

LANDHOLDER BELIEFS ABOUT NRM IN THE SOUTHERN RIVERS NRM REGION

BENCHMARKING SURVEY



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Southern Rivers Catchment Management Authority
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TABLE OF CONTENTS

TABLE OF CONTENTS	ii
EXECUTIVE SUMMARY	vi
1 INTRODUCTION	9
2 OBJECTIVES	9
3 METHODOLOGY	10
3.1 Questionnaire Design	10
3.2 Survey Sampling	10
4 INTERPRETATION OF GRAPHS	15
5 LAND MANAGEMENT ISSUES	18
5.1 Salinity	22
5.2 Soil Erosion	25
5.3 Weeds	28
5.4 Decline in Native Animals	31
5.5 Introduced Pest Animals	34
5.6 Poor Quality Groundwater	37
5.7 Poor Quality Water in Rivers and Streams	40
5.8 Poor Soil Condition	43
5.9 Reduced Native Vegetation Cover	46
5.10 Poor Condition of Native Vegetation	49
6 BELIEFS ABOUT THE HEALTH OF RURAL PROPERTIES	52
6.1 Beliefs about the Influence of Climate Change	54
7 BELIEFS ABOUT NATIVE VEGETATION	56
7.1 The Occurrence of Native Vegetation on Properties	56
7.2 Beliefs about Native Vegetation and Economic Production	57
7.3 Beliefs about Native Vegetation and the Health of the Local Environment	58
7.4 Beliefs about the Management of Native Vegetation	59
7.5 Interest in the Management of Native Vegetation	60
7.6 Knowledge of Native Plants on Property	61
7.7 Motivation to Manage Native Vegetation	62
7.8 Willingness to Accept Advice about Managing Native Vegetation	63
8 CAPACITY FOR NATURAL RESOURCE MANAGEMENT	64
8.1 Awareness of Local Land and Water Issues	65
8.2 Local Involvement with Neighbours in Land and Water Issues	66
8.3 Knowledge of Local Landcare Groups	67
8.4 Participation in Land and Water Issues	68
8.5 Interest in Land and Water Issues	69
8.6 Experience and Knowledge in Addressing NRM Issues	70
8.7 Skills and Training to Address NRM Issues	71
8.8 Capacity to Influence Decisions about NRM	72

9	EXTERNAL SUPPORT AND INFORMATION.....	73
9.1	Sources of Information about Environmental Issues	73
9.2	Membership of Landcare.....	74
9.3	Membership of an NRM Group or Network (other than Landcare).....	75
9.4	Percent Requesting Support to Improve the Health of their Property	77
9.5	Percent Undertaking Training to Improve the Health of their Property	79
10	AWARENESS AND INVOLVEMENT WITH THE SOUTHERN RIVERS CMA	84
10.1	Awareness of the Southern Rivers CMA.....	84
10.2	Contact or Communication with the Southern Rivers CMA	85
10.3	Preferred Methods for Southern Rivers CMA Communication	86
11	BELIEFS ABOUT ABORIGINAL LAND MANAGEMENT ISSUES	87
12	PROPERTY AND LANDHOLDER CHARACTERISTICS	89
12.1	Irrigated Properties	89
12.2	Properties Used for Production.....	90
12.3	Hobby and Lifestyle Farms or Land Use for Conservation.....	91
12.4	Years Lived on Current Property.....	92
12.5	Age of Landholders	93
TABLE OF CONTENTS		ii
EXECUTIVE SUMMARY		vi
1	INTRODUCTION	9
2	OBJECTIVES	9
3	METHODOLOGY	10
3.1	Questionnaire Design	10
3.2	Survey Sampling	10
4	INTERPRETATION OF GRAPHS	15
5	LAND MANAGEMENT ISSUES	18
5.1	Salinity.....	22
5.2	Soil Erosion	25
5.3	Weeds	28
5.4	Decline in Native Animals	31
5.5	Introduced Pest Animals.....	34
5.6	Poor Quality Groundwater.....	37
5.7	Poor Quality Water in Rivers and Streams.....	40
5.8	Poor Soil Condition	43
5.9	Reduced Native Vegetation Cover	46
5.10	Poor Condition of Native Vegetation	49

6	BELIEFS ABOUT THE HEALTH OF RURAL PROPERTIES	52
6.1	Beliefs about the Influence of Climate Change.....	54
7	BELIEFS ABOUT NATIVE VEGETATION.....	56
7.1	The Occurrence of Native Vegetation on Properties	56
7.2	Beliefs about Native Vegetation and Economic Production.....	57
7.3	Beliefs about Native Vegetation and the Health of the Local Environment.....	58
7.4	Beliefs about the Management of Native Vegetation.....	59
7.5	Interest in the Management of Native Vegetation	60
7.6	Knowledge of Native Plants on Property	61
7.7	Motivation to Manage Native Vegetation	62
7.8	Willingness to Accept Advice about Managing Native Vegetation	63
8	CAPACITY FOR NATURAL RESOURCE MANAGEMENT	64
8.1	Awareness of Local Land and Water Issues.....	65
8.2	Local Involvement with Neighbours in Land and Water Issues.....	66
8.3	Knowledge of Local Landcare Groups.....	67
8.4	Participation in Land and Water Issues	68
8.5	Interest in Land and Water Issues.....	69
8.6	Experience and Knowledge in Addressing NRM Issues	70
8.7	Skills and Training to Address NRM Issues.....	71
8.8	Capacity to Influence Decisions about NRM	72
9	EXTERNAL SUPPORT AND INFORMATION.....	73
9.1	Sources of Information about Environmental Issues.....	73
9.2	Membership of Landcare.....	74
9.3	Membership of an NRM Group or Network (other than Landcare).....	75
9.4	Percent Requesting Support to Improve the Health of their Property	77
9.5	Percent Undertaking Training to Improve the Health of their Property	79
10	AWARENESS AND INVOLVEMENT WITH THE SOUTHERN RIVERS CMA	84
10.1	Awareness of the Southern Rivers CMA.....	84
10.2	Contact or Communication with the Southern Rivers CMA	85
10.3	Preferred Methods for Southern Rivers CMA Communication	86
11	BELIEFS ABOUT ABORIGINAL LAND MANAGEMENT ISSUES	87
12	PROPERTY AND LANDHOLDER CHARACTERISTICS	89
12.1	Irrigated Properties	89
12.2	Properties Used for Production.....	90
12.3	Hobby and Lifestyle Farms or Land Use for Conservation.....	91
12.4	Years Lived on Current Property.....	92

12.5	Age of Landholders	93
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EXECUTIVE SUMMARY

The objective of this project was to benchmark landholder awareness, attitudes and beliefs in relation to NRM; the engagement of landholders in NRM and the capacity of landholders to undertake sustainable practices¹.

Although the project provides a basis for developing initiatives in relation to landholder engagement and capacity, the project focuses on benchmarking these attributes and is not an explanatory study which seeks to identify and explain the underlying causes or determinants of landholder behaviour, attitudes or beliefs. As the first in a series of future benchmarking studies, this project provides the basis for future comparisons and the assessment of change across time.

The project methodology was based on a telephone survey of 2,000 landholders within the Southern Rivers region undertaken between February and April 2008.

Land Management Issues

Amongst landholders the two most common land management issues were weeds (74%) and introduced pest animals (71%). Although weeds and introduced pests affected a high percentage of landholders, these issues were seen as a minor problem by most landholders. In addition, the majority of landholders indicated they had a 'moderate' capacity to deal with these two issues.

In relation to weeds, the three most common capacity issues constraining landholder ability to address this issue was, (i) the lack of motivation to act to address weeds, (ii) the lack of money to undertake the necessary actions and (iii) the older age of many landholders. Although motivation was not an issue underpinning landholder's ability to address the problem of introduced pests, many landholders did not act to address the issue as they believed the issue 'could not be fixed'.

Furthermore, 88% of landholders reporting a problem with weeds and 72% of landholders who had experienced issues with introduced pest animals had undertaken actions to address these issues in the last 12 months.

An examination of the characteristics of those landholders reporting weeds and introduced pest animals as issues, indicates these issues to be more of a problem in the Snowy-Monaro subregion; amongst the very large properties and those involved in sheep production. Landcare members rather than non-members were also more likely to report this issue, although whether they became Landcare members because of this issue, or whether being a Landcare member better enabled them to identify the issue is unknown.

A similar analysis has been undertaken in relation to other land management issues. In general many of the other land management issues were found most commonly in the Snowy-Monaro subregion; amongst larger property owners; those involved in sheep production; and those who were Landcare members.

¹ A spatial atlas of the same data as used in this report has also been completed.
Fenton, D.M. & Rickert, A. (2008). *Social atlas: Southern Rivers CMA natural resource management benchmarking. Southern Rivers CMA, NSW.*

Beliefs about the Health of Rural Properties

The majority of landholders believed their properties to be healthy, with an average score of eight on a ten point scale. Relatively less healthy properties were found to be in the Snowy-Monaro subregion; and on a region wide basis amongst dairy as opposed to beef and sheep farmers; and amongst older landholders.

The majority of landholders believed the health of their property had improved over the past five years, with the greatest improvement occurring in the Upper Shoalhaven subregion; amongst dairy farmers; and amongst properties of between 57 and 113 hectares.

In addition, 76% of landholders reported considering the issue of climate change and how it might affect their property and the way they managed it.

Beliefs about Native Vegetation

Seven key belief statements were used to assess beliefs about native vegetation on properties. Across all landholders 83% reported having native vegetation on their properties. The majority of landholders agreed with the following statements:

1. The native vegetation on my property contributes to my economic production (81%)
2. The native vegetation on my property contributes to the health of the local environment (95%)
3. Native vegetation needs to be managed to be healthy (63%)
4. I am interested in managing the native vegetation to be as healthy as possible (69%)
5. I can name most of the native plants on my property (79%)
6. I would like to manage the native vegetation on my property, but it is low on the list of things to do on my property (48%)
7. I would accept advice on how to do more to manage the native vegetation on my property (70%)

Capacity for Natural Resource Management

The capacity to address NRM issues was addressed using eight belief statements. Each belief statement was constructed so that it not only provided an indication of landholder capacity in relation to NRM, but it could also be placed along a continuum of capacity and engagement from simple awareness of NRM issues through to empowerment and the capacity to influence NRM decision making. The percentage of landholders agreeing with each statement is shown below:

1. I am awareness of local land and water issues (91%)
2. I would work with neighbours on land and water issues (77%)
3. I know about the things the local Landcare group is doing (70%)
4. I would participate in addressing land and water issues (59%)
5. I am interested in finding out about land and water issues (47%)
6. I have the experience and knowledge to address NRM issues (46%)
7. I have the skills and training to address NRM issues (31%)
8. I am able to influence decision making about NRM (17%)

External Support and Information

For landholders the three most common sources of information on environmental issues on their properties and in their local area were (i) Local Government Authorities; (ii) State agencies and (iii) Landcare groups.

Thirteen percent of landholders indicated they were a member of a Landcare group and 7% indicated they were members of other NRM groups other than Landcare. Landcare membership was highest in the Snowy-Monaro subregion; amongst large property owners; and those involved in sheep production.

Thirteen percent of landholders indicated they sought support or advice in the last two years about improving the health of their property, while only 5% reported undertaken training in the last two years to improve the health of their properties.

Landholders were asked to identify one question about improving the health of their property that they would like to ask the CMA. Nearly a third (29%) of all questions related to weed management and specifically issues related to the eradication of weeds. A further 15% of questions focussed on water management and 10% focussed on the removal and control of pest animals. These three issues (pest plants and animals and water management) accounted for over half of all the questions landholders indicated they would like to ask the CMA.

Awareness and Involvement with the Southern Rivers CMA

Forty-seven percent of all landholders indicated they had heard of the Southern Rivers CMA. Awareness of the CMA was most common in the Upper Shoalhaven and Snowy-Monaro subregions; amongst landholders with relatively small (7-24 hectares) and large landholdings; amongst hobby farmers; Landcare members; and older landholders.

Landholders indicated the two most preferred methods of CMA communication to be (i) posting material in the mail (40%) and (ii) the use of the local newspaper (38%).

Beliefs about Aboriginal Land Management Issues

Landholders were asked if Aboriginal people should have the right to access properties for management and traditional cultural practices if the land was their traditional land. Approximately 45% of landholders were found to agree with the statement and 55% were found to disagree with the statement.

Landholders were also asked if they believed Aboriginal people possessed traditional ecological knowledge which could benefit the management of land and water in the region. Across all landholders 59% agreed with this statement and 41% disagreed with the statement.

1 INTRODUCTION

The Southern Rivers Catchment Management Authority (SRCMA) is one of 13 regional natural resource management (NRM) bodies in NSW. The CMAs were established in 2004 and each CMA has developed a Catchment Action Plan (CAP) and Investment Strategies to support the management of natural resources and achievement of NRM targets within each region.

In achieving the NRM targets as identified in the CAP, capacity building and engagement are integral activities which need to be undertaken to *enable* the achievement of core NRM targets and objectives. These enabling activities, which lead to intermediate outcomes within the program logic of NRM, include for example increasing community awareness and knowledge of NRM issues and increased participation and involvement in NRM activities. By increasing the capacity and involvement of landholders more broadly in NRM, the greater the likelihood that the resource condition targets, as identified in the CAP are able to be achieved.

This project provides the basis for benchmarking the existing level of landholder capacity, beliefs and involvement in NRM in the Southern Rivers region and will form a reference point for ongoing monitoring and evaluation of landholder engagement and capacity over the life of this and future CAPs.

2 OBJECTIVES

The primary objective of this project was to benchmark landholder awareness, attitudes and beliefs in relation to NRM; the engagement of landholders in NRM and the capacity of landholders to undertake sustainable practices.

The objectives of the study was to allow benchmarking of the Community and Partnerships Target² which stated that:

“By 2016 communities of the Southern Rivers region are willing and adequately supported to actively engage in natural resource management”

Furthermore, this benchmarking project specifically addresses two of the community and partnership management targets, which state that:

C1: Engagement: From 2006 the willingness of communities to engage in NRM and the quality of that engagement will be enhanced, with the number of people working collaboratively maintained or increased.

C4: Capacity and Practices: By 2016 there will be an increase in community awareness, knowledge and skills in relation to NRM and an increase in the adoption of practices that improve NRM outcomes

² Southern Rivers CMA (2006). *Catchment action plan*. Southern Rivers CMA, Wollongong, NSW.

Although the project provides a basis for developing initiatives in relation to engagement and landholder capacity, the project focuses on benchmarking these attributes and is not an explanatory study which seeks to identify and explain the underlying causes or determinants of landholder attitudes or beliefs. As the first in a series of future benchmarking studies, this project provides the basis for future comparisons and the assessment of change across time.

3 METHODOLOGY

There were three core components to the project methodology which included (i) the design and pre-testing of the questionnaire; (ii) the sampling of landholders and (iii) interviews with landholders.

3.1 Questionnaire Design

The questionnaire was based on issues as identified and discussed in a one day workshop with CMA staff and other stakeholders. The questionnaire was designed so that it could be completed through a 20 minutes telephone interview. Furthermore the questionnaire consisted primarily of structured and close ended questions, which because they are more quantitative are more suited to a monitoring program where comparisons and trends can be examined across time.

The questionnaire (Appendix A) included questions which focussed on:

1. The occurrence and severity of land management issues (i.e., salinity, weeds etc)
2. Capacity to address land management issues;
3. Beliefs and attitudes towards native vegetation management;
4. Engagement in NRM
5. Perception and beliefs about the Southern Rivers CMA; and
6. Characteristics of landholders.

An initial draft of the questionnaire was pre-tested on a random sample of 40 respondents from within the Southern Rivers NRM region. The objective of the pre-test was to ensure question wording and question ordering was appropriate and that the responses to questions were meaningful. On the basis of the pre-test minor changes were made to the wording and structure of the questionnaire.

3.2 Survey Sampling

The sampling frame consisted of all private landholders in the Southern Rivers NRM region. Landholders were defined as those respondents who “owned, lived on or looked after a farm or rural property”. This definition was included as the first question in the questionnaire (Appendix A) and acted as a filter to exclude those respondents who did not “own, live on or look after a farm or rural property”.

On the basis of the project budget, the sample size was maximised so as to include 2,000 telephone interviews with landholders. The use of a large sample not only allowed pre and post

stratification of the sample, but also ensured there was minimal error when using the survey findings in the context of a longer term monitoring and evaluation framework³.

Figure 1 shows the six SRCMA subregions and Figure 2 shows the 19 sample areas used as a basis for sample selection. To a large extent the number and location of sample areas was dependent upon the population size of rural landholders, although the boundary of these spatial units were also reviewed by CMA staff.

Landholders were identified from the digital white pages⁴ and through their address details were assigned to one of the 19 spatial units. As the last available digital white pages was from 2004, telephone numbers one above and one below the telephone number identified in the white pages were also selected. Through this process more recent telephone numbers were able to be included. However it should be noted, particularly when interpreting the survey findings, that this sampling procedure would generally exclude most absentee landholders.

While an examination of the address associated with the initial telephone number was the best estimate of the location of the respondent and whether the respondent was likely to be a rural landholder, the first interview question asked whether the respondent “owned, lived on or looked after a farm or rural property”. If the response to this question was negative, the interview was concluded.

All landholders were also asked the nearest town and the nearest road to their property (Appendix A) and this was also used to ensure the landholders were assigned to the appropriate subregion and sample areas.

While an initial attempt was made to obtain approximately 333 interviews from within each of the six subregions, with an equal distribution of landholders from each of the sample areas within subregions, in several instances there were insufficient phone numbers through which to achieve this target. Where the target number was not able to be achieved, the balance of the sample was obtained from those subregions and sample areas which had additional phone numbers available.

Table 1 shows the final sample counts for the six subregions and each of the sample areas. Population estimates for the number of landholders within each of the subregions has also been derived from Rural Lands Protection Boards (RLPBs). The information provided by RLPBs is usually for the number of landholders above a thresholds of either four, five or 10 hectares. Survey data has been used to estimate the percentage of landholders below these values within each subregion which has been used to derive the final estimates.

³ For example, when a ‘yes’ or ‘no’ response is required to a specific question and assuming 50% of respondents within a sample of 2,000 responded ‘yes’ and the remaining 50% responded ‘no’, this would yield a standard error of 0.011. In other words, if 50% of the sample responded ‘yes’ to a specific question, we would be 95% confident that the true value in the population from which the sample was drawn would be between 47.9% and 52.1%.

⁴ The 2004 digital white pages telephone directory was the last year a digital directory of all phone numbers in Australia was publicly available.

With the exception of Eurobodalla, all population estimates for the number of landholders within each subregion are with plus or minus five percent of the sample percentage. Given that there is some uncertainty in relation to the population estimates, and given the sample and population estimates are reasonably similar, the sample has not been weighted to reflect the population estimates⁵.

While the target sample for the SRCMA region was 2,000, Table 1 shows the final sample count to be 1,953. The lower final sample count was due to 47 landholder interviews being undertaken where it was later identified that their properties were outside the SRCMA region.

Table 1. Sample sizes for spatial units

Spatial unit	Sample Size	Sample Percent	Population Estimates	Sample-Population Discrepancy
<i>Bega</i>				
B1	129	6.6		
B2	79	4.0		
B3	260	13.3		
B4	124	6.3		
Total	592	30.3	28.3	+2.0
<i>Eurobodalla</i>				
E1	83	4.2		
E2	107	5.5		
Total	190	9.7	17.2	-7.5
<i>Illawarra</i>				
I1	113	5.8		
I2	78	4.0		
Total	191	9.8	4.5	+5.3
<i>Shoalhaven</i>				
S1	80	4.1		
S2	153	7.8		
S3	54	2.8		
S4	84	4.3		
Total	371	19.0	17.2	+1.8
<i>Snowy-Monaro</i>				
SM1	135	6.9		
SM2	56	2.9		
SM3	87	4.5		
SM4	53	2.7		
Total	331	16.9	13.5	+3.4
<i>Upper Shoalhaven</i>				
U1	38	1.9		
U2	176	9.0		
U3	64	3.3		
Total	278	14.2	19.4	-5.2
Total SRCMA region	1,953	100.0		

Note: Figure 1 and 2 shows the location of subregions and sample areas.
The population estimates are based on information provided by Rural Lands Protection Boards, which is generally only for landholdings above a minimum four, five or 10 hectares. Within each subregion sample percentages for the number of landholdings below these values have been used to adjust these estimates.

Source: EBC (2008)

⁵ Sensitivity analyses in which the distribution of responses for selected variables using an unweighted sample and the sample weighted on the basis of population estimates also shows a difference of less than 0.5% in the percentages reported.

Figure 1 Subregions within the Southern Rivers NRM Region



Figure 2 Sample areas within the Southern Rivers NRM Region



4 INTERPRETATION OF GRAPHS

Figure 3 shows an example of the type of graph used in presenting the results of analyses.

Figure 3 shows the presentation of results in relation to mean scores. In this example the mean scores for each of the six subregions are symbolised as a 'dot', with the upper and lower whiskers on either side of the mean indicating the 95% confidence interval. The 95% confidence interval indicates that, although we have estimated the population mean on the basis of sample data, we can be 95% confident the true population mean is between the upper and lower bounds that have been identified.

The graph also shows the mean for the Southern Rivers region. On the right axis of this graph the exact mean scores are presented and the sample size on which the mean was based. Sample sizes will vary as some questions were not applicable to all respondents, while in other instances the respondent may have indicated they were unable or did not wish to answer the question.

As a guide to interpretation, an asterisks (*) is also used against the Y axis heading in each graph to indicate that the means were found to be significantly different using an analysis of variance test.

While the graph in Figure 3 shows the mean scores, a similar interpretation can be used to understand the information presented in graphs which show percentages (bar graphs). However in this case rather than mean scores being presented the results are based on the percentage of respondents for each of the variables of interest.

In each of the graphics presented in this report, the variable of interest is compared against a number of other explanatory variables in order to further identify important relationships in the data. The range of explanatory variables used in the analysis is explained below:

Subregions: This distinguishes between the six subregions within the Southern Rivers region. Respondents were assigned to each subregion on the basis of (i) the town location associated with their phone number; (ii) the nearest town to their property (Question 26); and (iii) the name of the nearest road to their property (Question 27).

Property Size: This provides a comparison of landholders with different property sizes.

Primary land use: This graphic shows the mean scores for landholders who use their land for the production of crops, pastures or livestock and those who use their land as a hobby or lifestyle farm or for conservation with none or minor production.

Type of Production: This graphic shows the differences in means amongst those landholders who use their land solely for either dairy, beef or sheep production. The graphic does not include multiple uses (i.e., a landholder who may use their land for both dairy and beef production)

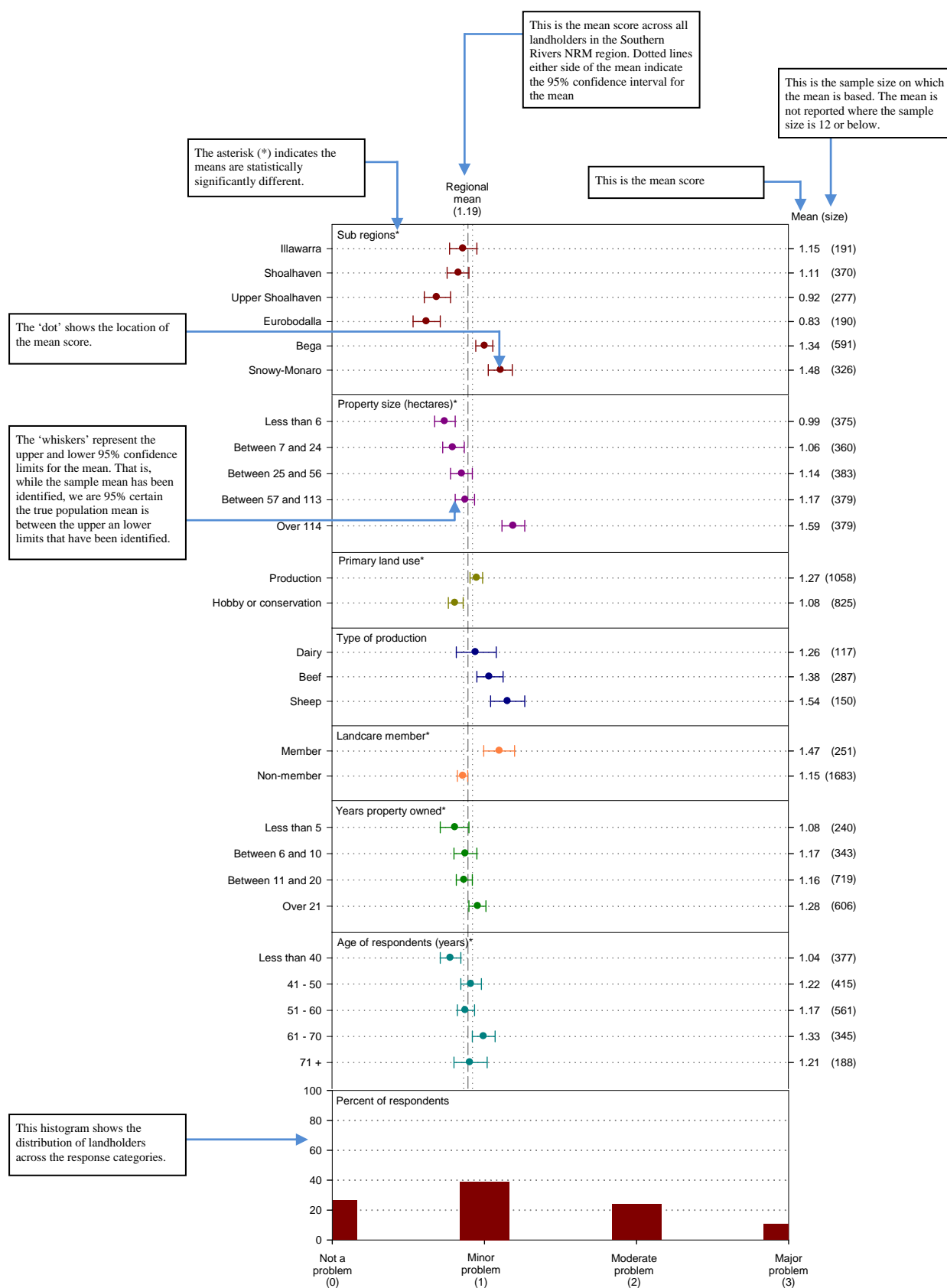
Landcare Member: This graphic shows the mean for those landholders who indicated they were or were not a member of a Landcare group.

