

**COMMUNITY ATTITUDES TO ENVIRONMENTAL  
ISSUES: STATEWIDE AND REGIONAL  
OVERVIEW**

**October 2001**

**AGRICULTURE VICTORIA - BENDIGO  
CENTRE FOR LAND PROTECTION RESEARCH**

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**Abbreviations**

CALP	Catchment and Land Protection Boards
GMA	Catchment Management Authority
LGA	Local Government Area
NRE	Natural Resources and Environment
ABS	Australian Bureau of Statistics

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# **COMMUNITY ATTITUDES TO ENVIRONMENTAL ISSUES: STATEWIDE AND REGIONAL OVERVIEW**

**October 2001**

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## **ABSTRACT**

The success of proposed natural resource management programs in Catchment Management Strategies is highly dependent on community awareness of, and concern for, issues covered by these programs. A review of existing studies on public opinion of environmental issues showed a link between environmental concern and the economic state of the country. There was a significant shift in general opinion on environmental issues in 1989. Concern for the environment declined considerably during the recession when unemployment was at its peak. Melbourne and provincial town residents expressed the highest general concern for environmental issues and rural landholders had the lowest level of general concern – although this rose significantly from 1989 to 1998.

Pollution and waste recycling were the dominant environmental concern for Melbourne and provincial town residents, while land degradation issues were of least concern to them. Rural landholders were more concerned about land degradation issues such as erosion, salinity, and degraded rivers and catchments.

Over the last decade several community education programs were employed by either regional salinity forums or sub-regional community working groups and implementation groups. The aim of these programs was to raise community awareness of salinity and other land degradation issues, and to inspire community involvement in implementing the salinity and other natural resource management programs. Salinity monitoring surveys show that despite the decline in general concerns for environmental issues during the recession, concern for salinity had not changed significantly among provincial town residents or rural landholders during this period. This is likely a result of community education programs, which have contributed to a continuous awareness of land degradation issues. The timing of changes in awareness correspond with the commencement of public awareness programs in each of the regional areas. Continuous monitoring of the community awareness of, and attitudes to, these issues is important in achieving success in the natural resource management programs.

## **1 INTRODUCTION**

The environment is a major national concern in Australia, and environmental quality and sustainable natural resource management have become growing social issues throughout Victoria. The Catchment and Land Protection Boards (CALP) have developed regional catchment management strategies for each catchment region in Victoria. These strategies set the priorities and implementation programs for the management and protection of natural resources in Victorian catchments. These programs include measures to improve the use of land and water resources, and specify procedures for monitoring the implementation of programs and assessing program effectiveness.

The successful implementation of these natural resource management strategies lies in the degree of commitment of the community towards these programs. It is important, therefore, to understand community beliefs about the seriousness of various environmental issues in Victoria. Australia is a predominantly urbanised country and the attitudes of the urban population also play a vital role. Without the support of the urban population these programs are unlikely to achieve much success. Therefore this study explores the trends in both urban and rural

community awareness of, and attitudes to, environmental issues which could be used as a benchmark to monitor community understanding in future.

## **2 OBJECTIVE OF THE REPORT**

The objective of this report is to provide the Catchment Management Authorities (CMAs) with an understanding of the level of community awareness of, and attitudes to, environmental issues addressed by catchment management strategies, and to provide a detailed analysis on community understanding of salinity in different regions.

## **3 DATA SOURCES**

### **3.1 Salinity monitoring and weed awareness surveys 1988-1998**

This report used data mainly from a series of attitude surveys conducted in Victoria between 1988 and 1998. In 1988 the Victorian Government Salinity Program contracted Reark Research Consultants (RRC) to undertake two attitude surveys of community opinions about salinity. One survey (RRC 1988b) contacted 816 people in Melbourne and rural towns. The second survey (RRC 1988a) contacted 908 people in rural Victoria. Both surveys were conducted by telephone in May 1988. The aims of these surveys were to assess the community's perceptions of the seriousness of a number of land related problems and to further assess their understanding of salinity. These two surveys were repeated in June 1989 (Yann *et al.* 1989a, 1989b) and again in May 1994 (RRC 1994).

In 1997 the Department of Natural Resources and Environment (NRE) commissioned Reark Research to undertake a similar survey to determine the level of community awareness of environmental and farm weeds compared to a number of other environmental issues covered in previous salinity program surveys. This is to be used as a benchmark to monitor the effectiveness of the Weeds Communication Strategy. This survey covered 1727 respondents both in urban and rural Victoria (RRC 1997). This weed awareness survey was repeated in 1998 (RRC 1998) to measure changes in awareness over time.

#### **3.1.1 Sampling procedure for salinity and weed awareness surveys**

The rural sample for the salinity surveys were selected at random from the private subscriber section of appropriate telephone directories and screened to remove numbers from major towns. The sample for the weed awareness survey was drawn from the CD-ROM White Pages. The sampling for these rural surveys was by strata as shown in Table 3.1

**Table 3.1** Sampling for rural surveys (number of people surveyed)

Regions	1988	1989	1994	1997	1998
Mallee	101	100	200	103	102
Wimmera	100	101	102	101	102
Glenelg	100	100	91	213	101
Corangamite	99	100	98	37	101
Gippsland	102	106	102	90	101
North East	102	100	104	143	101
North Central	203	198	203	84	202
Goulburn	101	102	105	139	101
TOTAL	908	907	1005	910	911

Source: Salinity and weed awareness surveys (1988-1998)

The provincial town group comprised respondents from the metropolitan area of Melbourne and from a number of other urban centres throughout the state. For the salinity awareness provincial town surveys, telephone numbers were selected at random from the private subscriber sections of appropriate telephone books. Numbers were rejected if they were not located within a major town. The sample for the weed awareness survey was drawn from the CD-ROM White Pages. The sample was selected by strata as shown in Table 3.2.

For both rural and provincial town surveys, interviewers were directed to interview persons over 18 and to obtain equal numbers of males and females in each population centre.

**Table 3.2** Sampling for provincial town surveys (number of people surveyed)

Region	Town	1988	1989	1994	1997	1998
Melbourne		218	200	220	218	221
Mallee	Mildura	99	98	26	32	28
	Swan Hill	8	8	19	8	11
Wimmera	Stawell	61	60	9	7	8
	Horsham	33	33	18	12	15
	Dimboola	7	6	9	6	3
Corangamite	Geelong	51	50	117	155	150
	Ballarat	29	29	79	79	77
	Colac	4	4	16	11	12
Glenelg	Warrnambool	8	9	21	37	29
	Portland	4	5	17	9	12
	Hamilton	4	4	17	8	11
Gippsland	Moe-Morwell	58	54	33	38	39
	Sale	23	21	20	16	15
	Bairnsdale	19	19	19	14	13
North East	Wangaratta	43	56	25	18	19
	Wodonga	56	54	26	0	28
North Central	Bendigo	51	49	56	84	68
	Echuca	7	7	16	14	11
	Kyneton	5	4	9	4	5
Goulburn	Shepparton/ Mooroopna	21	23	28	35	35
	Benalla	7	7	21	12	10
Total		816	800	821	817	820

Source: Salinity and weed awareness surveys (1988-1998)

In reporting the results, appropriate weighting was used to compensate for different sampling rates within provincial towns in different years and to overcome the sample influence due to differences in total populations in provincial towns. The most obvious case where this needed to be applied is to compensate for the relatively high sampling from Geelong in the 1994, 1997 and 1998 surveys compared with 1988 and 1989.

### 3.1.2 The survey schedules

For the provincial town sample there were four main questions in the salinity awareness survey. The respondents were asked:

1. To give a score to each issue listed below by giving a number from 1 to 10, where 1 is not serious and 10 is extremely serious, depending on how serious they think the problem is to the future of Victoria.

- Soil erosion
- Pollution
- Loss of native forests
- Poor waste recycling
- Salinity
- Degraded rivers and catchments
- Extinction of plants and animals
- Loss of public open space
- Destruction of wetlands

2. What is salinity?

3. What causes the problem of salinity to occur in the first place?

4. What measures should be taken to reduce the problem of salinity or to control the extent of the problem?

The second question was omitted for the rural interviews. In the 1994 survey the rural question schedule contained questions about local salinity management plans and farm based activity to control salinity. Weeds on farmland and environmental weeds were added to the list of environmental issues in 1997 and 1998 weed awareness surveys. Questions on salinity were not included in these two surveys.

### **3.2 Australian Bureau of Statistics farm census: 1984-1994**

This report also used data drawn from the Australian Bureau of Statistics annual farm census. In 1984 a question about salinity was included in the census at the instigation of the Salinity Committee of the Victorian Parliament. This question asked farmers to report the area of salinity affected land on their farm. Although intended as a measure of the extent of salinity, it soon became apparent that this question was a measure of the perception of salinity. The question was subsequently repeated in Victoria in 1989, 1993 and 1994, providing a ten year time series data set on changing perceptions of salinity. In this report data aggregated to the parish level has been utilised. This provides a greater degree of resolution than that at Local Government Area (LGA), which is more commonly available. This greater area of resolution enables a closer representation of Catchment Management Authority areas by aggregating parishes.

This report also used results from the following previously unpublished opinion studies conducted by a number of organisations, ranging through market research companies, universities and secondary schools. Each provides insights into changing community attitudes at the local level.

### **3.3 Roy Morgan Research Centre surveys: 1988, 1991, 1992, 1993**

In 1988 the Roy Morgan Research Centre (RMRC) conducted a survey on soil conservation for the Department of Primary Industries and Energy, Canberra. An Australia-wide sample of 1182 respondents selected from both state capitals and regional areas were interviewed to study their attitudes to and concern for environmental issues. Results are tabulated on both Australia-wide and statewide basis (RMRC 1988).

Similar surveys were conducted in 1991, 1992 and 1993 for Landcare Australia to study the knowledge and attitudes of Australians about the Landcare movement (RMRC 1991, 1992, 1993).

### **3.4 Australian National Opinion Polls Research Services surveys: 1991, 1993**

Australian National Opinion Polls Research Services (ANOPRS) undertook a survey to identify the nature of environmental issues and development. This survey explored the attitudes of Australians towards the environment compared with other community objectives and covered a sample of 2700 respondents Australia-wide (ANOPRS 1991).

ANOPRS repeated the 1991 survey again in 1993 with a sample of 2100 respondents Australia-wide (ANOPRS 1993).

### **3.5 'The environment: a re-emerging issue in social insights' (Frank Small and Associates 1994)**

Frank Small and Associates commenced a long-term monitoring study of environmental concerns of Australians in mid 1989. This survey was repeated each year until 1994. A sample of about 1300 Australians aged 16 years and older were interviewed (with the exception of 400 respondents from Sydney in 1994). In these surveys respondents were asked to rate their concern for 15 different environmental issues. Amongst these issues was water erosion, wind erosion, soil salinity and air pollution.

### **3.6 'Who cares about the environment?' (EPA 1994)**

The Environment Protection Authority (EPA) commissioned Keys Young, (Sydney) to study the environmental knowledge, attitudes, skills and behaviour of the people of NSW. The aim of the project was to generate 'benchmark information that could be used to keep track of changes in the social aspects of environment protection'. This involved consultation with number of 'focus groups' and a survey of over 1100 randomly selected residents from metropolitan and country towns interviewed face-to-face in February and March 1994.

### **3.7 Australian Bureau of Statistics supplementary surveys: 1986, 1993, 1998, 1999**

In April 1986 the Australian Bureau of Statistics (ABS) conducted a supplementary survey to the ABS household survey to collect information on environmental concerns and attitudes and usage of national parks in Australia. Results were produced on statewide basis. Since 1992 the ABS has conducted state supplementary surveys to the monthly Labour Force Population Survey, and the quarterly Population Survey Monitor. These surveys include questions on environmental concern, complaints about environmental problems and the environmental involvement by Australians. The surveys covered rural and urban areas across all States and Territories of Australia. This set of data has been collected in 1992, 1994, 1996, 1998 and 1999, and will be collected on an annual basis in future.

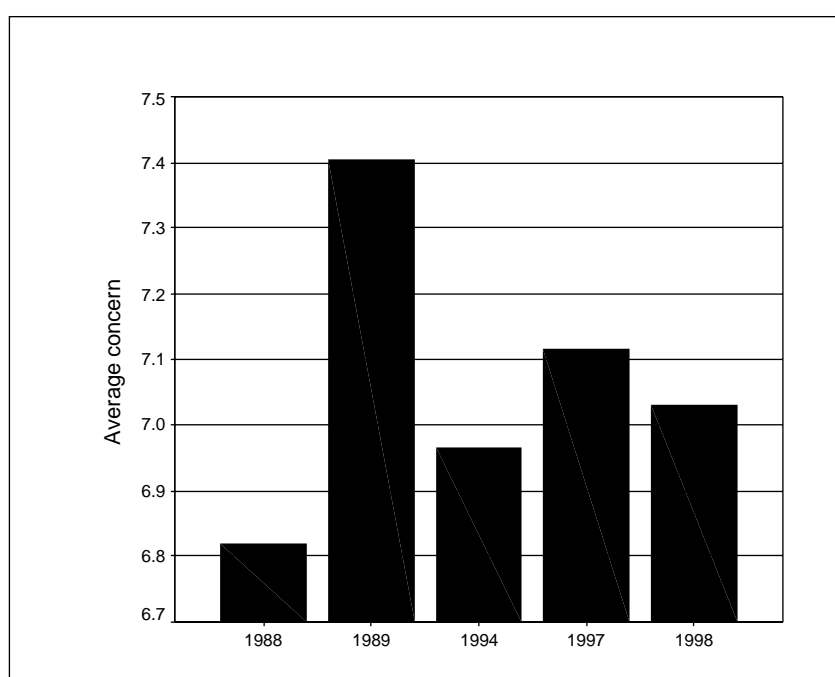
## 4 A STATEWIDE OVERVIEW OF COMMUNITY CONCERNS

### 4.1 A general increase in environmental concern

The repeated surveys of community environmental concerns carried out from 1988 to 1998 showed a dramatic increase in public concern for a whole range of environmental issues during the late 1980s and a subsequent drop in the 1990s. A general measure of environmental concern was computed by averaging the scores given for each of the environmental issues covered in the survey. Figure 4.1 shows a major rise in general concern for environmental issues in 1989, although this was not sustained for a long time. The average concern for these issues dropped from 7.4 to 6.9 percent between 1989 and 1994, although remaining higher than in 1988. Levels of concern started to increase again in the late 1990s. This trend is consistent with the findings of other studies on environmental issues in Australia.

According to ABS supplementary surveys in 1986, 47 percent of the Australians were concerned about problems with the environment. By 1992, three-quarters of the Victorian population registered some environmental concern, but this declined in 1994. At present an average of about 70 percent of Victorians are concerned about environmental problems (Figure 4.2).

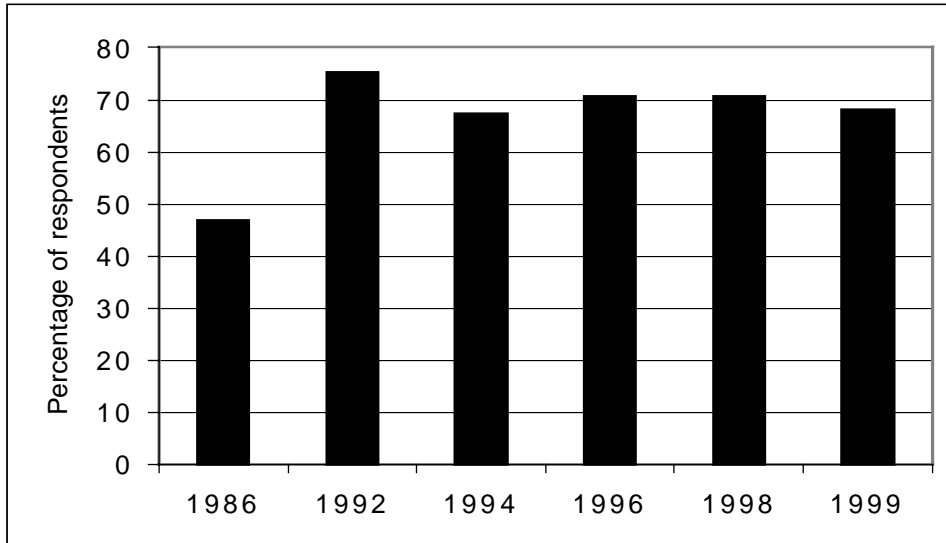
The proportion of people specifying the environment as the issue of most concern to them increased from 5 to 26 percent from 1988 to 1989. This shift was consistent throughout 1990/91, but decreased in 1992 (RMRC 1988, 1992). In an ANOPRS survey, the environment was nominated as the most serious issue for the country by only 12 percent of Australians in 1991. This dropped to three percent in 1993 (ANOPRS 1991, 1993). The monitoring surveys of Frank Small and Associates (1994) also showed a slight fall in environmental concern in early 1990, before starting to rise again (Figure 4.3).



Source: Salinity and weed awareness surveys (1988-1998)

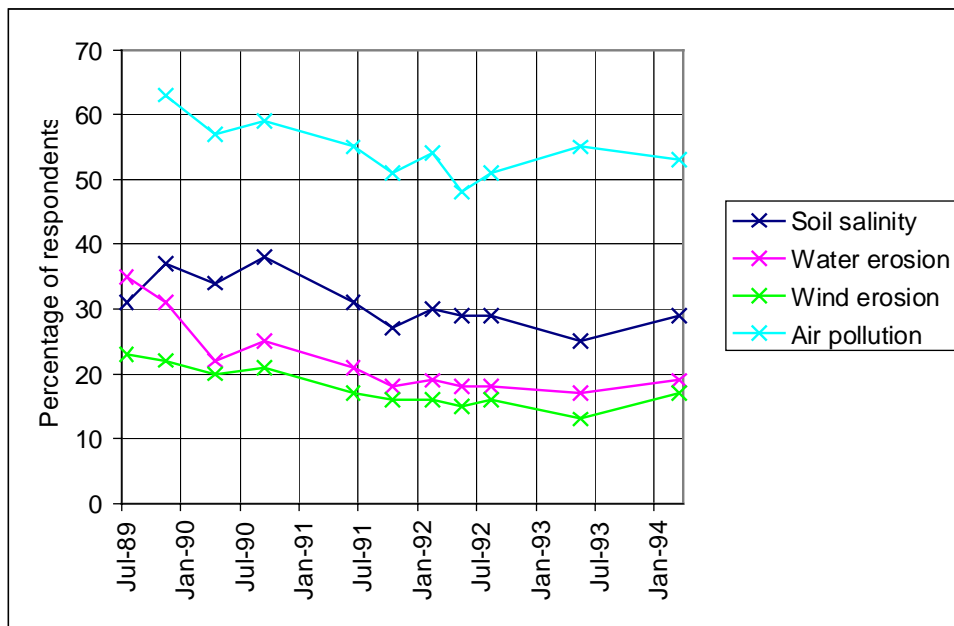
**Figure 4.1** General concern for environmental issues, on a scale of 1-10 (1988-1998).

Note: response 'don't know' treated as no opinion



Source: ABS supplementary surveys 1986 and 1999. Note: Figures for Victorians were not available for 1986, hence the results for Australians are considered. Figures for Victorians are shown for 1992 to 1999

**Figure 4.2** Concern about environmental problems

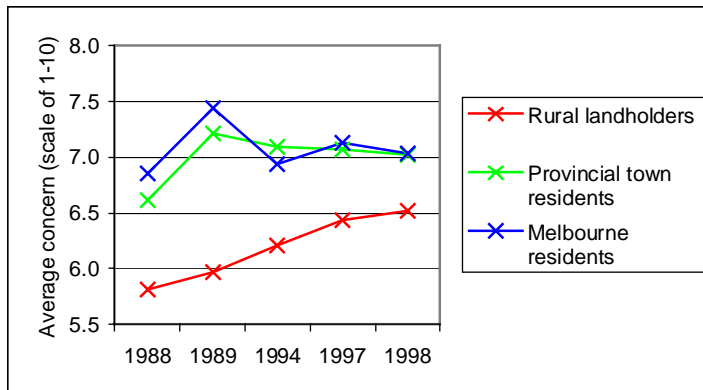


Source: Frank Small and Associates (1994)

**Figure 4.3** Concern for environmental issues

Melbourne residents expressed the highest general concern for environmental issues, while rural landholders had the lowest concern. Residents of provincial towns had a similar level of concern to Melbourne residents (Figure 4.4). Melbourne and provincial town residents showed a shift in the level of concern between 1988 and 1989. Melbourne residents' concern for environmental issues fell considerably in 1994 and had no significant difference between 1988 and 1994. Provincial town residents' concern was still significantly higher in 1994 when compared with 1988. In contrast, the rural residents' concern for environmental issues continued to rise significantly from 1989 to 1998.

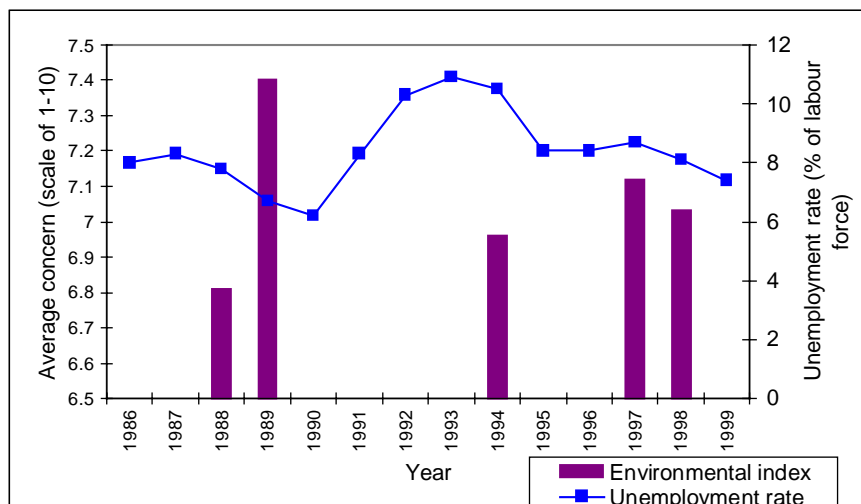
The 1999 ABS supplementary survey also showed that the people in non-metropolitan areas are more likely to have no concerns about the environment (32 percent) than people living in metropolitan areas (28 percent).



Source: Salinity and weed awareness surveys 1988-1998

**Figure 4.4** Concern for environmental issues by rural, provincial town and metropolitan residents, on a scale between 1-10 (1988–1998)

Possible causes for the shift in general concern for environmental issues in 1989 are the inclusion of the environmental issues into the party political agenda and the subsequent enormous media exposure given to environmental issues during this year (Crook & Pakulski 1994). The subsequent drop in concern for environmental issues was likely related to the rising unemployment rates in Australia during this period. In Figure 4.5 the environmental concern peaks in 1989 with the fall of unemployment rates. The fall in environmental concern commences as unemployment accelerates in the mid 1990s, and continues to fall as unemployment rises to its peak. Environmental concern starts to rise again with the fall of unemployment rates.



Source: Unemployment rate-ABS Year Book Australia (1986-1999), Environmental concern index-salinity monitoring surveys (1988, 1989, 1994, 1997 and 1998).

