.
- Clearing of Mallee lands for farms continues across WA, SA, Vic, NSW over the next couple of decades.

# Problem – wind erosion

1940s

Victoria

## Farmers

- Getting to know the land by living with changes that come with severe drought and wind erosion.
- Soil Conservation Authority set up in 1940 by Victorian Government to help them by researching better Science about the land and its problems.

# Science - soil types

1944

Australia



**New discovery!  
First to tell  
about our soil types!**

## Geographer/ Soil Scientist James Arthur Prescott

- Getting to know the land by studying the soils.
- 1931 published that there was a link between soil type, plants and climate. (as CSIR soil scientist)
- 1944 finished investigating all the soils of Australia and published the first *Soil Map of Australia*.

# Problem – salinity!

1963

Victoria

## Farmers

- Getting to know the land by living with changes that come with long term farming of a land that was forest.
- Some low-lying areas will no longer grow crops, and farmers don't know what's wrong .
- First salinity problems in the Beulah area are also recorded for the 1960s.(from our survey)
- Monitoring of water table depth and water quality begins in the Sunraysia where there is irrigation farming and salty water is soon found too close to tree roots.

# Science - Land Systems

1963

Victoria eg Mallee



**New discovery!**  
**First to tell**  
**about our land systems!**

## Geomorphologist James Rowan and Soil Scientist Ronald Geoffrey Downes

- Getting to know the land by detailed investigation into the land as a system linking the land, water, plants and air parts of the environment.
- 1963 published that the Mallee Land Systems linking soil type, landforms, plants and climate. (as Soils Conservation Authority scientists)
- Still being used today as the basis for more in depth studies eg Technical Report 6 of the Mallee CMA which broke up the land systems into its different features.

# What can we do about the salt?

1986

Victoria

## Farmers as Landcarers

- Getting to know the land by finding solutions to problems of erosion, salinity etc
- Science learnt by groups of farmers with scientists fixing land problems, as a Victorian Government Landcare program with the first group at Winjallock near St Arnaud in 1986.
- 1989 Landcare became an Australian Government program, with the 1990s a Decade of Landcare.

# Problem – salinity!

1987

Victoria

## Saltwatchers

- Getting to know the land by finding out what the salinity levels are like where you live.
- More areas across the state have been put out of production with salt problems.
- Annual monitoring of surface waters for salt begins involving everyone in this statewide Science research

# Science - Local farm trials and actions

1992

Birchip area

## Birchip Cropping Group farmers and scientists

- Getting to know the land by detailed investigation on trial plots near Birchip.
- Publications of trials run on farms to members and reports online.

# Science - pipeline replaces channels

1992

Wimmera-  
Mallee

## Grampians Wimmera Mallee Water Engineers

- Have detailed maps, land systems information, and satellite photos to be able to plan a new water system.
- Science learnt by studying the theory and researching the local situation.
- Channel system lost a lot of water in bringing it to farms across such a large area.
- It leaked and created local salinity problems along it.
- In drought, channel system couldn't run any more, and the water in dams had got salty.
- Pipeline brings low salinity water to all parts of the Wimmera-Mallee and uses much less water. Northern Mallee Pipeline begun in 1992. Main pipes in the Grampians laid in 2005. First stage begun 2006. Completed 2010 with 9000+ KM s of pipe

# Science - Salinity research and action

1993

Australia wide

## National Dryland Salinity Program scientists

- Getting to know the land by detailed investigation in land systems for all aspects of salinity, local causes and local solutions, up to regional level eg Mallee-Darling.
- Three main publications: Dryland Salinity, its locations, causes, and options for farmers – trees still the key.

# Problem – water quality!

1995-  
2010

Wimmera  
Catchment

## Waterwatchers

- Getting to know the land by finding out what the quality of waters where you live.
- Salinity is not the only farm water problem, there is also levels of pH, turbidity, nutrients, hardness.
- Regular monitoring of any waters begins involving everyone in this local, regional & statewide Science research

# Science - Water quality research and action

2000

Australia wide

## National Action Plan for Salinity and Water Quality Scientists

- Getting to know the water/land (catchment) systems by detailed investigation in land systems for all aspects of water issues including salinity, local causes and local solutions, up to regional level eg Mallee-Darling.
- Combined Australian and all state governments in tackling water problems from 2000-2008

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