Years Property Owned: All respondents were asked to identify how many years they had owned their current property. On the basis of responses to this question, respondents were grouped into four categories. This graphic compares the means across the four response categories. When interpreting this variable against the variable of interest, increasing or decreasing linear trends are sought.

Age of respondents: On the basis of the respondents age, five age classes were defined. Like the number of years resident on their current property, when interpreting this variable against the variable of interest, increasing or decreasing linear trends are sought.

As indicated previously, it is important to recognise that this report provides benchmarking information against which landholder attitudes and beliefs can be monitored across time. The analyses and graphics are presented in such a way as to allow future assessments against this benchmarked information. In terms of the direct interpretation of the current findings, it is generally only those stakeholders and CMA staff with detailed local knowledge who will be able to provide the contextual explanations for many of the findings reported in the graphics.

Figure 3 Example of graph of means used in reporting analyses



5 LAND MANAGEMENT ISSUES

Interviews with landholders addressed several land management issues which individual landholders may have experienced on their properties. The specific land management issues included:

1. Salinity;
2. Soil erosion, including erosion to stream beds, banks and gullies;
3. Weeds;
4. A decline in native animals;
5. Introduced pest animals, such as foxes, pigs and rabbits;
6. Poor quality ground water;
7. Poor quality water in rivers and streams;
8. Poor soil condition, such as nutrient deficiency, acidity and compaction;
9. Reduced native vegetation cover, including ground cover; and
10. Poor condition of native vegetation.

As shown in the questionnaire (Appendix A), each respondent was asked if the issue had occurred on their property within the last two years. If the issue had occurred on their property they were also asked additional questions, which included:

1. *Extent of the issue*, that is whether the issue was regarded as a minor, moderate or major problem;
2. *Their ability to address the issue*, with a judgment made on a five point scale from very low to very high;
3. *The type of capacity constraints* they had in addressing the issue, which was only asked of those respondents who indicated they had ‘very low’ or ‘low’ capacity to address the issue; and
4. *Actions to address the issue*, where respondents indicated whether they had taken action to address the issue in the last 12 months.

Figure 4 shows that two of the most common land management issues in the Southern Rivers NRM region were weeds, which affected 74% of landholders and introduced pest animals, which affected 71% of landholders.

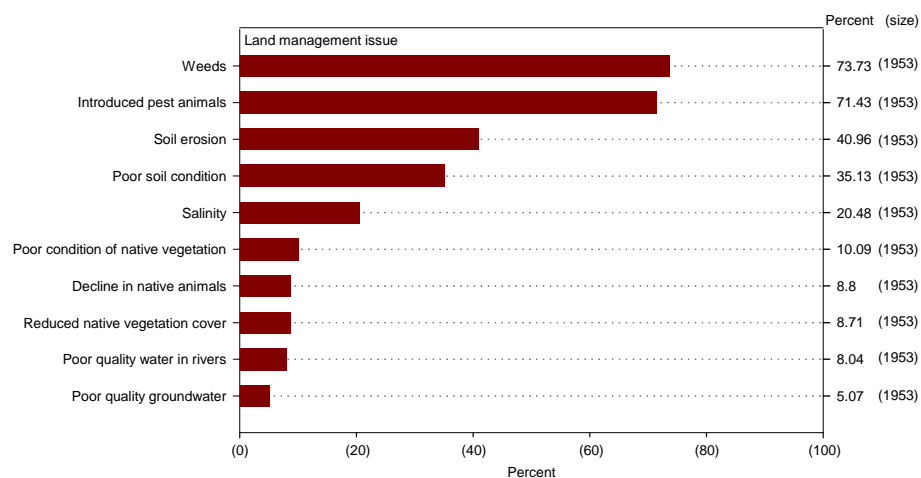


Figure 4. All issues: “Could you tell me if this is a problem that has occurred on your land in the last two years?”

Figure 5 shows across all land management issues, landholder beliefs about the extent of the land management problem they had reported. Although affecting a significant percentage of landholders (Figure 4), weeds and introduced pests were seen as a minor problem by most landholders.

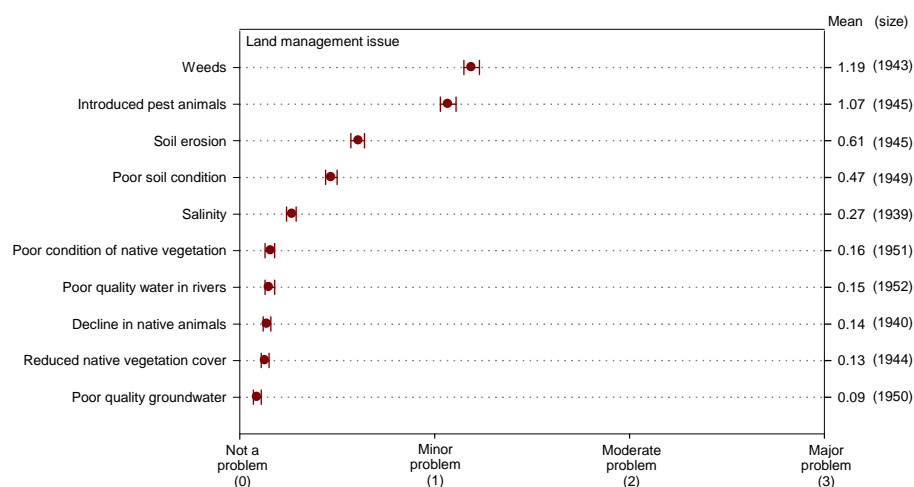


Figure 5. All issues: Extent of the land management issue

Those landholders who had identified a land management issue on their property were also asked what their ability was to address the issue. Figure 6 shows that many landholders indicated a 'moderate' ability to address many of the land management issues. However they had less ability to address issues associated with the condition of native vegetation, poor quality water in rivers and streams and the decline in native animals.

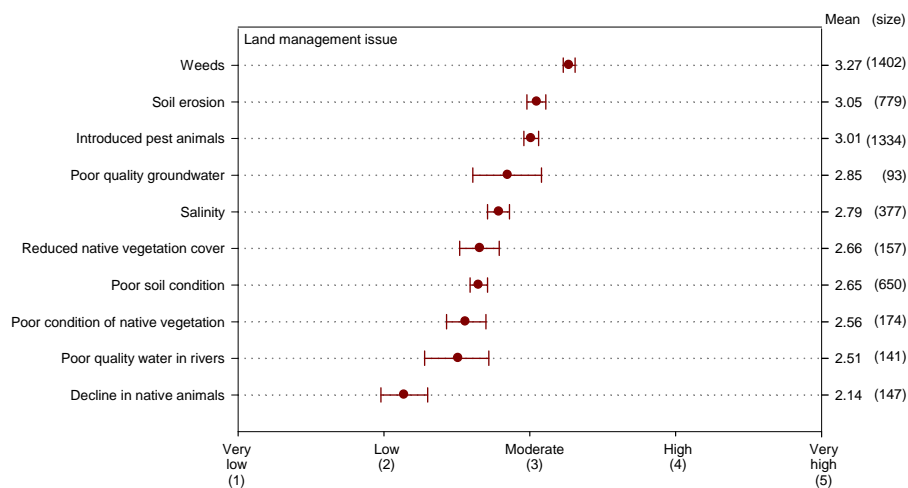


Figure 6. All issues: Capacity to address the land management issue

Those landholders who indicated they had ‘very low’ or ‘low’ ability to address a specific land management issue were also asked why they believed they had a low ability to address the issue. Table 2 shows the type of responses obtained for each of the specific land management issues.

What is clear from Table 2 is that motivation (‘lack of time/too busy’) is a common capacity issue across many of the land management issues. For example, in relation to weeds, which is one of the core land management issues in the region, the motivation to act to address weeds, the lack of money to undertake the necessary actions and the older age of many landholders are clearly the three most common capacity issues constraining their ability to address this issue.

Table 2. “Why would you say your ability to address [land management issue] is very low or low?”

Response	Count	Percent
Weeds		
Lack of time/too busy	37	38.5
Lack of money	32	33.3
Too old	31	32.3
Soil erosion		
Lack of money	46	41.1
Lack of equipment	29	25.9
Lack of knowledge	26	23.2
Lack of time/too busy	25	22.3
Cannot be fixed	22	19.6
Too old	21	18.8
Introduced pest animals		
Cannot be fixed	59	31.9
Lack of time/too busy	40	21.6
Too old	35	18.9
Lack of knowledge	31	16.8
Not interested	25	13.5
Lack of money	19	10.3
Lack of equipment	19	10.3
Poor quality ground water		
Cannot be fixed	10	45.5
Salinity		
Lack of time/too busy	13	30.2
Too old	13	30.2
Reduced native vegetation cover		
Cannot be fixed	18	47.4
Lack of time/too busy	10	26.3
Poor soil condition		
Cannot be fixed	45	40.2
Lack of money	32	28.6
Lack of equipment	21	18.8
Lack of time/too busy	19	17.0
Lack of knowledge	13	11.6
Too old	12	10.7
Poor condition of native vegetation		
Cannot be fixed	19	44.2
Poor quality water in rivers and streams		
Cannot be fixed	25	50.0
Lack of knowledge	14	28.0
A decline in native animals		
Cannot be fixed	34	50.0
Lack of knowledge	16	23.5
Lack of time/too busy	12	17.6

Note: Based on those respondents who indicated they had ‘very low’ or ‘low’ ability to address the issue.
This is a multiple response table which means that for each row an individual may be counted in multiple columns.
The question was free recall and no prompts were used.
Only the most common responses are included in the table.

Source: EBC (2008).

Landholders who identified a specific land management issue, were also asked whether they had undertaken any actions to address the issue within the last 12 months. Figure 7 shows that over half of these landholders had undertaken actions to address weeds (88%); soil erosion (82%); introduced pest animals (72%); poor quality groundwater (57%) and poor soil condition (51%).

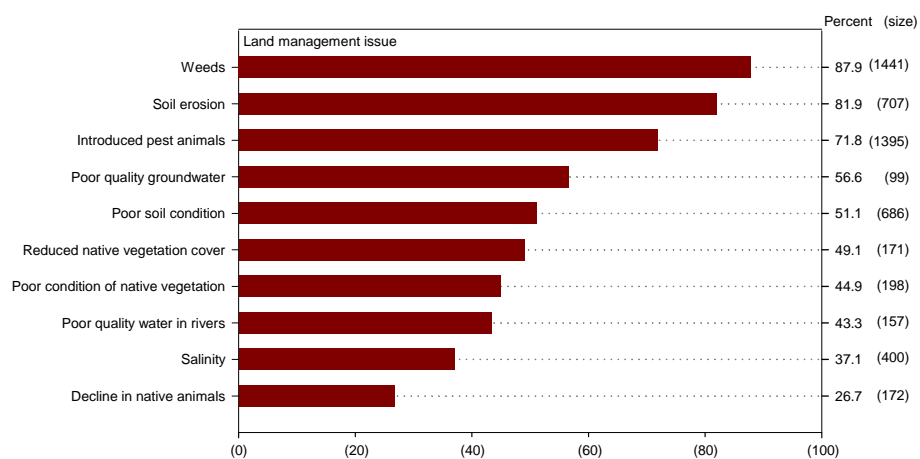


Figure 7. All issues: "In the last 12 months have you done anything to address this issue?"

5.1 Salinity

Figure 8 shows the extent of salinity as a land management issue. Salinity appears to be more of a issue in the Shoalhaven and Snowy-Monaro subregions, amongst larger properties and those involved in sheep production. Landcare members rather than non-members are also more likely to report this issue, although whether they became Landcare members because of this issue, or whether being a Landcare member better enabled them to identify the issue is unknown.

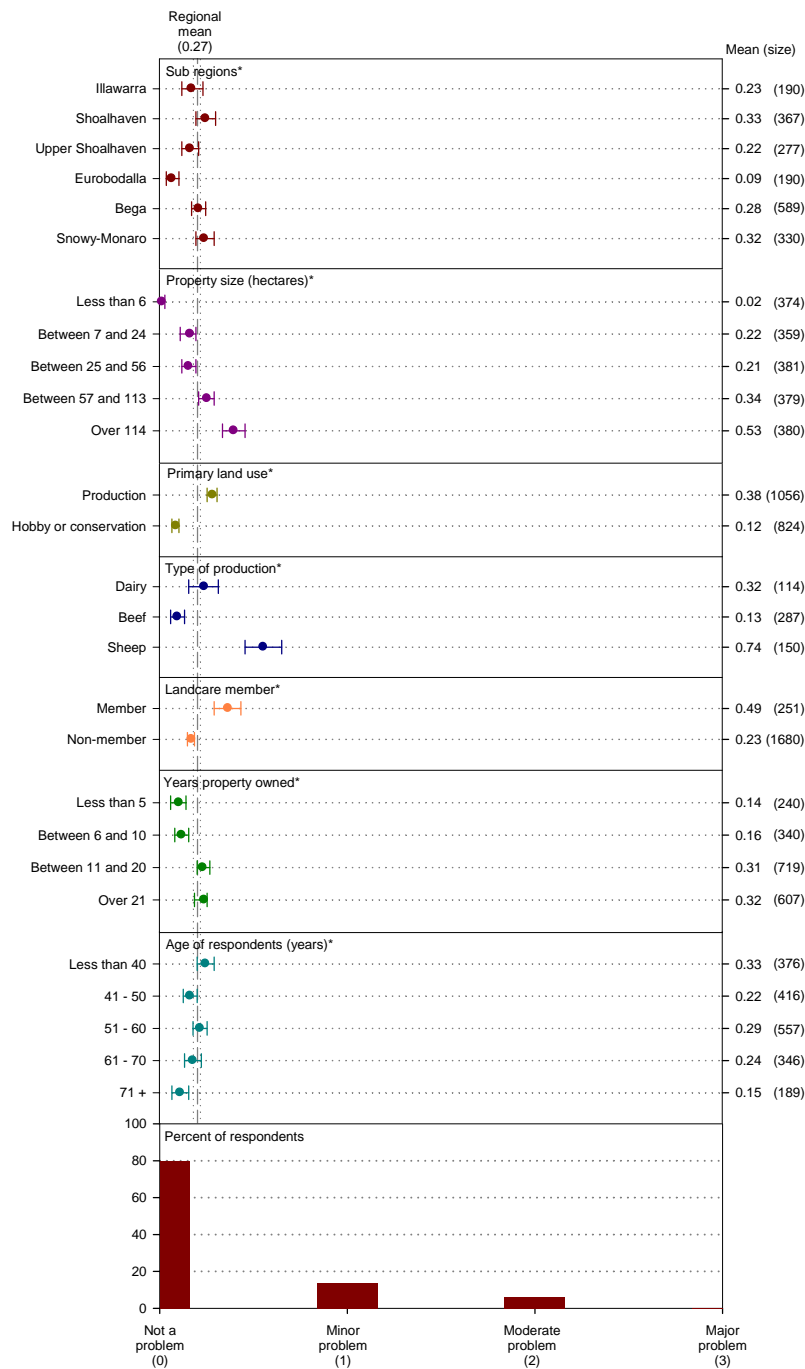


Figure 8. Extent of salinity issue

The capacity of landholders to address salinity was regarded as ‘moderate’ across the region (Figure 9). Landholders in the Shoalhaven believed they had the highest capacity to address this issue, with capacity also being highest amongst landholders on larger properties and amongst Landcare members.

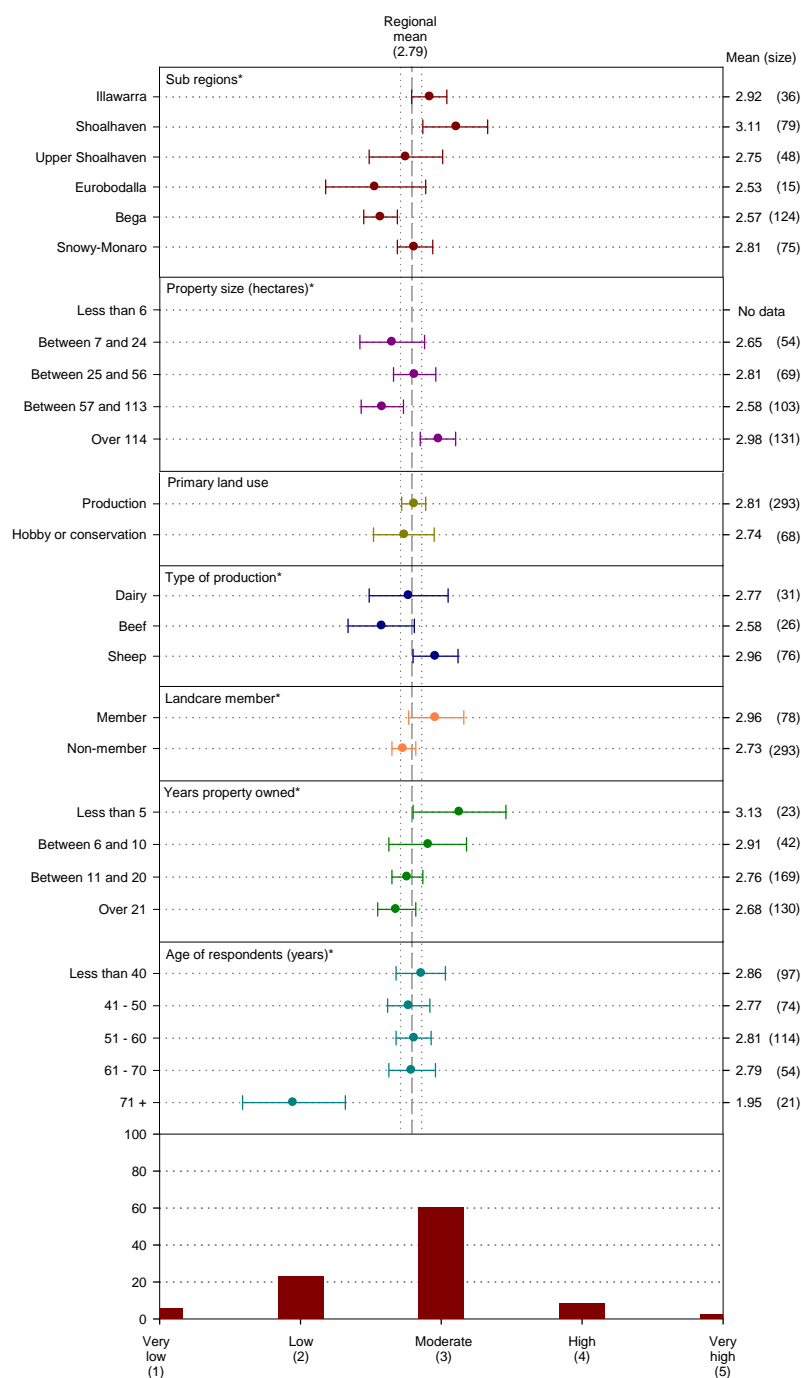


Figure 9. Capacity to address salinity

Those landholders who indicated they had ‘very low’ or ‘low’ capacity to address salinity, were also asked to indicate why they believed they had such a low capacity. Table 3 indicates the two most common reasons were a ‘lack of time/too busy’ and that they were ‘too old’.

Table 3. “Why would you say you ability to address salinity is low?”

Response	Count	Percent
Lack of time/too busy	13	30.2
Too old	13	30.2
Cannot be fixed	6	14.0
Lack of knowledge	6	14.0
Lack of money	5	11.6
Other	2	2.6
Total	43	100.0

Source: EBC (2008).

Figure 10 shows that in the Southern Rivers region, 37% of landholders with a salinity problem had undertaken actions to address this issue in the last 12 months.

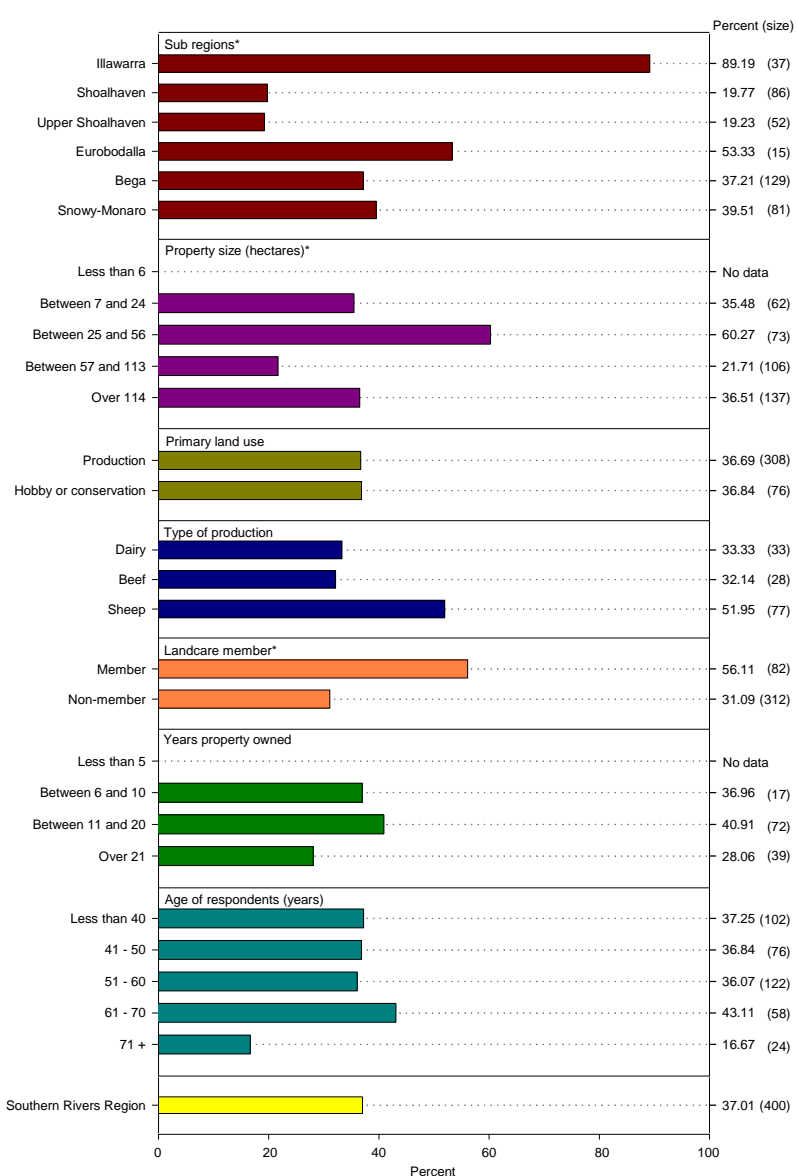


Figure 10. “In the last 12 months have you done anything to address [salinity]?”

5.2 Soil Erosion

Figure 11 shows the extent of soil erosion as a land management issue. Soil erosion appears to be more of an issue in the Snowy-Monaro subregion; amongst larger properties and those involved in sheep production. Furthermore the longer the landholder had owned a property the more likely weeds were to be an issue. Landcare members rather than non-members are also more likely to report this issue.

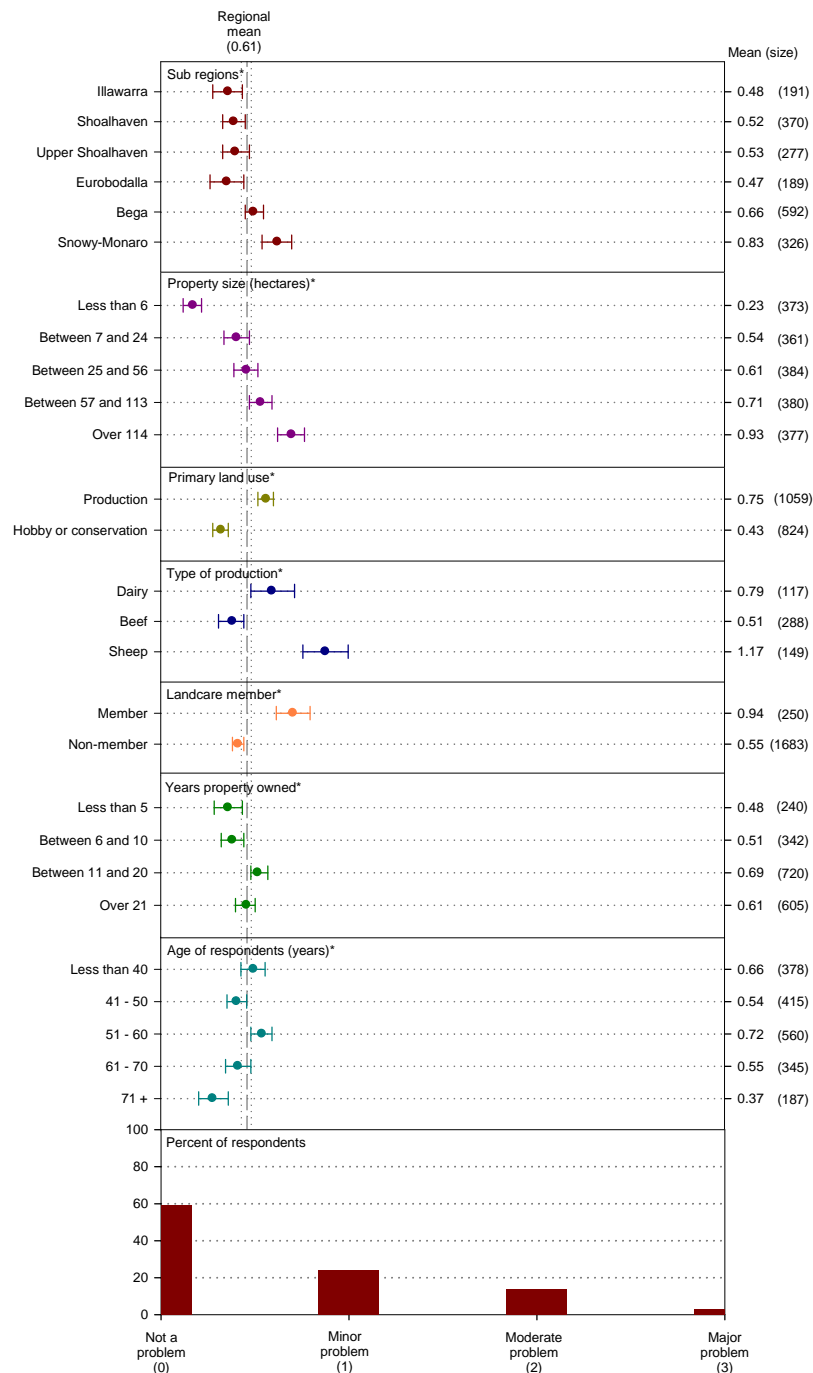


Figure 11. Extent of soil erosion issue

The capacity of landholders to address soil erosion was regarded as ‘moderate’ across the region (Figure 12). Landholders on smaller properties and older landholders had the lowest capacity to address this issue.