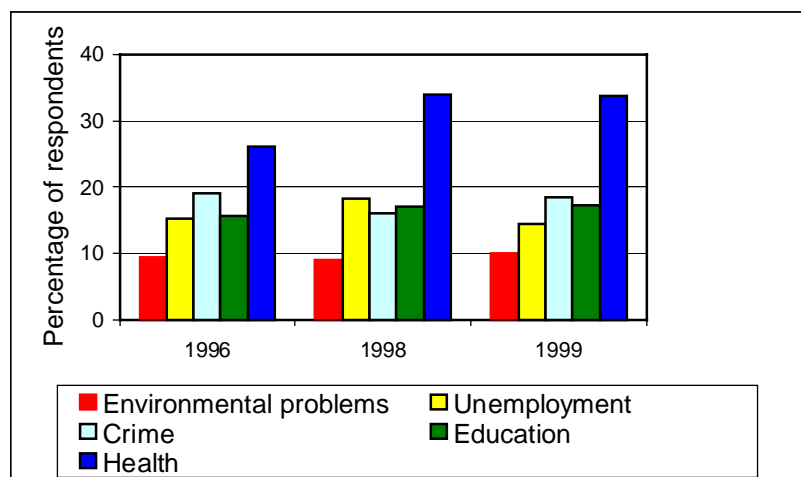
**Figure 4.5** Unemployment rate and the index of environmental concern (on a scale of 1-10)

This relationship is illustrated in several environmental studies. In a national poll of the issues rated by Australians as very important, employment continued to dominate as the principal concern of Australians between 1990 and 1994, peaking at 82 percent in 1992. The pattern for environment is almost the mirror image of that of unemployment. Concern about environment fell from 62 percent in 1990 to 52 percent in February 1992 and February 1993 but rose again to 64 percent by November 1993 (Lothian 1994).

According to the ANOPRS surveys, the number of respondents nominating the environment as the most important issue facing Australia fell from 12 to 3 percent from 1991 to 1993. By comparison, concern about unemployment rose from 38 to 49 percent and concern for the state of the economy rose from 24 to 30 percent of those surveyed (ANOPRS 1991, 1993).

The long-term monitoring study of Frank Small and Associates (1994) detected a major fall in environmental concern within 10 months of its commencement in 1989. The number of Australians willing to pay for the environmentally friendly products also halved during this period. Some rise in environmental concern was shown again in 1994 with the fall of the unemployment rate, although this still remained lower than 1989 levels.

Public concern about unemployment still remains higher than for environmental issues. ABS supplementary surveys in 1996, 1998 and 1999 asked respondents for the most important social issue. Environmental problems were an issue for only nine percent of Victorians while unemployment was an issue of concern for 15 percent in 1996. Health was considered to be the most important issue. Concern for environmental issues maintained its position for the next two years while concern over unemployment increased in 1998. Concern for unemployment dropped in 1999, but still remained higher than concern for environmental issues (Figure 4.6).



Source: ABS Supplementary surveys (1996,1998,1999)

**Figure 4.6** Most important social issues for Victorian residents (1996, 1998 and 1999)

#### 4.2 Most important environmental issues for Victorians

Pollution has continued to be the issue of greatest concern for Victorians. This is followed by forest protection, recycling and biodiversity. The late 1990s have seen a drop in concern for recycling and an increase in concern for catchment and wetland protection. Overall, Victorians have a lesser concern for soil and catchment issues. Salinity had the lowest concern level throughout the decade with the exception in 1994 (Table 4.1).

This pattern is observed in other studies in Australia. ANOPRS surveys divided the environmental issues into four levels of concern where water pollution and disposal of hazardous waste were consistently placed in the top rank and land degradation is consistently placed in the second level of concern (ANOPRS 1991, 1993).

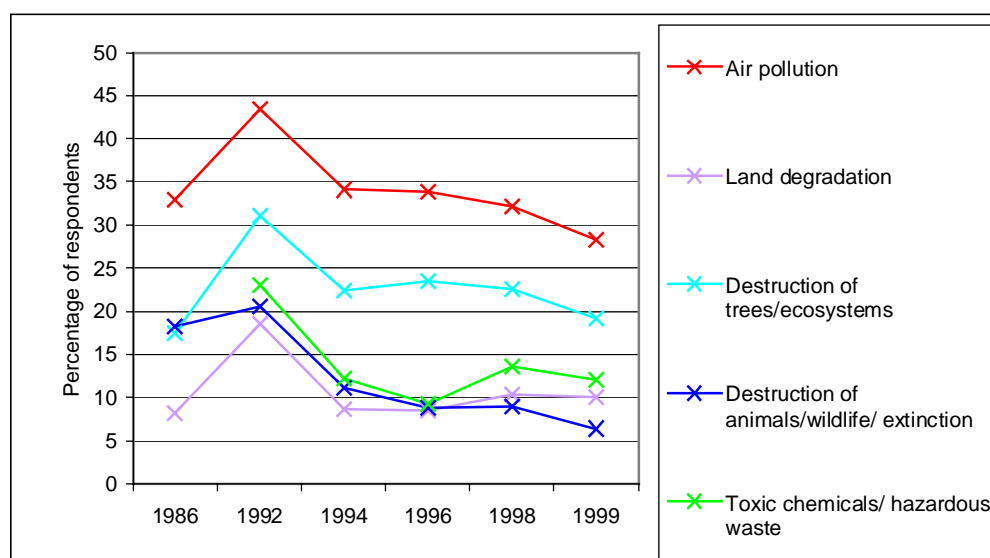
**Table 4.1** Average concern for environmental issues by Victorians, on a scale of 1-10 (1988-1998)

Environmental issues	1988	1989	1994	1997	1998
Soil erosion	6.84	7.39	6.93	7.19	7.15
Pollution	8.15	8.68	7.99	8.08	7.99
Forests	7.15	8.17	7.26	7.52	7.55
Recycling	6.91	8.03	7.16	6.86	6.42
Salinity	5.40	6.21	6.73	6.14	6.21
Catchments	6.68	7.03	6.59	7.01	7.17
Biodiversity	7.43	7.62	7.12	7.43	7.27
Open space	6.77	6.88	6.47	6.95	6.80
Wetlands	6.06	6.63	6.38	6.86	6.70

Source: Salinity and weed awareness surveys (1988-1998)

In ABS supplementary surveys, air pollution remained the dominant environmental concern, followed by other types of pollution issues such as fresh water pollution and ocean/sea pollution. Problems related to land degradation have the least concern among the selected issues. Protection of forests and loss of biodiversity are of more concern to Victorians than soil problems (Figure 4.7).

This same pattern was observed in surveys conducted by Frank Small and Associates (1994). Air pollution had the highest level of community concern, while land issues were of less concern. More people were concerned about soil salinity than erosion problems (Figure 4.3).



Source: ABS Supplementary surveys (1986-1999)

**Figure 4.7** Environmental concern by Victorians (1986-1999)

### 4.3 Who is concerned?

People in non-metropolitan areas are more likely to be unconcerned for the overall environment than people living in the metropolitan area. The proportion of residents not concerned about the environment was 32 percent and 28 percent for these two groups respectively (ABS supplementary survey, 1999). Pollution was of more concern to people in metropolitan areas than those living in rural areas, while soil erosion, salinity, toxic chemicals, hazardous waste and use of pesticides are of more importance to rural residents (Table 4.2). This is in parallel with the findings of the salinity and weed awareness surveys from 1988 to 1998 (RRC 1988a, 1988b, 1994, 1997, 1998).

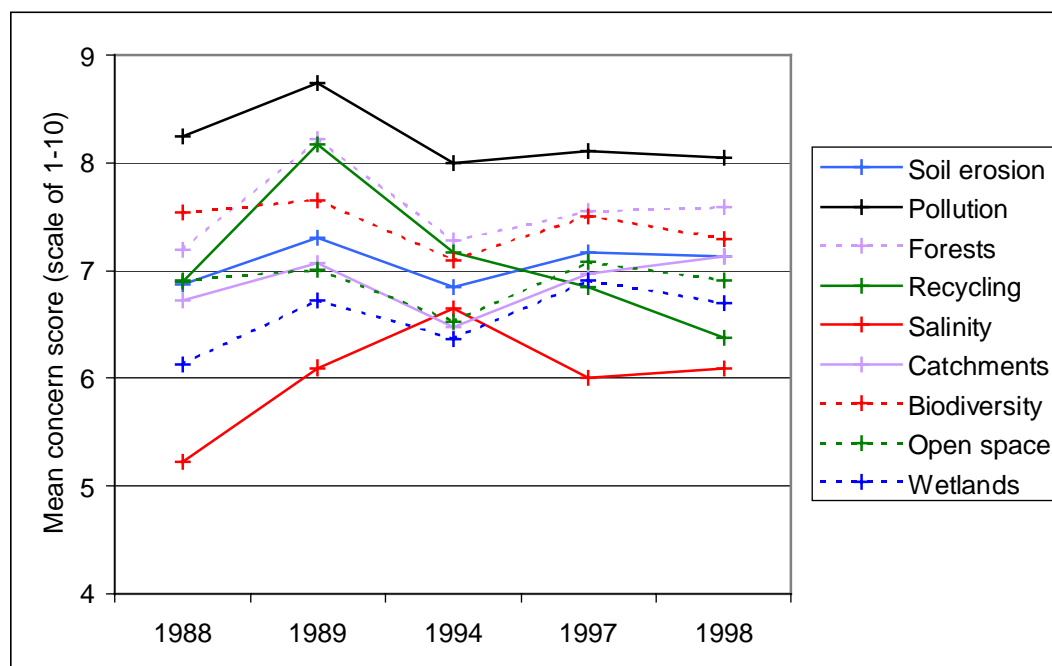
**Table 4.2** Environmental concern by area (percent of respondents)

	Metropolitan area	Non-metropolitan area
Air pollution	33.9	20.0
Land degradation	8.5	13.5
Toxic chemicals/ hazardous waste	10.7	11.5
Destruction of trees/ecosystems	22.0	19.6
Destruction of animals/wildlife/ extinction	8.0	7.4

Source: ABS Supplementary surveys (1999)

#### 4.3.1 Melbourne residents

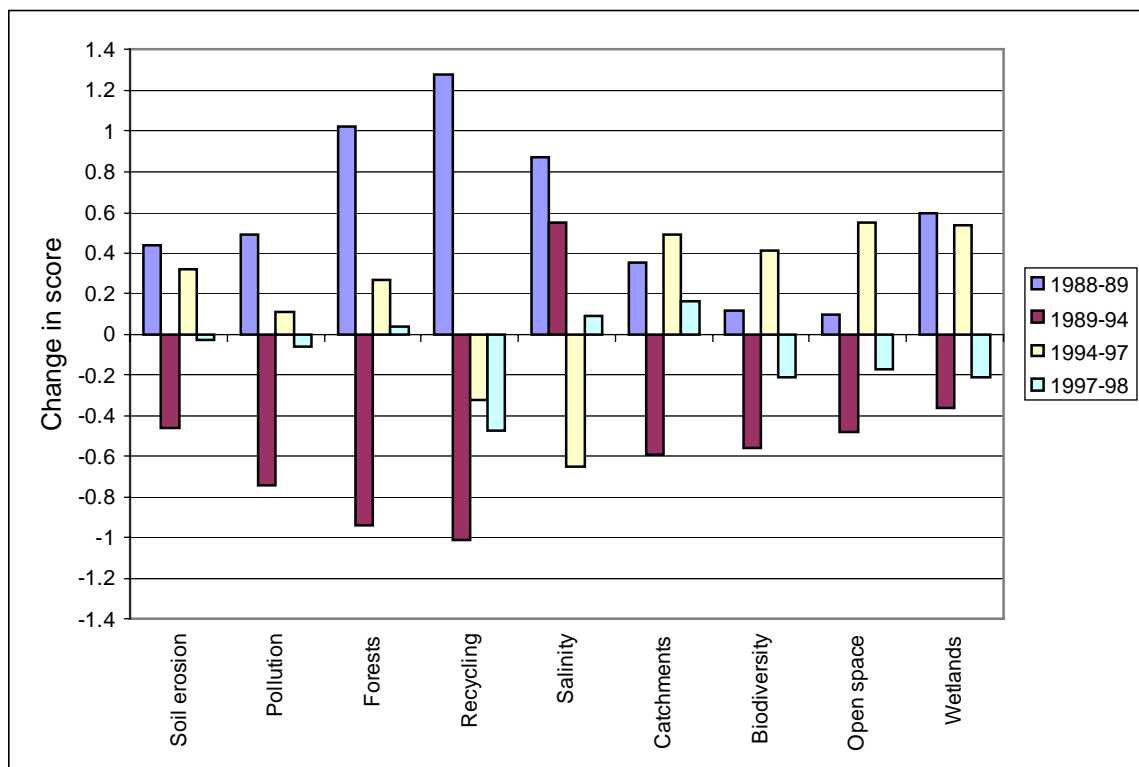
Salinity and weed awareness surveys revealed that pollution issues were of more concern to metropolitan residents than soil/land degradation issues. Environmental pollution, forest protection, recycling and biodiversity were the main concerns for metropolitan residents (Figure 4.8). Pollution maintained the highest concern level throughout the decade while salinity continued to be the issue of least concern.



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 4.8** Concern for environmental issues by metropolitan residents (1988-1998)

Concern for all issues except for salinity increased between 1988 and 1989 and dropped in 1994 while concern for salinity continued to rise until 1994. Concern for most these issues started to rise again by 1997 with the exception of concern for salinity and recycling which fell from 1994 to 1997. Recycling and forest protection had the greatest rate of increase in concern from 1988 to 1989. Salinity also had a high increase in concern while erosion, pollution and wetlands protection had average increases. Loss of species diversity, open space and catchment protection had little increase in concern. These issues had higher increases in support during 1997 (Figure 4.9). The increasing concern for salinity in 1994 was in spite of the recession in which concern for other environmental issues dropped. This was evident in other environmental studies. The continuous monitoring surveys from 1989 to 1994 to measure concern for 15 environmental issues showed a similar pattern of rising concern for soil salinity during the recession while concern for pollution was falling (Frank Small and Associates 1994).

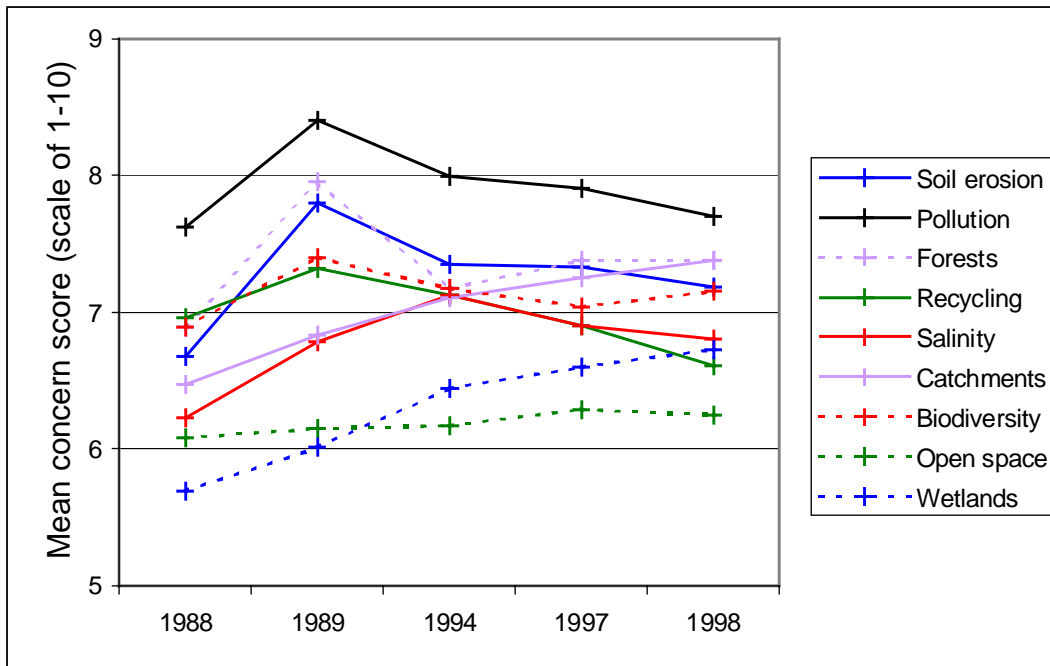


Source: Salinity and weed awareness surveys (1988-1998)

**Figure 4.9** Average change in concern for environmental issues by Melbourne residents (1988-1998)

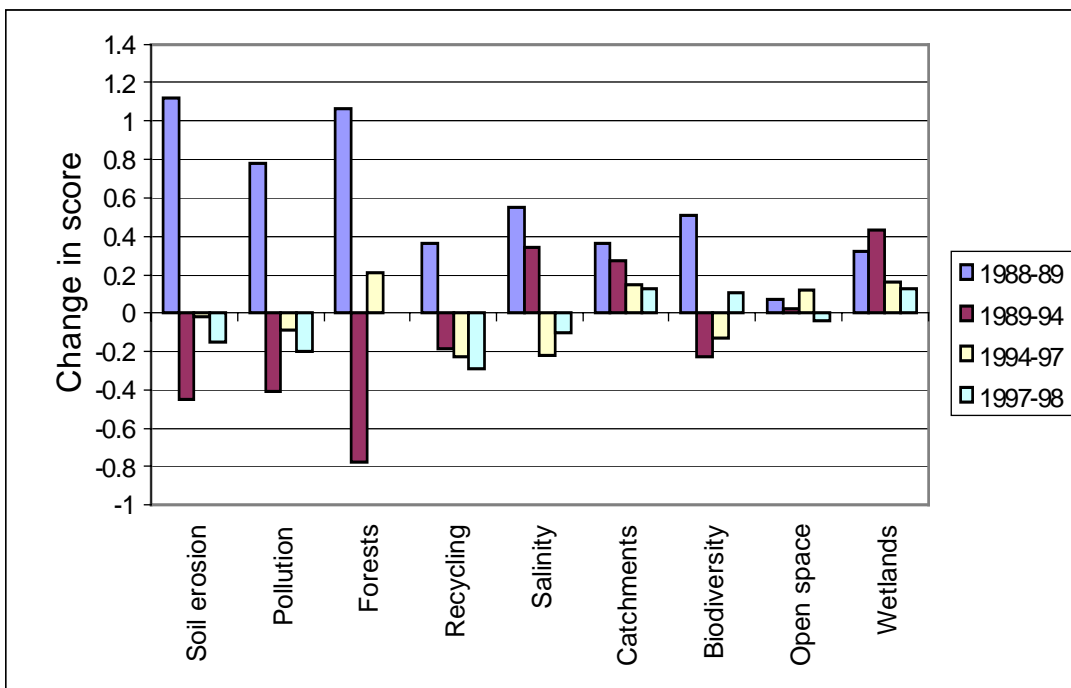
#### 4.3.2 Provincial residents

Residents of Victorian provincial towns, like metropolitan residents, were mainly concerned with environmental pollution, forest protection, recycling and biodiversity in the late 1980s to mid 1990s (Figure 4.10). There was rise in concern for most environmental issues between 1988 and 1989. The decline in concern for these issues in 1994 was less obvious than for Melbourne residents. Concern for many issues declined between 1994 and 1997. However, the increase in concern for soil erosion in 1989, the increased concern for salinity in 1994, and the continuously rising concern for catchment and wetland protection are evidence for growing awareness of the significance of land degradation and catchment issues by residents of provincial towns (Figure 4.11).



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 4.10** Concern for environmental issues by provincial residents, on a scale of 1-10 (1988-1998)

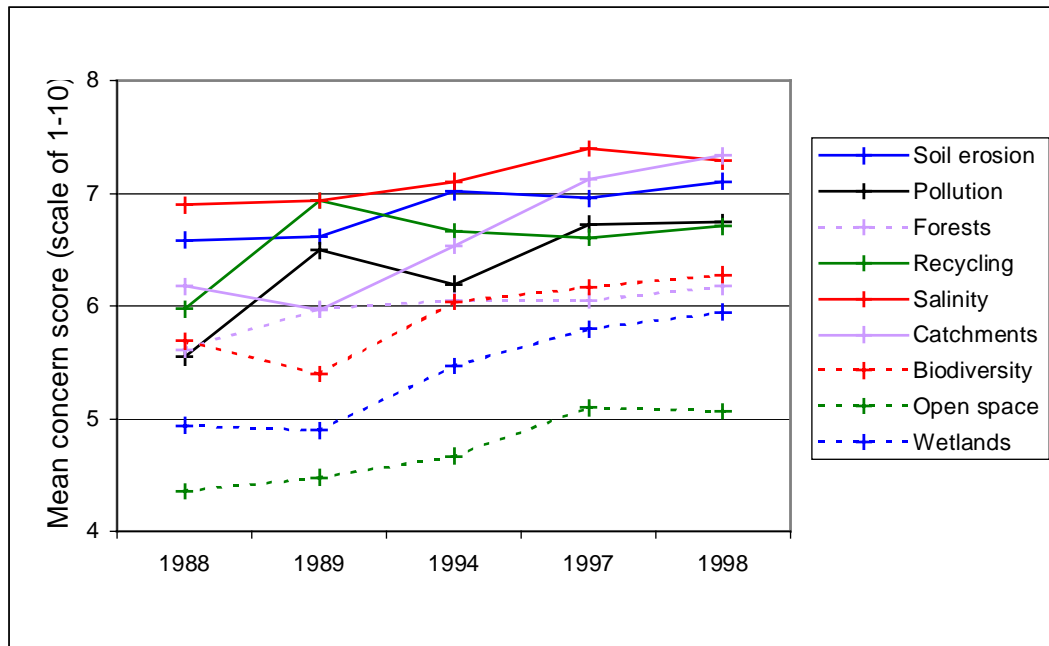


Source: Salinity and weed awareness surveys (1988-1998)

**Figure 4.11** Average change in concern for environmental issues, provincial residents (1988-1998)

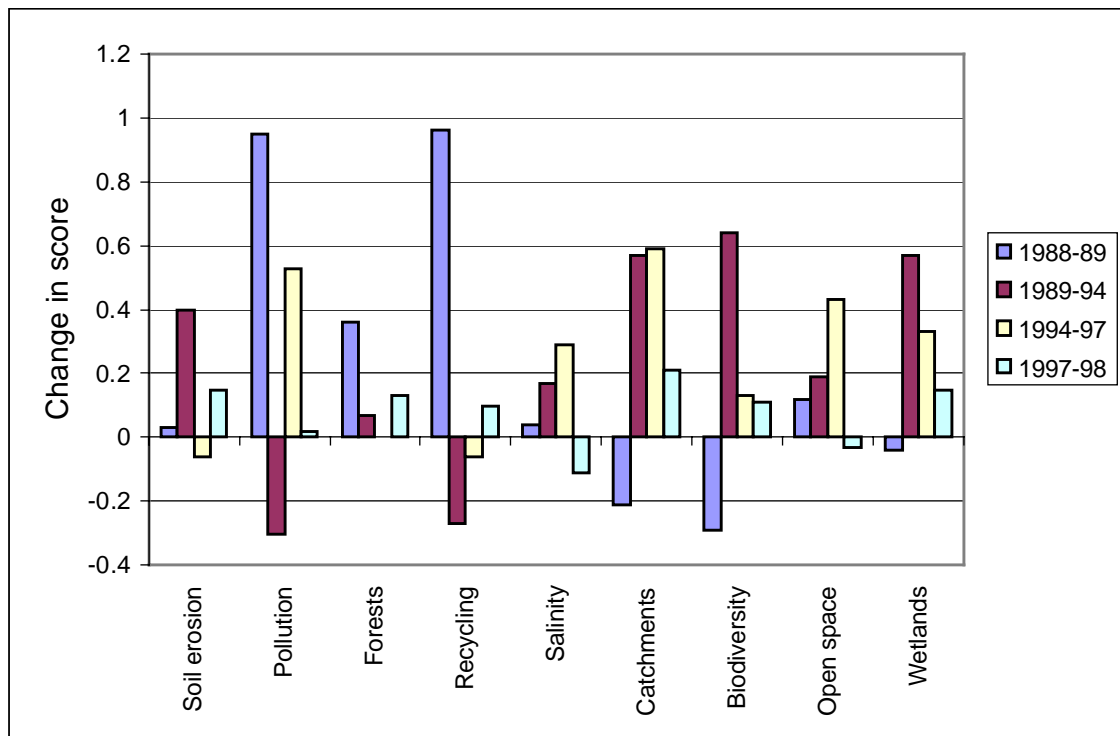
### 4.3.3 Rural landholders

Rural Victorians' concerns differed from those of urban residents. Soil degradation issues were of more concern to them than pollution issues. Salinity, soil erosion and catchment protection were the main concerns for rural landholders (Figure 4.12). Concern for both salinity and erosion remained unchanged between 1988 and 1989, while concern for catchment and wetland protection slightly declined. Concern for all land and catchment issues increased during the next five years (Figure 4.13). Concern for catchment issues continued to rise and was ranked highest in 1998. Concern for pollution and recycling followed a similar trend to those of Melbourne residents although at a lower level of overall concern.



