

STATE SALINITY COUNCIL

Newsletter of the Western Australian State Salinity Council

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Outback Oceans start reeling 'em in

Initial results are promising for the Outback Oceans project, which is looking at raising trout in the saline waters of the wheatbelt.

According to Agriculture Western Australia's Peter Lacey, who's one of the co-ordinators for the project, some fish already weigh up to 800 grams.

The fish had initially been stocked in saline dams and ponds as 50 - 80 gram fingerlings in May and June last year.

More than 100 wheatbelt farmers are involved in the project to raise rainbow trout under a variety of conditions and a range of salinities.

AGWEST and Fisheries Western Australia began the project in 1997 to examine the potential of a low-input, commercial aquaculture industry.

Mr Lacey, an AGWEST water resources technical officer at Merredin, said the project was proceeding better than expected.

"I expected more problems and failures than we experienced," he said.

"At the moment, we're trying to get as much information as possible and make sense of it.



Outback Ocean trout treat... Cranbrook farmer Henry Reynolds with a 12-month-old trout. Some of the fish bred in saline waters in the wheatbelt are expected to come in at more than a kilo.

"By the time all the results are in, we expect some of the fish to be tipping the scales at a kilo or more."

He said there were only one or two sites where the fish had not survived, and this was apparently due to water salinity being very high, a very low pH or very low levels of feed available.

He said the size of the fish depended on what food was already available in the selected dam or pond.

"Most of the 100 or so sites haven't had artificial food added," he said.

"Those where the fish have done

really well have good food sources."

The final results of the project should be known by the end of January, and the project is due to be re-assessed in March.

Mr Lacey said saline groundwater had the potential to be a valuable resource and aquaculture may be the answer to making groundwater pumping a real option.

He said funding had been sought for a second venture - to pump water from under the town of Merredin to be used for aquaculture.

Survey finds new species – and a few surprises

The biological survey being conducted under the Salinity Action Plan has already found the biodiversity of the agricultural region is much higher than previously estimated.

Detailed surveys of the Lake Muir/Unicup reserves, for example, have documented almost 1000 flora species - considerably higher than Mt Lesueur, which is known for its species richness.

The small Quairading Shire Reserve, which was surveyed with community volunteers, has a flora of more than 500 species, including two completely new species and the largest populations of two critically endangered taxa.

The four-year survey, which CALM began in 1997, will establish almost 1000 monitoring sites and will be the basis for identifying at least six more natural diversity recovery catchments.

The survey has also rediscovered one presumed extinct aquatic plant, and discovered two other previously unknown species.

Even the first year of the survey, which covered only the central third of the study area, has dramatically increased available data on the distribution, status and habitats of small wheatbelt vertebrates and arachnids.

For example, more than 500 species of ground-dwelling arachnids (spiders, centipedes and scorpions)

were recorded, compared with WA Museum records of about 165 species for the whole agricultural region.

Although vertebrates encountered belonged to known species, up to 70 per cent of the arachnids were undescribed.

A significant decline in the biodiversity of terrestrial animals is apparent at sites affected by rising salinity levels, which have an average of 30 per cent fewer species than their non-salinised counterparts.

While the survey is still to be completed and the results analysed, the same trend has been found for aquatic invertebrate, plant and waterbird species.

More land added to conservation estate

More of Western Australia's diverse wheatbelt ecosystems are to be protected with the addition of more than 1600 hectares to the State's conservation estate.

The State and Federal Governments have jointly purchased three large areas of agricultural land under the National Reserve System Program (NRSP) of the Natural Heritage Trust, with funds allocated to CALM's Wheatbelt Region providing the balance.

The program aims to ensure that each of Australia's unique regions, their landscapes and biodiversity values are sufficiently represented in conservation reserves.

The new wheatbelt reserves will also

protect important areas of remnant native vegetation - a key initiative under the Salinity Action Plan to help control long-term salinity in the region.