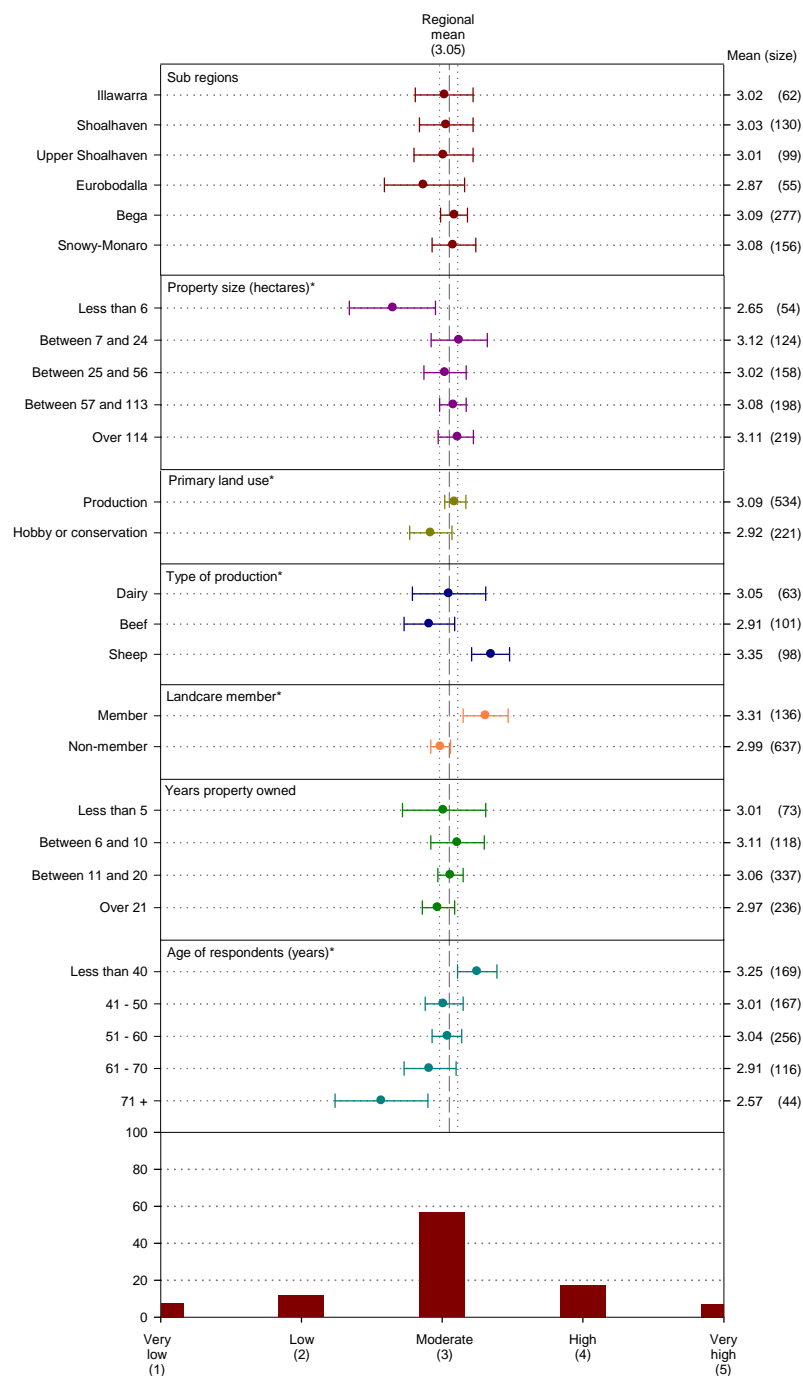


Figure 12. Capacity to address soil erosion

Those landholders who indicated they had ‘low’ capacity to address soil erosion, were also asked to indicate why they believed they had such a low capacity. Table 4 indicates the most common reason was a ‘lack of money’ to undertake the activity.

Table 4. “Why would you say your ability to address soil erosion is low?”

Response	Count	Percent
Lack of money	46	41.1
Lack of equipment	29	25.9
Lack of knowledge	26	23.2
Lack of time/too busy	25	22.3
Cannot be fixed	22	19.6
Too old	21	18.8
Not interested	3	2.7
Total	112	100.0

Source: EBC (2008).

Figure 13 shows that in the Southern Rivers region, 82% of landholders who reported an issue with soil erosion had undertaken actions to address this issue in the last 12 months.

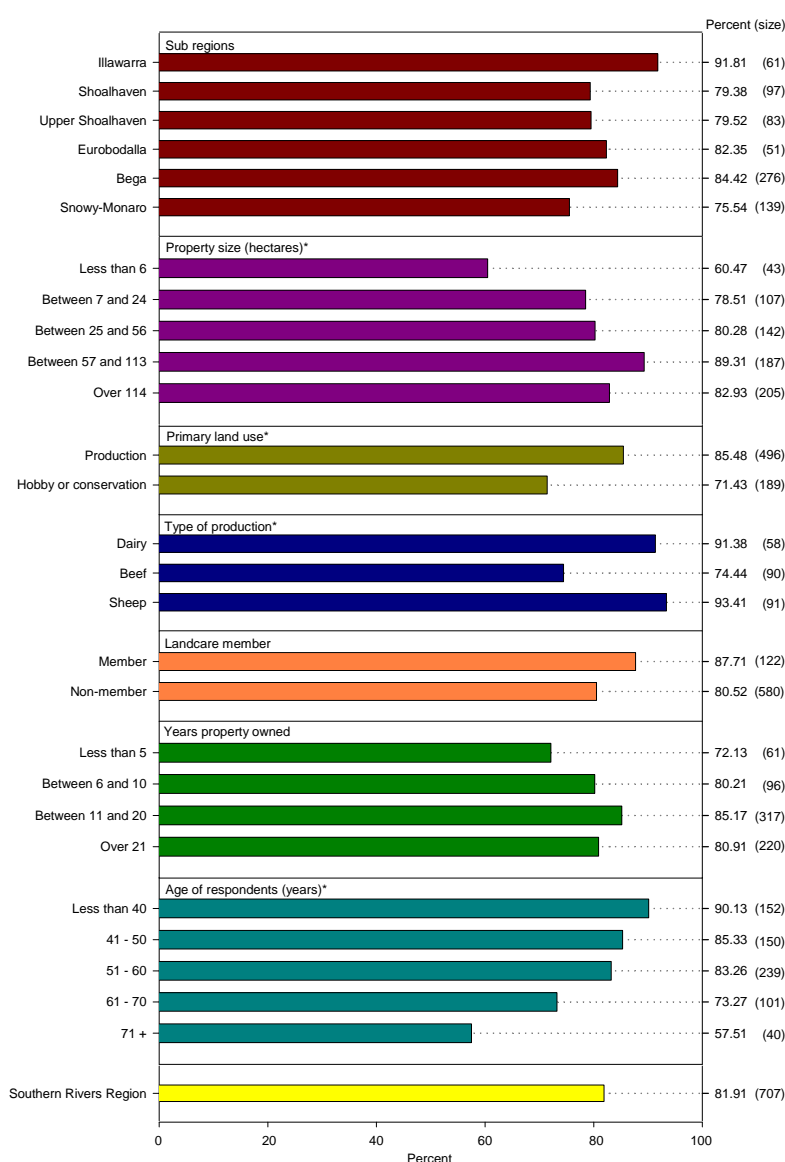


Figure 13. “In the last 12 months have you done anything to address [soil erosion]?”

5.3 Weeds

Figure 14 shows the extent of weeds as a land management issue. Weeds appears to be more of a issue in the Snowy-Monaro and Bega subregions; amongst the very large properties and those involved in sheep production. Landcare members rather than non-members are also more likely to report this issue.

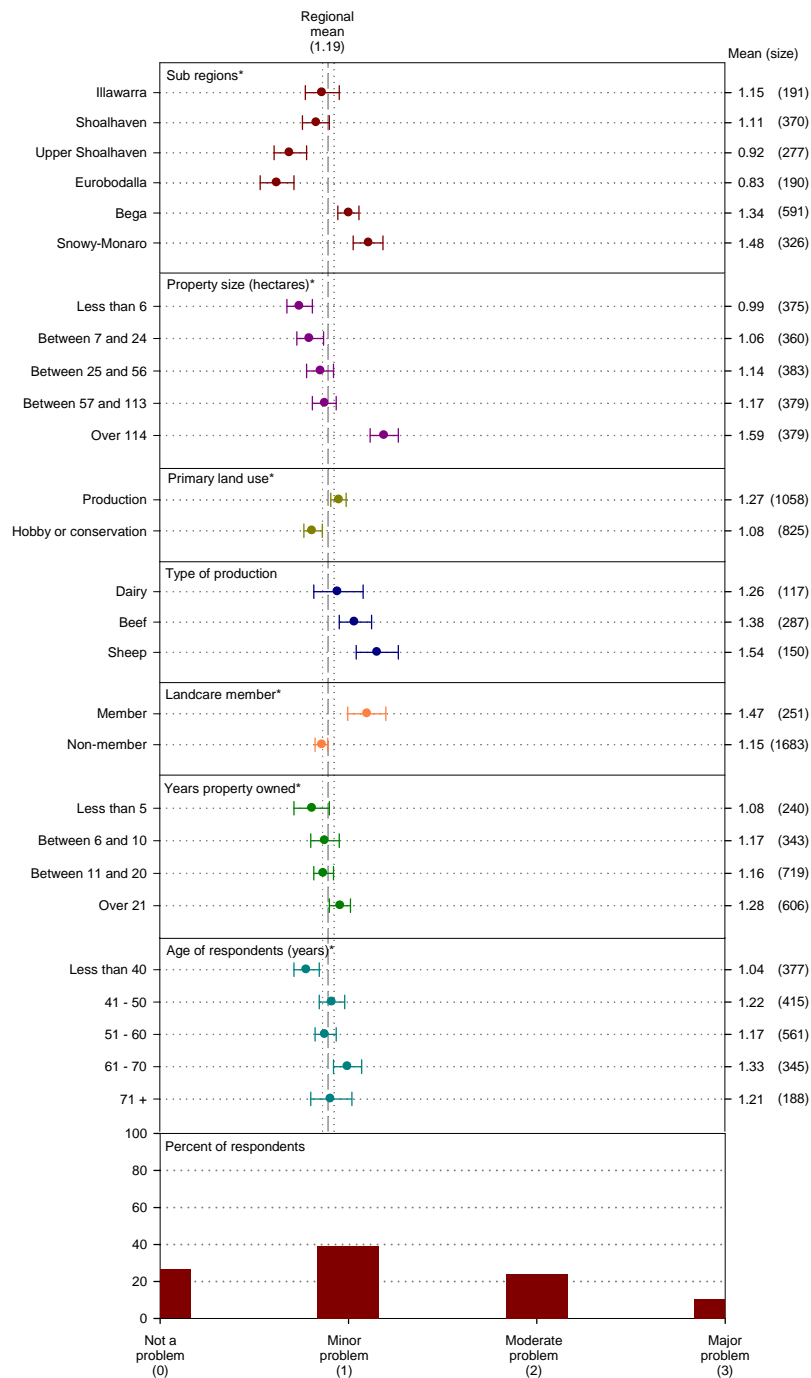


Figure 14. Extent of weeds issue

Landholder capacity to address weeds was regarded as somewhat above ‘moderate’ across the region (Figure 15), with older landholders having the lowest capacity to address this issue.

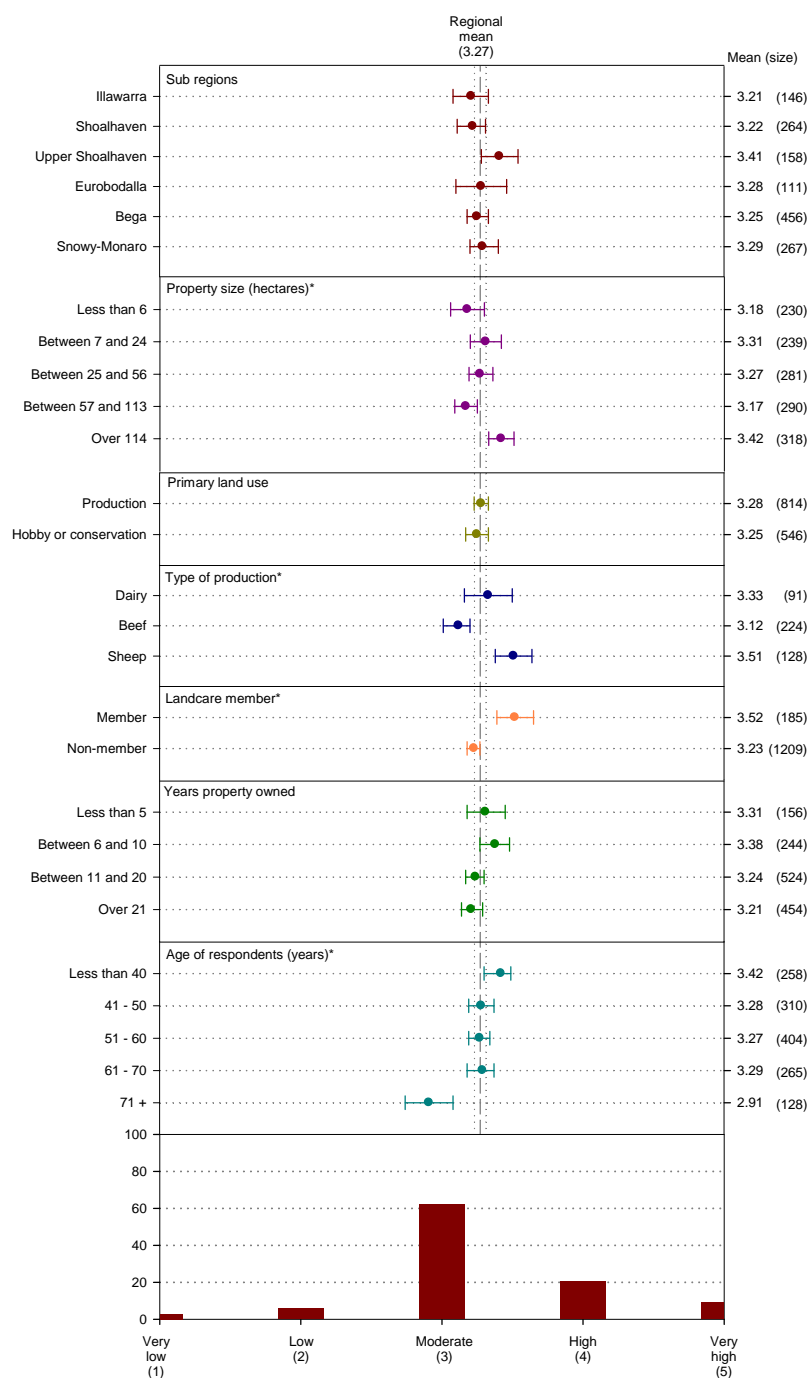


Figure 15. Capacity to address weeds

Landholders with ‘low’ capacity to address weeds, were also asked to indicate why they believed they had such a low capacity. Table 5 indicates the three most common reasons underlying the lack of capacity were, the ‘lack of time/too busy’, the ‘lack of money’ and that they were ‘too old’.

Table 5. “Why would you say you ability to address weeds is low?”

Response	Count	Percent
Lack of time/too busy	37	38.5
Lack of money	32	33.3
Too old	31	32.3
Lack of equipment	11	11.5
Cannot be fixed	10	10.4
Not interested	9	9.4
Lack of knowledge	8	8.3
Total	96	100.0

Source: EBC (2008).

Figure 16 shows that in the Southern Rivers region, 88% of landholders reporting a problem with weeds had undertaken actions to address this issue in the last 12 months.

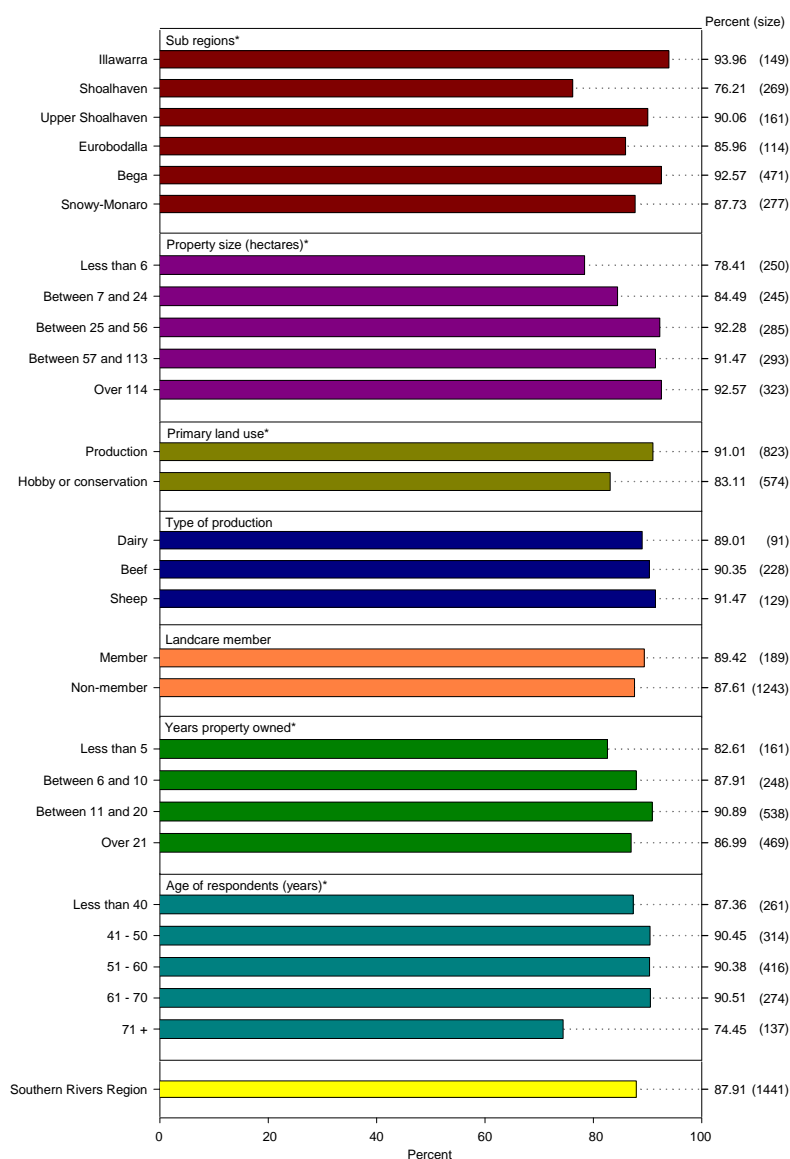


Figure 16. “In the last 12 months have you done anything to address [weeds]?”

5.4 Decline in Native Animals

Figure 17 shows the extent of the issue associated with a decline in native animals. Although not a common issue amongst landholders, it appears to be more of a problem in the Snowy-Monaro subregion; amongst the very large properties and those involved in sheep production. Landcare members rather than non-members are also more likely to report this issue.

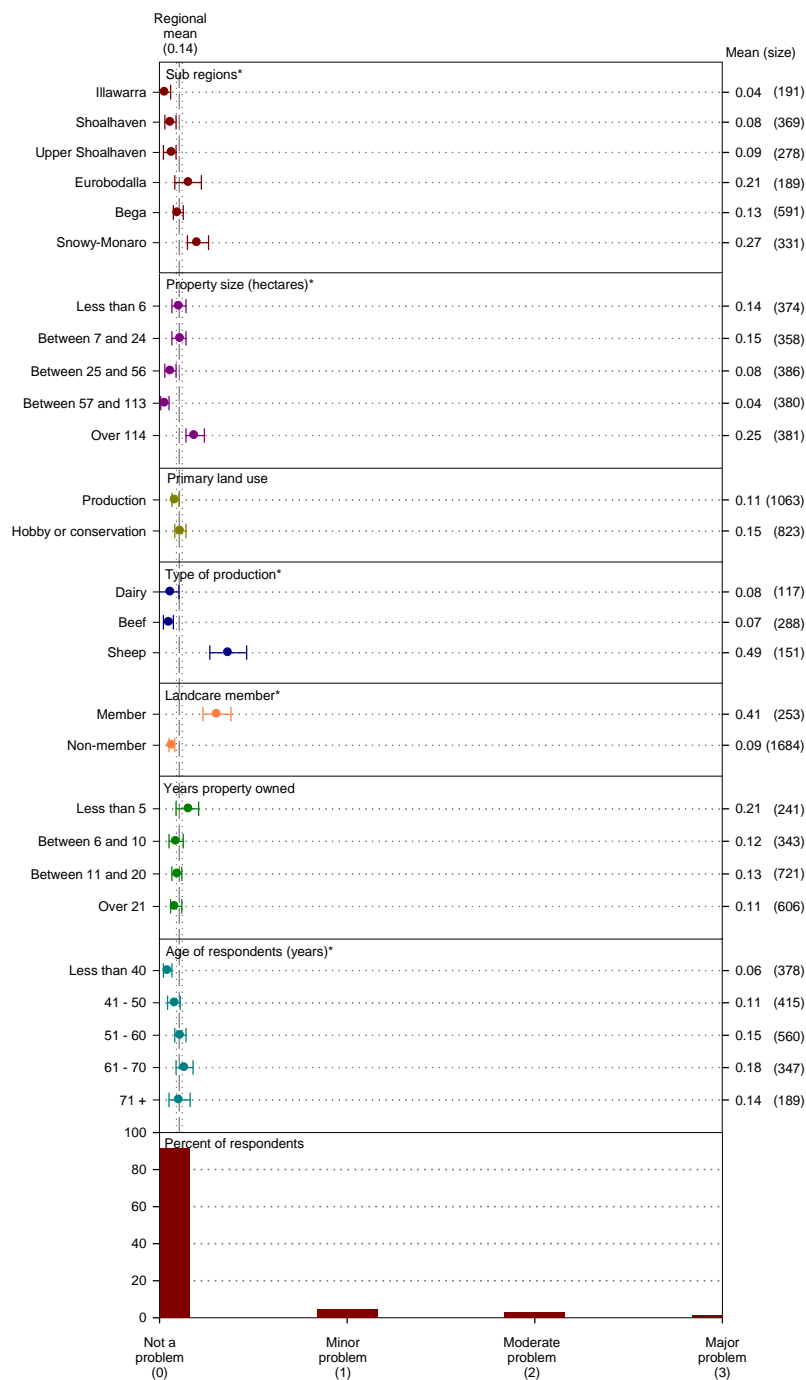


Figure 17. Extent of issue with the decline in native animals

Landholder capacity to address the decline in native animals was regarded as ‘low’ across the region (Figure 18). The lowest capacity to address this issue was amongst smaller property owners; those with hobby or conservation landholdings and those who were not members of Landcare.

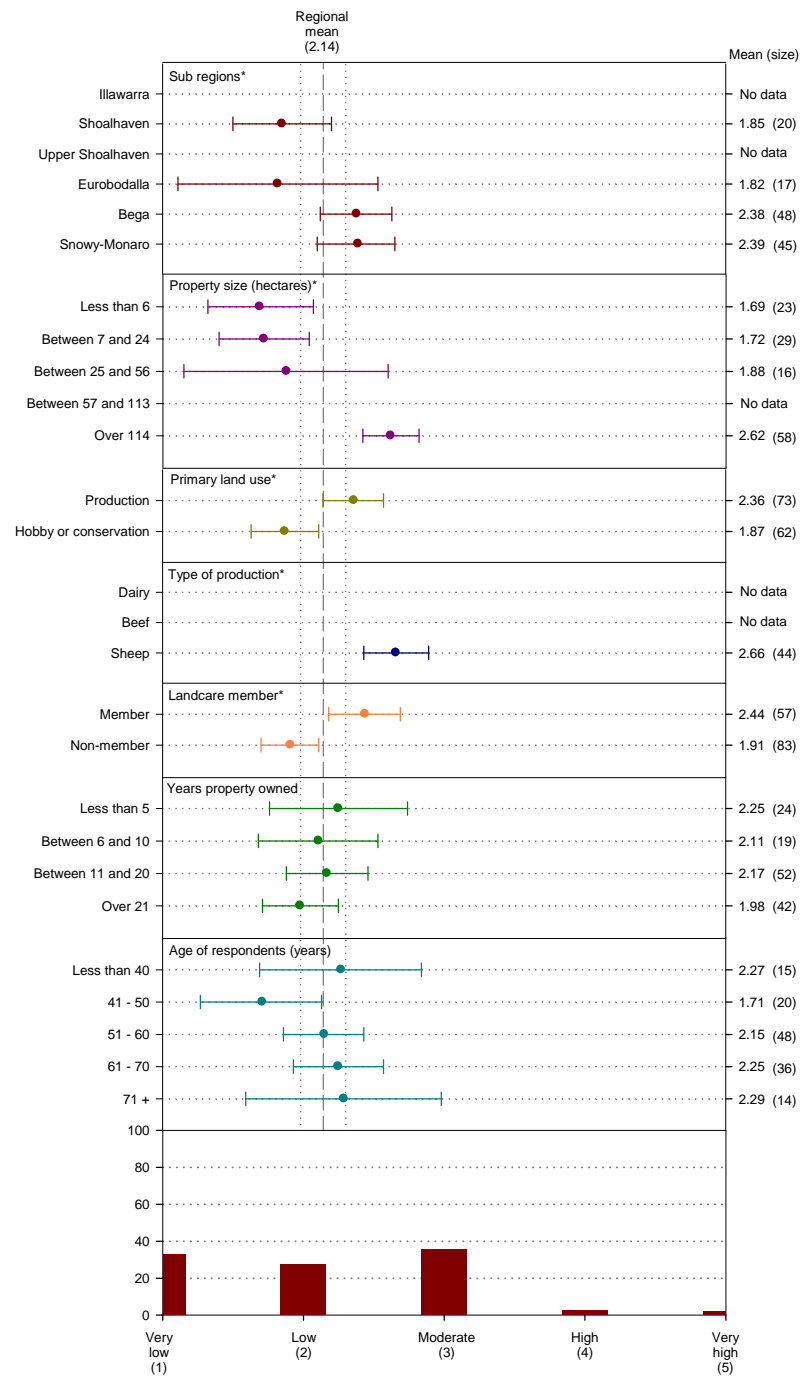


Figure 18. Capacity to address the decline in native animals

Amongst those landholders with ‘low’ capacity to address the decline in native animals, the most common reason they believed they had such a low capacity to address this issue was the belief that the issue ‘cannot be fixed’ (Table 6).