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 4.12** Concern for environmental issues by rural residents (1988-1998)



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 4.13** Average change in concern for environmental issues by rural residents (1988-1998)

Figure 4.14 shows more clearly how people changed their opinions about environmental issues throughout the decade. The respondents were asked to rank the issues on a scale of 1-10 according to how serious they think the issues were (1 showing no problem and 10 showing a very serious problem). The response 'don't know' is denoted by 0. The change in the number of people giving 'don't know' responses gives a good picture of changes in opinion.

Most people in Melbourne and provincial towns were able to rate their concerns about pollution, recycling and forests throughout the decade. Very few people answered 'don't know' to these issues. In Melbourne less than one percent of respondents answered 'don't know' to the seriousness of pollution. A high proportion of people regarded pollution as a very serious problem, selecting between 8-10 in the scale of 1 to 10. In contrast, close to 30 percent of Melbourne residents answered 'don't know' to the seriousness of salinity in 1988, while another 10 percent answered 'don't know' to issues of wetland and catchment protection. Of the people able to rate their concern, the majority considered wetland and catchment protection as moderate or serious problems, choosing between 5-10 on the scale. Over the next year there was a decrease in the number of metropolitan residents answering 'don't know' to questions about salinity and by 1994 less than 10 percent of the population responded 'don't know'. In the first two years of the survey, the number of people considering salt as a very serious problem (choosing 9 or 10) increased. There was no significant change in the proportion of people selecting between 1-8 on the scale. This may be a result of the increase in awareness of salinity by Melbourne residents, and perhaps suggests that many people have moved from 'don't know' to the highest level of concern represented by 10. The change in concern for salinity during the next five years, however, shows a different picture. In 1994 the percentage of Melbourne residents answering 'don't know' fell to 10 percent. During this period the percentage of people choosing 9 or 10 on the scale also decreased, while the proportion selecting a moderate score between 5-8 increased. Even with more people able to rate their concern about salinity later in the decade, the proportion of people answering 'don't know' still remained higher than in rural areas.

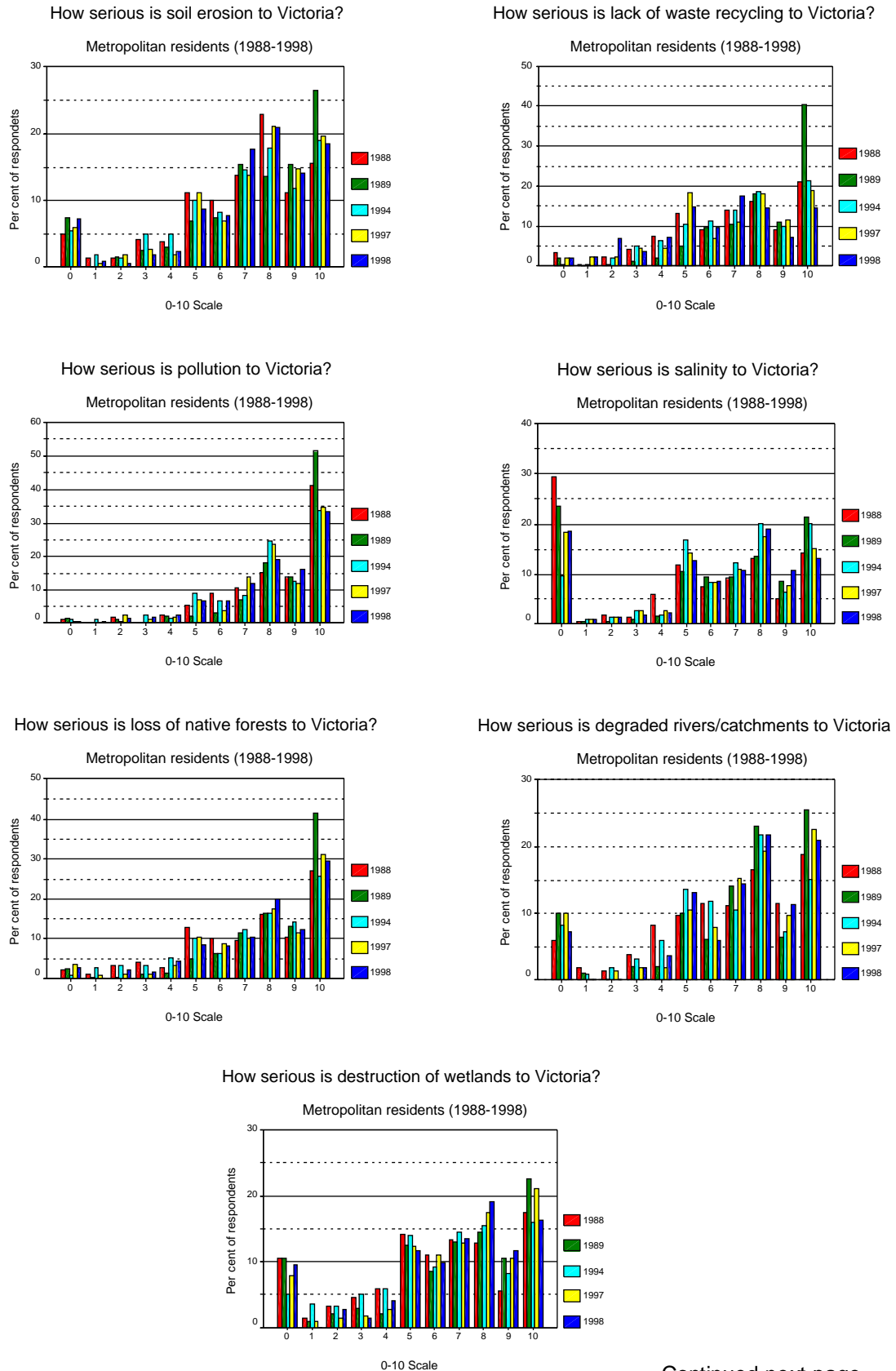
The proportion of people answering 'don't know' to soil erosion and catchment issues increased between the 1988 and 1989. At the same time the number of people with high levels of concern increased while the proportion of people with moderate concerns decreased. This may suggest that people who had been able to rate their concern had an increased concern for these issues in later surveys.

Provincial town residents demonstrated a slightly different pattern of concern to Melbourne residents. The percentage of people answering 'don't know' on salinity increased in 1989 before falling to six percent in 1994.

In rural areas fewer people answered 'don't know' to soil and catchment issues. In 1988 only one percent of rural population answered 'don't know' and in 1994 almost all rural people were able to rate their opinion on these issues. As with urban residents, rural landholders also showed an increase in the proportion of people who answered 'don't know' about salinity in 1989. At the same time the proportion of people selecting moderate or serious as their choice did not vary much, while people with less concern (choosing 1-2 on the scale) decreased. These changes are difficult to explain. It may suggest that some people who were less concerned about salinity have moved to the 'don't know' category. The change in concern for other land and catchment issues showed a similar pattern. Towards the end of the decade the number of people showing high concern for catchment and wetland protection increased.

**Figure 4.14** How serious are the environmental issues to Victoria?

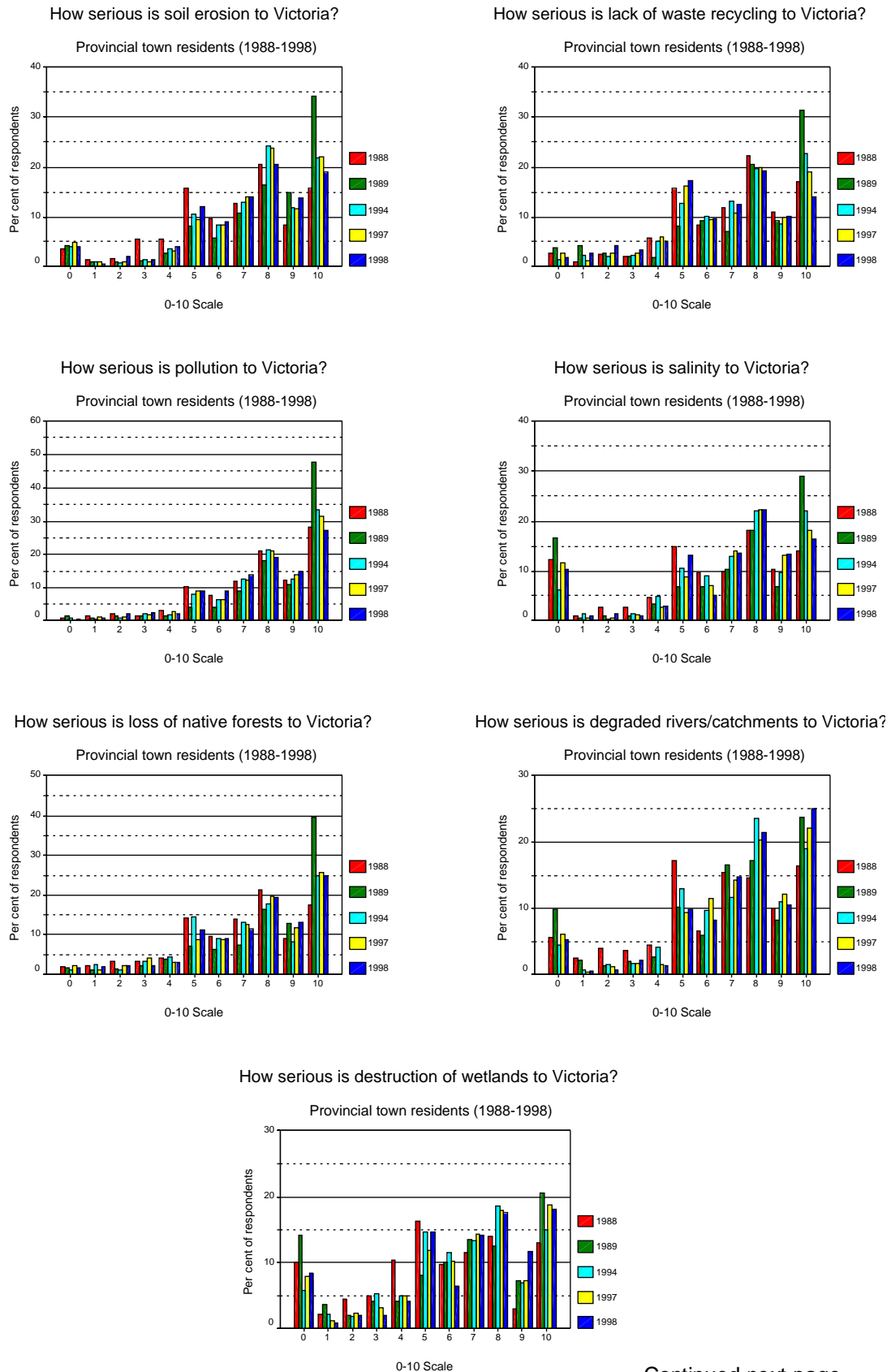
Percent of respondents (Melbourne residents) on a scale of 1 to 10



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Figure 4.14 Continued.

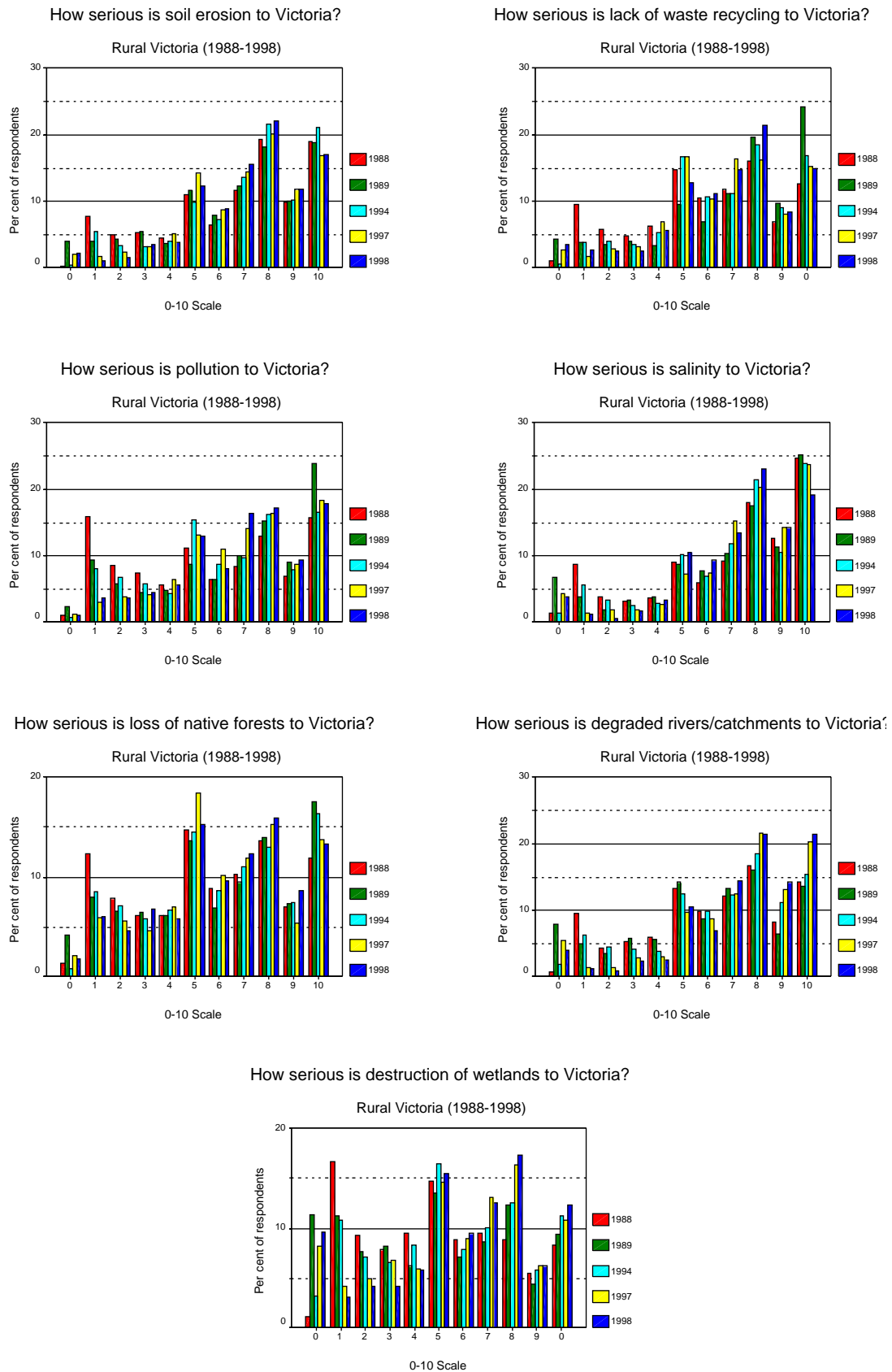
Percent of respondents (provincial town residents) on a scale of 1 to 10



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Figure 4.14 Continued.

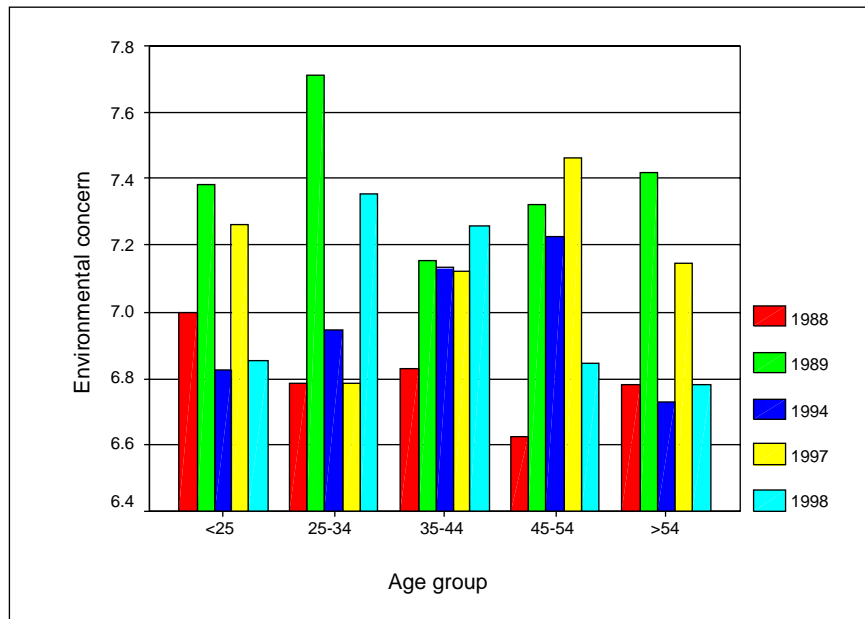
Percent respondents (rural residents) on a scale of 1 to 10



#### 4.4 Environmental concerns by age

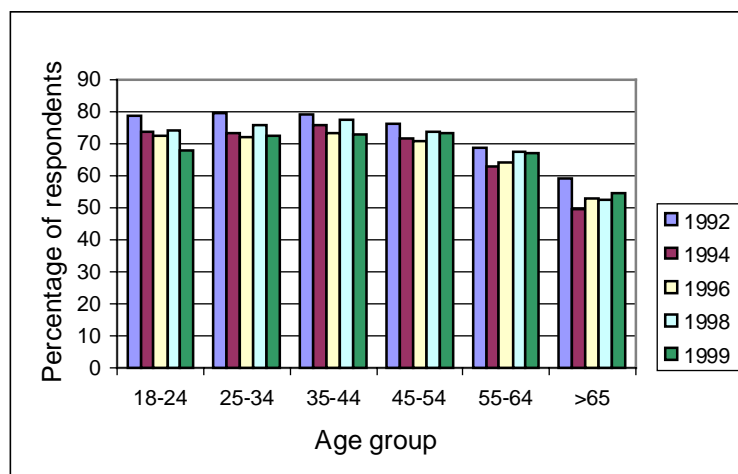
Earlier in the decade younger Victorians showed a greater concern about the environment. People below 35 years of age had the higher average concern in 1988. Within a year a large positive change in attitude was shown by all age groups. Concern decreased again within the next few years amongst the younger groups, while the opinion of middle-aged Victorians (35-55 years) remained unchanged. In 1997 people aged between 45-54 years showed the highest concern for environment (Figure 4.15).

A similar pattern is shown in ABS supplementary surveys. These surveys show that people less than 44 years of age were more concerned about environmental problems than older people. These surveys reflected the same pattern of reduction in concern in all age groups demonstrated in salinity surveys in 1994 (Figure 4.16).



Source: Salinity and weed awareness surveys (1988-1998)

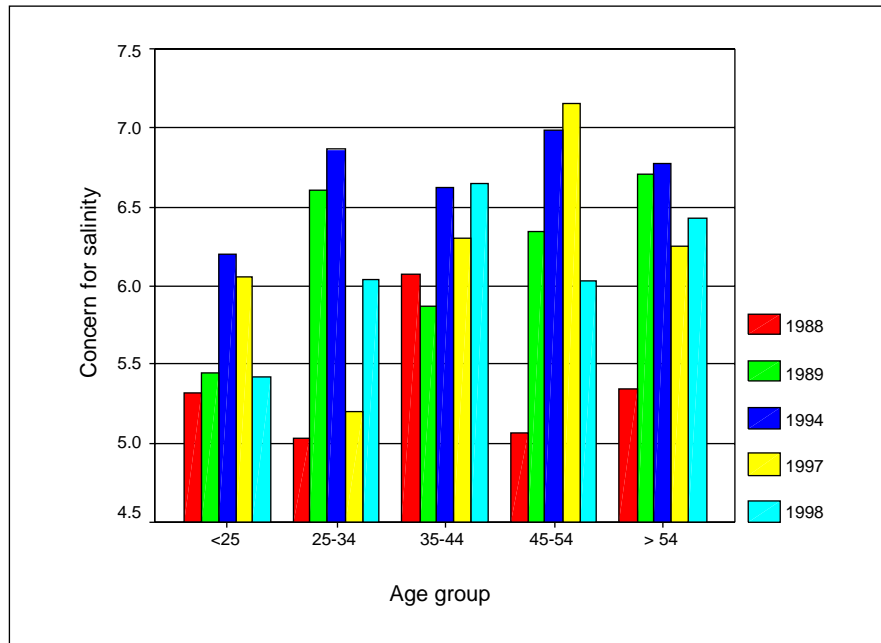
**Figure 4.15** Environmental concern (on a scale of 1-10) by age groups



Source: ABS supplementary surveys (1992-1999)

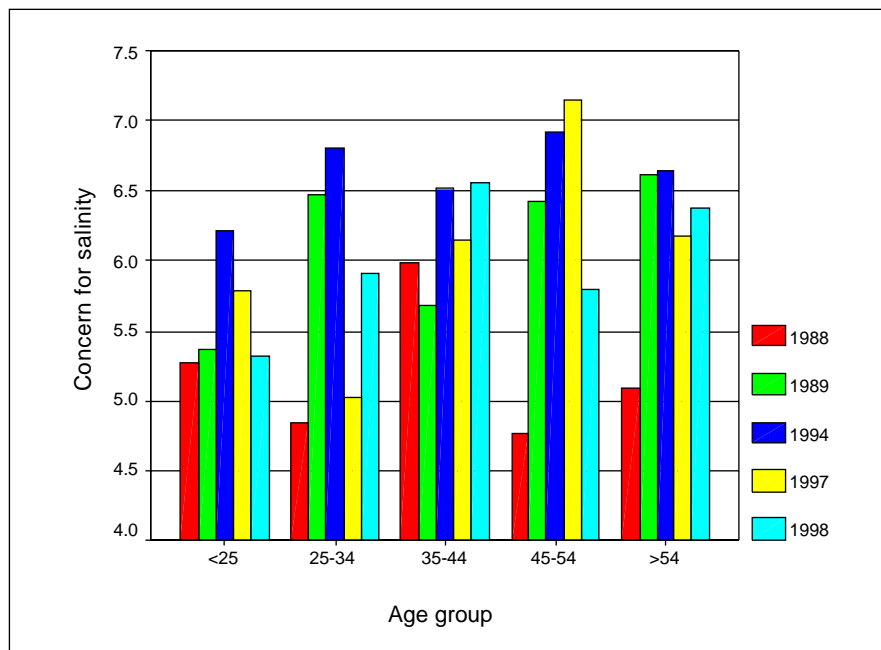
**Figure 4.16** Environmental concern by age groups

People between 35 and 44 years of age had the highest concern for salinity in 1988. However, by the following year a large increase in concern for salinity was shown by young adults (25-34) and as well as those 45 years and older. Victorians aged between 45-54 continued to increase their opinion about the seriousness of salt until 1997 (Figure 4.17). Concern for salinity dropped in 1998. These changes are mainly reflected in Melbourne and provincial residents (Figure 4.18). Amongst rural Victorians there were no significant changes in any one of the groups, with the exception of people over 55 years of age (Figure 4.19).