The three areas purchased are:

- Part Avon Location 23456 (535ha), which supports seven vegetation types, of which six were unrepresented in the conservation reserve system and poorly conserved. The area also contains priority flora and stands of salmon gum and red morrel which contain nesting hollows for fauna.
- Avon Location 29252 (400ha), an uncleared parcel of remnant vegetation that contains two vegetation types not well represented in the Nungarin Shire.



Bird bonus . . . threatened malleefowl have been found on one of the properties recently purchased for the State's conservation estate.

The threatened malleefowl has also been recorded on the property.

- Part Williams Location (726ha), which supports 10 species of priority flora and one species of threatened flora.

Blackwood River under scrutiny

Increased flood risk in the Blackwood River has been highlighted in studies contributing to the Salinity Action Plan update.

A joint project by the Water and Rivers Commission and the Blackwood Basin Group looked at the links between rising water tables and salinisation on the future likelihood and extent of flooding.

Commission chief executive Roger Payne said as water levels rose to the point of waterlogging the surface, the land became impermeable to water from rainfall.

"At worst, waterlogged ground behaves like a huge carpark - the water has to move somewhere and in cleared conditions it moves quickly into the river channels," Mr Payne said.

The study considered worst case scenarios that could eventuate if no action were taken to combat salinity.

Potential flood risks were predicted on the scenario of up to 40 per cent of the Blackwood upper catchment being waterlogged. The actual present level is about 10 per cent.

The model predicted:

- Increased flood flows of between two to four times levels reached in the 1982 flood;
- Increased peak flood levels of between two and four metres compared with the 1982 event; and
- The potential increase in flood risk and damage to buildings, roads, bridges and farmland.

Mr Payne said people had to understand that the predictions were based on modelling and were not absolute and many variables would affect real events.

Blackwood Basin Group program manager Saan Ecker said altering hydrology to combat salinity through landcare activities was a major focus in the Blackwood Basin.

"The BBG and other landcare groups and organisations are implementing a strategy to reduce the rise in the water table through a range of landcare and sustainable agriculture activities," she said.

Mr Payne said raising the prospect of greater flood risk was not designed to scare people but stressed that the whole community needed to take the salinity debate very seriously.

"The studies highlight the link between land clearing, waterlogging, salinisation and flood risk," he said.

"Without sustained action on many fronts and dramatic changes to the way we behave, especially in the wheatbelt, the farmers and towns will face a whole range of threats."

Country towns get \$200,000

Another \$200,000 funding has been allocated to combat salinity in country towns - including Moora which had been flooded twice last year due to cyclones.

The grants were allocated under the Rural Towns Program run by Agriculture Western Australia, with each shire to provide matching funds.

Primary Industry Minister Monty House said seven Wheatbelt shires would receive grants ranging from \$5,000 for revegetation of the Cranbrook sports reserve, to \$30,000 for surface water management earthworks in the Nyabing catchment.

Moora would receive \$50,000 to improve its town drainage scheme.

Mr House said Moora was a particular concern because of the flooding due to cyclones Elaine and Vance in 1999.

"We need to know to what extent the floods increased watertable levels and whether any watertable rises will increase the risk of salinity in Moora," Mr House said.

He said there are complex interactions between salinity and flooding, with each compounding the effect of the other.

"Groundwater recharge produced by floodwaters increases watertable levels and hence salinity," he said.

For further information on the program, contact Mark Pridham on (08) 9368 3919.

Farmers learn to live with salinity

About 100 farmers, agricultural professionals and interested people took part in a seminar on living with salinity held in Narrogin in October.

The Australian Institute of Agricultural Science and Technology organised the seminar with sponsorship from Agriculture Western Australia (AGWEST), the Grain Pool of WA and CSBP.

The seminar covered the effects of salinity and highlighted a range of potential strategies to minimise its impact on agricultural production and the environment.