Table 6. “Why would you say you ability to address the decline in native animals is low”

Response	Count	Percent
Cannot be fixed	34	50.0
Lack of knowledge	16	23.5
Lack of time/too busy	12	17.6
Not interested	5	7.4
Too old	5	7.4
Lack of money	3	4.4
Other	3	4.4
Total	68	100.0

Source: EBC (2008).

In the Southern Rivers region, 27% of landholders who had experienced a decline in native animals had undertaken actions to address this issue in the last 12 months (Figure 19).

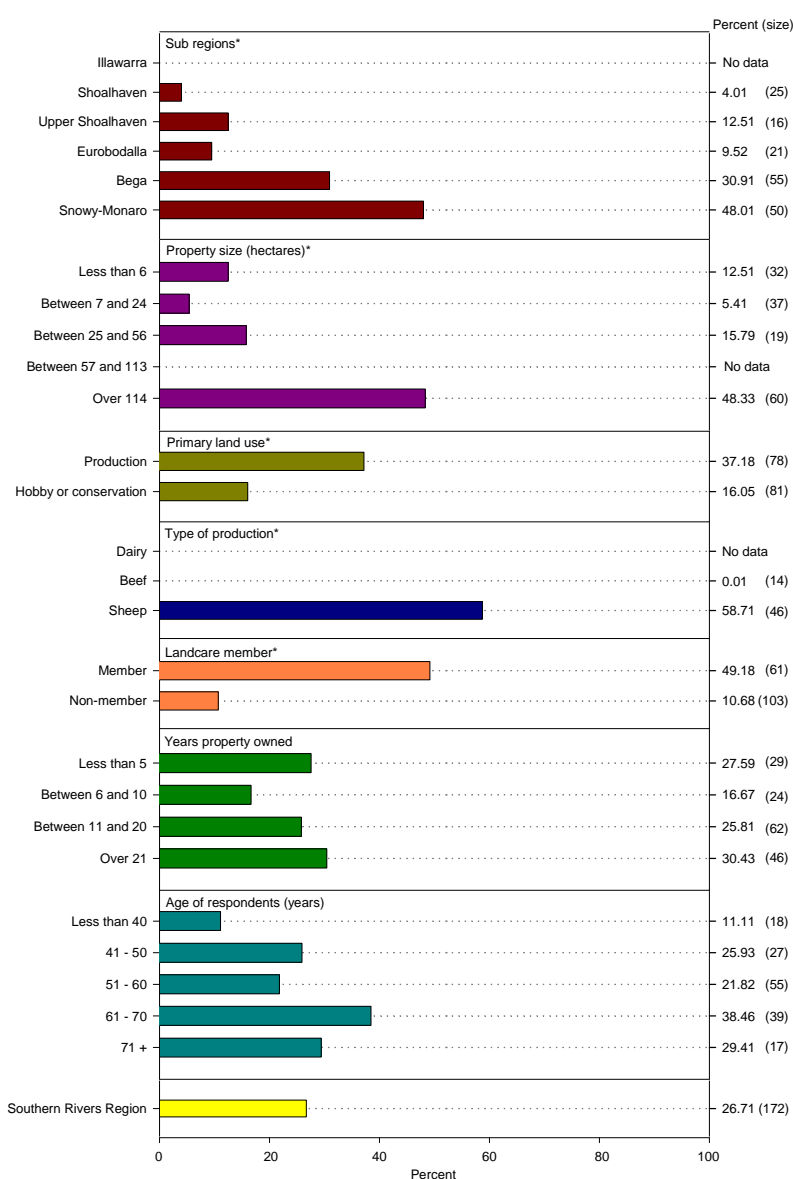


Figure 19. “In the last 12 months have you done anything to address [decline in native animals]?”

5.5 Introduced Pest Animals

Although only considered a ‘minor problem’ by the majority of landholders, issues with introduced pest animals appear to be more of a problem in the Snowy-Monaro subregion, amongst relatively larger properties and those involved in sheep production (Figure 20). Landcare members rather than non-members are also more likely to report this issue.

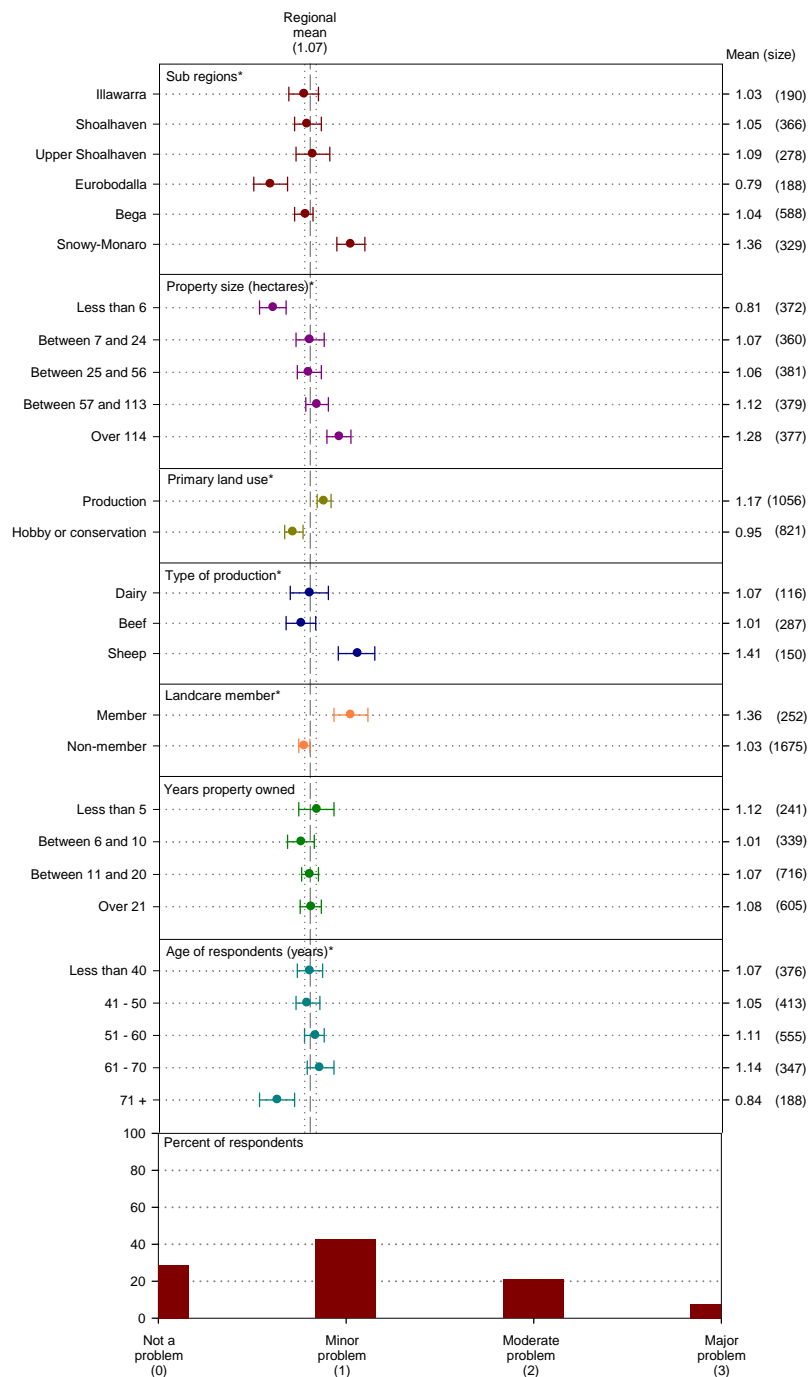


Figure 20. Extent of issue with pest animals

Across the region, the capacity to address introduced pest animals was regarded as somewhat above 'moderate' (Figure 21). Landholders with the lowest capacity to address this issue were more likely to be found in the Illawarra and Eurobodalla subregions; on small properties primarily used as hobby farms or for conservation; and amongst older landholders.

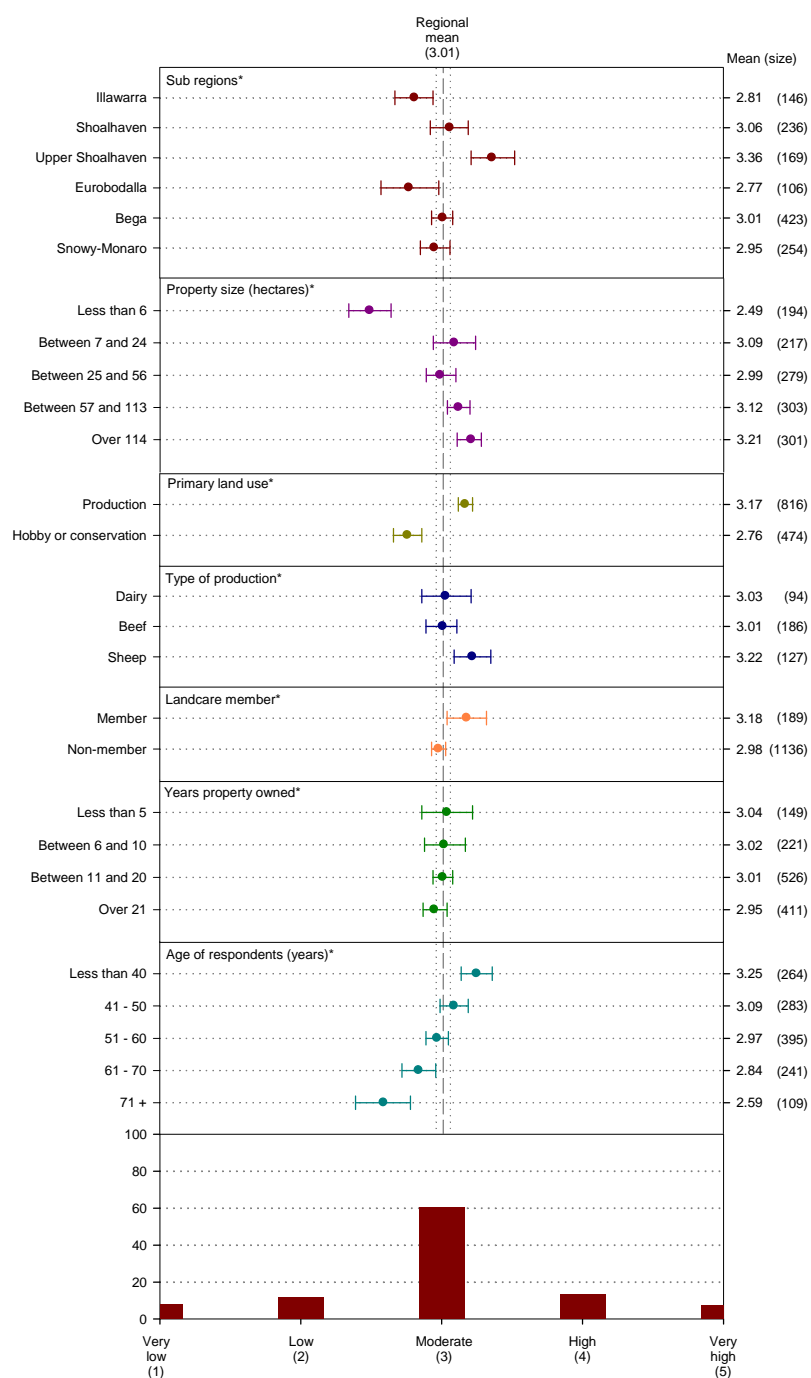


Figure 21. Capacity to address issues with introduced pest animals

Landholders with ‘low’ capacity to address the issue of introduced pest animals, were also asked to indicate why they believed they had such a low capacity. Table 7 indicates a range of reasons for the lack of capacity, with the most common being that it ‘cannot be fixed’.

Table 7. “Why would you say you ability to address introduced pest animals is low?”

Response	Count	Percent
Cannot be fixed	59	31.9
Lack of time/too busy	40	21.6
Too old	35	18.9
Lack of knowledge	31	16.8
Not interested	25	13.5
Lack of money	19	10.3
Lack of equipment	19	10.3
Total	185	100.0

Source: EBC (2008).

In the Southern Rivers region, 72% of landholders who had experienced issues with introduced pest animals had undertaken actions to address this issue in the last 12 months (Figure 22).

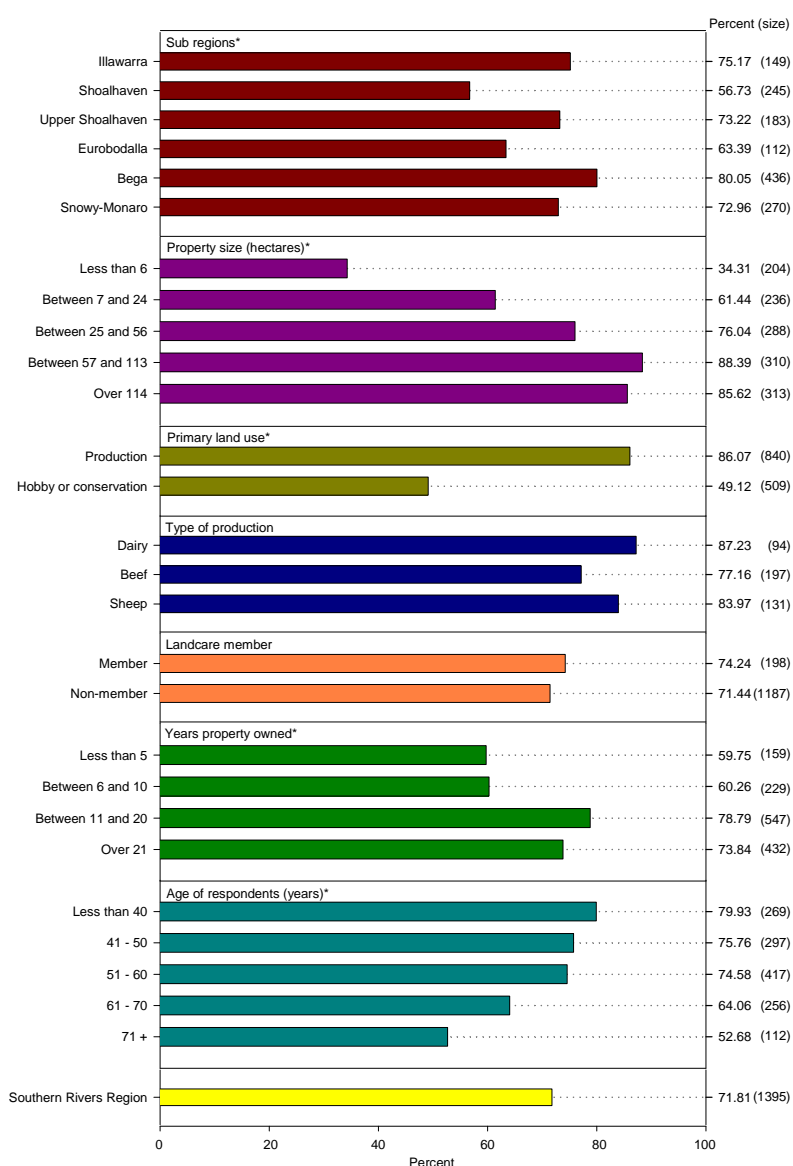


Figure 22. “In the last 12 months have you done anything to address introduced pest animals?”

5.6 Poor Quality Groundwater

Figure 23 shows the extent of the issue associated with poor quality ground water to be a very minor issue throughout the region. Although not a common issue amongst landholders, it appears to be more of a problem in the Snowy-Monaro subregion; amongst the very large properties and those involved in sheep production. Landcare members rather than non-members are also more likely to report this issue.

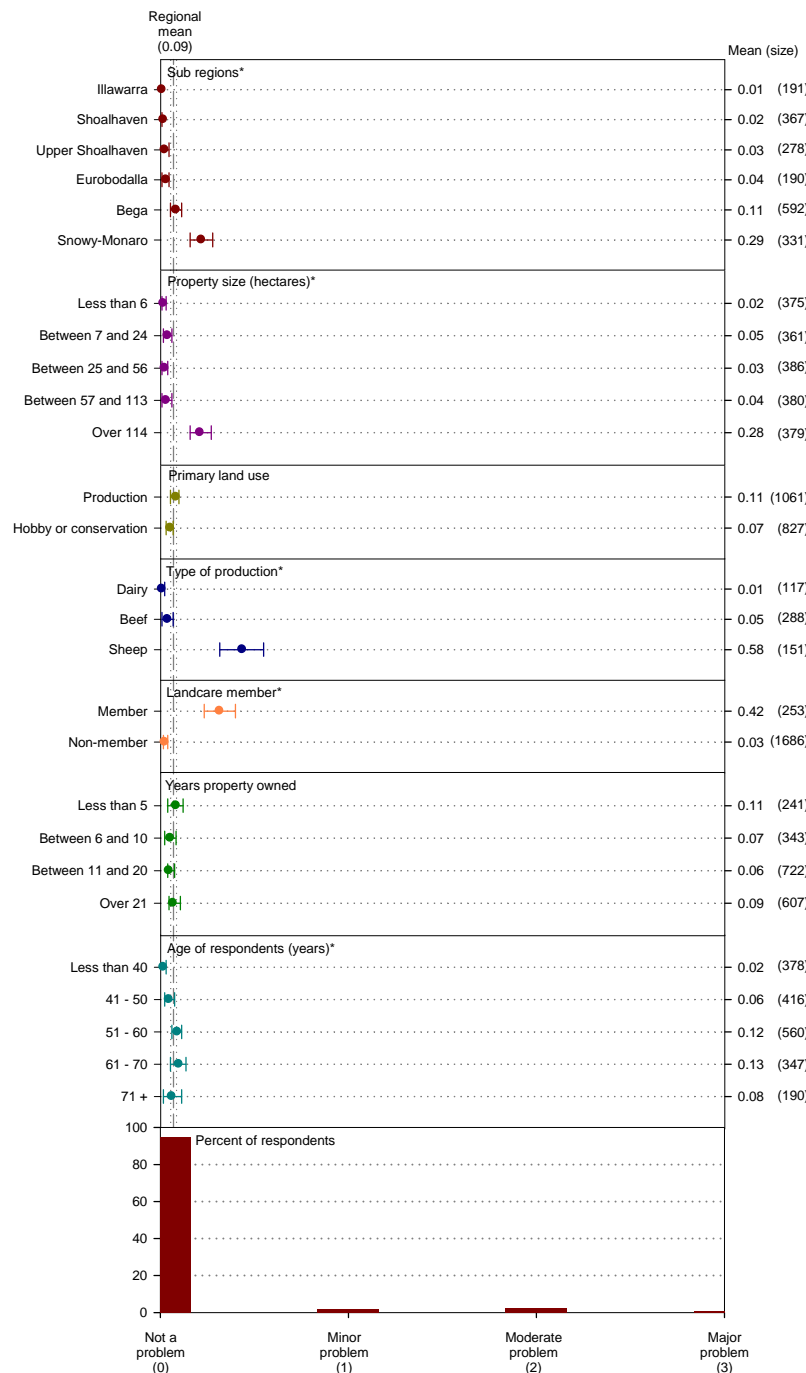


Figure 23. Extent of issue with the poor quality ground water

Landholder capacity to address poor quality ground water was regarded as somewhat below 'moderate' across the region (Figure 24). The lowest capacity to address this issue was amongst hobby or conservation landholdings; those who were not members of Landcare; and younger landholders.

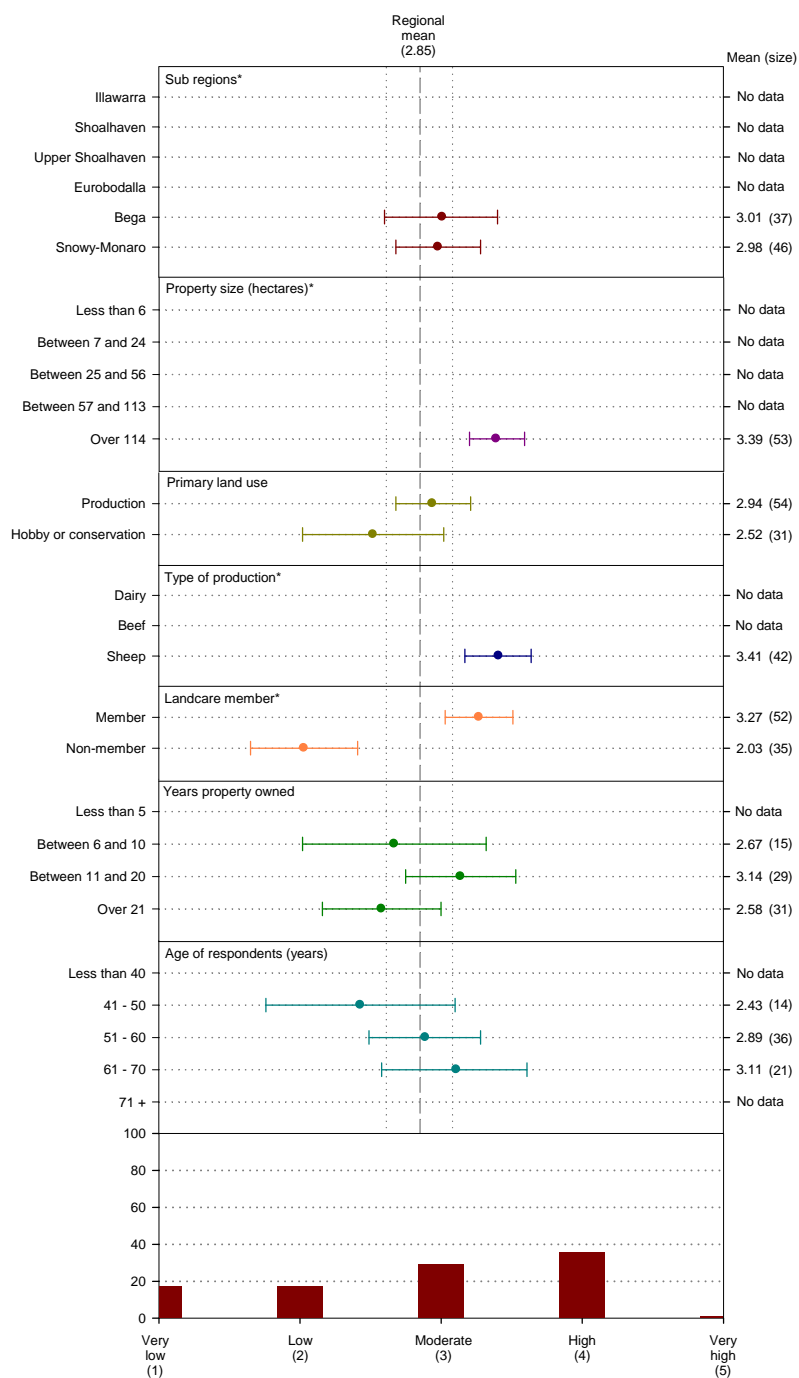


Figure 24. Capacity to address poor quality ground water

Although based on a low sample count, landholders with low capacity to address this issue were also asked to indicate why they believed they had such a low capacity. Table 8 indicates the most common reason being for the low capacity to address the issue was the belief that it ‘cannot be fixed’.

Table 8. “Why would you say your ability to address poor quality groundwater is low?”

Response	Count	Percent
Cannot be fixed	10	45.5
Not interested	3	13.6
Lack of knowledge	3	13.6
Other	8	36.4
Total	22	100.0

Source: EBC (2008)

In the Southern Rivers region, 57% of landholders who had experienced issues with poor quality groundwater had undertaken actions to address this issue in the last 12 months (Figure 25).