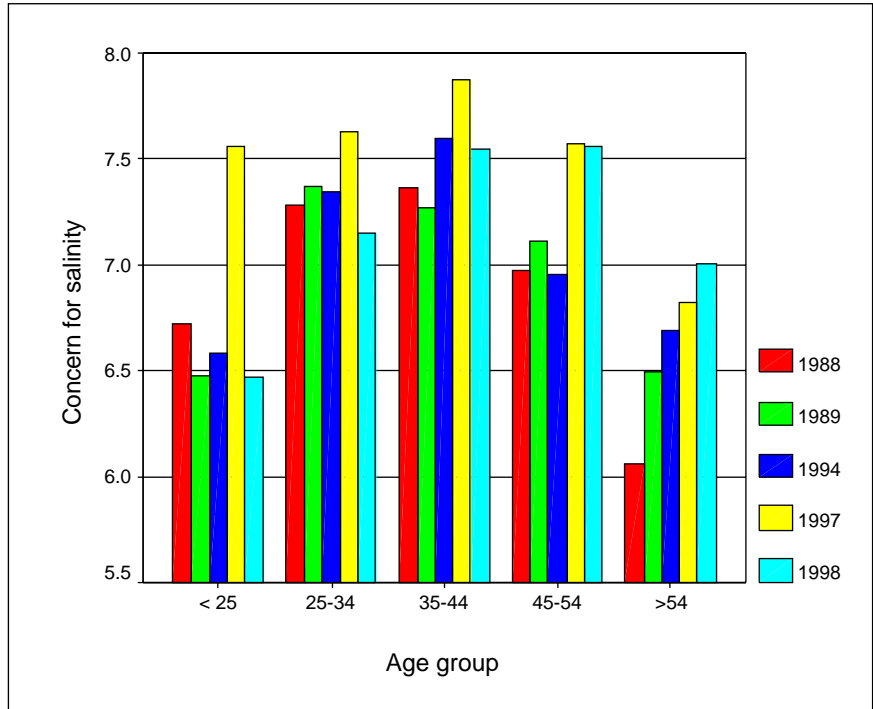
Source: Salinity and weed awareness surveys (1988-1998)

**Figure 4.17** Victorian residents' concern for salinity (on a scale of 1-10) by age groups



Source: Salinity and weed awareness surveys (1988-1998)

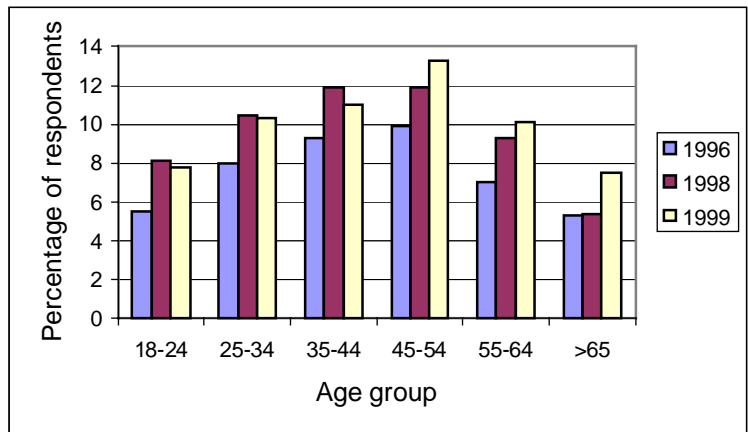
**Figure 4.18** Melbourne residents' concern for salinity (on a scale of 1-10) by age groups



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 4.19** Rural residents' concern for salinity (on a scale of 1-10) by age groups

The greater concern for salinity by middle-aged Victorians is again reflected in ABS surveys. People aged between 35 and 54 years have the highest concern for land degradation issues. People of all age groups, except for the group between 35 and 44 years of age, showed a positive change in their opinion about the seriousness of land degradation in Victoria (Figure 4.20).



Source: ABS supplementary surveys (1996, 1998 and 1999)

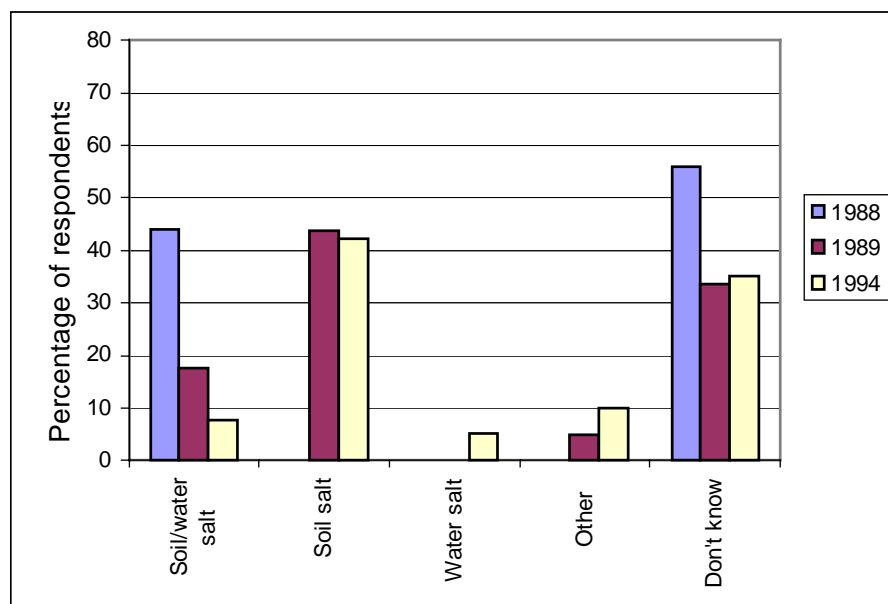
**Figure 4.20** Concern for land degradation issues by age groups

## 4.5 Awareness of salinity

The three Salinity Program public opinion monitoring surveys conducted in 1988, 1989 and 1994 included some additional questions to determine people's awareness of salinity, the possible causes for salinity and the measures that could be taken to reduce salinity (RRC 1988a, 1988b, 1994; Yann *et al.* 1989a, 1989b).

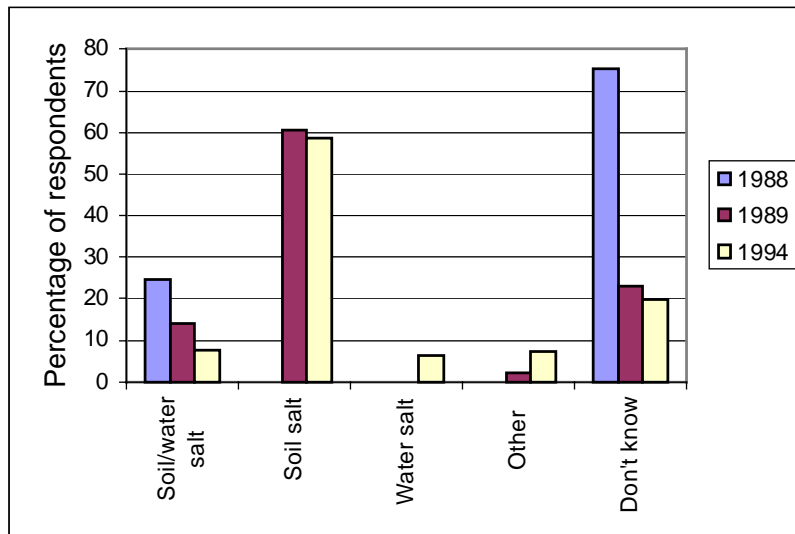
### 4.5.1 What is salinity?

In the provincial and Melbourne metropolitan surveys (RRC 1994, 1988b; Yann *et al.* 1989b) the respondents were asked the question, 'what is salinity?' This question was not asked of rural landholders. Correct answers to this question could include descriptions of soil salinity or water salinity or both. The results of the survey show an increase in awareness of salinity in both Melbourne and provincial town residents. In 1988, 56 percent of Melbourne residents did not know what salinity was, compared to 75 percent in provincial centres. Respondents with correct answers (in both areas) understood it to be a process related to salt in both the soil and water. Response patterns changed in the following year. Provincial town residents demonstrated an increased awareness in the 1989 survey with the percentage of people responding 'don't know' falling by about 50 percent. Melbourne residents answering 'don't know' fell by 22 percent. During 1989, considerably more people in both survey areas nominated salinity as a process related to salt in soil, rather than salt in both soil and water. A possible cause for this difference – as well as a general increase in knowledge about salinity in soil – may be a change in perception of those who previously considered salinity as both a soil and water process. There was not much change in awareness shown in the 1994 survey, other than a small reduction in the percentage of people relating salinity to salt in both soil and water, and some respondents mentioning it as salt in water (Figures 4.21 & 4.22). Despite the apparent increase in the understanding of salinity among metropolitan and provincial town Victorians, there is still a significant proportion of the population who had no idea what salinity is.



Source: Salinity awareness surveys (1988-1994)

**Figure 4.21** What is salinity? (Melbourne residents)



Source: Salinity awareness surveys (1988-1994)

**Figure 4.22** What is salinity? (provincial town residents)

#### 4.5.2 What causes salinity?

The three salinity surveys conducted in 1988, 1989 and 1994 asked Victorians the question, 'What causes salinity?' Most common responses to this question were as follows:

- Clearing of trees
- Over-irrigation
- Lack of drainage
- Poor farm management
- Excess use of fertiliser/chemicals
- Don't know

In 1988 rural Victorians had a better understanding of the causes of salinity than urban residents. Only 16 percent of rural Victorians said they did not know what causes salinity (Table 4.3). The majority of the sample believed clearing of trees was the main cause of the problem. Over-irrigation was the next most common answer to this question, followed by poor drainage and rising watertable. There was little increase in the rural population's understanding of the causes of salinity over the following year, with less respondents answering 'don't know' and more identifying the above-mentioned causes of salinity. The proportion of people giving 'poor management' as a cause for salinity almost doubled during this year. This trend again changed within the next survey, with a slight increase in the proportion of respondents answering 'don't know' to the question, although fewer than in 1988.

In 1988, urban Victorians demonstrated poor knowledge of the causes of salinity. For both Melbourne and provincial town residents the most common response to this question was 'don't know'.

More provincial town residents demonstrated an understanding of the causes of salinity than did Melbourne metropolitan residents. For both groups the most common response (after 'don't know') was 'clearing of trees' followed by 'over-irrigation' and 'poor management practices'. In the following year, there was an increase in the understanding of the causes of salinity among urban Victorians, with less people answering 'don't know' to the question. The proportion of respondents mentioning 'clearing of trees' and 'poor farm management' had increased in both groups, although these changes were greater in provincial town areas than in metropolitan areas. These trends changed again within the next five years with more respondents answering 'don't know' to the question in both Melbourne and provincial towns. There was also a significant increase in the percentage of persons nominating chemicals and fertilisers as a cause of salinity.

**Table 4.3** Beliefs about the causes of salinity (percent of respondents)

Causes of salinity	Rural residents			Provincial town residents			Melbourne residents		
	1988	1989	1994	1988	1989	1994	1988	1989	1994
Poor land management	13.2	26.5	19.9	8.4	24.5	17.3	8.7	22.5	14.5
Loss of trees	44.2	53.1	44.3	23.1	45.3	32.8	15.6	29.5	26.4
Over-irrigation	28.0	33.8	29.2	16.4	21.5	17.1	11.5	11.0	20.5
Rising watertable	27.4	33.2	15.4	10.0	18.5	9.3	6.0	9.5	8.6
Poor drainage	14.3	14.1	9.4	6.2	7.5	3.7	2.3	4.0	1.8
Poor river flows/pollution in river	3.6	4.0	6.6	5.4	5.7	9.2	7.8	14.0	9.5
Chemicals and fertilisers	3.6	3.9	5.0	4.3	3.5	9.2	9.2	6.5	13.2
Natural process	3.2	2.4	2.0	5.4	2.2	1.3	7.8	0.5	2.7
Cyclic windborne salt	1.8	0.1	5.7	0.3	1.3	5.0	1.4	4.0	4.1
Evaporation leaving salt behind	0.4	0.9	1.3	2.2	2.0	0.7	2.3	2.5	0.5
Channel seepage	0.9	1.2	1.1	0.0	0.2	0.0	0.0	1.0	0.0
Don't know	16.6	10.5	14.8	34.1	24.0	28.3	43.6	27.5	35.5

Source: Salinity awareness surveys (1988-1994)

#### 4.5.3 What controls salinity?

All surveys asked the question 'what measures should be taken to reduce the problem of salinity or to control the extent of the problem?' 'Don't know' and 'planting trees' were the most common answers to this question, although responses varied considerably between survey groups. Provincial Victorians demonstrated little knowledge of methods of salinity control. In 1988 more than half of Melbourne respondents responded 'don't know' to this question, while only 16 percent mentioned tree planting as a measure of control. By 1989 thirty percent of people mentioned trees as a method of control and people mentioning 'don't know' had fallen to 40 percent. In provincial towns, awareness of salinity control was similar to Melbourne. The only difference was a greater proportion of people who mentioned tree planting as a solution to salt. Support for tree planting rose from 26 percent to 47 percent between the first two surveys.

In 1988 approximately half of rural Victorians were aware of the role of tree planting in salinity control. This figure increased slightly in the following year, but dropped again in the 1994 survey (Table 4.4). The need for better farm management was the next most common answer given by over a quarter of the rural population in 1989.

**Table 4.4** Beliefs about the solutions to salinity (percent of respondents)

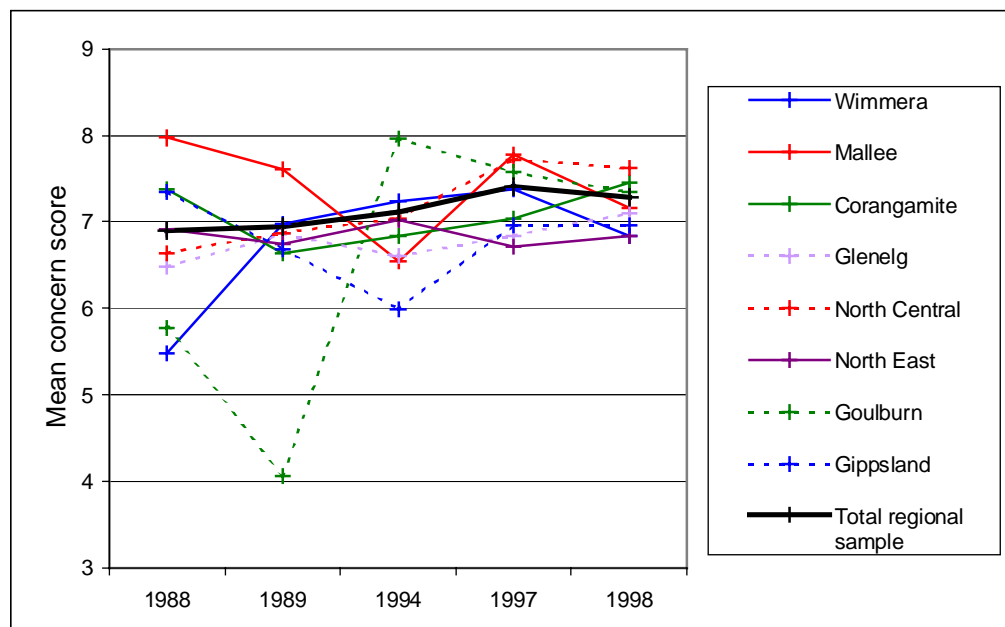
Solutions to salinity	Rural landholders			Provincial town residents			Melbourne residents		
	1988	1989	1994	1988	1989	1994	1988	1989	1994
Plant trees	48.8	57.3	56.2	26.3	47.0	35.9	16.5	29.5	25.0
Better land/water management	11.0	27.2	7.9	7.7	20.3	7.8	3.2	17.0	7.3
Less intense agriculture	3.5	4.4	17.2	2.0	5.0	7.0	4.1	5.0	11.4
Improve river flows	1.4	8.0	2.5	4.0	5.7	3.5	3.2	6.0	2.7
Pipeline to sea	2.2	0.1	3.7	1.7	0.2	1.5	0.5	0.5	0.9
Educate/raise public awareness	4.5	8.3	10.1	5.9	7.0	9.0	3.7	9.5	12.3
More research	3.6	4.4	2.3	4.8	4.8	4.3	5.0	6.5	4.1
Groundwater pumping	2.1	4.4	0.0	0.3	2.2	0.3	0.5	1.0	0.0
Pipeline open channels	0.6	1.0	0.4	0.2	0.0	0.3	0.0	0.0	0.0
Install evaporation basins	0.9	1.2	0.6	0.3	0.3	0.2	0.0	0.5	0.0
Other	8.1	6.1	19.6	7.0	6.7	12.8	8.3	7.5	11.8
Don't know	25.4	17.6	17.0	46.2	32.0	32.9	56.0	39.5	42.3

Source: Salinity awareness surveys (1988-1994)

## 5 A REGIONAL COMPARISON

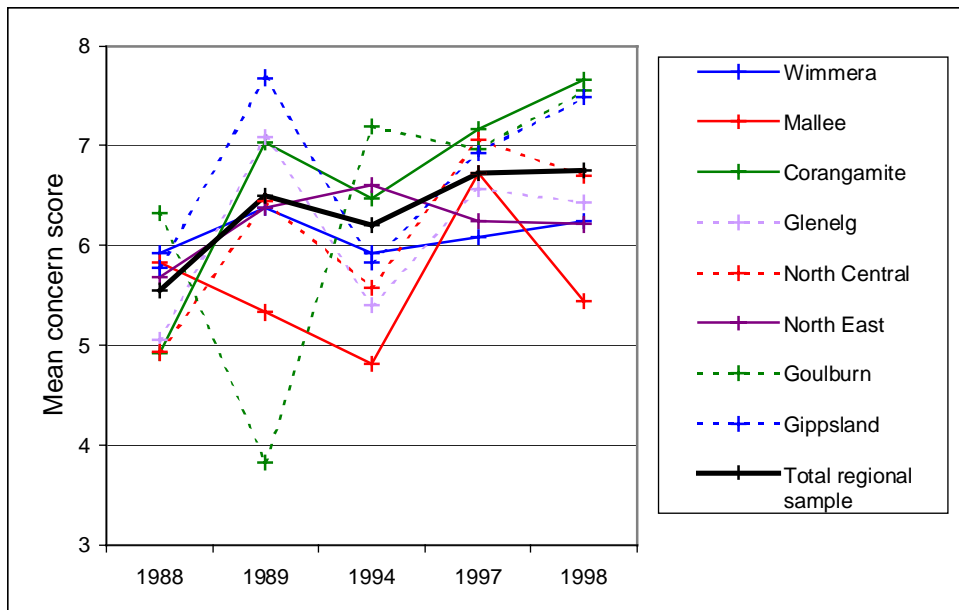
### 5.1 Concern for environmental issues

Figures 5.1 and 5.2 show the trends in concern for salinity and pollution in the Victorian catchment management regions. Most regions follow a similar trend in levels of concern across the survey period, although the general trend in salinity concern did not change significantly over this time. This lack of movement in salinity concern needs to be considered against the general decline in community concern for environmental issues during the survey period. Figure 5.2 shows concern for pollution declining in a number of regions during the recession and rising again towards the end of the decade. Concern for salinity also fell in the Mallee and Gippsland regions during this time. Given the low incidence of salinity in Gippsland, it is understandable that salinity concern may follow general trends in concern for other environmental issues. The perception of salinity on Mallee farms was similar to that in the Gippsland region. Salinity concern in the Goulburn Region dropped significantly in the year 1988-89, but rose again substantially in the next survey period. Concern for other issues such as erosion and pollution followed a similar trend in this region (Figure 5.2). There appears to be no explanation for this other than a possible methodological error on the part of the market researcher contracted for this survey. However, as the 1988 and 1994 surveys were undertaken by the same market researcher, using a consistent sampling strategy, there can be confidence that the increase between 1988 and 1994 is real.



Source: Salinity and weed awareness surveys (1988-1998)

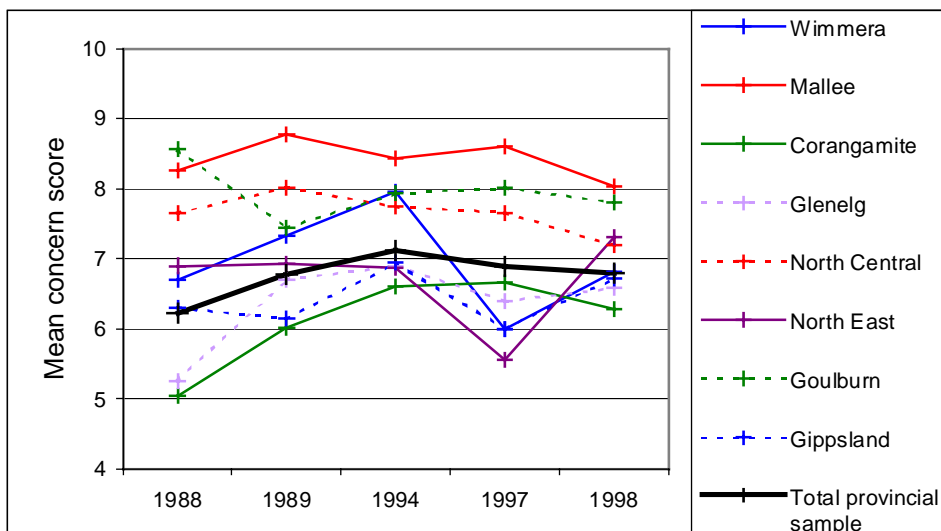
**Figure 5.1** Rural residents' concern for salinity (on a scale of 1-10)



Source: Salinity and weed awareness surveys (1988-1998)

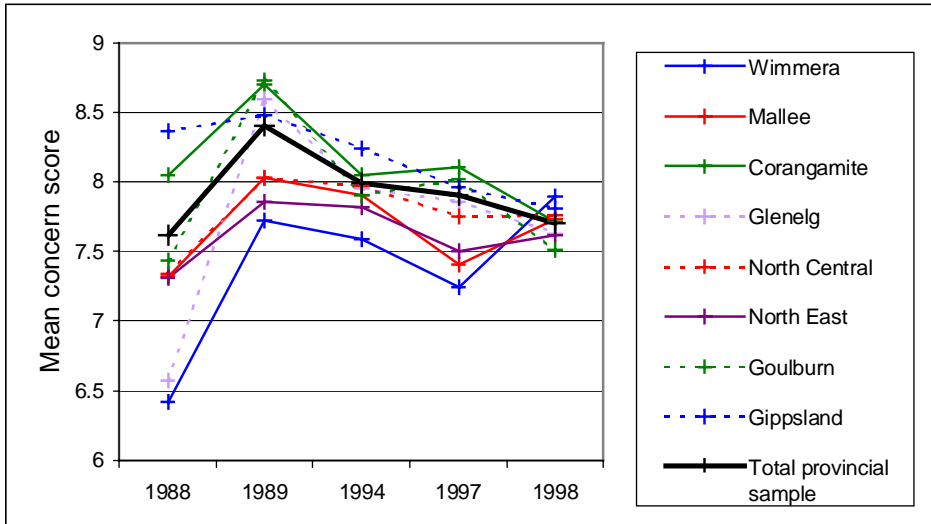
**Figure 5.2** Rural residents' concern for pollution (on a scale of 1-10)

Residents of provincial towns in the northern catchments, covering the North Central, Mallee and Goulburn regions, stand out with highest levels of concern for salinity (Figure 5.3). Residents in southern regions had the lowest levels of concern, lower than the average concern shown by all Victorian provincial residents. In provincial cities there was again very little change in salinity concern scores between 1988 and 1998. Glenelg and Corangamite are the exception, with a significant increase in concern for salinity between 1988 and 1989. Despite this significant rise, it only brought these regions up to a level of concern similar to less salt affected regions of the State: Gippsland and the North East. Trends in concern for pollution amongst provincial town residents followed the general trend for all regions with increasing concern in 1989 and decreasing concern during the recession (Figure 5.4).