Richard George (AGWEST) presented results from modelling in which he and others looked at the predicted impact of various changes in land use on the extent and spread of salinity in the wheatbelt over 100 years.

The modelling indicated salinity is on the increase and here to stay.

At best, we can buy some time but we must expect significantly more saline land in WA and should plan to manage salt-affected land where appropriate rather than attempt to reverse salinity.

Bob Nulsen (AGWEST) suggested that we need to focus on this productive land so that we have the income to

begin to address the salt-affected land.

He emphasised the benefits of gathering information and planning before taking any action.

Options for action could include achieving production from saline land, managing surface water, drainage and/or pumping, eliminating sandplain seeps, protecting vegetation that is high in the landscape and/or managing saline areas.

Roy Latta (AGWEST) described the work that he and his co-workers were conducting to compare the water use and productivity of a three-year lucerne, four-year cropping cycle compared with an annual pasture-cropping cycle. In the areas best suited to lucerne, watertables were up to 100mm lower than annual systems following three years of lucerne cropping.

Lucerne also seems to be performing well in other areas of the wheatbelt, although the trials at these locations have not yet been through a full cycle.

Ed Barrett-Lennard (AGWEST) also spoke on the productive use of saltland.

A booklet of proceedings will be available from AIAST (WA branch) at nominal cost. Contact James Fisher, on (08) 9690 2129.

Landholders get on-ground help

An on-ground action guide for landholders is being produced as part of the updated Salinity Program package.

The guide aims to provide a very brief overview of management options, as well as listing technical resources and contacts to approach for further information.

It's directed at landholders who may not necessarily read the whole salinity strategy and action plan, but would like some help as to what they can do on their properties to fight salinity. The guide offers a smorgasbord of options, some tried and established and some not.

Criteria and considerations, including rainfall, will be listed to help landholders choose the water-using options that suit their conditions. References to existing technical notes are provided.

Contact Christine Wardell-Johnson on (08) 9278 0554 for more details.

Strategy update

The Salinity Strategy resulting from the update of the Salinity Action Plan had been due for release in November but negotiations over the strategy and budget have taken longer than expected.

Cabinet is considering the strategy budget and the Salinity Strategy should be released in February/March.

Pine project set for massive expansion

CALM's Maritime Pine Project, launched under the 1996 Salinity Action Plan, is set for a massive expansion in 2000 with incentive payments of up to \$200 a hectare being offered to attract landowners.

The aim is to plant 10,000 hectares of cleared land, the first stage of a possible 500,000-hectare program extending from north of Gingin to Esperance.

This will more than double the 7000 hectares already planted under the Maritime Pine Project, which targets the 400 to 600 millimetre rainfall zone and the coastal plain around Perth.

The Department's Manjimup nursery is producing an additional 15 million seedlings for the expanded program, following completion of an \$8 million expansion project.

Ninety people have been employed, mostly from the Manjimup area, to allow the nursery to work at full speed to produce a total of 40 million tree seedlings this year.

Establishing tree crops on a large scale is part of the State Government's attack on salinity and land degradation, and is also enhancing biodiversity and offsetting carbon dioxide emissions.

Landowners who join the project this year will be entitled to payments for signing up 50 hectares or more for planting. (The payments offered are not annuities.)

The incentive payments are structured on a sliding scale: \$100 per hectare for areas between 51 and 100ha; \$150 per hectare for 101 to 200ha; and \$200 per hectare for more than 200ha.

These payments are offered to individual landowners, or to neighbours who put together parcels of suitable land.

There will also be a fencing allowance, a biodiversity component, options for cropshare, establishment and pruning assistance.

Further details can be obtained from a CALM Sharefarm office.



CALM Sharefarms officer, Owen Donovan, inspects a young maritime pine crop ... farmers who join the project can get incentives of up to \$200 per hectare.