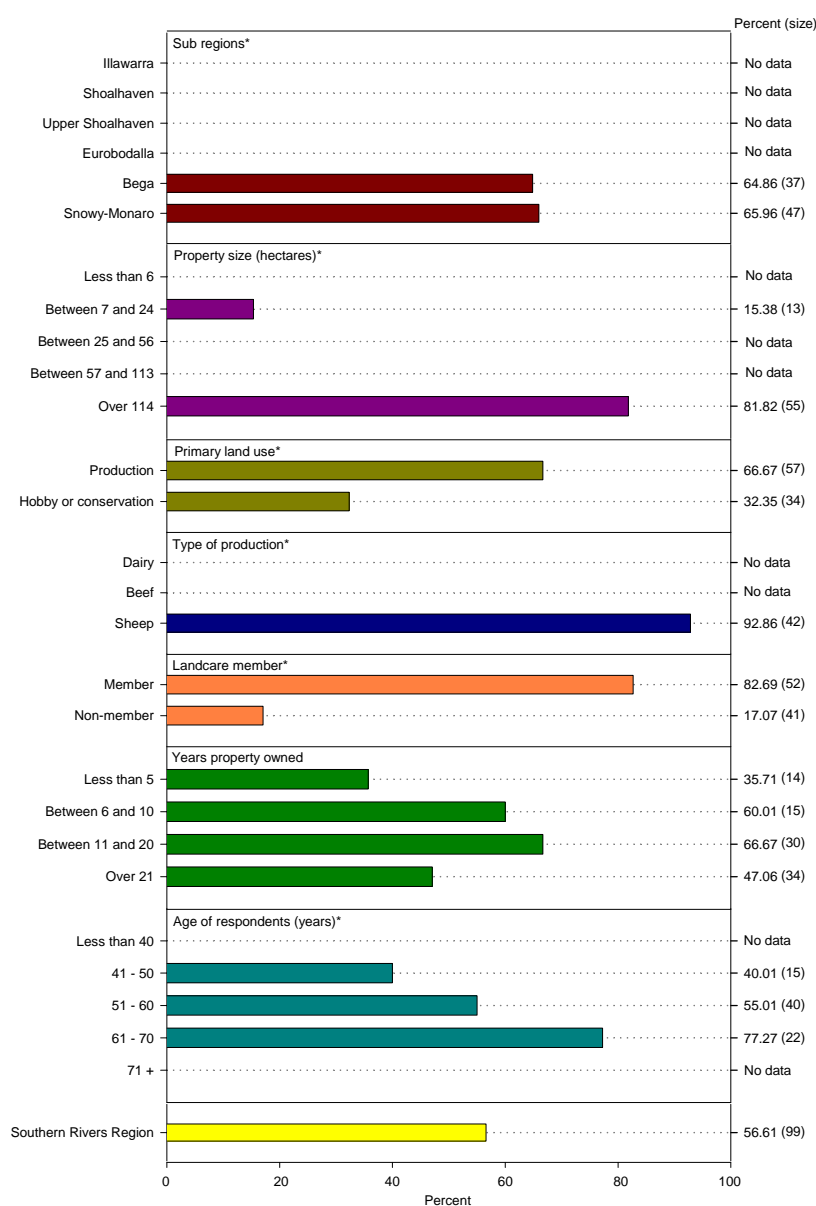


Figure 25. “In the last 12 months have you done anything to address poor quality ground water?”

5.7 Poor Quality Water in Rivers and Streams

The extent of the issue associated with poor quality water in rivers and streams appears to be a very minor issue throughout the region (Figure 26). Although not a common issue amongst landholders, it appears to be more of a problem in the Snowy-Monaro subregion, amongst the very large properties and those involved in sheep production. Landcare members rather than non-members were also more likely to report this issue.

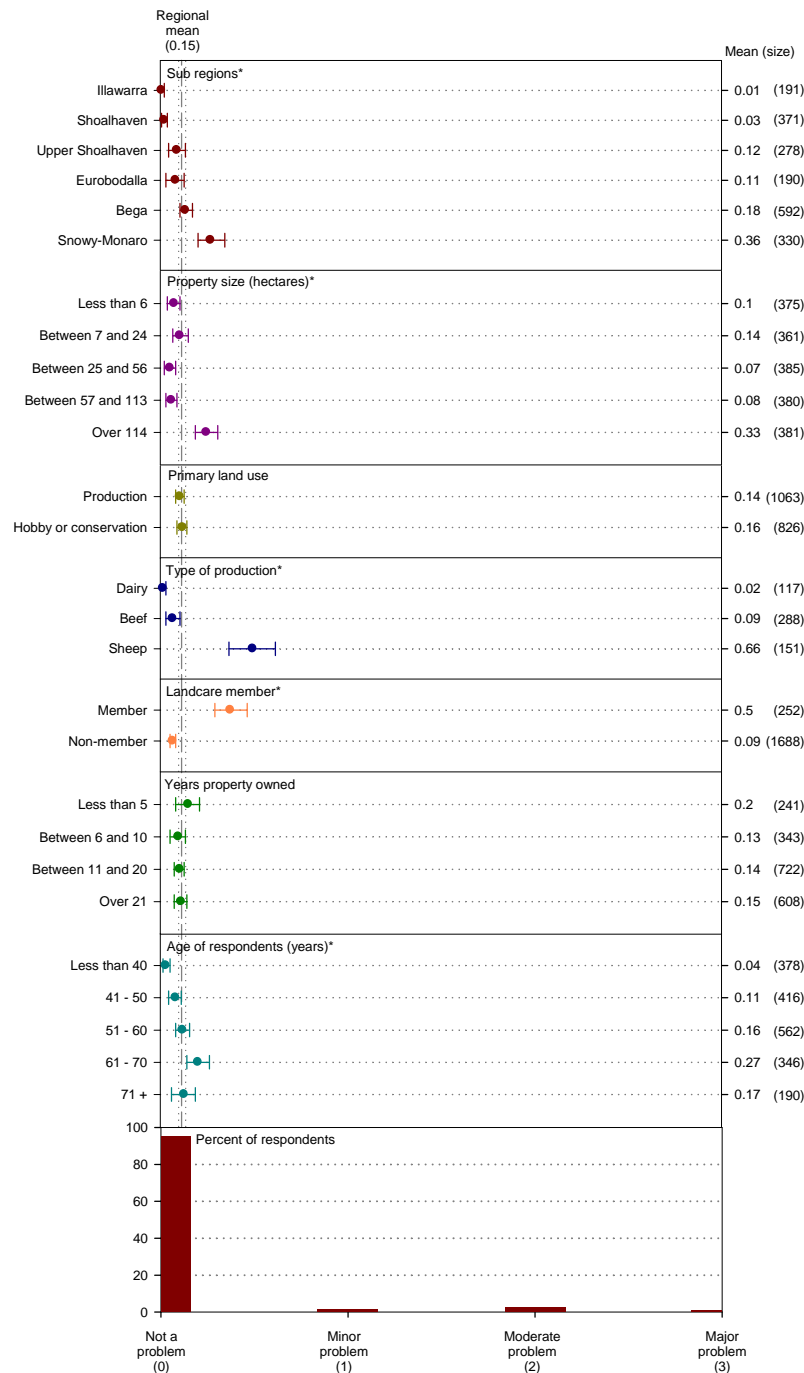


Figure 26. Extent of issue with the poor quality water in rivers and streams

Landholder capacity to address poor quality water in rivers and streams was regarded as somewhat below ‘moderate’ across the region (Figure 27). The lowest capacity to address this issue was in the Upper Shoalhaven; amongst landholders on smaller properties; amongst hobby or conservation landholdings; amongst those involved in beef production and those who were not members of Landcare.

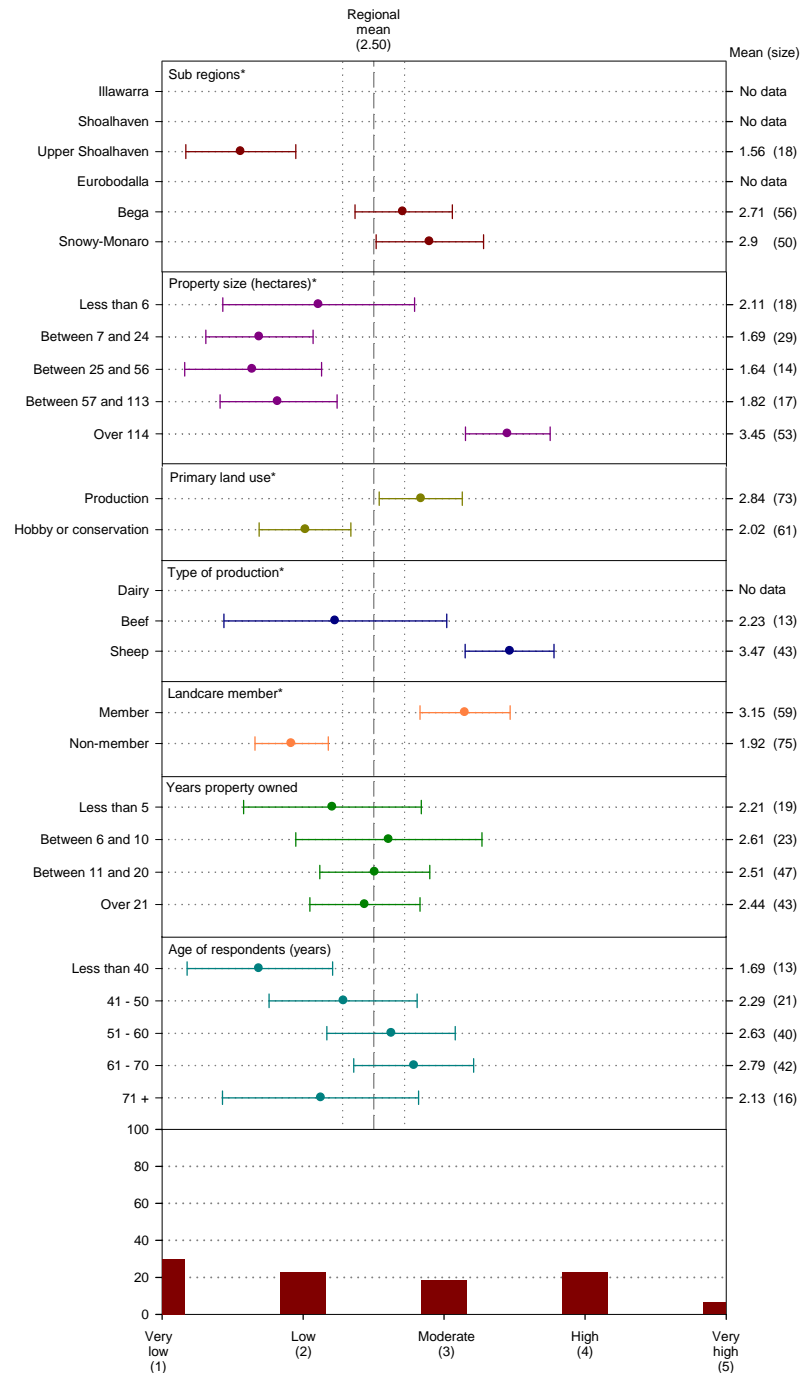


Figure 27. Capacity to address poor quality water in rivers and streams

Landholders with low capacity to address this issue, were also asked to indicate why they believed they had such a low capacity. Table 9 indicates the most common reason being for the low capacity to address the issue was the belief that it ‘cannot be fixed’.

Table 9. “Why would you say your ability to address poor quality water in rivers and streams is low?”

Response	Count	Percent
Cannot be fixed	25	50.0
Lack of knowledge	14	28.0
Lack of money	6	12.0
Lack of equipment	6	12.0
Too old	4	8.0
Not interested	3	6.0
Total	50	100.0

Source: EBC (2008).

In the Southern Rivers region, 43% of landholders who had experienced issues with poor quality water in rivers and streams had undertaken actions to address this issue in the last 12 months (Figure 28).

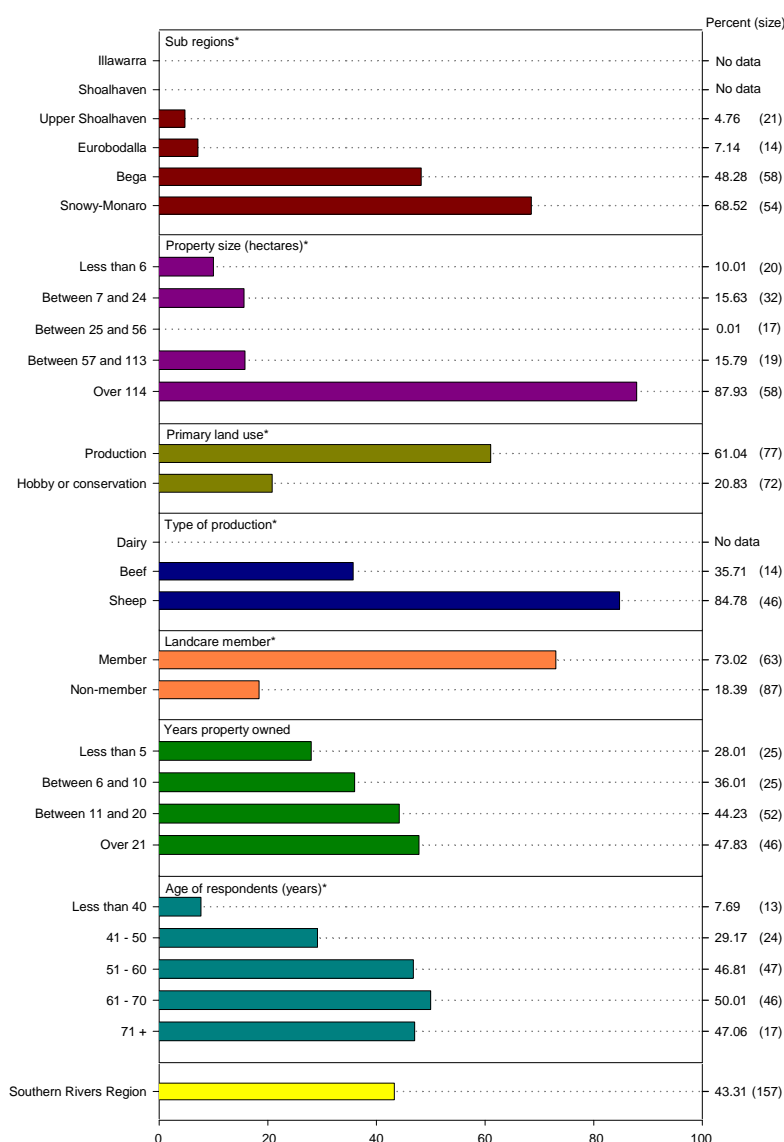


Figure 28. “In the last 12 months have you done anything to address poor quality in rivers?”

5.8 Poor Soil Condition

Figure 29 shows the extent of the issue associated with poor soil condition. It appears that this issue is most common in the Snowy-Monaro, Bega and Eurobodalla subregions; amongst larger properties; and those involved in sheep production. Landcare members rather than non-members are also more likely to report this issue.

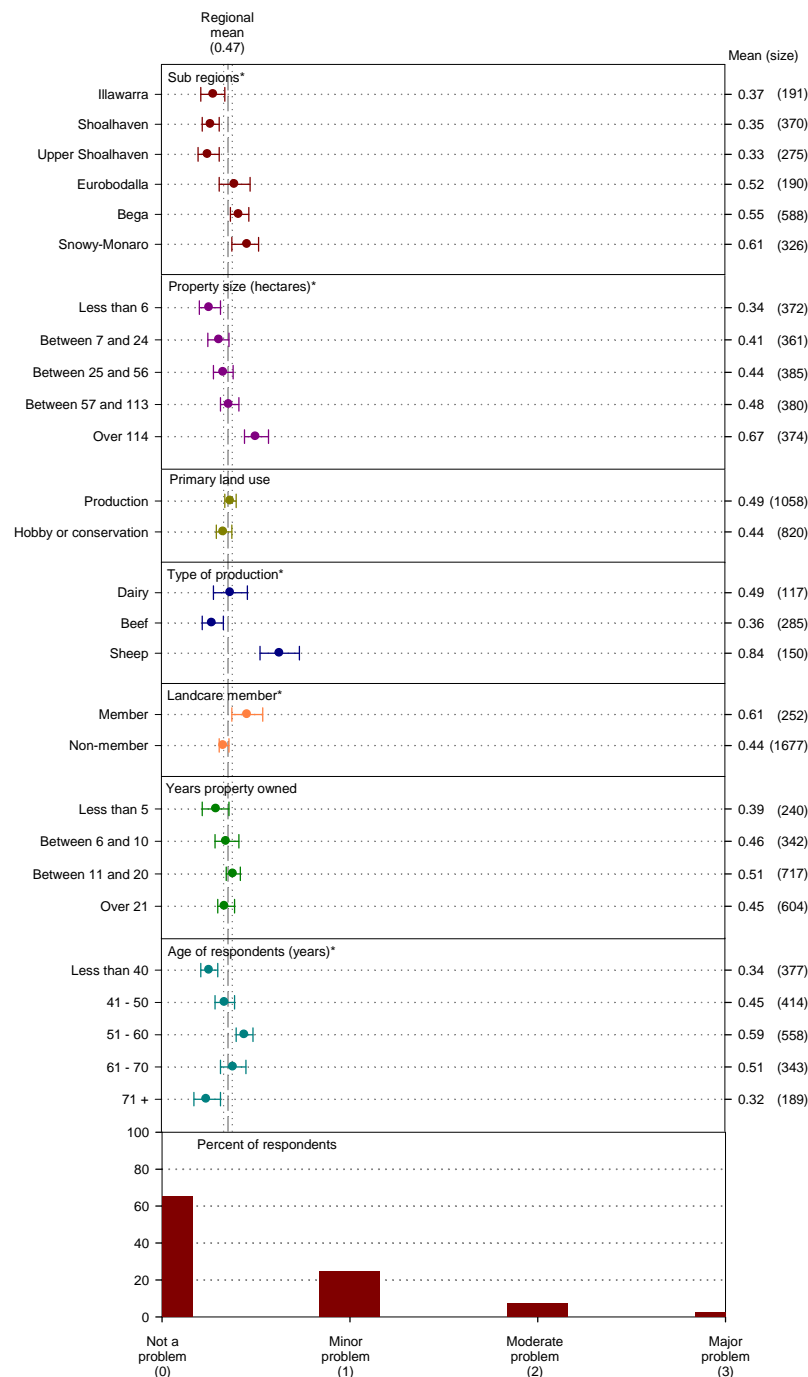


Figure 29. Extent of issue with the poor soil condition

Landholder capacity to address poor soil condition was regarded as somewhat below ‘moderate’ across the region (Figure 30). The lowest capacity to address this issue was in the Eurobodalla subregion; amongst landholders on smaller properties, amongst hobby or conservation landholdings; those involved in beef and dairy production; and those who were not members of Landcare.

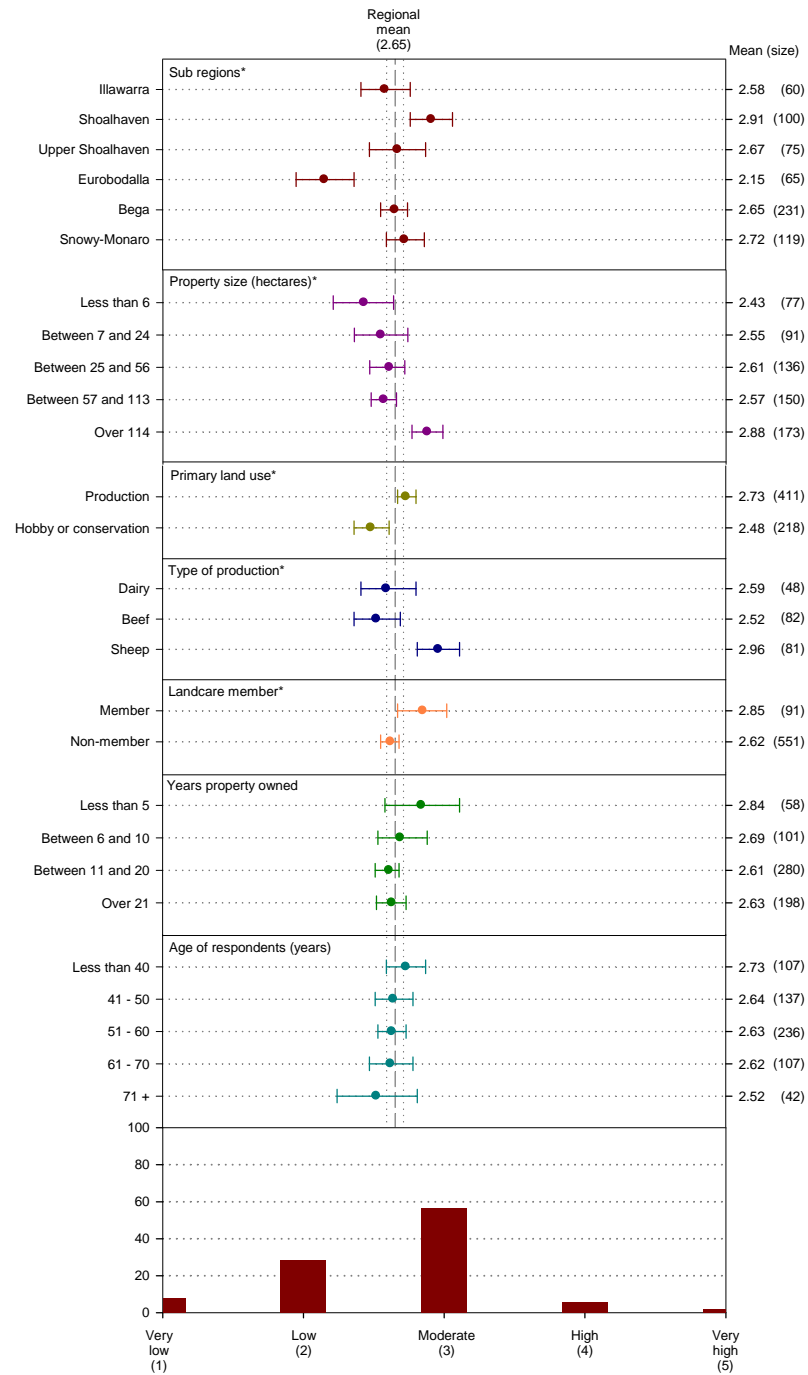


Figure 30. Capacity to address poor soil condition

Landholders with low capacity to address this issue, were also asked to indicate why they believed they had such a low capacity. Table 10 indicates the most common reason being for the low capacity to address the issue was the belief that it ‘cannot be fixed’.

Table 10. “Why would you say you ability to address poor soil condition is low?”

Response	Count	Percent
Cannot be fixed	45	40.2
Lack of money	32	28.6
Lack of equipment	21	18.8
Lack of time/too busy	19	17.0
Lack of knowledge	13	11.6
Too old	12	10.7
Not interested	8	7.1
Total	112	100.0

Source: EBC (2008).

In the Southern Rivers region, 51% of landholders who had experienced issues with poor soil condition had undertaken actions to address this issue in the last 12 months (Figure 31).

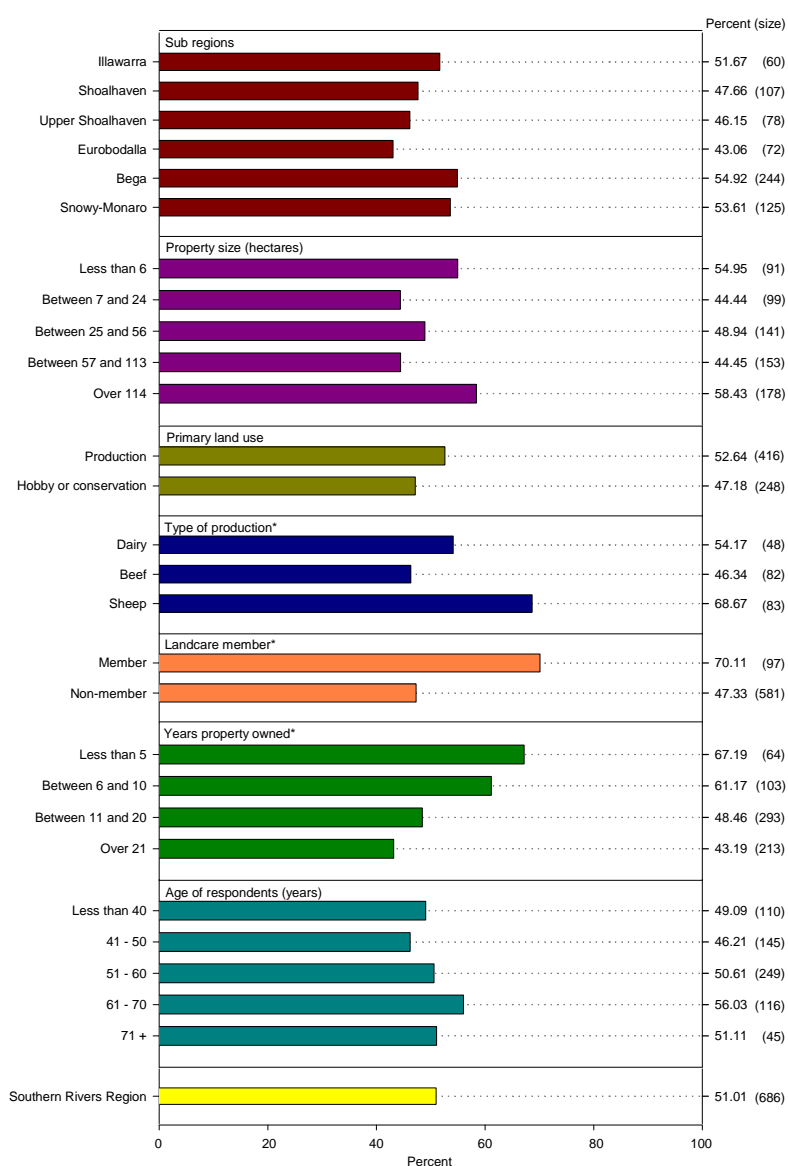


Figure 31. “In the last 12 months have you done anything to address poor soil condition?”

5.9 Reduced Native Vegetation Cover

Figure 32 shows the majority of landholders believe the issue with reduced native vegetation cover to be a very minor issue on their properties. It appears that this issue is most common in the Snowy-Monaro subregion; amongst large properties; and those involved in sheep production. Landcare members rather than non-members are also more likely to report this issue.