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 5.3** Provincial town residents' concern for salinity (on a scale of 1-10)



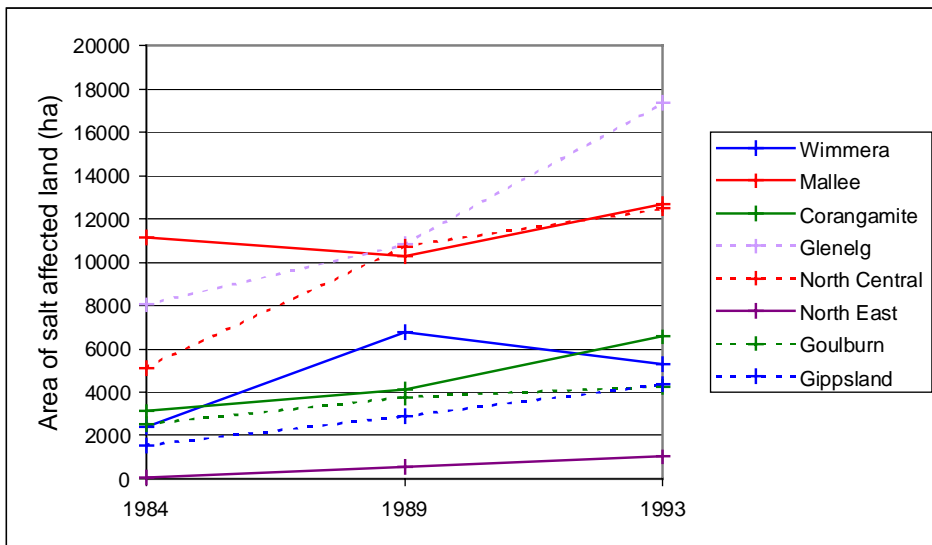
Source: Salinity and weed awareness surveys (1988-1998)

**Figure 5.4** Provincial town residents concern for pollution (on a scale of 1-10)

## 5.2 Salinity awareness

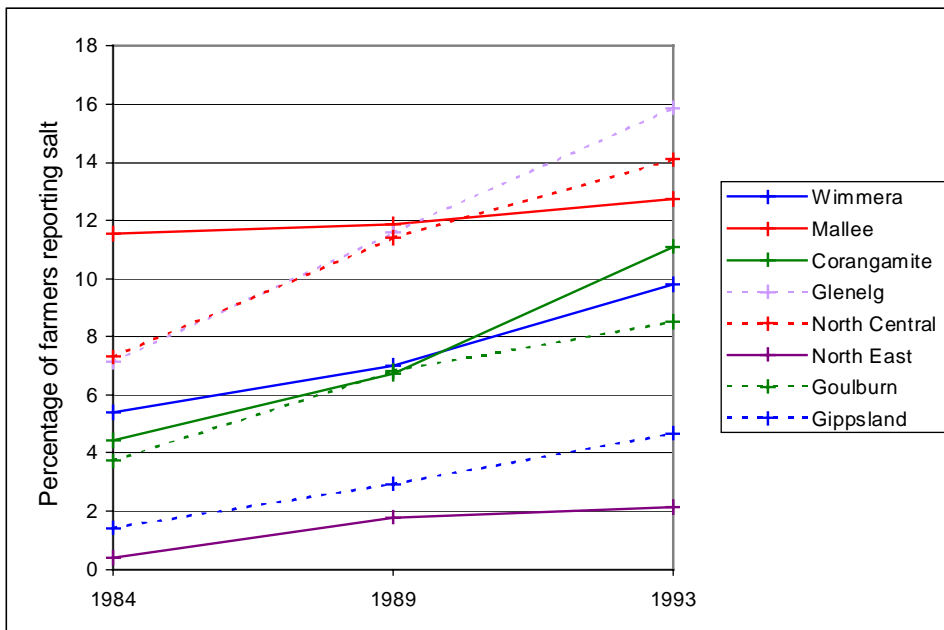
Figure 5.5 shows changes in reported areas of salinity on farms in Victorian regions since 1984. There was a general trend towards increased reporting of salinity in nearly all regions of the State. This change is more likely explained by increased awareness of salinity rather than a significant increase in salt affected land over this period. There are clear differences in the timing of changes in reporting. In the northern dryland catchments of the Wimmera, North Central and Goulburn regions the greatest increase in reporting occurred between 1984 and 1989. In contrast, the majority of increases in reporting in the southern catchments of Glenelg and Corangamite occurred between 1989 and 1993. These differences in timing coincide with the commencement of salinity public awareness programs in each of these regions. There has been a gradual increase in awareness in the North East and Gippsland regions, although neither has been the focus of catchment-wide awareness programs. There was a decrease in the reporting of salinity in the Mallee catchment between 1984 and 1989, followed by a rise in reported salinity areas in the next four years. The Wimmera Region shows a reverse trend with an increase in salinity between 1984 and 1989, followed by a slight decrease in the reported salinity during the next four years. It is difficult to explain the drop in the reporting of salinity in these regions, as it is unlikely that salinity would have decreased during the specified period.

Figure 5.6 shows the changes in the percentage of farmers reporting salt on their own properties. It reveals a consistent increase in the numbers of farmers reporting salt in most regions. In northern dryland catchments the rate of increase in the area of reported salt affected land between 1984 and 1989 is greater than the rate of increase in the number of farmers reporting salt in their properties. The reverse is true, however, in many regions in the period between 1989 and 1993. This may reflect an increase in the awareness of salt, and a consequent increase in the reporting of salt in the period after 1989. The southern Glenelg and Corangamite catchments experienced the greatest increase in farmers reporting salt affected land between 1989 and 1993. Most surprisingly, the Mallee dryland showed little change in the percentage of farmers reporting salt over the period of the monitoring surveys.



Source: ABS farm census (1984-1993)

**Figure 5.5** Area of farm land reported as salt affected by region (1984-94)

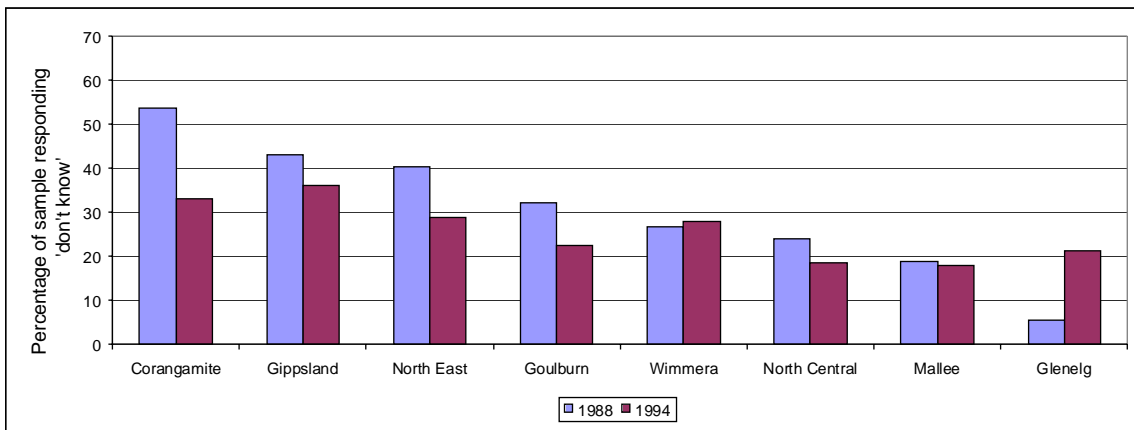


Source: ABS farm census (1984-1993)

**Figure 5.6** Percentage of farmers reporting salt on their properties by region (1984-93)

### 5.3 Understanding of salinity

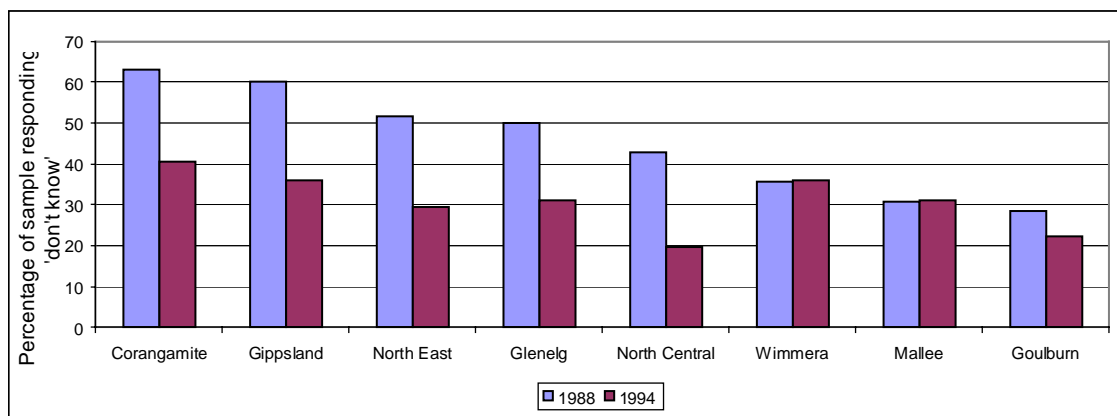
Figure 5.7 shows the percentage of residents of provincial towns giving a 'don't know' response to the question 'What causes salinity?' in 1988 and 1994. In 1988 residents of northern and north-western towns were most likely to have a positive response to this question, with only around 20 percent responding 'don't know'. In the following survey there was little change in this percentage. The Glenelg Region had an exceptionally low percentage of responses of 'don't know' to the question in 1988. This increased approximately fourfold in the next survey. The largest improvement in understanding of the causes of salinity has been in the Corangamite and North East regions.



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 5.7** Percentage of provincial town residents responding 'don't know' to question about the cause of salinity by region (1988-94)

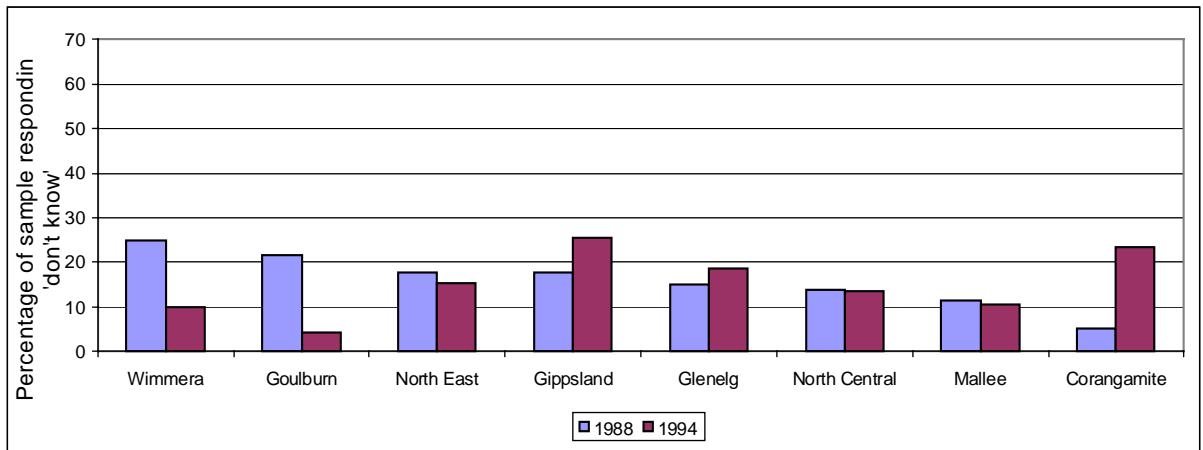
In contrast to questions about the cause of salinity, there has been a dramatic decrease in the percentage of residents of provincial towns answering 'don't know' to questions about the solution to salinity (Figure 5.8). This fall has been significant in all regions except in the Mallee and Wimmera.



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 5.8** Percentage of provincial town residents responding 'don't know' to question about the solutions to salinity by region (1988-94)

A far more mixed picture emerged from the survey of rural residents' responses to questions about the causes of, and solutions to, salinity (Figures 5.9 and 5.10). For the Wimmera and Goulburn regions there has been a dramatic fall in the number of 'don't know' responses to the question about causes of salinity, while 'don't know' responses in the Corangamite and Gippsland regions increased. For the other regions there has been no significant change in 'don't know' responses. A similar pattern emerged in answers to questions about the solution to salinity (Figure 5.10). There was a significant decline in 'don't know' responses in the Wimmera and Goulburn catchments and less significant declines in all other catchments, except in Gippsland and Corangamite. 'Don't know' responses to the question about solutions to salinity increased in the Gippsland and Corangamite regions.



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 5.9** Percentage of rural residents responding 'don't know' to questions about the cause of salinity by region (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 5.10** Percentage of rural residents responding 'don't know' to questions about the solutions to salinity by region (1988-94)

## 6 A REGIONAL ANALYSIS OF COMMUNITY CONCERNS: WITH AN EMPHASIS ON SALINITY

### 6.1 Wimmera Region

#### 6.1.1 Provincial town residents

##### 6.1.1.1 Concern for environmental issues

Lack of recycling was the main environmental concern for Wimmera provincial town residents in 1988. This was followed by degraded rivers and catchments, salinity and soil erosion. In the following year concern for all issues was greater, with pollution being the most significant issue, followed by soil erosion. Salinity was placed in the third position, while degraded rivers and catchments was ranked seventh, behind recycling, forests and biodiversity. By 1994 salinity became the issue of most concern, while general concern for all other issues increased. However, in 1997 there was a dramatic decrease in concern for salinity. By 1998 pollution and degraded rivers and catchments were issues of greatest concern (Table 6.1). The significant increase in concern for degraded rivers and catchments reflects the focus on the water quality problems of the Wimmera River addressed in the integrated regional catchment management strategy.

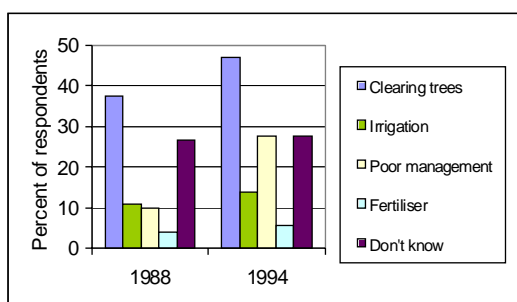
**Table 6.1** Environmental concern (on a scale of 1-10), in the Wimmera Region

Environmental issue	Rural residents					Provincial town residents				
	1988	1989	1994	1997	1998	1988	1989	1994	1997	1998
Salinity	5.84	6.98	7.24	7.37	6.83	6.69	7.33	7.95	5.99	6.81
Erosion	6.46	6.98	7.27	6.99	6.32	6.65	7.59	7.59	7.41	7.19
Degraded rivers	5.44	6.07	6.61	7.01	6.94	6.76	6.78	7.48	7.23	7.83
Pollution	5.92	6.38	5.92	6.09	6.24	6.42	7.72	7.59	7.24	7.89
Recycling	5.57	7.01	7.01	6.27	6.65	6.81	7.18	7.26	6.90	7.42
Forests	5.59	5.82	5.77	5.6	5.52	6.26	7.10	6.97	7.04	7.14
Biodiversity	5.63	5.40	5.91	5.65	5.57	6.13	7.02	7.19	5.52	7.80
Wetlands	4.42	4.87	5.57	5.36	5.31	5.22	5.63	6.53	6.24	6.95
Open Space	4.12	4.21	4.53	4.44	4.53	5.14	6.01	6.73	5.67	5.79

Source: Salinity and weed awareness surveys (1988-1998)

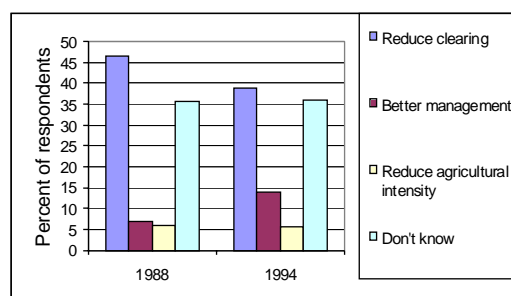
##### 6.1.1.2 Awareness of salinity

There was no significant change in the frequency of Wimmera provincial town residents responding 'don't know' to questions about the cause and solution to salinity. The number of persons nominating tree clearing and poor land management practices as causes of salinity increased significantly from 1988 to 1994 (Figure 6.1). At the same time, reduced clearing of trees and improved land and water management practices were the most common solutions mentioned to reduce salinity (Figure 6.2).



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.1** Beliefs about causes of salinity, Wimmera provincial town residents (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.2** Beliefs about solutions to salinity, Wimmera provincial town residents (1988-94)

## 6.1.2 Rural residents

### 6.1.2.1 Concern for environmental issues

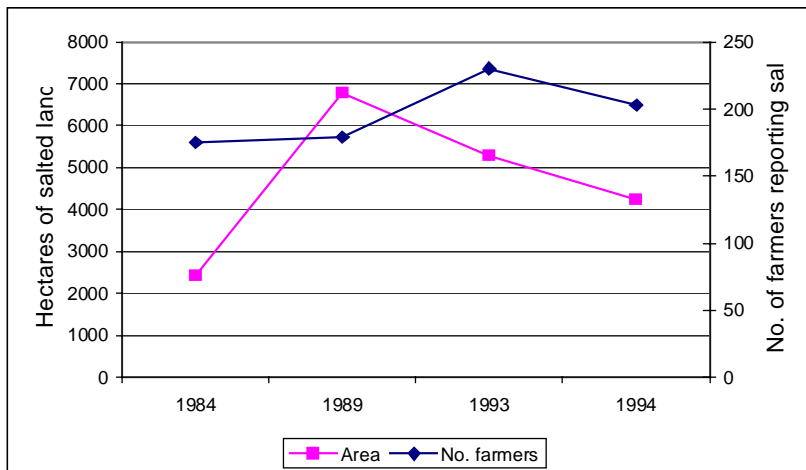
Rural residents' concerns for all environmental issues was lower than that of provincial residents throughout the survey period. Rural residents' concerns for all issues increased significantly between 1988 and 1989 (Table 6.1). Concerns about both salinity and degraded rivers and catchments continued to increase until 1997, when salinity became the issue of most concern. In 1998 the concern for salinity dropped, while degraded rivers and catchments remained unchanged, but became the issue of most concern.

### 6.1.2.2 Awareness of salinity

A similar increase in salinity awareness among Wimmera farmers was also evident from the ABS census data. Between 1984 and 1989 the area of farm land reported as salt affected increased from 2500 hectares to 6700 hectares. During this period there was no significant increase in the number of farmers reporting salt on their properties (Figure 6.3). It is possible that the increase in reporting of salt was due to farmers identifying more salt on their properties, rather than an increase in the numbers of farmers identifying salt. In the period between 1989 and 1993 the pattern changed. There was another moderate increase in the number of farmers reporting salt, but the actual area of reported salt declined. Both the area and the number of farmers reporting salt declined by the following year.

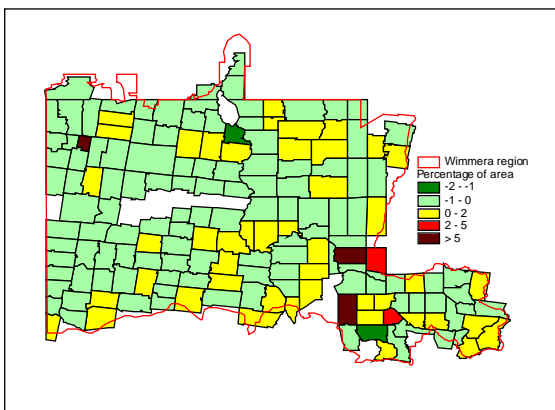
Most of the increase in reported salt during 1989 occurred in a small area in the south-east of the region (Figures 6.4 and 6.5).

Wimmera rural residents appeared to become significantly more aware of the causes and solutions to salinity during the period 1988-94. The percentage of responses of 'don't know' to causes of salinity fell from 25 percent to 10 percent (Figure 6.6), while 'don't know' responses to the question about solutions to salinity fell from 33 percent to 4 percent (Figure 6.7). These are the most significant changes in perception measured across all surveyed regions. There was also a significant increase in the number of persons nominating tree clearing as a cause of salinity, while more rural residents saw reduced tree clearing as a solution to salinity.



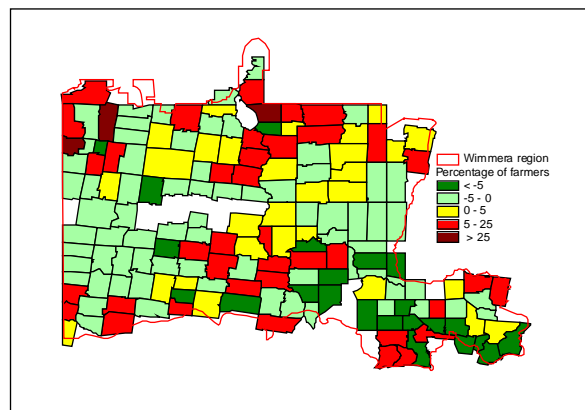
Source: ABS census (1984-1994)

**Figure 6.3** Area of salt affected land and number of farmers reporting salt on their properties (1984-94)



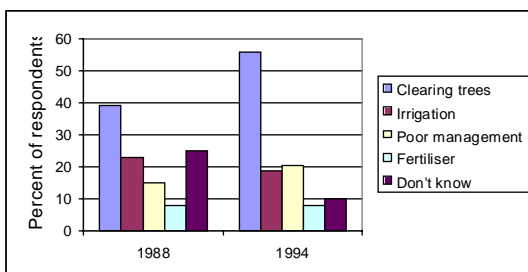
Source: ABS census (1984-1994)

**Figure 6.4** Increase in percentage of salt affected area (1984 –89)



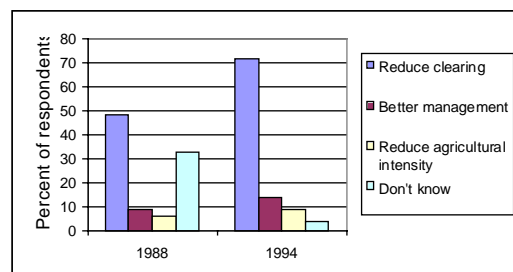
Source: ABS census (1984-1994)

**Figure 6.5** Increase in percentage of farmers reporting salt on their properties (1989-93)



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.6** Beliefs about causes of salinity, Wimmera rural residents (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.7** Beliefs about solutions to salinity, Wimmera rural residents (1988-94)

## 6.2 Corangamite Region

### 6.2.1 Provincial town residents

#### 6.2.1.1 Concern for environmental issues

In 1988 pollution was considered by Corangamite provincial town residents to be the most serious of the nine environmental issues canvassed in the surveys conducted by the Salinity Program. This was followed by biodiversity and forest protection (Table 6.2). Salinity, soil erosion and degraded rivers and catchments were the least important issues to these residents. By 1989 there had been a significant rise in concern for all environmental issues. Much of this concern had evaporated by 1994. Concern for pollution, biodiversity, soil erosion and forests fell, while concern for salinity and degraded rivers and catchments increased in 1994. Concern for salinity and degraded rivers and catchments continued to rise, and by 1997 was significantly higher than that recorded in both 1988 and 1989.