MPs get the lowdown on salinity



Michael Lloyd (Saltland Pastures Assoc.), Tom Hatton (CSIRO) and Alex Campbell (State Salinity Council) discuss salinity issues with Deputy Premier Hendy Cowan, who hosted the briefing for MPs (left - right).

State MPs were given a valuable overview of the salinity issue and potential solutions at the inaugural State Science Briefing held in October.

About 35 MPs and their advisers attended the Parliament House briefing, organised by the CSIRO and the State Salinity Council.

The briefing was hosted by Deputy Premier Hendy Cowan. Speakers included Salinity Council chairman Alex Campbell; CSIRO researcher Tom Hatton; and Saltland Pastures Association president Michael Lloyd.

Mr Lloyd farms at Lake Grace where his

property has about 800 hectares of salt-affected land – about 45 per cent of his property.

He told the briefing that from a saltbush and pasture planting program started in 1989, he had lowered water tables by 60-70cm and that sheep numbers had trebled on the saline land.

"I am now running twice the number of sheep per hectare on the salt land compared to annual pasture on the rest of the farm," Mr Lloyd said.

Alex Campbell urged the MPs to give bipartisan support to salinity management.

Swan Coastal Plain set to go in SAP

A review of salinity in the Swan Coastal Plain was undertaken last year by Agriculture Western Australia and submitted to the State Salinity Council as part of the Salinity Action Plan update.

The review summarised studies which show that some 20 per cent of the southern portion of the Coastal Plain and up to 36 per cent of the irrigation areas are already affected by soil salinity.

The review of Swan Coastal Plain salinity was prompted by concerns that these areas were not covered at all in the original Salinity Action Plan.

As a result of this review, it's expected that the updated version of the Salinity Action Plan will refer clearly and specifically to the problem of salinity in the Coastal Plain and irrigation areas.

Specific actions to address the problem have also been recommended.

These include the use of deep-rooted perennials to increase water use; soil salinity mapping; and the development of land and water management plans (which Agriculture Western Australia is already drawing up with South West Irrigation).

For further details, contact Mark Rivers at Agriculture Western Australia, Pinjarra on (08) 9531 1788.

Cost-sharing offered for Warren projects

Farmers in the Warren Recovery Catchment are being encouraged to take part in cost-sharing partnerships for salinity management projects to improve streamflow water quality.

The Salinity Action Plan identifies the Warren as a future public water resource under threat from salinity.

The State Government is keen to support a range of actions to improve water quality in the river. The target is to have potable water – about 500mg/L – by 2030. To achieve this, the Water and Rivers Commission is working with the local community and other parties.

The partnership is guided by the Warren Recovery Team which meets regularly.

State Government funding to the Water and Rivers Commission through the Salinity Action Plan will be used for cost-sharing. The funds need to be spent in a way that contributes to improving water quality.

Landholders in the Warren Recovery Catchment are invited to propose projects to the Recovery Team based on:

- expected effectiveness for salinity management;
- balance between landholder's costs and those sought; and
- relevance in the sub-catchment (proposals derived from farm and catchment plans are preferred).

Interim cost-sharing guidelines cover such

issues as remnant vegetation and riparian zone management; seed or seedlings for rehabilitation; establishing non-commercial or potentially commercial trees, shrubs or other perennials; and demonstration sites for alleys of trees.

Funding for the proposals will be at the discretion of the Recovery Team, with the prime criterion being water use potential. The interim arrangements will be in place until March 2000.

There is no formal application form, but it is expected that proposals will have a map, written description and full costing for the Recovery Team to consider.

For further information, call Viv Read on (08) 9278 0453.

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Department of Conservation and Land Management



For more information please contact:
Don Crawford Executive Officer, State Salinity Council
PO Box 6740 Hay Street East Perth WA 6892
Telephone: (08) 9278 0300 Facsimile: (08) 9278 0587



Department of Environmental Protection



WATER AND RIVERS COMMISSION