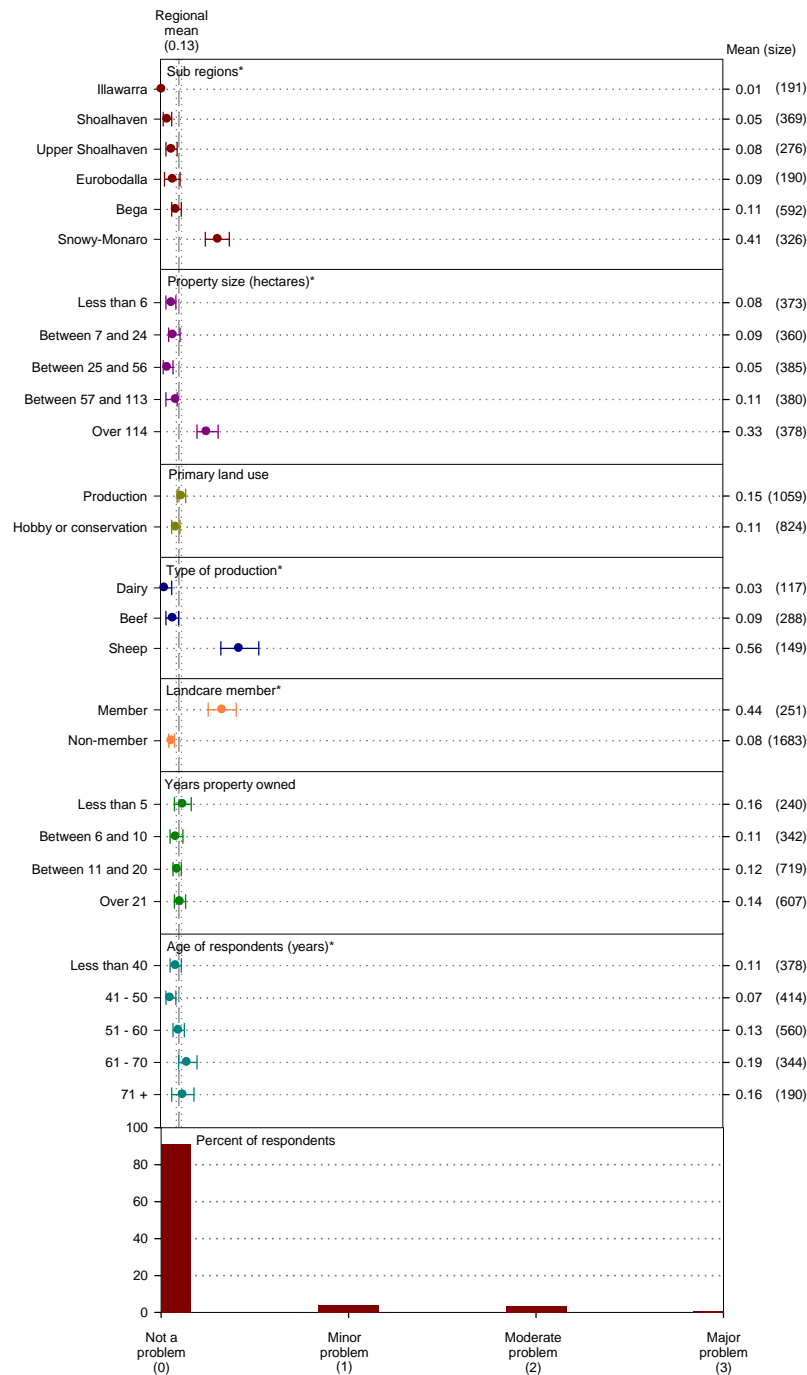


Figure 32. Extent of issue with reduced native vegetation cover

Landholder capacity to address reduced native vegetation cover was regarded as somewhat below 'moderate' across the region (Figure 33). The lowest capacity to address this issue was amongst landholders on properties between 25 and 113 hectares; amongst hobby or conservation landholdings; and those who were not members of Landcare.

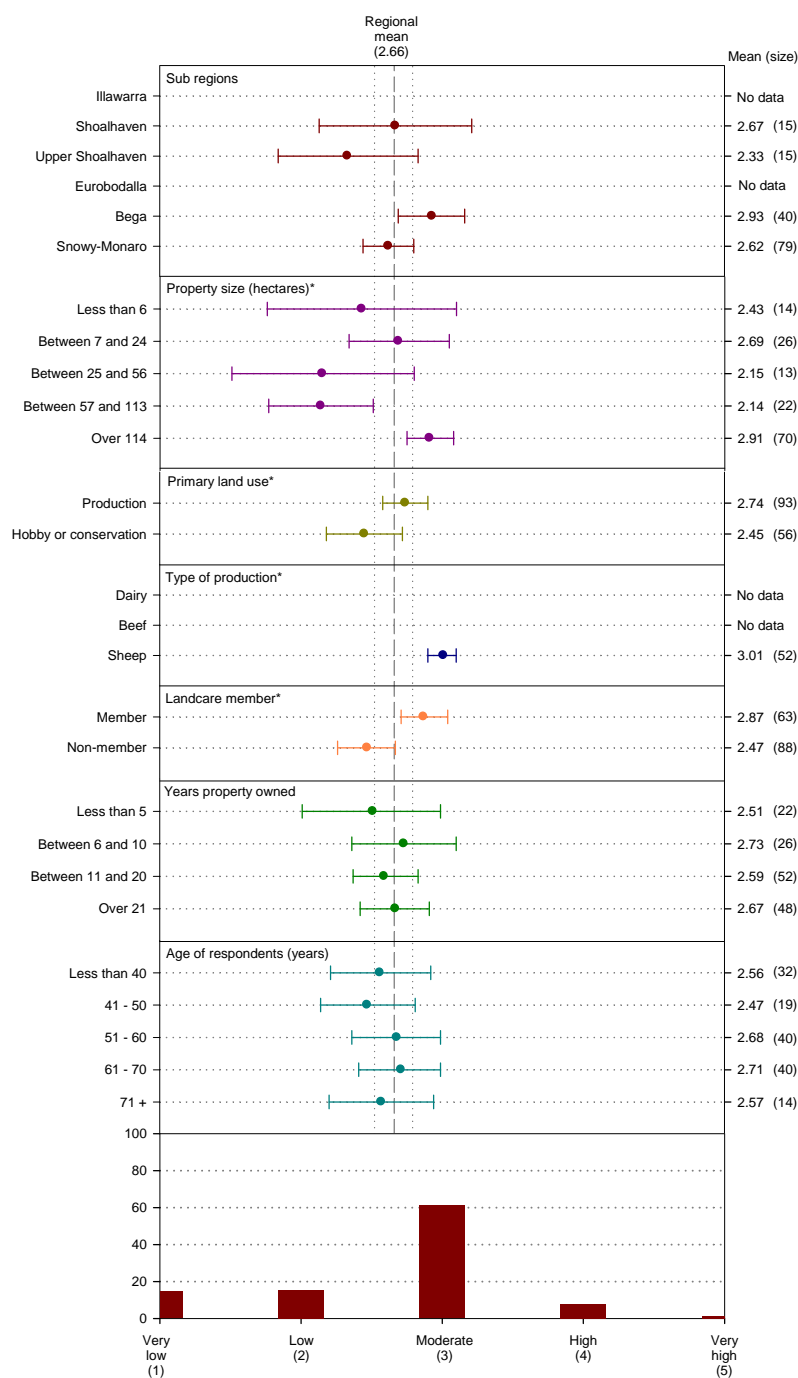


Figure 33. Capacity to address reduced native vegetation cover

Landholders with low capacity to address this issue, were also asked to indicate why they believed they had such a low capacity. Table 11 indicates the most common reason for the low capacity to address the issue was the belief that it ‘cannot be fixed’.

Table 11. “Why would you say you ability to address reduced native vegetation cover is low?”

Response	Count	Percent
Cannot be fixed	18	47.4
Lack of time/too busy	10	26.3
Lack of money	7	18.4
Not interested	4	10.5
Other	6	15.9
Total	38	100.0

Source: EBC (2008).

In the Southern Rivers region, 49% of landholders who experienced issues with reduced native vegetation cover had undertaken actions to address this issue in the last 12 months (Figure 34).

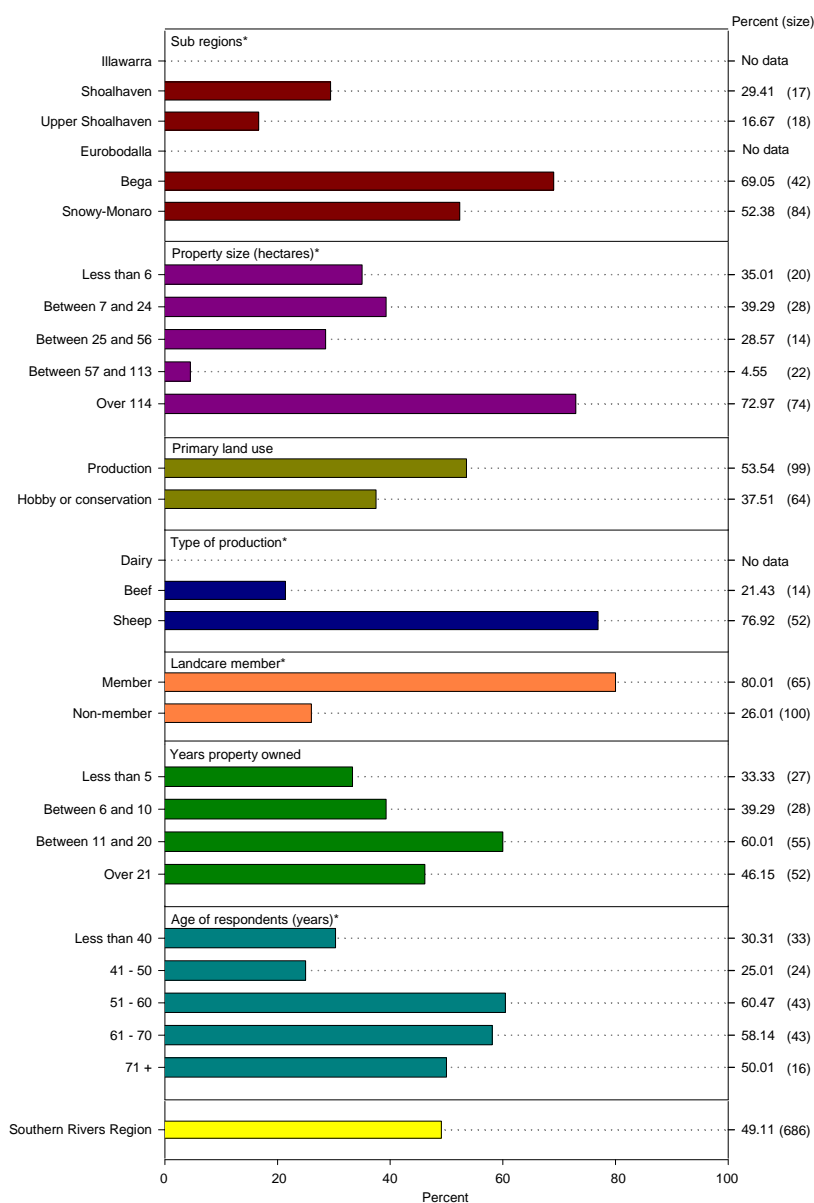


Figure 34. “In the last 12 months have you done anything to address reduced native vegetation cover

5.10 Poor Condition of Native Vegetation

Figure 35 shows the majority of landholders believe the issue with poor condition of native vegetation cover to be a very minor issue on their properties. It appears that this issue is most common in the Snowy-Monaro subregion; amongst large properties; and those involved in sheep production. Landcare members rather than non-members are also more likely to report this issue.

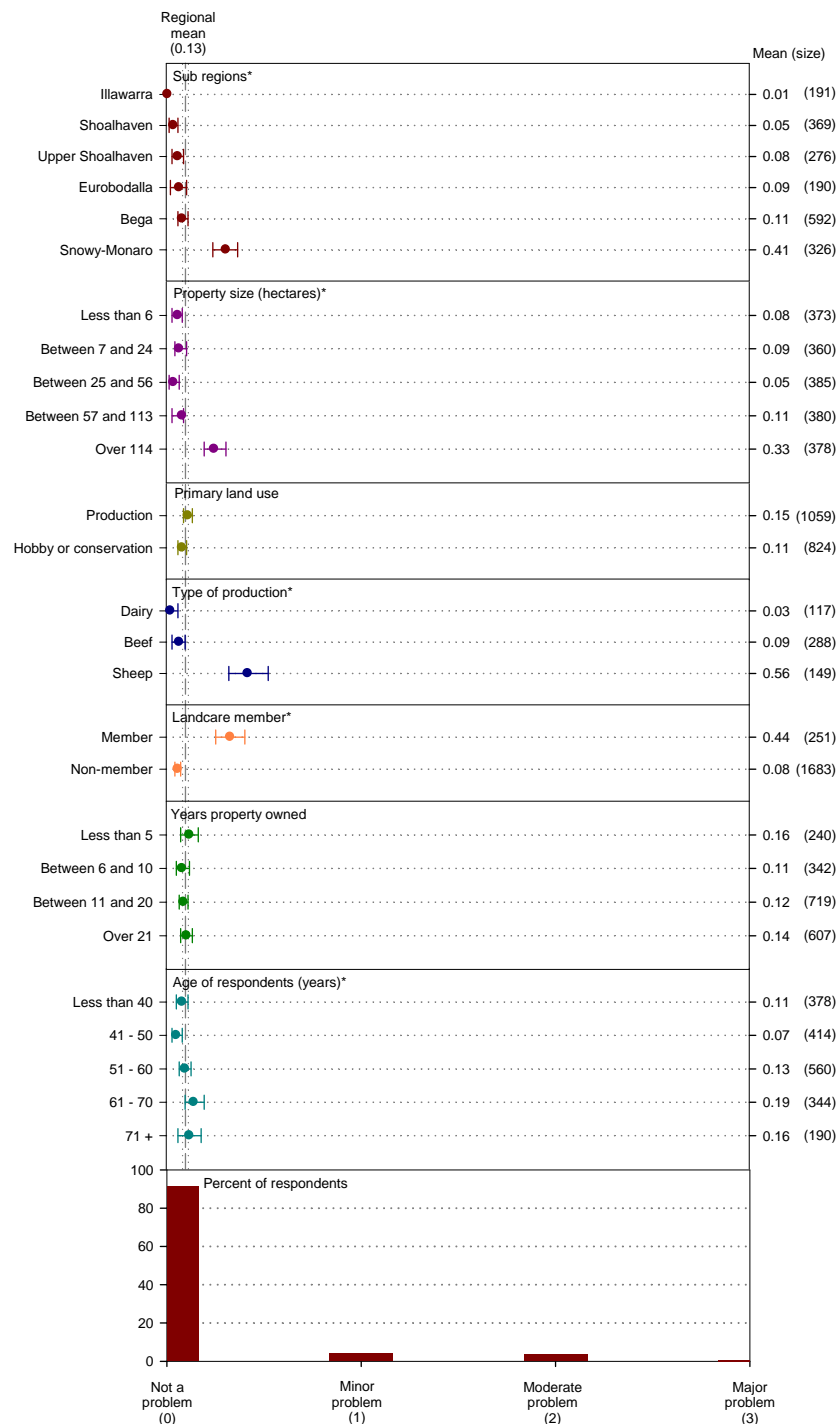


Figure 35. Extent of issue with poor condition of native vegetation

Landholder capacity to address the poor condition of native vegetation was regarded as somewhat below 'moderate' across the region (Figure 36). The lowest capacity to address this issue was amongst beef as opposed to sheep producers and those who were not members of Landcare.

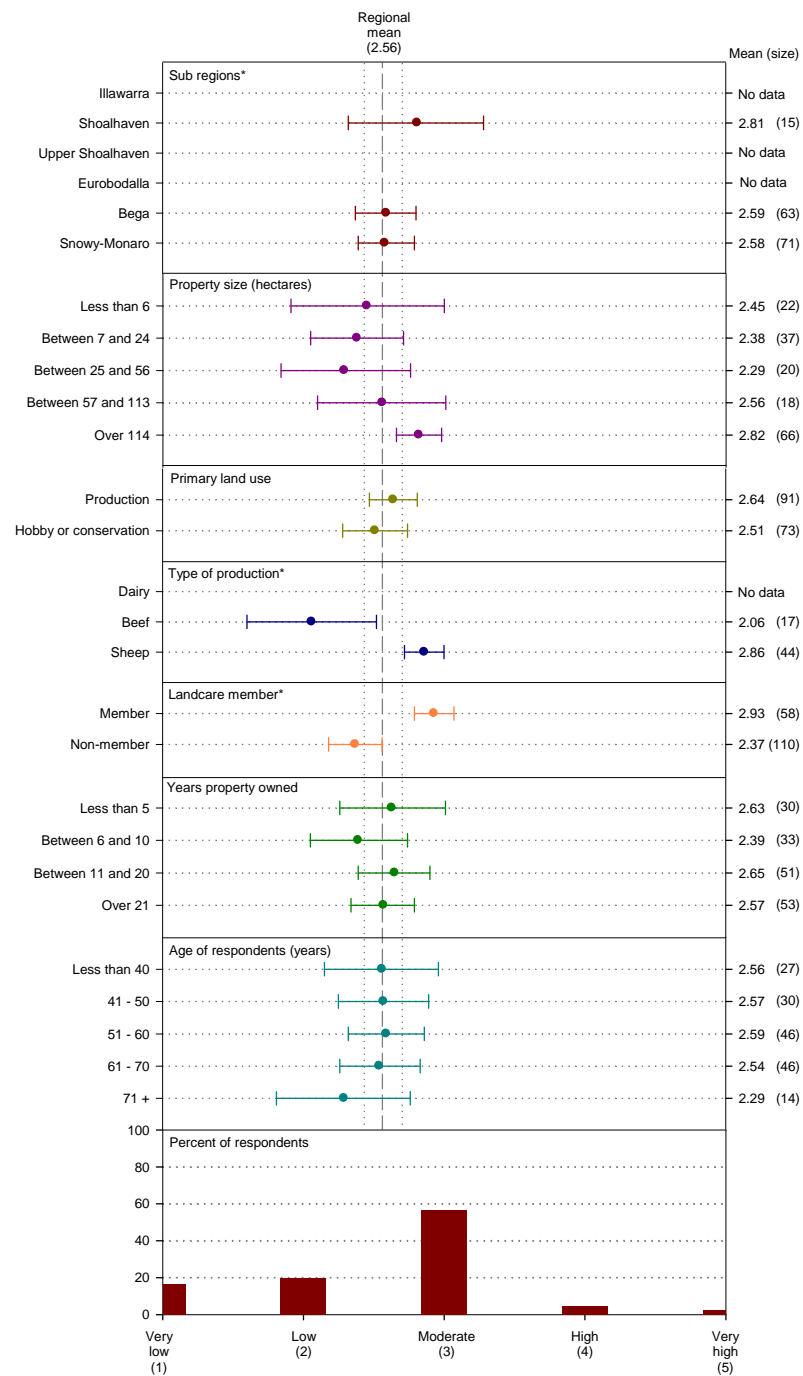


Figure 36. Capacity to address poor condition of native vegetation

Landholders with a low capacity to address this issue, were also asked to indicate why they believed they had such a low capacity. Table 12 indicates the most common reason being for the low capacity to address the issue was the belief that it ‘cannot be fixed’.

Table 12. “Why would you say you ability to address the poor condition of native vegetation is low?”

Response	Count	Percent
Cannot be fixed	19	44.2
Lack of money	8	18.6
Lack of time/too busy	8	18.6
Lack of knowledge	7	16.3
Not interested	4	9.3
Lack of equipment	3	7.0
Too old	2	4.7
Total	43	100.0

Source: EBC (2008).

In the Southern Rivers region, 45% of landholders with native vegetation in poor condition had undertaken actions to address this issue in the last 12 months (Figure 37).

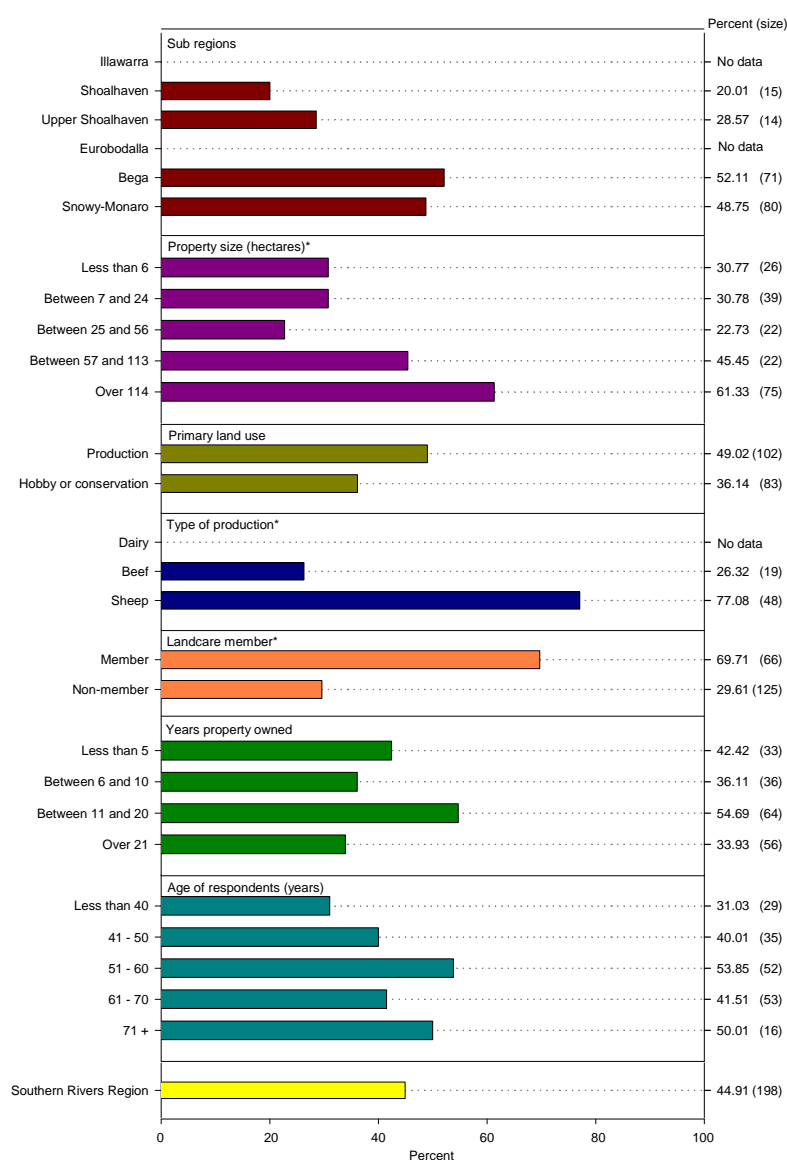


Figure 37. “In the last 12 months have you done anything to address the poor condition of native vegetation?”

6 BELIEFS ABOUT THE HEALTH OF RURAL PROPERTIES

All landholders were asked to judge the health of their property, using a ten point scale with end points one (1) being very unhealthy and ten (10) being very healthy. Figure 8 shows that the majority of landholders within the Southern Rivers region regarded their properties to be healthy, with an average score of eight on a ten point scale.

Figure 38 also shows relatively less healthy properties to be in the Snowy-Monaro subregion; and on a region wide basis amongst dairy as opposed to beef and sheep properties; and amongst older landholders.

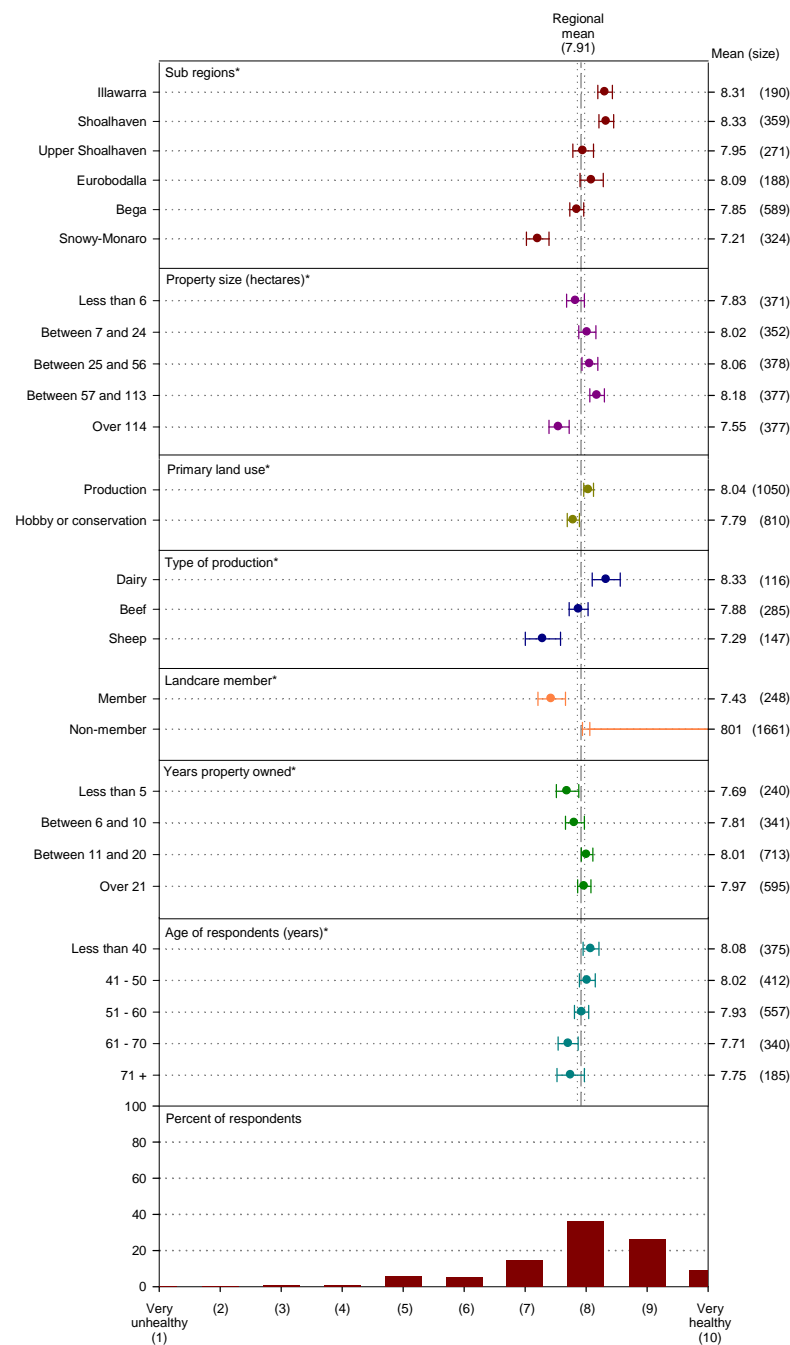


Figure 38. “Thinking about these issues, if you were to judge the health of the land, vegetation and water on your property on a scale from one (1) to ten (10), with one (1) being very unhealthy and ten (10) being very healthy, what score would you give it?”