The percentage of residents nominating 'don't know' as to the seriousness of salinity also fell from 18 percent to 8 percent during 1988 and 1994, while the proportion of people considering salt as a very serious problem increased from 3.5 to 17 percent. This increasing awareness of salinity was also highlighted in a salinity awareness survey conducted by Geelong College students to monitor community awareness of the salinity problem among both farmers and townspeople. In this study four hundred Colac district residents were selected at random for street interviews each year between 1990 and 1993. One of the three questions asked was 'Do you think salinity is a problem in this area?' In this study, the percentage of urban residents seeing salinity as a local problem increased consistently from 15 to 55 percent between 1990 and 1993.

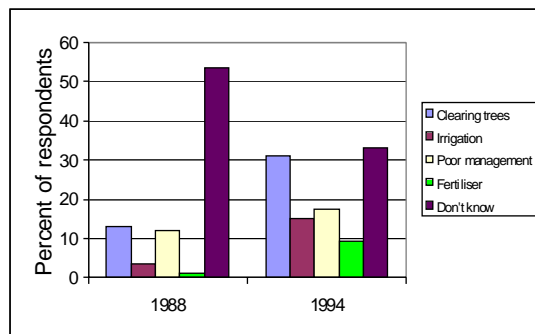
**Table 6.2** Environmental concern (on a scale of 1-10) in the Corangamite region

Environmental issue	Rural residents					Provincial town residents				
	1988	1989	1994	1997	1998	1988	1989	1994	1997	1998
Salinity	7.37	6.64	6.84	7.03	7.46	5.05	6.02	6.61	6.67	6.28
Erosion	6.72	6.60	7.14	6.54	7.50	6.10	7.85	7.00	7.23	7.06
Degraded rivers	6.21	5.77	6.47	6.76	7.62	6.14	6.78	6.94	7.24	7.15
Pollution	4.92	7.03	6.47	7.16	7.66	8.05	8.70	8.05	8.11	7.71
Biodiversity	4.93	5.61	6.51	6.41	7.20	7.20	7.89	7.26	7.38	7.26
Forests	5.24	6.30	6.68	6.32	7.22	7.13	8.42	7.14	7.66	7.53
Recycling	5.79	7.13	6.84	6.30	7.41	6.79	7.24	6.95	7.07	6.33
Open Space	3.71	4.71	5.06	5.51	5.51	6.57	6.44	6.47	6.50	6.46
Wetlands	4.56	4.61	6.05	5.62	6.36	5.62	6.31	6.46	6.92	6.92

Source: Salinity and weed awareness surveys (1988-1998)

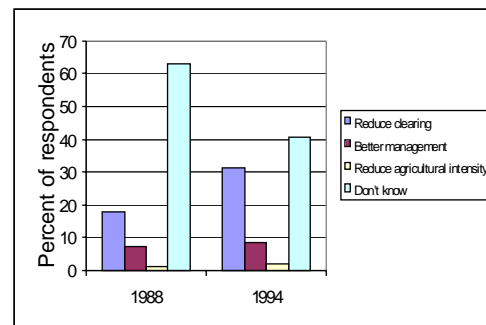
### 6.2.1.2 Awareness of salinity

The increase in concern for salinity by residents of Corangamite provincial towns was matched by an increasing understanding of the nature of salinity. In 1989, 31 percent of respondents to the Salinity Program survey stated they did not know what salinity was. By 1994 this figure had fallen to 23 percent. The percentage of 'don't knows' to the causes of salinity fell from 53 percent to 33 percent while 'don't knows' to the solution to salinity fell from 63 percent to 40 percent. Responses nominating tree clearing, poor land management practices, over-irrigation and use of fertiliser/chemicals increased significantly from 1988 to 1994 (Figure 6.8). Reduced clearing of trees was the most common solution to salinity identified in this region (Figure 6.9).



Source: Salinity and weed awareness surveys (1988-94)

**Figure 6.8** Beliefs about causes of salinity, Corangamite provincial town residents (1988-94)



Source: Salinity and weed awareness surveys (1988-94)

**Figure 6.9** Beliefs about solutions to salinity, Corangamite provincial town residents (1988-94)

## 6.2.2 Rural residents

### 6.2.2.1 Concern for environmental issues

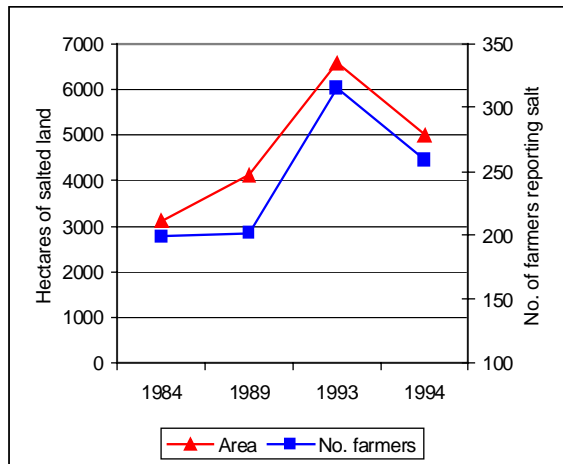
In the Corangamite Region, concern for environmental issues amongst rural residents followed a different trend. Rural residents saw salinity as the most serious threat, followed by soil erosion and degraded catchments. Pollution, biodiversity and forests were less important to farmers. According to salinity awareness surveys there was no significant change in the concern for salinity throughout the decade, whereas the concern for pollution and biodiversity increased significantly, to equal scores of provincial town residents.

The street survey conducted in Colac between 1990 and 1993 showed a different trend to changes in salinity awareness. This survey showed a strong and steady increase in concern over salinity amongst rural landholders.

### 6.2.2.2 Awareness of salinity

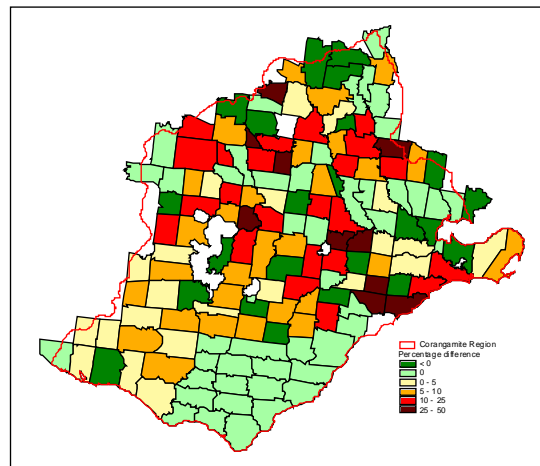
ABS farm census data on awareness of salinity shows a similar pattern to the Colac street survey results with regard to change in awareness. Awareness of salinity on farms in the Corangamite Region steadily increased during the period 1984 to 1994. In 1984 farmers reported having a little over 3000 hectares of salt affected land on their farms. The area of reported salt rose a little in the intervening five years to 4000 hectares. The largest rise was reported between 1989 and 1993 when the reported area of salt rose by over 50 percent to 6500 hectares. Most of this increase in reported salt was possibly due to greater numbers of farmers reporting salt rather than farmers reporting an increase in the areas of previously reported salt (Figure 6.10). Between 1984 and 1993 the percentage of farmers reporting salt

rose from 4 percent to 11 percent. This increase in the number of farmers reporting salinity on their properties occurred from the centre to the north of the catchment (Figure 6.11). This increase in awareness of salinity was in line with the active community education programs operating in the region.



Source: ABS farm census data (1984-1994)

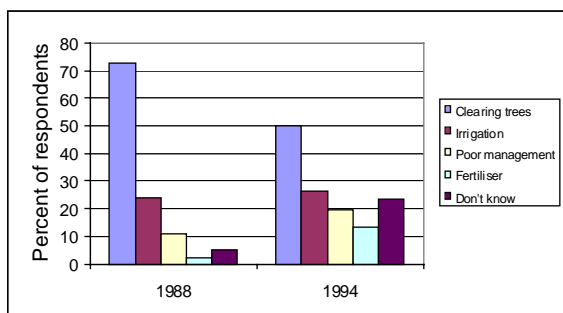
**Figure 6.10** Area of salt affected land and number of farmers reporting salt on their properties (1984-94)



Source: ABS farm census data (1984-1994)

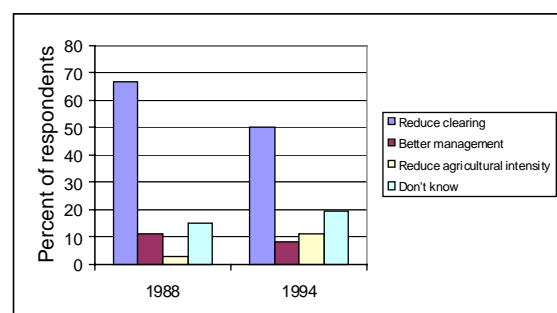
**Figure 6.11** Increase in percentage of farmers reporting salt on their properties (1989-93)

In contrast to provincial town residents, an increase in awareness of salinity by rural residents has not been matched by an increased understanding of the causes or cures for salinity in the Corangamite Region. There has been a significant increase in the percentage of people who report that they do not know the cause of salinity or a cure for salinity. The most commonly nominated cause of salinity was removal of trees, however, between 1988 and 1994 nominations for this cause decreased significantly from 70 percent to 50 percent of the population. There was also a significant increase in the belief that the use of fertilisers and chemicals causes salinity (Figure 6.12). This answer was more common in the Corangamite Region than in any other region of the State. Similar trends were evident in responses to the question 'What can be done to cure salinity?' Reduced clearing of trees was by far the most common answer in 1988, but fewer selected this method in 1994, while there was an increase in the number of persons who advocated less intense farming (Figure 6.13).



Source: Salinity and weed awareness surveys (1988-94)

**Figure 6.12** Beliefs about causes of salinity, Corangamite rural residents (1988-94)



Source: Salinity and weed awareness surveys (1988-94)

**Figure 6.13** Beliefs about solutions to salinity, Corangamite rural residents (1988-94)

## 6.3 Glenelg Region

### 6.3.1 Provincial town residents

#### 6.3.1.1 Concern for environmental issues

Recycling and pollution were the main concerns for Glenelg provincial town residents in 1988. Soil erosion was rated third while salinity was the issue of least concern (Table 6.3). Salinity maintained this position throughout the decade. The rise in concern over salinity in provincial towns during the survey period was not significant. Significant rises in concern for erosion and pollution were measured between 1988 and 1989. However, levels of concern for these issues have gradually declined since 1989.

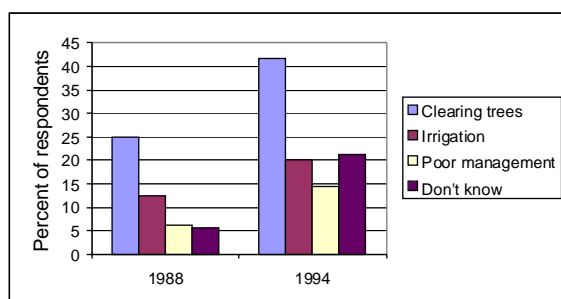
**Table 6.3** Environmental concern (on a scale of 1-10), in the Glenelg Region

Environmental issue	Rural residents					Provincial town residents				
	1988	1989	1994	1997	1998	1988	1989	1994	1997	1998
Salinity	6.48	6.86	6.60	6.84	7.10	5.25	6.70	6.90	6.39	6.58
Erosion	5.96	6.83	6.20	6.66	6.99	6.25	8.52	7.67	7.18	7.03
Degraded rivers	5.26	5.64	5.53	6.83	6.68	6.03	6.81	6.83	6.56	7.18
Pollution	5.05	7.09	5.40	6.57	6.43	6.57	8.59	7.95	7.86	7.63
Recycling	5.58	7.47	6.24	6.90	6.92	7.63	7.91	6.98	6.88	7.33

Source: Salinity and weed awareness surveys (1988-1998)

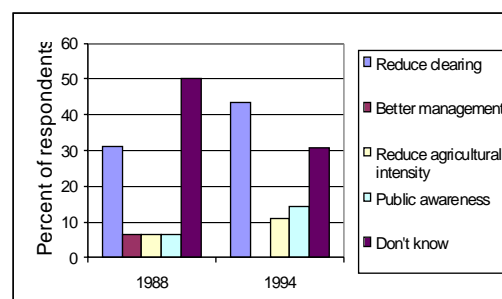
#### 6.3.1.2 Awareness of salinity

Unlike the neighbouring Corangamite Region, there was no clear trend of increasing understanding of salinity within the major regional centres of the Glenelg catchment. Instead, the proportion of respondents answering 'don't know' to questions about the cause of salinity increased from six to 21 percent between 1988 and 1994 (Figure 6.14). The number of persons nominating tree clearing as a cause of salinity increased significantly during this period. However, the percentage answering 'don't know' to the question about the solutions to salinity fell by a significant margin (Figure 6.15). Reduced clearing of trees was the most common solution mentioned to reduce salinity.



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.14** Beliefs about causes of salinity, Glenelg provincial town residents (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

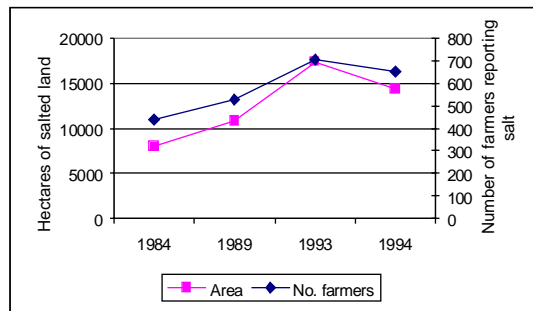
**Figure 6.15** Beliefs about solutions to salinity, Glenelg provincial town residents (1989-94)

### 6.3.1 Rural residents

#### 6.3.1.1 Concern for environmental issues

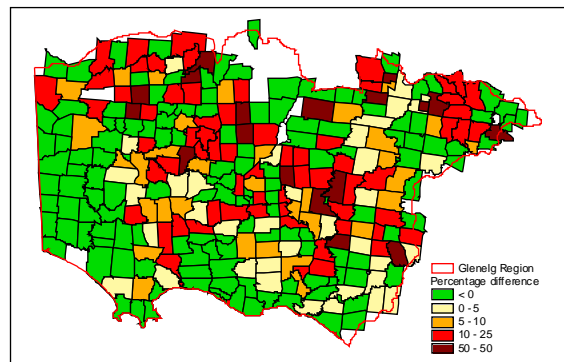
In 1988 rural residents in the Glenelg catchment had completely different concerns to provincial town residents. Rural residents saw salinity and erosion as the most serious threats to the environment, and pollution as the least threat. Concern for both erosion and pollution rose by 1989 and fell again in the intervening five years. Concern for these issues started to rise again towards the end of the decade. There was no significant change in the concern of rural residents for salinity over this period, but it still maintained its position as the issue of most concern.

In contrast to this, the ABS farm census data have shown an increase in the area of salt reported by farmers. During the period 1984-1993 there was a doubling in the area of salt reported by farmers in the catchment. There has also been a doubling of the number of farmers reporting salinity on their properties (Figure 6.16). This growth in recognition of salinity has been remarkably consistent across the region with the only exception being the south-west of the region (Figure 6.17).



Source: ABS census (1984-1994)

**Figure 6.16** Area of salt affected land and number of farmers reporting salt on their properties

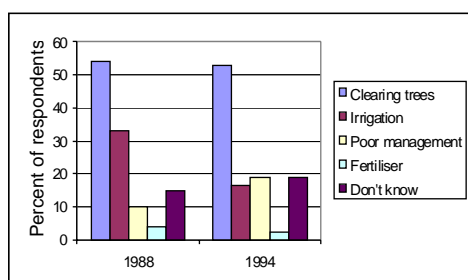


Source: ABS census (1984-1994)

**Figure 6.17** Increase in percentage of farmers reporting salt on their properties (1989-93)

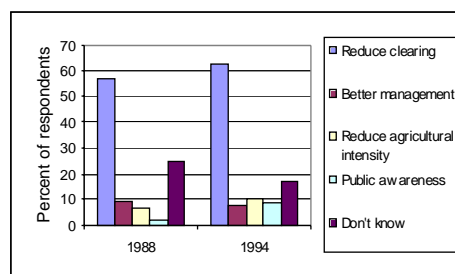
#### 6.3.2.2 Awareness of salinity

Glenelg rural residents did not seem to change their views about the causes of, or cure for, salinity during the period of the salinity monitoring surveys. There has been no significant change in the percentage of respondents who answered 'don't know' to questions about the cause of salinity (Figure 6.18). Answers to this question have been dominated by the response 'clearing trees'. Likewise there has been only a small decrease in the percentage unable to respond to the question concerning the solution to salinity, with tree planting being by far the favoured option (Figure 6.19).



Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.18** Beliefs about causes of salinity, Glenelg rural residents (1988-94)



Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.19** Beliefs about solutions to salinity, Glenelg rural residents (1988-94)

## 6.4 North East Region

### 6.4.1 Provincial town residents

#### 6.4.1.1 Concern for environmental issues

Pollution was the main concern of North East provincial town residents in 1988, followed by soil erosion, lack of waste recycling and extinction of plants and animals. Salinity was perceived as the fifth most serious environmental threat. There was no significant change in concern for salinity over the period from 1988 to 1994, but there was a drop in concern in 1997 (Table 6.4). The ranking of concern for salinity dropped to seventh position while concern for degraded rivers and catchments rose to the level of soil erosion and pollution (which dominated as environmental concerns throughout the decade). Soil erosion (which is more of a focus to Landcare than salinity in the region) rose steadily over the period to become the most important issue in 1998.

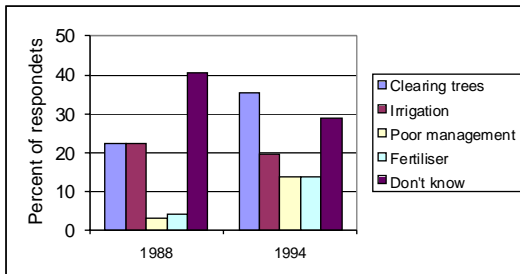
**Table 6.4** Environmental concern (on a scale of 1-10), in the North East Region

Environmental issue	Rural residents					Provincial town residents				
	1988	1989	1994	1997	1998	1988	1989	1994	1997	1998
Salinity	6.92	6.74	7.02	6.72	6.83	6.90	6.93	6.87	5.56	7.31
Erosion	6.00	6.75	7.63	6.83	7.36	7.15	7.53	7.79	6.17	7.74
Degraded rivers	6.68	5.99	6.94	6.99	7.34	6.79	6.71	7.62	6.83	7.63
Pollution	5.68	6.38	6.60	6.24	6.21	7.31	7.86	7.82	7.50	7.62
Recycling	6.14	6.73	6.51	6.39	6.31	7.08	7.68	7.05	5.83	6.40
Forests	6.18	5.34	5.98	5.65	5.71	6.39	7.44	7.48	6.06	7.21
Biodiversity	6.27	5.10	6.13	6.00	6.03	6.99	6.79	7.14	5.94	7.36

Source: Salinity and weed awareness surveys (1988-1998)

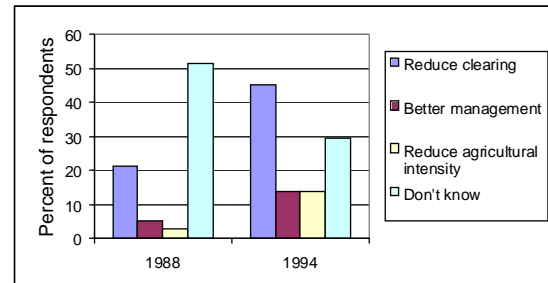
### 6.4.1.2 Awareness of salinity

During the period of 1988-94 there was a significant improvement in provincial North East residents' understanding of the causes and solutions to salinity. The percentage of 'don't know' responses to these questions fell significantly, and the percentage of answers identifying tree clearing as a cause of salinity rose significantly. While concern over salinity has not shown significant change, this is strong evidence of increase in understanding of salinity (Figures 6.20 and 6.21).



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.20** Beliefs about causes of salinity, North East provincial town residents (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

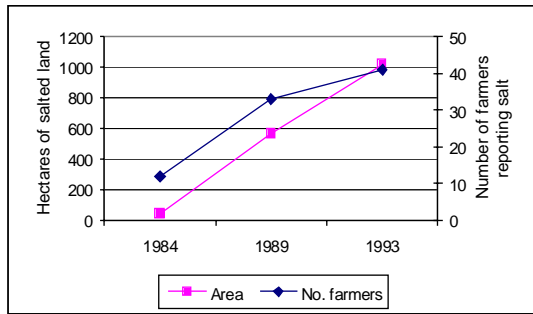
**Figure 6.21** Beliefs about solutions to salinity, North East provincial town residents (1988-94)

### 6.4.2 Rural residents

#### 6.4.2.1 Concern for environmental issues

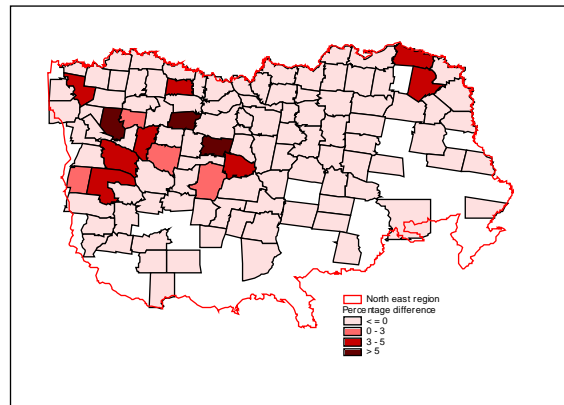
Salinity was recognised as the issue of most concern by North East rural residents. However, there was no significant change in the level of concern during the survey period. In contrast, concern for soil erosion rose significantly and steadily to score the highest level of environmental concern in 1998 (Table 6.4).

According to ABS farm census, there has been a steady rise in the reporting of salinity by North East farmers between 1984 and 1993. Both the area of farm land reported as salt affected and the number of farmers reporting salt on their properties increased during this period (Figure 6.22). However, these figures are very low compared to any other region of the state. Most of the increase in reported salt occurred in the west of the region (Figure 6.23).



Source: ABS census (1984-1993)

**Figure 6.22** Area of salt affected land and number of farmers reporting salt on their properties

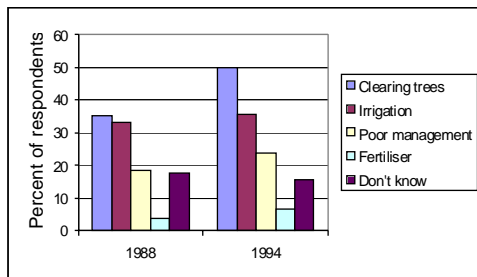


Source: ABS census (1989-1993)

**Figure 6.23** Increase in percentage of farmers reporting salt on their properties (1989-93)

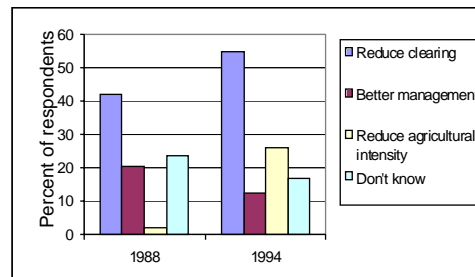
#### 6.4.2.2 Awareness of salinity

There was no significant change in North East rural residents' understanding of salinity. The percentage of respondents who answered 'don't know' to questions about the causes of salinity and solutions to salinity did not change significantly during the period between 1988 and 1994. However, the number of persons nominating tree clearing as a cause of salinity, and reduced clearing of trees as a solution to salinity increased significantly during this period (Figures 6.24 & 6.25).



Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.24** Beliefs about causes of salinity, North East rural residents (1988-94)



Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.25** Beliefs about solutions to salinity, North East rural residents (1988-94)

## 6.5 Mallee Region

### 6.5.1 Provincial town residents

#### 6.5.1.1 Concern for environmental issues

Salinity is recognised by Mallee provincial town residents as the most serious of all environmental threats (Table 6.5). Over the period of the monitoring surveys they ranked salinity as a higher concern than the residents of all other urban regions. This is different to the picture in southern regions where concerns for pollution and forests protection issues were higher (following a trend similar to urban Australians in general). Over the decade from 1988 to 1998 concern for salinity had not shown a significant change, but still retained its position of pre-eminent concern. The seriousness of soil erosion was the environmental concern to gain the most support over the period 1988-94. Concern for soil erosion dropped slightly by 1998. Concern for pollution increased slightly over the period while the support for forest protection did not show significant change. At the same time public concern for degraded rivers and catchments had a steady increase, and in 1997 and 1998 was rated second behind salinity.

**Table 6.5** Environmental concern of provincial town residents (on a scale of 1-10), in the Mallee Region

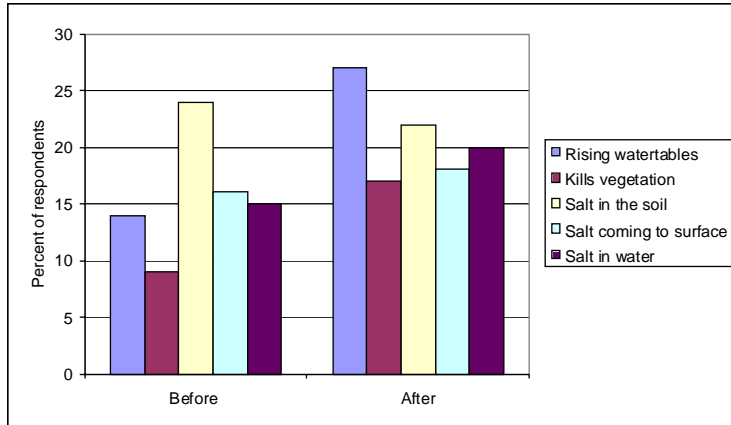
Environmental issue	1988	1989	1994	1997	1998
Salinity	8.26	8.78	8.43	8.61	8.03
Erosion	7.05	8.17	7.91	7.64	7.32
Degraded rivers	7.25	7.03	7.59	7.66	7.83
Pollution	7.32	8.03	7.90	7.41	7.73
Forests	7.20	7.55	7.06	7.18	7.43

Source: Salinity and weed awareness surveys (1988-1998)

#### 6.5.1.2 Awareness of salinity

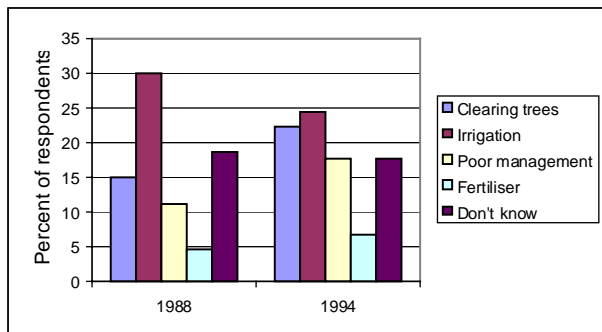
The results of the salinity program monitoring surveys show that community awareness programs improved the understanding of the link between salinity and rising watertables among Mallee provincial town residents. The percentage of respondents linking the watertable to salinity rose from 8 percent to 24 percent between 1988 and 1989.

The two surveys conducted in 1988 (in Mildura, Merbein, Red Cliffs and Robinvale in the Mallee Region) before and after the Watertable Watch campaign show a similar trend (RRC 1988c). The questions asked in these two surveys closely followed those used in the statewide salinity program monitoring study. The responses 'raising watertables' and 'kills vegetation' were the only factors to show any significant changes between the pre and post campaign surveys (Figure 6.26). Nominations for both factors almost doubled from the pre to the post campaign surveys.



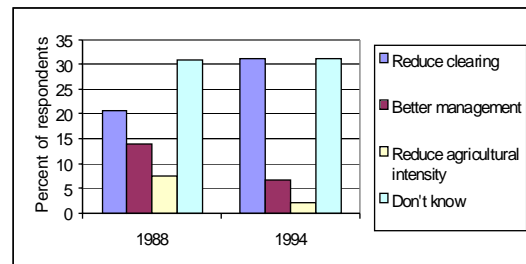
**Figure 6.26** What is salinity? Responses of Mildura residents before and after the WaterWatch campaign.

There has been no significant change in the frequency of ‘don’t know’ responses from Mallee provincial town residents about and solutions to salinity (Figures 6.27 & 6.28). There was, however, a dramatic shift in the community understanding of the causes of salinity. Whilst the issue of ‘over-irrigation’ continued to be seen as a major cause of salinity, there was an increase in respondents identifying ‘clearing trees’ and ‘poor management practices’.



Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.27** Beliefs about causes of salinity, Mallee provincial town residents (1988-94)



Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.28** Beliefs about solutions to salinity, Mallee provincial town residents (1988-94)

## 6.5.2 Rural residents

### 6.5.2.1 Concern for environmental issues

In this report rural residents in the Mallee are referred to as two separate groups: irrigation farmers and dryland farmers. On average 48 percent of Mallee rural residents interviewed in all surveys considered their main land use as irrigation farming. For irrigation farmers, salinity awareness relates to salinity in the water supply and in the drainage effluent flowing from irrigation farms. For dryland farmers salinity awareness relates to soil salinity.

Salinity was the issue of most concern for Mallee dryland farmers throughout the survey period, followed by soil erosion and degraded rivers and catchments. There was a gradual decline in concern for salinity over the period 1988-94 and a rise in concern again in 1997. However, throughout this period it remained at a higher level than all other environmental problems (Table 6.6).

Irrigation farmers showed a similar pattern of concern. Salinity was the issue of most concern throughout the period of the survey, followed by soil erosion and degraded rivers and catchments. However, concern for salinity amongst irrigation farmers has been comparatively high and remarkably stable gaining a score of over 8 (on a scale of 1 to 10) throughout the period of the monitoring studies.

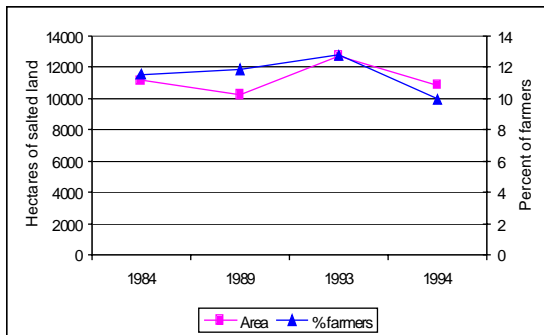
The high level of concern for salinity by Mallee rural residents is likely to be due to a number of factors. Community involvement in planning and preparing salinity management plans in the region, and local media campaigns and community education programs to promote salinity awareness may have contributed to this high level of concern.

**Table 6.6** Environmental concern of rural residents (on a scale of 1-10) in the Mallee Region

Environmental issue	Dryland farmers					Irrigation farmers				
	1988	1989	1994	1997	1998	1988	1989	1994	1997	1998
Salinity	7.97	7.61	6.54	7.78	7.16	8.97	8.14	8.51	8.73	8.04
Erosion	7.31	6.31	6.51	7.50	6.18	7.31	6.81	8.09	7.11	7.46
Degraded rivers	7.23	6.67	6.00	6.89	6.62	7.25	6.83	7.25	7.84	7.73
Pollution	5.83	5.33	4.81	6.72	5.45	6.68	5.56	6.96	7.08	6.85
Recycling	6.72	6.25	5.89	6.83	6.14	7.16	6.64	6.45	7.21	7.15
Forests	6.47	5.37	4.81	6.33	5.03	5.59	5.83	6.26	6.12	7.12

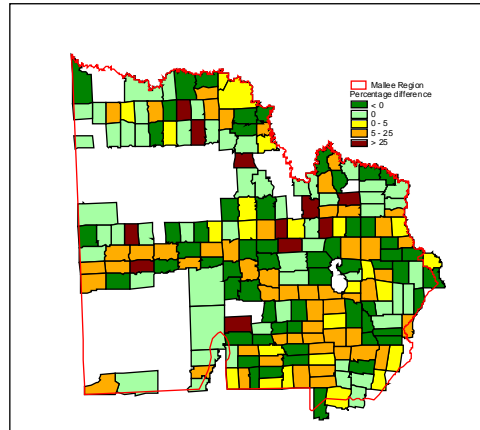
Source: Salinity and weed awareness surveys (1988-1998)

The ABS also measured the awareness of soil salinity in dryland areas in 1984, 1989, 1993 and 1994. These figures show that, over this period, the area of land described as salt affected by Mallee farmers has been quite stable, unlike in southern Victoria. Likewise, the percentage of farmers reporting salinity on their land has been quite stable (Figure 6.29). Figure 6.30 indicates there is no geographical pattern in the distribution of awareness of salinity on farms, with an apparent random scattering of parishes with increased reporting of salinity between 1989 and 1993.



Source: ABS farm census (1984-1994)

**Figure 6.29** Area of salt affected land and percent of farmers reporting salt on their properties in the Mallee (1984-94)



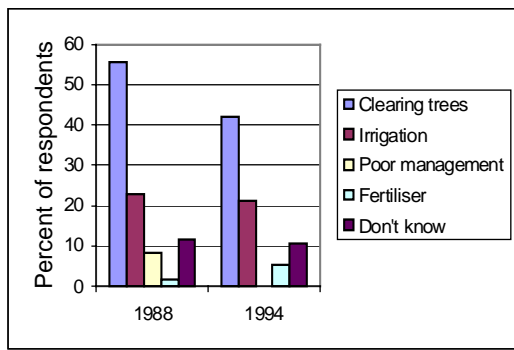
Source: ABS farm census (1984-1994)

**Figure 6.30** Increase in percentage of Mallee farmers reporting salt on their properties (1989-93)

#### 6.5.2.2 Awareness of salinity

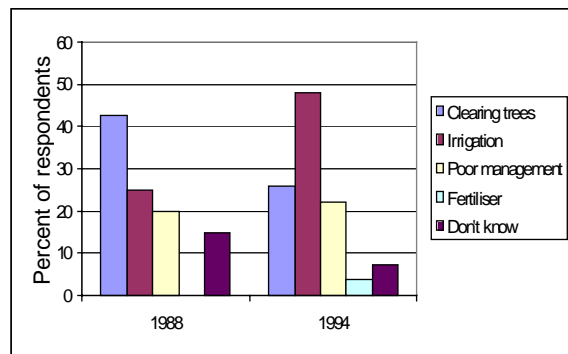
Amongst Mallee dryland farmers there appears to have been only a minor change in understanding of salinity. In 1988 tree clearing was by far the most commonly nominated cause of salinity, followed by irrigation and poor land management practices (Figure 6.31). The only change in nominated cause of salinity by dryland farmers between 1988 and 1994 was a significant fall in the number of mentions of tree clearing as a cause of salinity.

In irrigation areas, the impact of the community education campaign upon the understanding of irrigators can be clearly seen. The percentage of responses of 'don't know' to causes of salinity fell from 15 percent to 7 percent between 1988 and 1994. During this period there was a dramatic increase in the number of irrigators mentioning over-irrigation as a cause of salinity, and a significant decrease in the number of irrigators nominating tree clearing as the cause of salinity (Figure 6.32). In the same period there was also a decrease in the number of responses recommending revegetation and ceasing clearing as the solution. The increase in the number of responses nominating less intensive farming as the solution may be related to reduced irrigation intensity and increased water use efficiency (Figures 6.33 & 6.34).



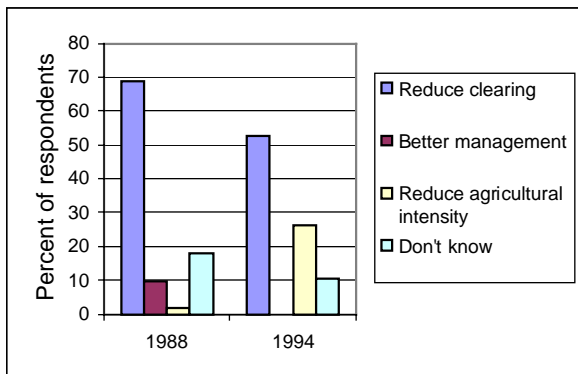
Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.31** Beliefs about causes of salinity, Mallee dryland farmers (1988-94)



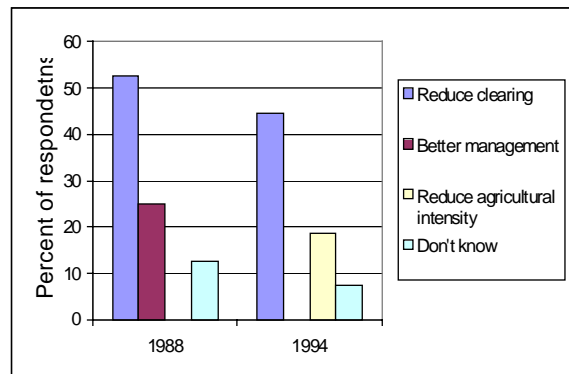
Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.32** Beliefs about causes of salinity, Mallee irrigated farmers (1988-94)



Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.33** Beliefs about solutions to salinity, Mallee dryland farmers (1988-94)



Source: Salinity and weed awareness surveys (1998-1994)

**Figure 6.34** Beliefs about solutions to salinity, Mallee irrigated farmers (1988-94)

## 6.6 Goulburn Region

### 6.6.1 Provincial town residents

#### 6.6.1.1 Concern for environmental issues

In 1988 provincial town residents in the Goulburn Region found salinity to be the issue of most concern, followed by pollution and soil erosion (Table 6.7). This is different to the pattern of concern of provincial town residents across Australia in general. Degraded rivers and catchments was the least important issue to these residents. Over the next decade there was not a significant change in concern for salinity. By 1989 there has been a slight increase in concern for all issues except for salinity, and pollution became the issue of most concern. Concern for degraded rivers and catchments continued to rise after 1989 and in 1998 became the issue of most concern.

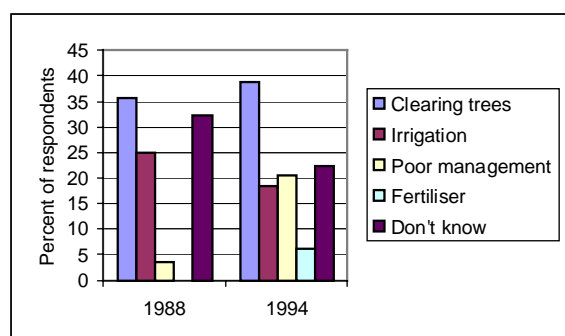
**Table 6.7** Environmental concern of provincial town residents (on a scale of 1-10) in the Goulburn Region

Environmental issue	Provincial town residents				
	1988	1989	1994	1997	1998
Salinity	8.56	7.44	7.93	8.01	7.80
Erosion	7.37	7.84	7.32	7.68	7.25
Degraded rivers	6.59	6.95	7.28	7.52	8.07
Pollution	7.43	8.73	7.90	8.02	7.51
Forests	6.68	7.87	7.08	7.76	7.33

Source: Salinity and weed awareness surveys (1988-1998)

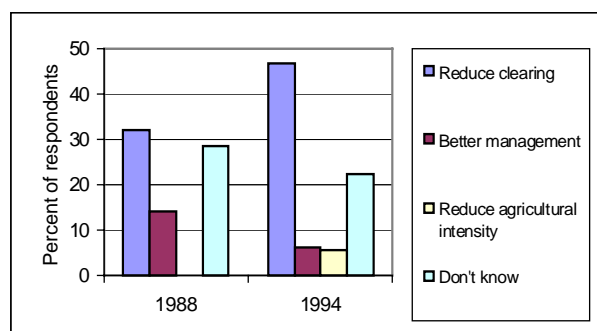
### 6.6.1.2 Awareness of salinity

Provincial town residents in the Goulburn Region showed a considerable improvement in their understanding of salinity. Between 1988 and 1994 there was a significant fall in the percentage of the sample who responded 'don't know' to both questions about the causes and solutions to salinity (Figures 6.35 & 6.36). Clearing of trees was the most frequently mentioned cause for salinity. Whilst the number of persons nominating tree clearing as a cause of salinity increased slightly from 1988 to 1994, there was a significant increase in people considering poor land management practices as a reason for salinity during this period (Figure 6.35). This change was not shown in perceived solutions to salinity. Reduced clearing of trees had a significant increase and remained as the most common solution to salinity while the response to better management practices fell from 14 percent to 6 percent.



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.35** Beliefs about causes of salinity, Goulburn provincial town residents (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.36** Beliefs about solutions to salinity, Goulburn provincial town residents (1988-94)

## 6.6.2 Rural residents

### 6.6.2.1 Concern for environmental issues

In this report rural residents in the Goulburn Region are referred to as two separate groups: irrigation farmers and dryland farmers. On average 32 percent of Goulburn rural residents interviewed in all surveys considered their main land use as irrigation farming. For irrigation farmers, salinity awareness relates to salinity in the water supply and in the drainage effluent flowing from irrigation farms. For dryland farmers salinity awareness relates to soil salinity.

In contrast to provincial town residents, dryland farmers in the Goulburn Region ranked salinity and degraded catchments as issues of least concern in 1988 (Table 6.8). Pollution and soil erosion were the issues of most concern followed by recycling. Concern for all issues dropped significantly by 1989. However, there was an increase in concern for salinity and degraded catchments within the next five years, and by 1994 salinity was ranked as the issue of most concern. No significant change in concern for environmental issues was shown over the next three years from 1994. In 1998 dryland farmers' concern for degraded catchments was higher than that for salinity.

Irrigation farmers showed a similar pattern of concern. Salinity and degraded rivers and catchments had a lower level of concern in 1988. However, there was an increase in concern for these issues up until 1998 when they were ranked as the most important (Table 6.8). At the same time concern for erosion, pollution and recycling amongst irrigation farmers has been comparatively stable throughout the period of the monitoring studies.

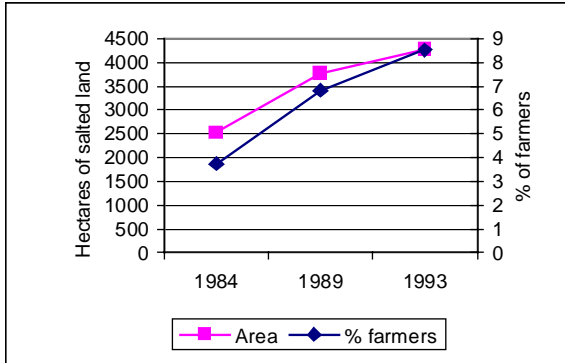
**Table 6.8** Environmental concern of rural residents (on a scale of 1-10) in the Goulburn Region

Environmental issue	Dryland farmers					Irrigation farmers				
	1988	1989	1994	1997	1998	1988	1989	1994	1997	1998
Salinity	5.78	4.06	7.96	7.57	7.34	7.00	7.21	8.52	8.21	8.29
Erosion	6.33	4.54	7.66	7.38	7.57	7.10	4.92	7.33	6.91	6.94
Degraded rivers	5.79	3.43	7.40	7.21	7.67	5.30	5.08	7.76	7.98	8.03
Pollution	6.33	3.83	7.19	6.96	7.55	7.60	5.12	7.05	6.77	7.53
Recycling	6.17	4.91	6.85	6.73	6.96	6.56	5.81	6.48	6.02	7.26
Forests	5.76	4.00	6.17	6.27	6.70	5.00	5.02	6.71	7.05	6.68

Source: Salinity and weed awareness surveys (1988-1998)

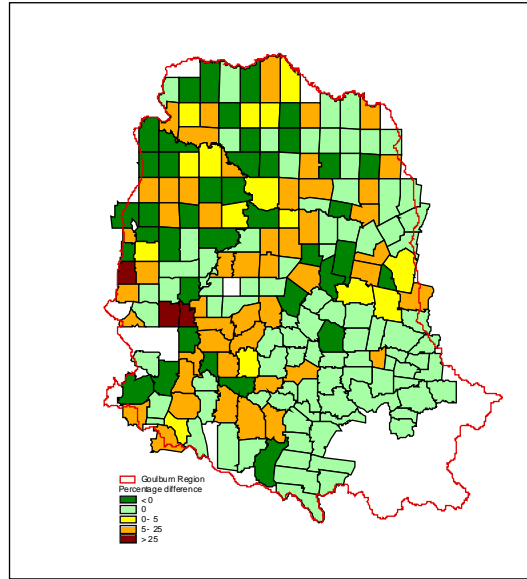
### 6.6.2.2 Awareness of salinity

In 1984, 1989, 1993 and 1994 the ABS surveyed awareness of soil salinity in dryland areas. The 1994 results are not included in this analysis due to an error in the data set. The results show that over the years from 1984 to 1993, both the area of land reported as salt affected by Goulburn farmers and the percentage of farmers reporting salt on their properties have increased (Figure 6.37). This implies that most of the increase in reported salt is due to a greater number of farmers reporting salt, rather than the same farmers reporting increased areas of salt. Most of the increase in the number of farmers reporting salinity has occurred in the north and the north-west of the region (Figure 6.38).



Source: ABS farm census (1984-1993)

**Figure 6.37** Area of reported salt and percentage farmers reporting salt on their land in the Goulburn Region

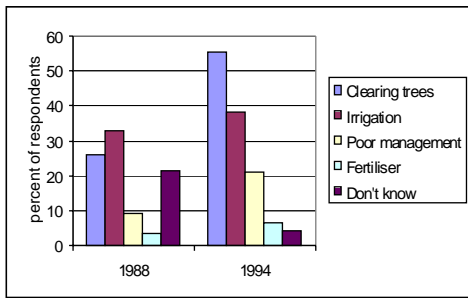


Source: ABS farm census (1984-1993)

**Figure 6.38** Increase in percentage of farmers reporting salt on their properties in the Goulburn Region (1989-93)

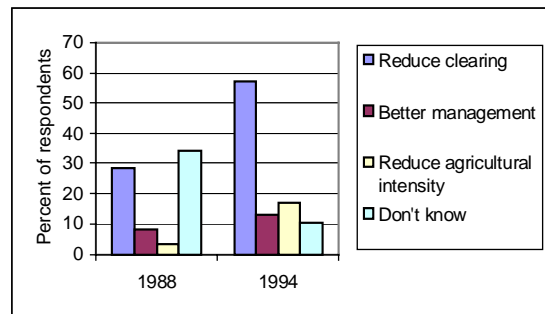
There was a significant change in the Goulburn dryland farmers' understanding of salinity. The percentage of farmers who responded to both questions about causes and solutions to salinity as 'don't know' fell considerably between 1988 and 1994. The belief that the removal of trees is a cause of salinity increased significantly from 26 percent to 55 percent during this period, while the percentage nominating over-irrigation as a cause remained unchanged (Figure 6.39). Similarly, revegetation was the most common solution for salinity reported by dryland farmers. This belief had become even more common by 1994 (Figure 6.40).

As with Mallee irrigators, the Goulburn irrigators' understanding of salinity was closely associated with water use. Over-irrigation was seen as a major cause of salinity, with a dramatic increase in the number of irrigators nominating this as a cause from 1988 to 1994 (Figure 6.41). At the same time there was an increase in the number of responses nominating less intensive farming as the solution, which possibly includes reduced irrigation intensity and increased water use efficiency (Figure 6.42). However, in contrast to Mallee irrigators, there was also an increase in the number of responses nominating tree clearing as the cause of salinity and recommending revegetation and ceasing clearing as the solution for salinity during this period.



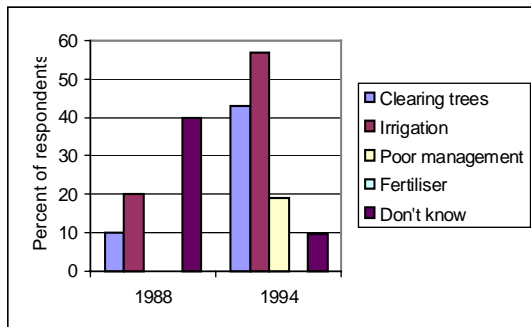
Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.39** Beliefs about causes of salinity, Goulburn dryland farmers (1988-94)



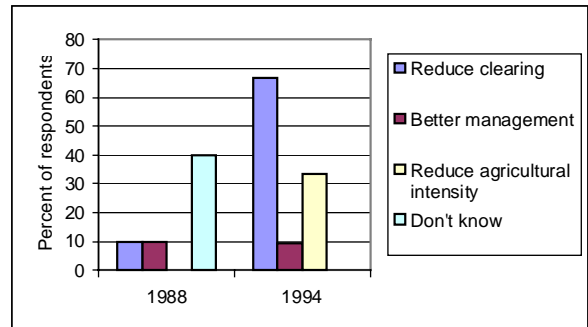
Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.40** Beliefs about solutions to salinity, Goulburn dryland farmers (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.41** Beliefs about causes of salinity, Goulburn irrigated farmers (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.42** Beliefs about solutions to salinity, Goulburn irrigated farmers (1988-94)

## 6.7 North Central Region

### 6.7.1 Provincial town residents

#### 6.7.1.1 Concern for environmental issues

In 1988 North Central provincial town residents rated salinity as the biggest issue of environmental concern (Table 6.9). In the following year, pollution surpassed it as the issue of most concern. There was no significant trend in concern for any environmental issues shown over the decade between 1988 and 1998. This differs from the general pattern of changing environmental concerns across provincial town Australia.

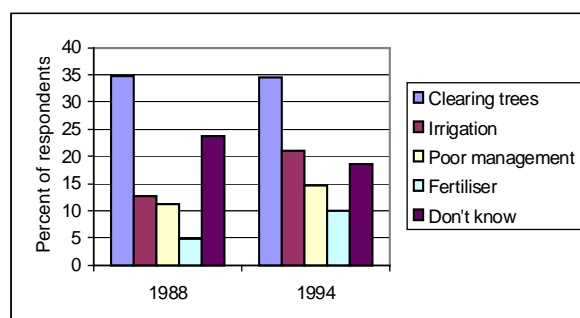
**Table 6.9** Environmental concern of provincial town residents (on a scale of 1-10) in the North Central Region

Environmental issue	Provincial town residents				
	1988	1989	1994	1997	1998
Salinity	7.65	8.02	7.74	7.66	7.19
Erosion	7.30	7.61	7.96	7.79	7.15
Degraded rivers	6.60	6.82	7.35	7.38	7.39
Pollution	7.34	8.03	7.97	7.75	7.76
Forests	7.15	7.49	7.20	7.11	7.34

Source: Salinity and weed awareness surveys (1988-1998)

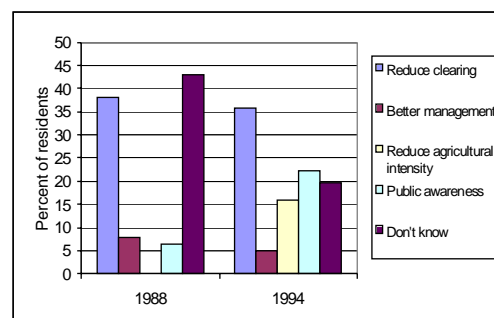
### 6.7.1.2 Awareness of salinity

North Central provincial town residents showed a good understanding of salinity. Between 1988 and 1994 there was a significant fall in the percentage of the sample who responded 'don't know' to the question about the causes and solutions to salinity (Figures 6.43 and 6.44). Clearing of trees was the most frequently mentioned cause of salinity. There was relatively little change in this understanding over the period of the monitoring surveys. Unlike many other regions, there was no comparable increase in the percentage of persons nominating tree clearing as a cause of salinity, or tree planting as a solution to salinity, during the period of the surveys. Instead there appeared to be a more complex understanding of salinity control and irrigation. There was a rise in the percentage of residents identifying irrigation as a cause for salinity, as well as reduced agricultural intensity as a solution, which likely includes reduced irrigation and land retirement. Raising public awareness through community education was also seen as important in reducing salinity in the region.



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.43** Beliefs about causes of salinity, North Central provincial town residents (1988-94)



Source: Salinity and weed awareness surveys (1988-1994)

**Figure 6.44** Beliefs about solutions to salinity, North Central provincial town residents (1988-94)

## 6.7.2 Rural residents

### 6.7.2.1 Concern for environmental issues

In this report rural residents in the North Central Region are referred to as two separate groups: irrigation farmers and dryland farmers. On average 30 percent of North Central rural residents interviewed in all surveys considered their main land use as irrigation farming. For irrigation farmers, salinity awareness relates to salinity in the water supply and in the drainage effluent flowing from irrigation farms. For dryland farmers salinity awareness relates to soil salinity.

Land degradation and catchment issues were of more concern to North Central dryland farmers than other environmental issues. Like provincial town residents, dryland farmers ranked salinity as the most important issue, followed by soil erosion, and degraded rivers and catchments. Concern for all issues increased slightly over the decade from 1988 to 1998.

Irrigation farmers showed a similar pattern of concern. Salinity and degraded rivers and catchments had a higher level of concern in 1988. However, no significant change in concern for environmental issues was shown over the period of the survey (Table 6.10).

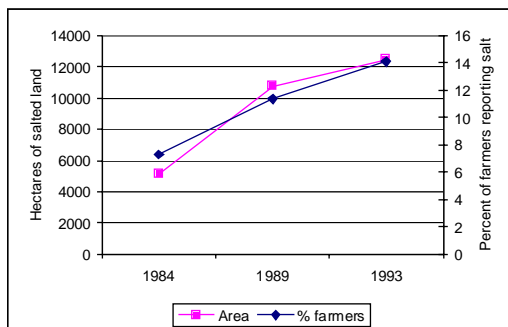
**Table 6.10** Environmental concern of rural residents (on a scale of 1-10) in the North Central Region

Environmental issue	Dryland farmers					Irrigation farmers				
	1988	1989	1994	1997	1998	1988	1989	1994	1997	1998
Salinity	6.64	6.87	7.04	7.72	7.62	7.57	7.73	7.02	7.60	7.96
Erosion	6.53	6.59	6.95	7.43	7.34	6.84	6.66	5.43	7.03	6.81
Degraded rivers	5.97	5.80	6.21	7.56	7.61	7.20	6.53	6.04	6.67	7.33
Pollution	4.93	6.44	5.58	7.06	6.70	5.18	6.44	5.39	6.37	6.70
Recycling	5.84	6.93	6.35	6.94	6.50	5.18	7.11	7.11	6.47	6.19
Forests	5.16	6.02	5.61	6.48	6.61	5.36	6.01	5.35	5.80	5.96

Source: Salinity and weed awareness surveys (1988-1998)

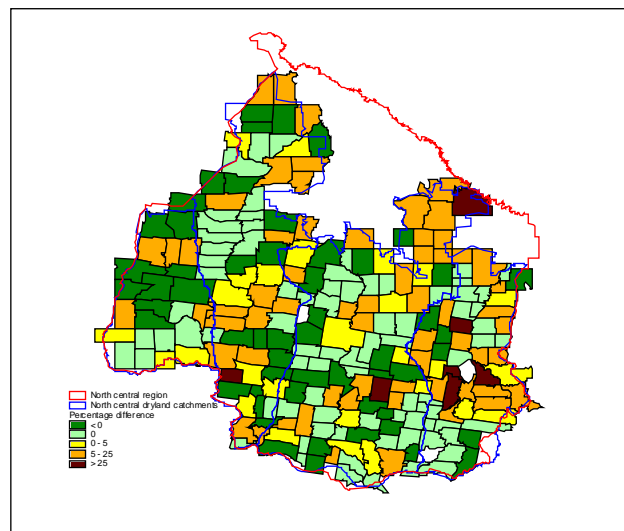
### 6.7.2.2 Awareness of salinity

In 1984, 1989, 1993 and 1994 the ABS surveyed awareness of soil salinity in dryland areas. The 1994 results are not included in this analysis due to an error in the data set. Between 1984 and 1993 the area of farm land reported as salt affected has more than doubled from 5100 hectares to 12 500 hectares. During this period the percentage of North Central farmers reporting salt on their properties has also increased (Figure 6.45). This implies that most of the increase in reported salt is due to greater numbers of farmers reporting salt, rather than the same farmers reporting increased areas of salt. Both the area affected, and the number of farmers reporting salt, declined in the following year. Most of the increase in the number of farmers reporting salinity occurred in Campaspe and Avoca catchments (Figure 6.46).



Source: ABS farm census (1984-1994)

**Figure 6.45** Area of salt affected land and number of farmers reporting salt on their properties

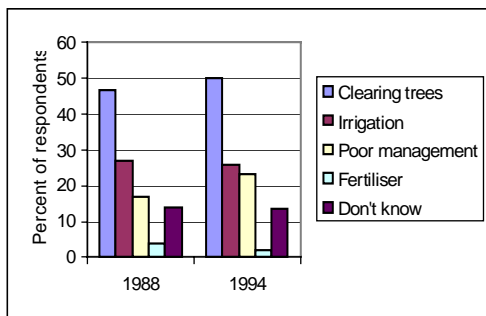


Source: ABS farm census (1984-1994)

**Figure 6.46** Increase in percentage of farmers reporting salt on their properties (1989-1993)

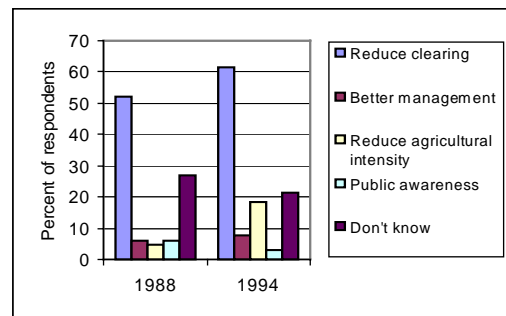
North Central dryland farmers showed a very good understanding of salinity. In 1988 and 1994 only 13 percent of respondents answered 'don't know' to the question about causes of salinity. Clearing of trees was the most frequently mentioned cause for salinity, followed by over-irrigation and poor management practices. There appears to be no significant change in this understanding of causes of salinity (Figure 6.47). There was a slight decline in the percentage of respondents nominating 'don't know' to the questions about solutions to salinity, and an increase in responses nominating tree planting and reduce agricultural intensity (Figure 6.48).

In contrast to dryland farmers, there was significant change in the North Central irrigation farmers' understanding of salinity. The percentage of farmers responding 'don't know' to questions about causes and solutions to salinity fell considerably between 1988 and 1994. As with irrigators in other regions, North Central irrigation farmers' understanding of salinity was also associated with water use. Over-irrigation was the most frequently mentioned cause for salinity in 1988 (Figure 6.49). There was also an increase in respondents nominating less intensive farming as the solution to salinity, which likely includes reduced irrigation intensity and increased water use efficiency (Figure 6.50).



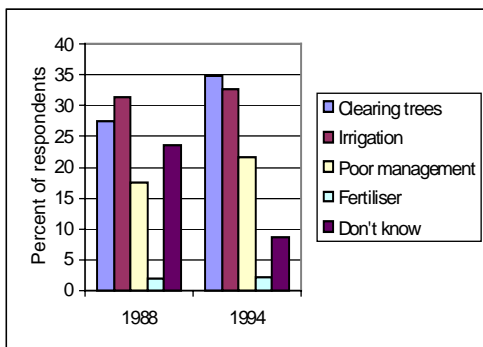
Source: Salinity and weed awareness surveys (1988-1998)

**Figure 6.47** Beliefs about causes of salinity, North Central dryland farmers (1988-94)



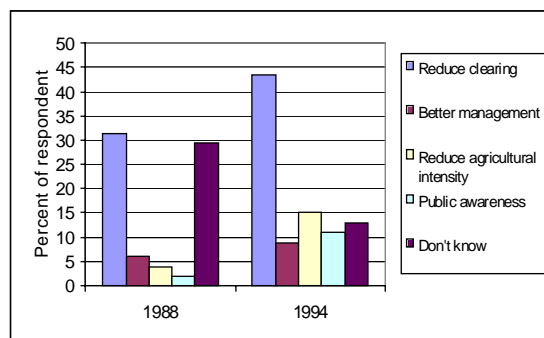
Source: Salinity and weed awareness surveys (1988-1998)

**Figure 6.48** Beliefs about solutions to salinity, North central dryland farmers (1988-94)



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 6.49** Beliefs about causes of salinity, North Central irrigated farmers (1988-94)



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 6.50** Beliefs about solutions to salinity, North Central irrigated farmers (1988-94)

## 6.8 South East Region

### 6.8.1 Provincial town residents

#### 6.8.1.1 Concern for environmental issues

Pollution was the main concern of South East provincial town residents in 1988, followed by soil erosion, degraded rivers and catchments, and poor recycling. Residents of South East provincial towns perceived salinity to be the third least serious threat to Victoria of the nine environmental issues rated in the survey. By the following year, concern for issues related to land degradation and degraded catchments declined, while there was an increase in concern for pollution, recycling and loss of forests. Concern for salinity increased after the general peak in environmental concern of 1989, and by 1994 had become the third most important issue, although still significantly behind pollution and recycling. Within the next four years there was a decrease in concern for salinity, pollution and recycling, while erosion and degraded catchments became issues of greater concern (Table 6.11).

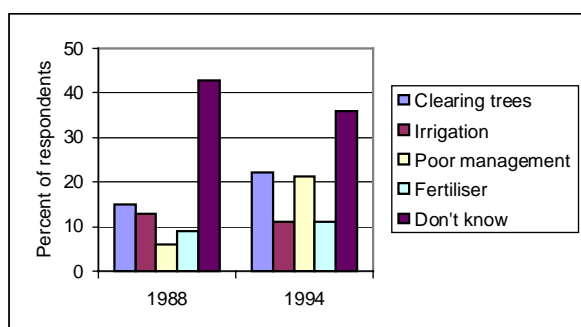
**Table 6.11** Environmental concern of provincial town residents (on a scale of 1-10) in the South East Region

Environmental issue	Provincial town residents				
	1988	1989	1994	1997	1998
Salinity	6.30	6.14	6.94	6.00	6.72
Erosion	7.61	7.10	6.80	7.10	7.30
Degraded rivers	7.20	7.07	6.61	7.43	7.22
Pollution	8.36	8.48	8.24	7.96	7.81
Recycling	7.11	7.23	7.44	6.79	7.10
Forests	6.85	7.09	6.93	6.87	6.98
Biodiversity	6.97	6.62	6.90	6.66	7.30
Open space	6.00	5.93	6.08	6.19	6.05
Wetlands	6.24	6.24	5.99	6.35	6.72

Source: Salinity and weed awareness surveys 1988-1998

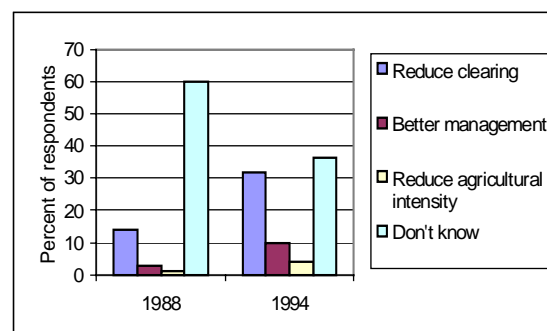
#### 6.8.1.2 Awareness of salinity

Understanding of salinity was not well advanced amongst South East provincial town residents in 1988, with 43 percent responding 'don't know' to questions about the cause of salinity, although this figure had fallen to 36 percent by 1994. Clearing of trees was seen as a major cause of salinity, while 'poor management practices' also received an increase in responses from 1988 to 1994 (Figure 6.51). In 1988, answers to questions about the solution to salinity revealed an even greater level of uncertainty with 60 percent responding 'don't know' to the question, although this level of uncertainty fell considerably in 1994. There was also a significant rise in the percentage of respondents who nominated reducing tree clearing as a solution to salinity (Figure 6.52).



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 6.51** Beliefs about causes of salinity, South East provincial town residents (1988-94)



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 6.52** Beliefs about solutions to salinity, South East provincial town residents (1988-94)

## 6.8.2 Rural residents

### 6.8.2.1 Concern for environmental issues

In contrast to town residents, South East rural residents ranked salinity as the most serious environmental issue in 1988, followed by soil erosion and degraded rivers and catchments. However, they showed a significant decrease in concern for salinity over the six year period from 1988. By 1994 salinity had dropped to the fifth most serious issue. This decline in concern does not correspond with the increase in salinity reported in the ABS census in the same period (Figure 6.53). In 1997, however, concern for salinity increased again until it was ranked second (only behind pollution), although both erosion and degraded catchments were ranked as more serious concerns in 1998 (Table 6.12).

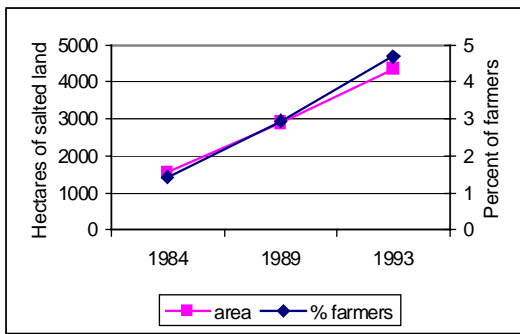
**Table 6.12** Environmental concern of rural residents (on a scale of 1-10) in the South East Region

Environmental issue	Rural landholders				
	1988	1989	1994	1997	1998
Salinity	7.34	6.69	5.99	6.96	6.96
Erosion	7.23	6.93	6.46	6.62	7.51
Degraded rivers	6.43	6.45	6.01	6.97	7.67
Pollution	5.78	7.68	5.83	6.93	7.48
Recycling	6.25	7.53	6.41	6.42	6.81
Forests	6.11	6.46	6.12	5.73	6.21
Biodiversity	6.08	5.69	5.86	6.16	6.65
Open space	4.74	4.99	4.88	5.19	5.45
Wetlands	5.59	5.69	5.47	5.68	6.55

Source: Salinity and weed awareness surveys (1988-1998)

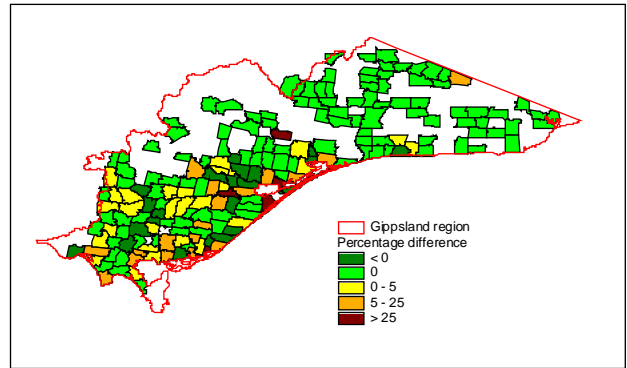
### 6.8.2.2 Awareness of salinity

There has been a steady rise in the reporting of salinity by South East farmers since 1984. Between 1984 and 1993 the area of farm land reported as salt affected increased from 1600 hectares to 4000 hectares. The percentage of farmers reporting salinity also increased, from 1.5 percent to 4 percent (Figure 6.53). This implies that most of the increase in reporting of salt was due to more farmers reporting salt, rather than the same farmers reporting more salt on their properties. Most of the increase in reported salt during this period has occurred in the east Gippsland region (Figure 6.54). However, in comparison with areas to the north of the Great Dividing Range, salinity is a relatively minor concern to South East farmers.



Source: ABS farm census (1984-1994)

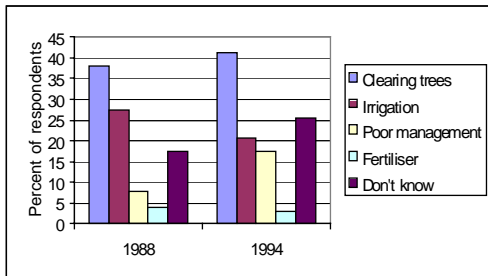
**Figure 6.53** Area of salt affected land and number of farmers reporting salt on their properties



Source: ABS farm census (1984-1994)

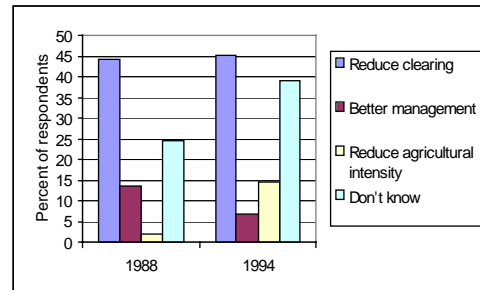
**Figure 6.54** Increase in percentage of farmers reporting salt on their properties (1989-93)

The salinity monitoring surveys have shown little improvement in South East rural residents' understanding of the causes and solutions to salinity through the period from 1988 to 1994. There was an increase in the percentage of respondents who answered 'don't know' to both questions during this period (Figures 6.55 & 6.56). Positive responses to these questions have been dominated by 'clearing trees' and 'reduce clearing trees' respectively. The percentage of farmers nominating 'reduce agricultural intensity' as a solution to salinity increased during this period.



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 6.55** Beliefs about causes of salinity, South East rural residents (1988-94)



Source: Salinity and weed awareness surveys (1988-1998)

**Figure 6.56** Beliefs about solutions to salinity, South East rural residents (1988-94)

## 7 CONCLUSIONS

The degree of concern for environmental issues varied throughout the decade. There was clear evidence of changes in concern corresponding with media attention and publicity given to a particular issue at a specific time, or with the time of commencement of public awareness programs in each of the regional areas. There was a shift in general public opinion on environmental issues in 1989, when it was the most important political issue in the country, receiving enormous media exposure. Concern for the environment dropped considerably by the mid 1990s when unemployment became the most prominent political issue during the peak of the recession, showing a link between environmental concern and the prevailing economic climate.

It was clear that most people gave the highest priority to those environmental issues they believed would have the greatest impact on their immediate environment. Pollution and waste recycling were the dominant environmental issues for Melbourne and provincial town residents while rural residents showed more concern for land degradation such as salinity, erosion, and degraded rivers and catchments.

Despite the decline in general concern for environmental issues during the recession, concern for salinity did not change significantly during the period of the survey, either among rural or provincial town residents. This is evidence that community education programs conducted in Victorian catchment regions during the last decade contributed to the sustained concern for this land degradation issue.

In the northern dryland catchments of the Wimmera, North Central and Goulburn regions the greatest increase in awareness occurred between 1984 and 1989. The majority of the changes in the southern Glenelg and Corangamite catchments occurred between 1989 and 1993.

Provincial town residents in the northern catchments of the North Central, Mallee and Goulburn regions stand out with highest levels of concern for salinity. Provincial town residents in southern regions had the lowest level of concern.

Concern for salinity was higher in the Mallee Region than any other region during the period 1988 to 1989. In the Mallee Region, preparation of salinity management plans and community education programs commenced in mid 1980s. Along with the Saltwatch, Waterwatch and Drainwatch programs conducted in the area, a range of other community education programs have contributed to the high level of awareness in the Mallee. The shift to linking rising watertables to salinity in the early surveys shows that the programs significantly improved the understanding of land degradation among Mallee provincial town residents.

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