Using the same instructions that were used to judge the current health of properties, all landholders were also asked to make a judgement about the health of their property five years ago. Figure 39 shows the discrepancy between the current health judgements and the judgements landholders made about the health of their property as it was five years ago.

As shown in Figure 39 the majority of landholders believed the health of their property had improved over the past five years, with the greatest improvement occurring in the Upper Shoalhaven subregion; amongst dairy farmers; and amongst properties of between 57 and 113 hectares.

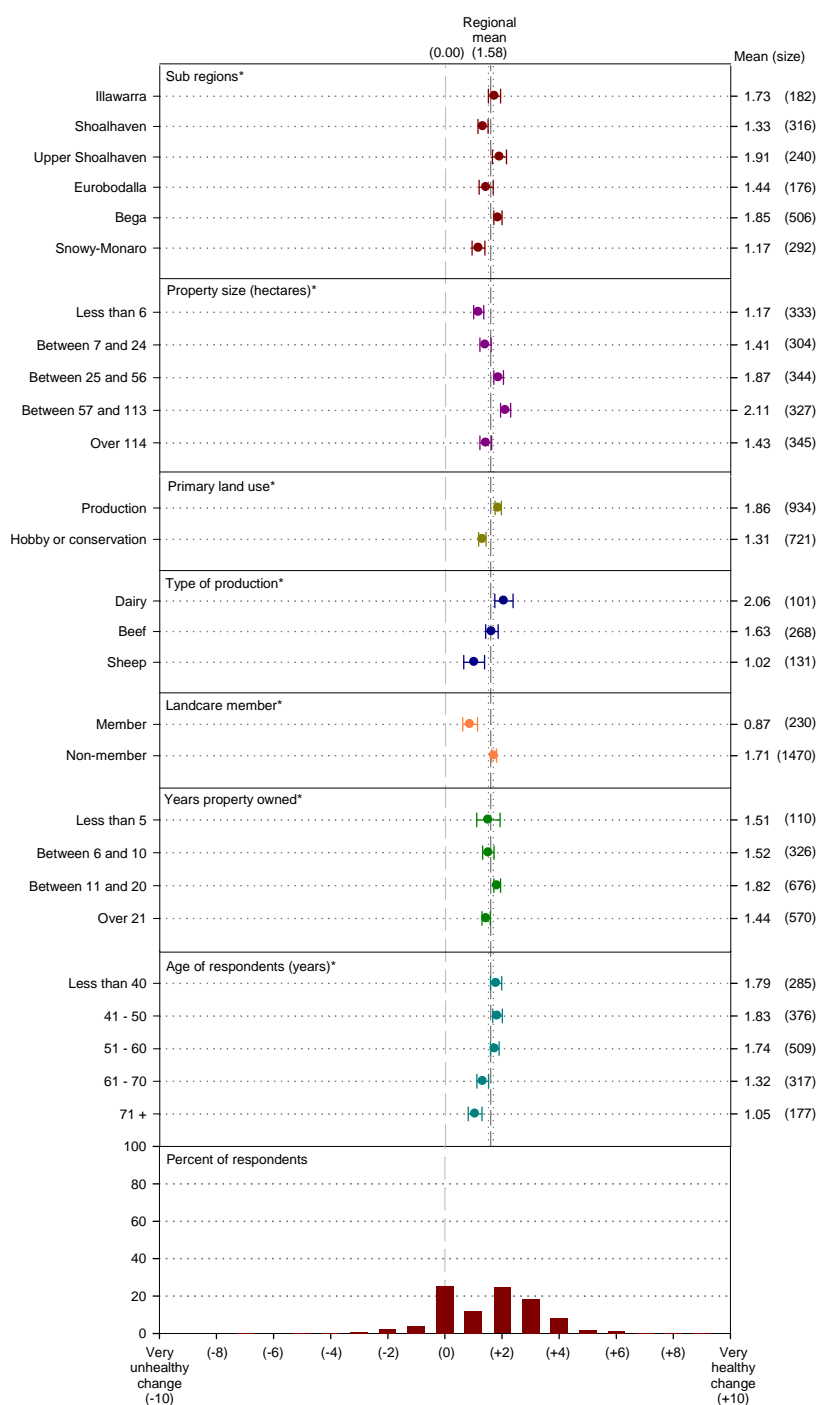


Figure 39. The discrepancy between current health judgements and judgments of the health of the property as it was five years ago.

6.1 Beliefs about the Influence of Climate Change

All landholders were asked if they had thought about climate change and about how it might affect their property and the way they manage it.

Figure 40 shows that 76% of landholders reported considering this issue, with this being particularly the case for landholders in the Illawarra and Bega subregions. As also shown in Figure

40 the issue was more important for landholders on larger landholdings; those landholders involved in production; dairy and sheep farmers; and younger rather than older landholders.

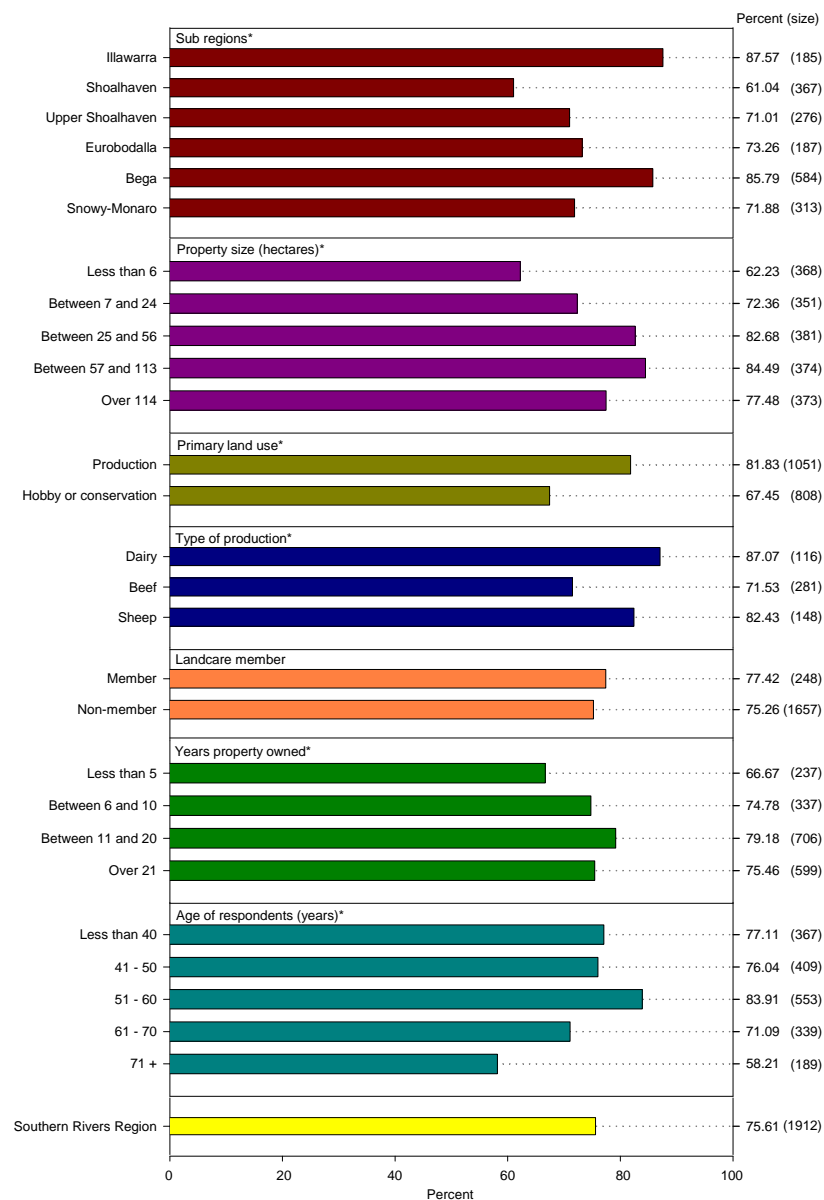


Figure 40. "Have you thought about climate change and how it might affect your property and the way you might manage it?"

7 BELIEFS ABOUT NATIVE VEGETATION

Seven key belief statements (Appendix A) were used to assess attitudes and beliefs about native vegetation on properties. These questions were used to provide an indication of landholder's attitudes and beliefs generally in relation to NRM and in this sense were seen as being similar to a 'keystone indicator'. Native vegetation was selected as the topic for the attitude and belief statements as native vegetation commonly occurred on most properties.

7.1 The Occurrence of Native Vegetation on Properties

Table 41 shows that 83% of landholders report having native vegetation on their properties. This was highest in the Illawarra subregion; amongst larger landholdings and amongst non-Landcare members.

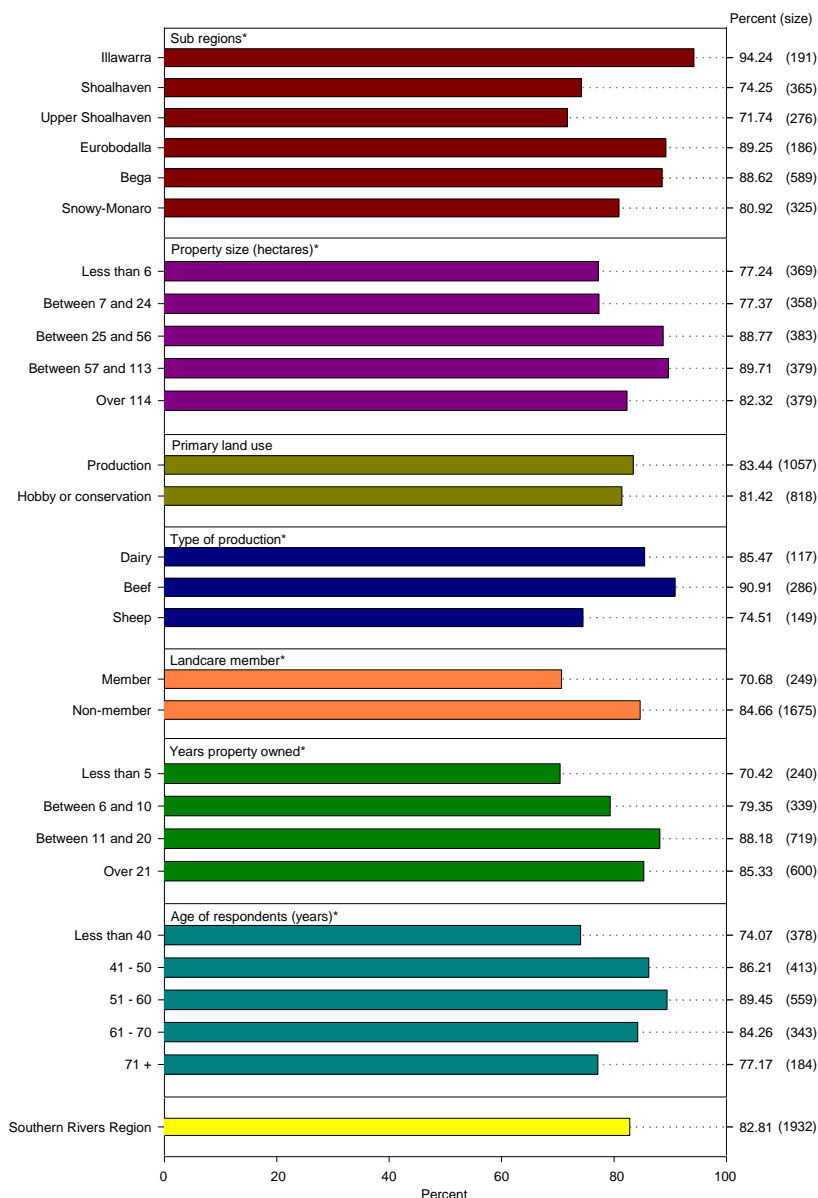


Figure 41. "Native vegetation includes all trees, plants, ground cover and native pastures that occurs naturally or is indigenous on your property. Do you have any native vegetation on your property?"

7.2 Beliefs about Native Vegetation and Economic Production

Landholders were asked to indicate the extent to which they agreed with the statement that “the native vegetation on my property contributes to my economic production”. Only those landholders with properties used for production were included in the analysis and shown in Figure 42. Landholders in the Upper Shoalhaven subregion; landholders with larger properties and younger landholders were most likely to agree with this statement.

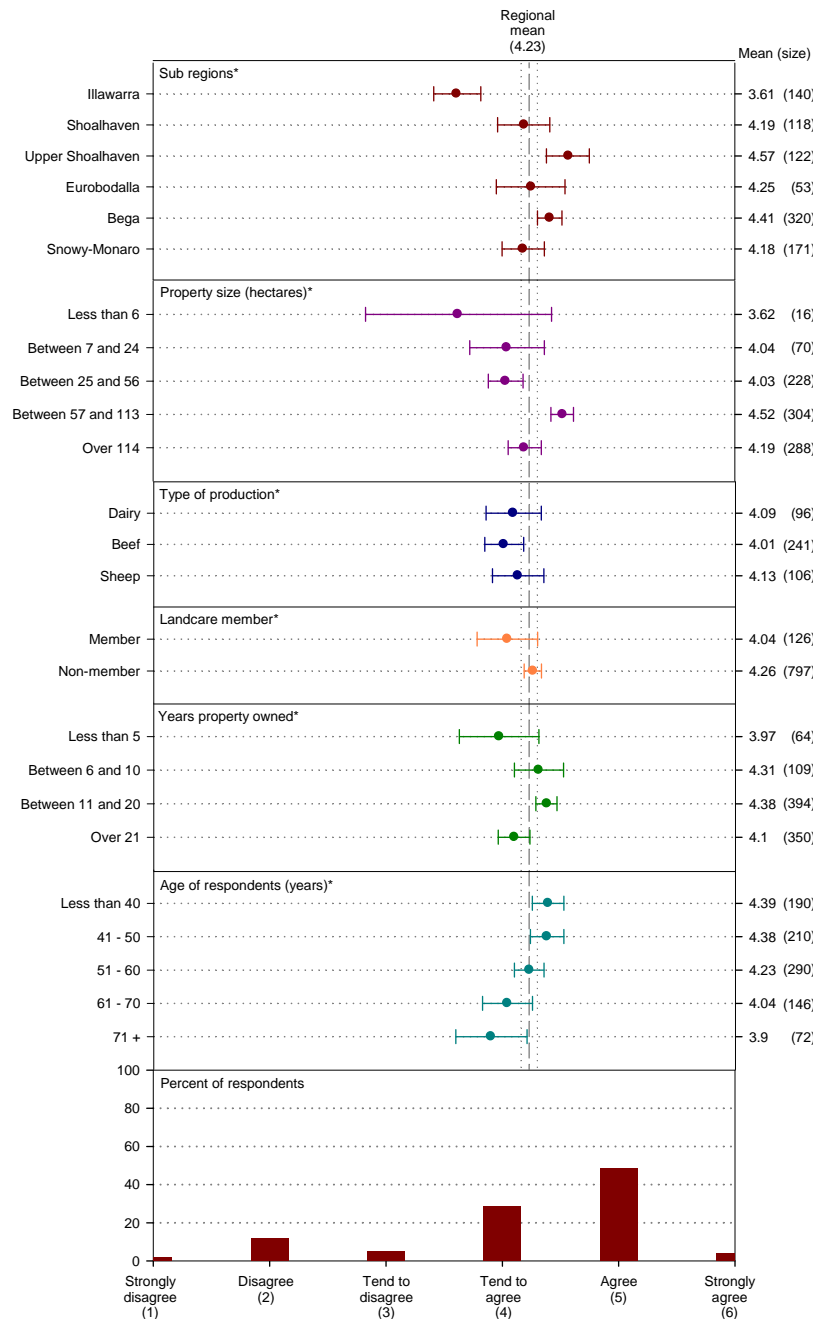


Figure 42. “The native vegetation on my property contributes to my economic production”
(only landholders with properties used for production)

7.3 Beliefs about Native Vegetation and the Health of the Local Environment

The majority of landholders agreed with the statement that, “the native vegetation on my property contributes to the health of the local environment” (Figure 43). This was particularly the case for landholders on smaller properties; those landholders with hobby farms; and those landholders who had been on their property for a relatively short period of time.

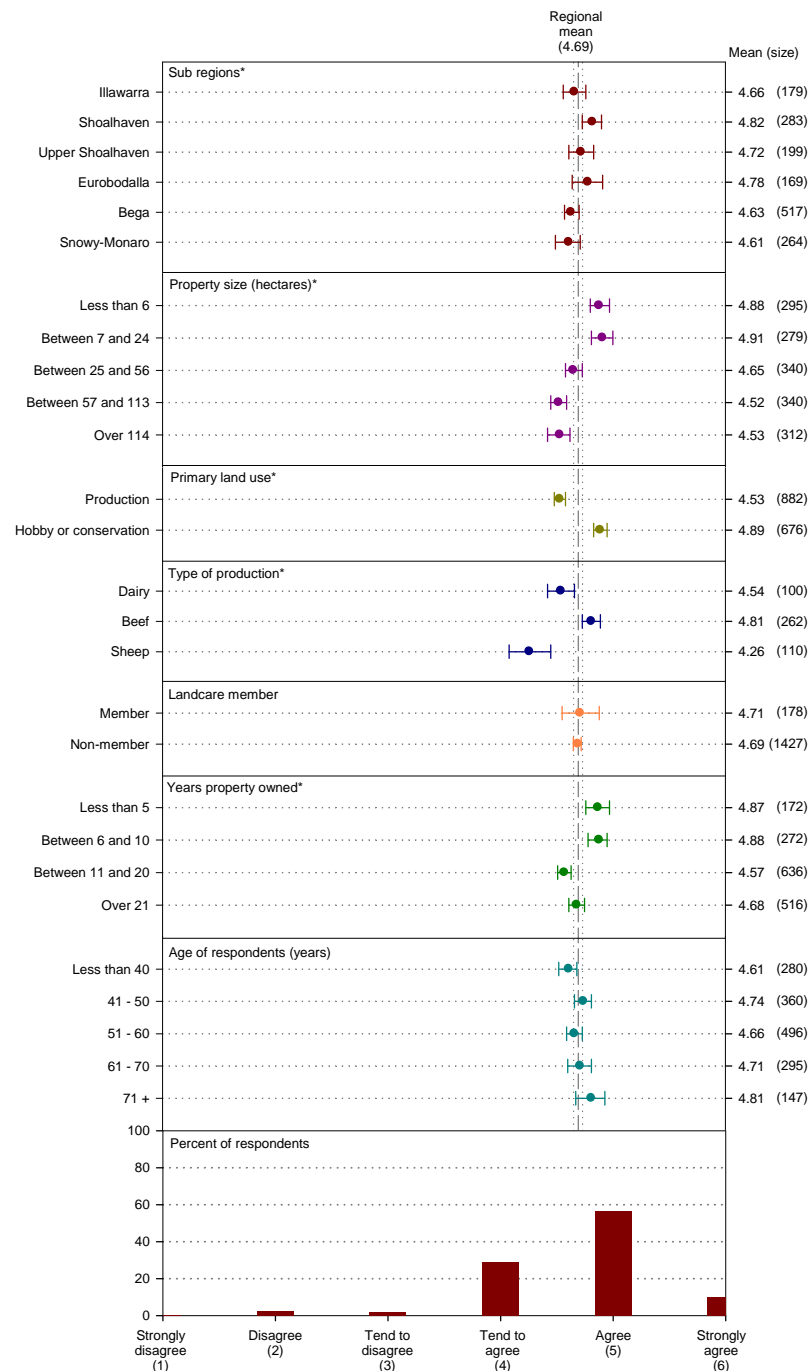


Figure 43. “The native vegetation on my property contributes to the health of the local environment”

7.4 Beliefs about the Management of Native Vegetation

Approximately two thirds of landholders agreed with the statement that “native vegetation needs to be managed to be healthy” (Figure 44). Those landholders most likely to agree with this statement were found in the Snowy-Monaro subregion; were landholders on relatively smaller properties; were hobby or lifestyle farmers; and had owned their property for a relatively short period of time.

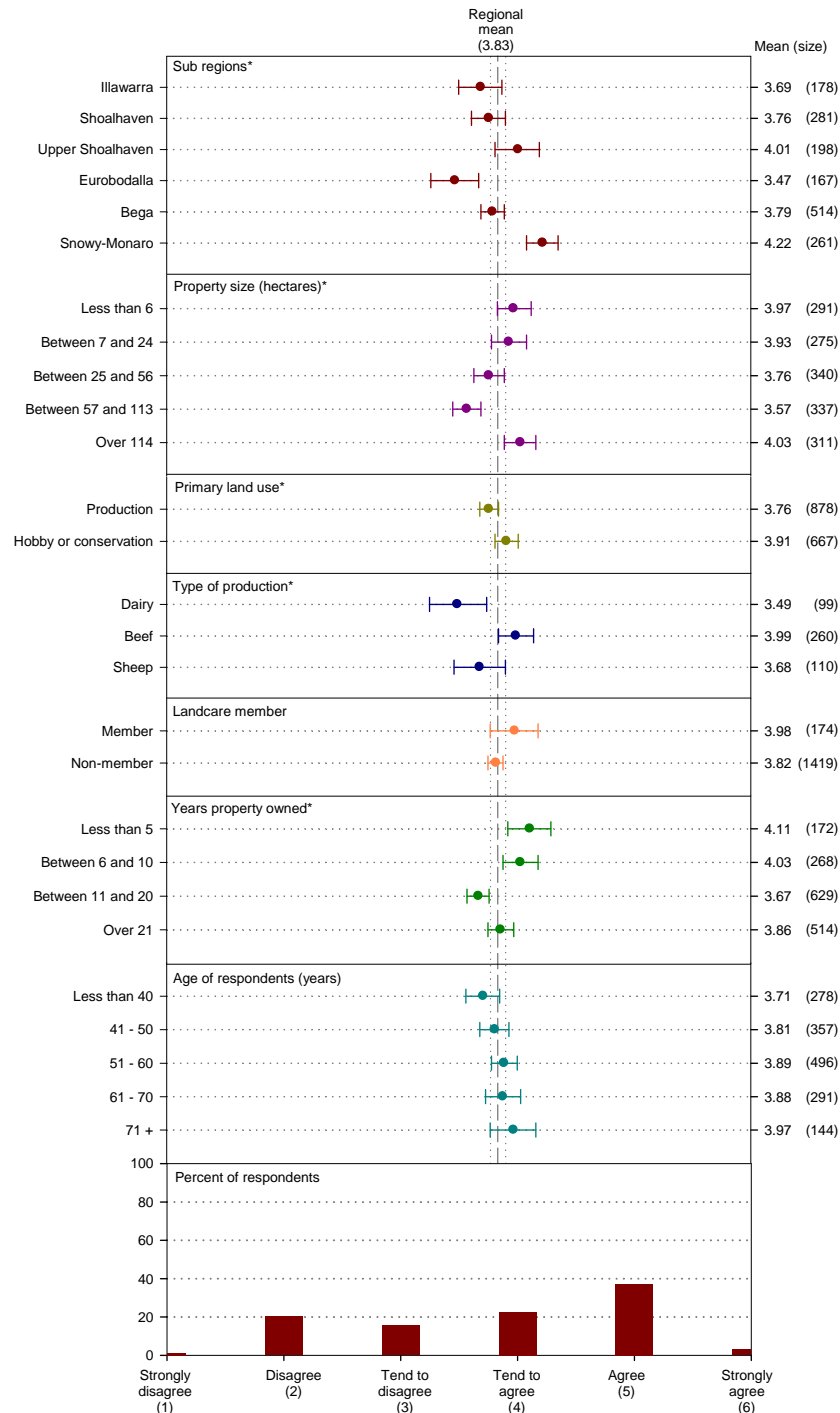


Figure 44. “Native vegetation needs to be managed to be healthy”

7.5 Interest in the Management of Native Vegetation

The majority of landholders agreed with the statement that, “I am interested in managing the native vegetation to be as healthy as possible” (Figure 45). This was particularly the case for landholders in the Upper Shoalhaven; landholders on relatively small properties; those landholders with hobby farms; Landcare members; and those landholders who had been on their property for a relatively short period of time.

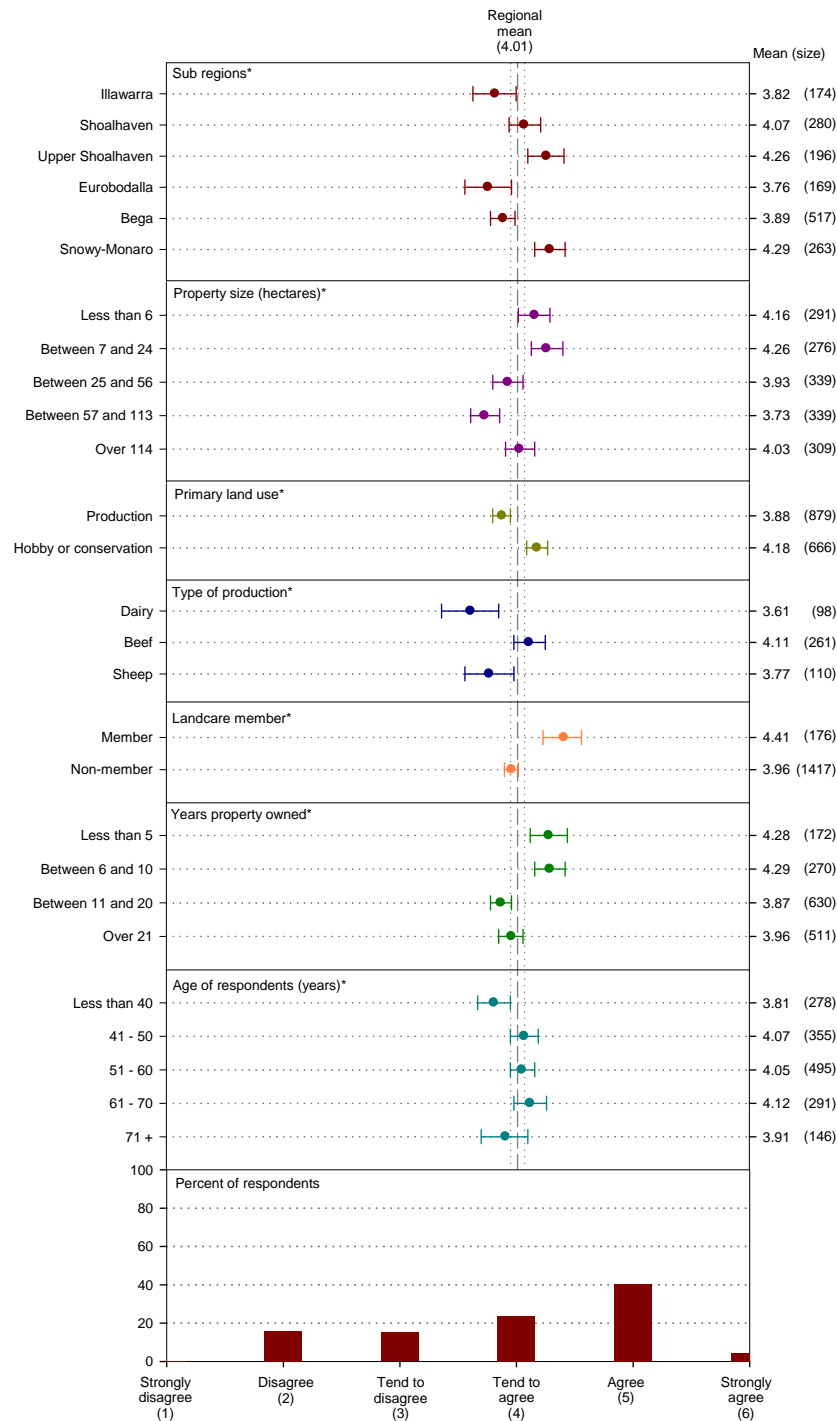


Figure 45. “I am interested in managing the native vegetation to be as healthy as possible”

7.6 Knowledge of Native Plants on Property

Knowledge of native vegetation was assessed by asking landholders if they could name the native plants on their property. The majority of landholders indicated they could to some extent identify the native plants on their property, with this being most commonly the case for landholders in the Illawarra subregion and for those who had owned their property for a relatively long period of time (Figure 46).

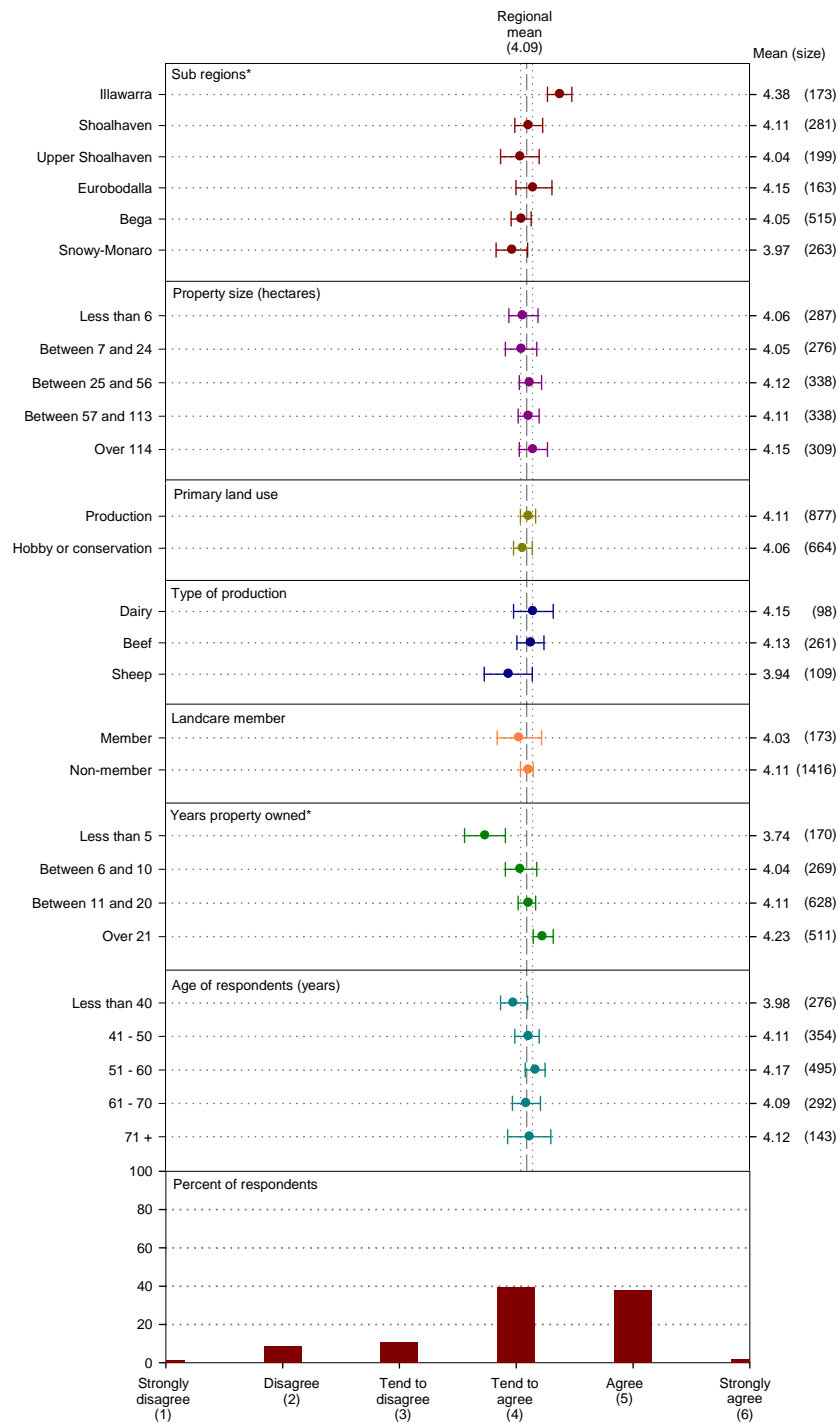


Figure 46. "I can name most of the native plants on my property"

7.7 Motivation to Manage Native Vegetation

There was some ambivalence amongst landholders in relation to their motivation to manage native vegetation on their property. As shown in Figure 47, amongst landholders who indicated an interest in managing native property, 50% indicated it was a low priority, with this being most commonly the case in the Shoalhaven subregion; amongst landholders on relatively larger properties; and on those properties used for production.

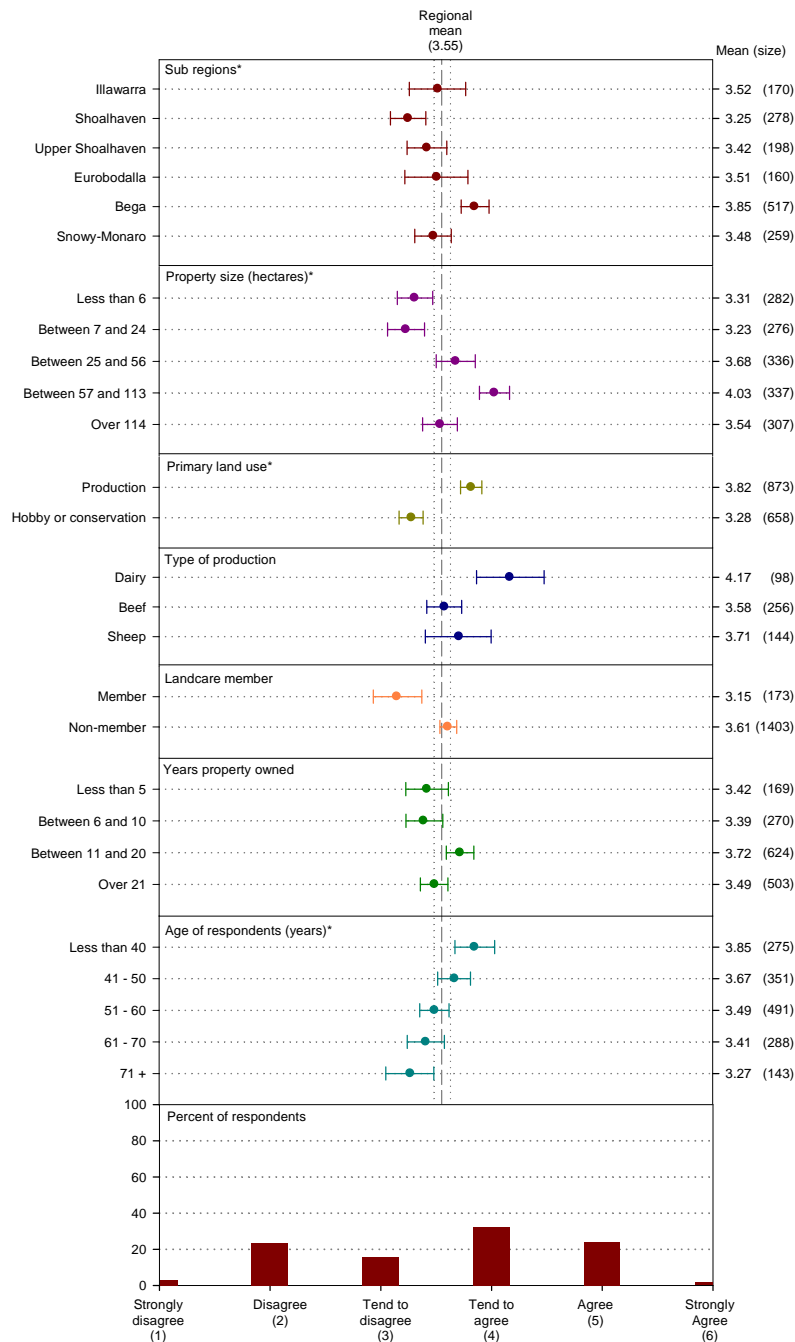


Figure 47. “I would like to manage the native vegetation on my property, but it is low on the list of things to do on my property”

(Based on only those landholders who indicated an interest in managing native property as presented in Section 7.5)

7.8 Willingness to Accept Advice about Managing Native Vegetation

Landholders willingness to accept advice on how to do more to manage native vegetation is shown in Figure 48. Two thirds of landholders indicated they would be willing to accept advice, although a third indicated they would not. Those least likely to accept advice were landholders in the Eurobodalla and Illawarra subregions; those on larger properties; those involved in production; non-Landcare members; and those who had owned their property for a relatively long period of time.

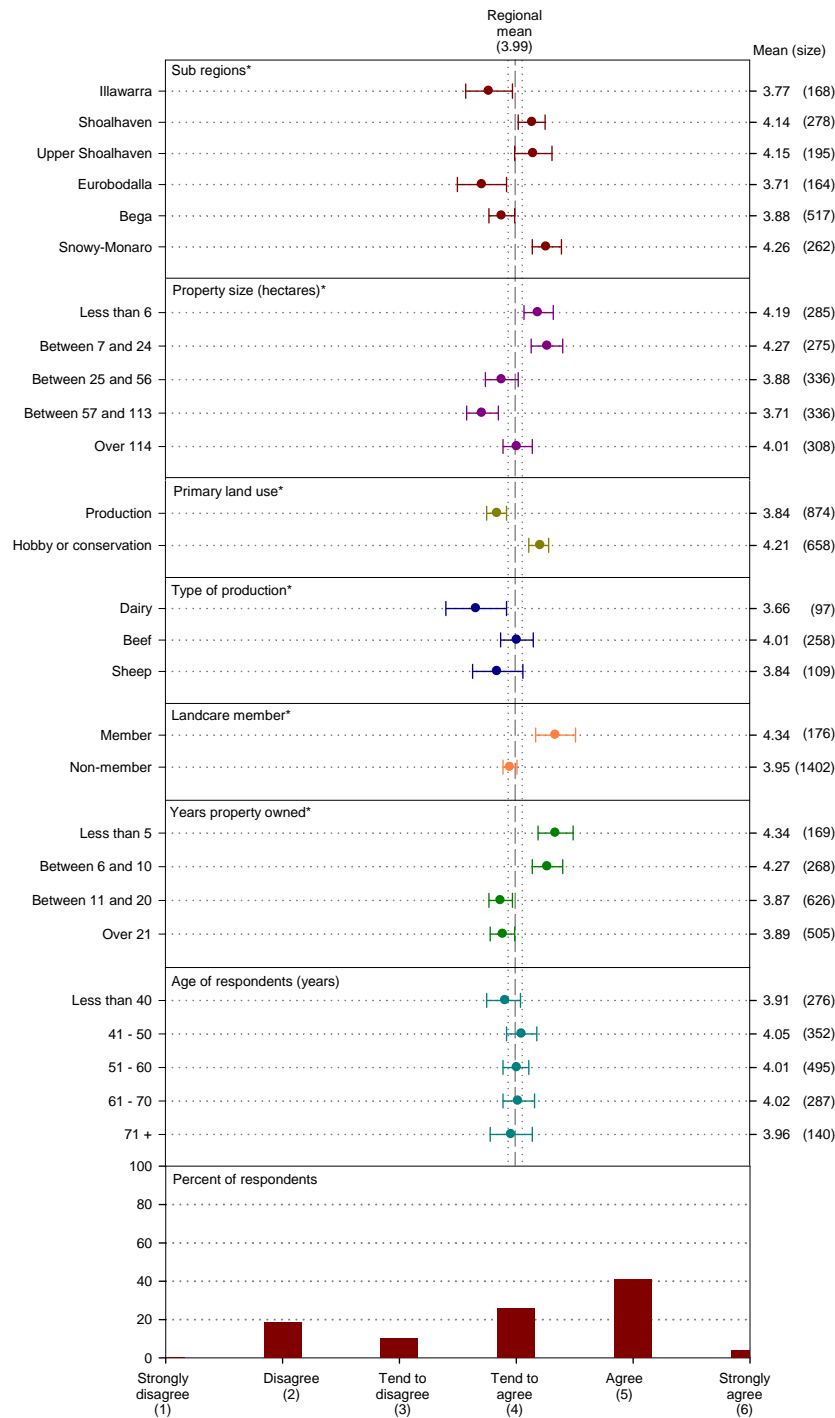


Figure 48. “I would accept advice on how to do more to manage the native vegetation on my property”

8 CAPACITY FOR NATURAL RESOURCE MANAGEMENT

The capacity to address NRM issues was addressed using eight belief statements (Appendix A, Question 23). Each belief statement was constructed so that it not only provided an indication of landholder capacity in relation to NRM, but it could also be placed along a continuum of capacity and engagement from simple awareness of NRM issues through to empowerment and the capacity to influence NRM decision making.

Each of the eight scale topics are shown below. What is evident when examining the percentage of agreement with each topic is that while there is relatively high agreement with those topics which reflect local issues and passive involvement, there is less likely to be agreement with those topics which require more active involvement, knowledge and experience of NRM issues.

	Percent agreement
9. I am awareness of local land and water issues.....	91%
10. I would work with neighbours on land and water issues.....	77%
11. I know about the things the local Landcare group is doing	70%
12. I would participate in addressing land and water issues	59%
13. I am interested in finding out about land and water issues.....	47%
14. I have the experience and knowledge to address NRM issues	46%
15. I have the skills and training to address NRM issues	31%
16. I am able to influence decision making about NRM	17%

8.1 Awareness of Local Land and Water Issues

Ninety one percent of landholders indicated they were aware of what the land and water issues were in their local area (Figure 49). Awareness of these issues was relatively lower amongst landholders in the Shoalhaven and Upper Shoalhaven; landholders on smaller properties; hobby farmers; non Landcare members and those who had owned their property for a relatively short period of time.

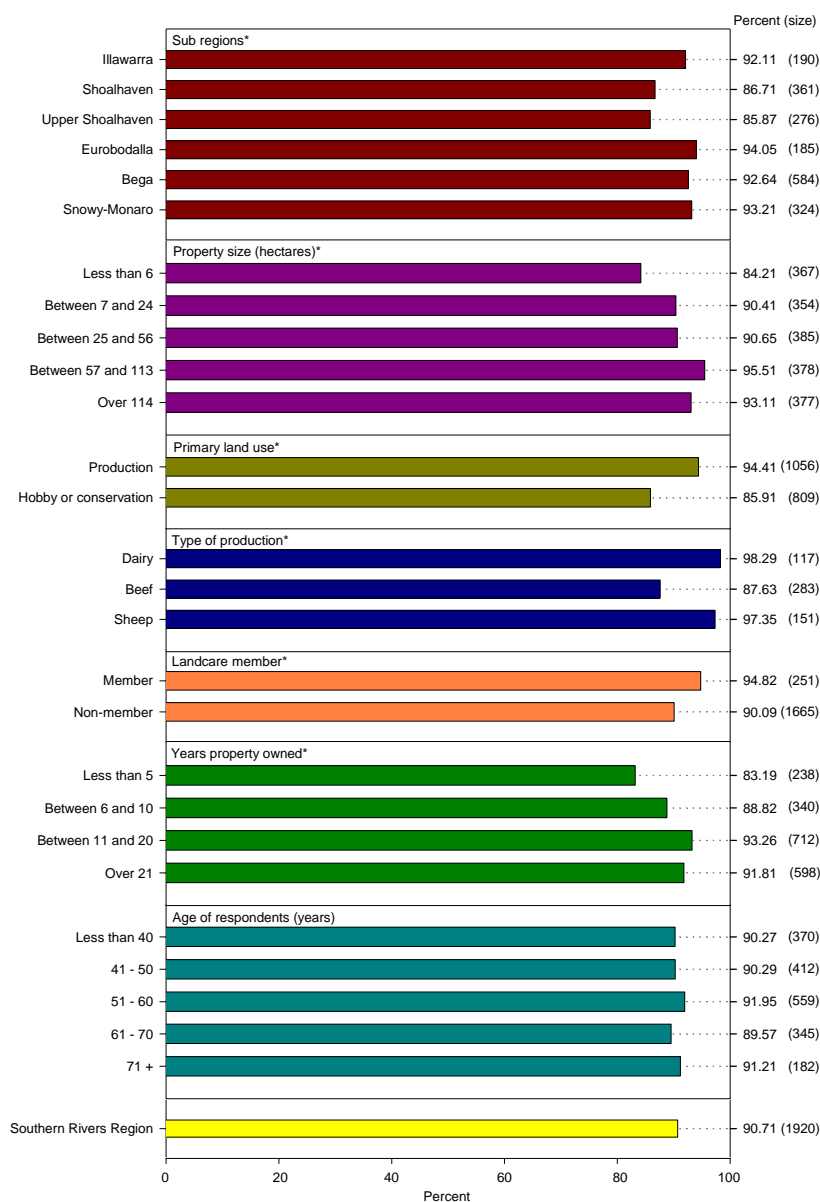


Figure 49. "I am aware of what the land and water issues are in this area"

8.2 Local Involvement with Neighbours in Land and Water Issues

Seventy-seven percent of landholders indicated they would work with their neighbours to address common NRM problems that they might have (Figure 50). This belief was most common amongst landholders in the Shoalhaven, Upper Shoalhaven and Snowy-Monaro subregions; those on smaller properties; hobby farmers; Landcare members; those who had owned their property for a relatively short period of time; and older landholders.

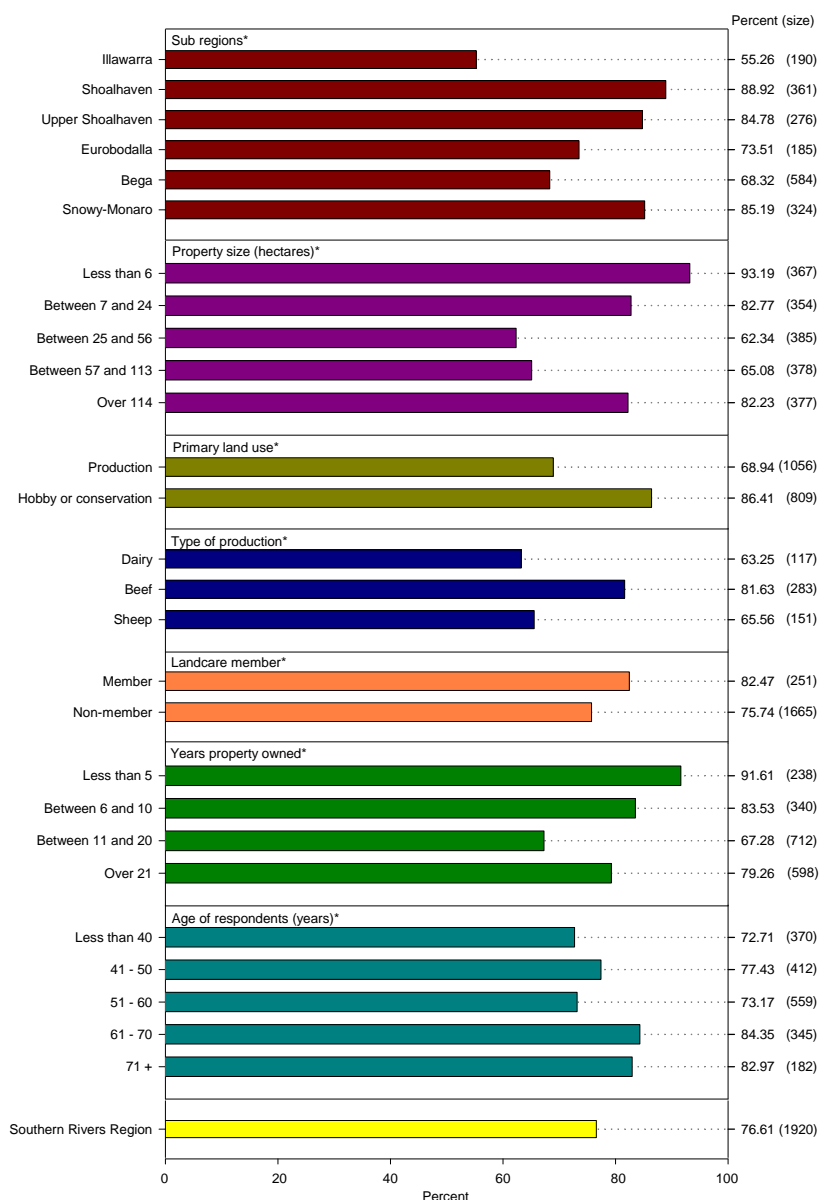


Figure 50. "I would work with my neighbours to address common problems that we might have"

8.3 Knowledge of Local Landcare Groups

Seventy percent of landholders indicated they were aware of the activities of local Landcare groups (Figure 51). Awareness of Landcare group activities was highest amongst landholders in the Illawarra subregion; larger property owners; those involved in production; dairy farmers; Landcare members; and those who had owned their property for a relatively long period of time.

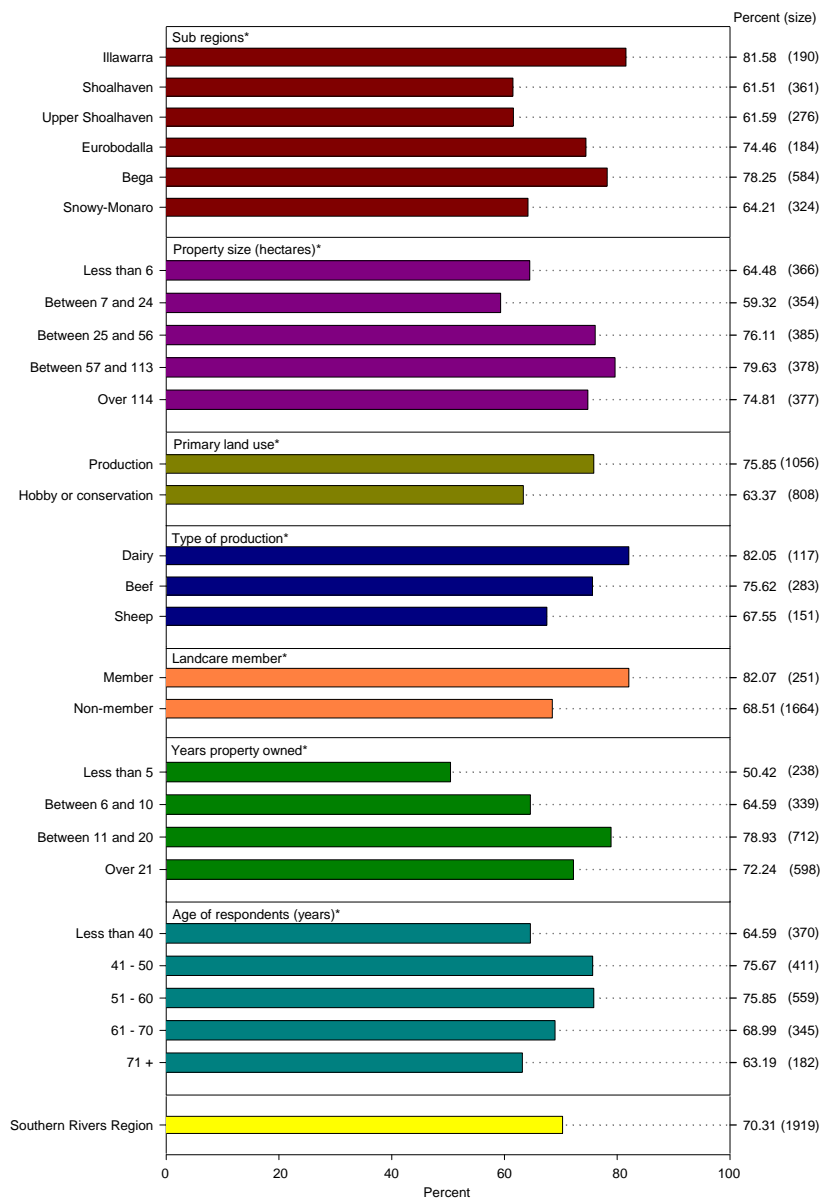


Figure 51. “I know about the things the local Landcare group does in this area”

8.4 Participation in Land and Water Issues

Fifty-nine percent of landholders indicated they would participate if asked in activities to improve the health of land and water in their area (Figure 52). This was typically highest amongst those landholders in the Snowy-Monaro subregion; those landholders on larger properties; those involved in production; and those who were Landcare members.

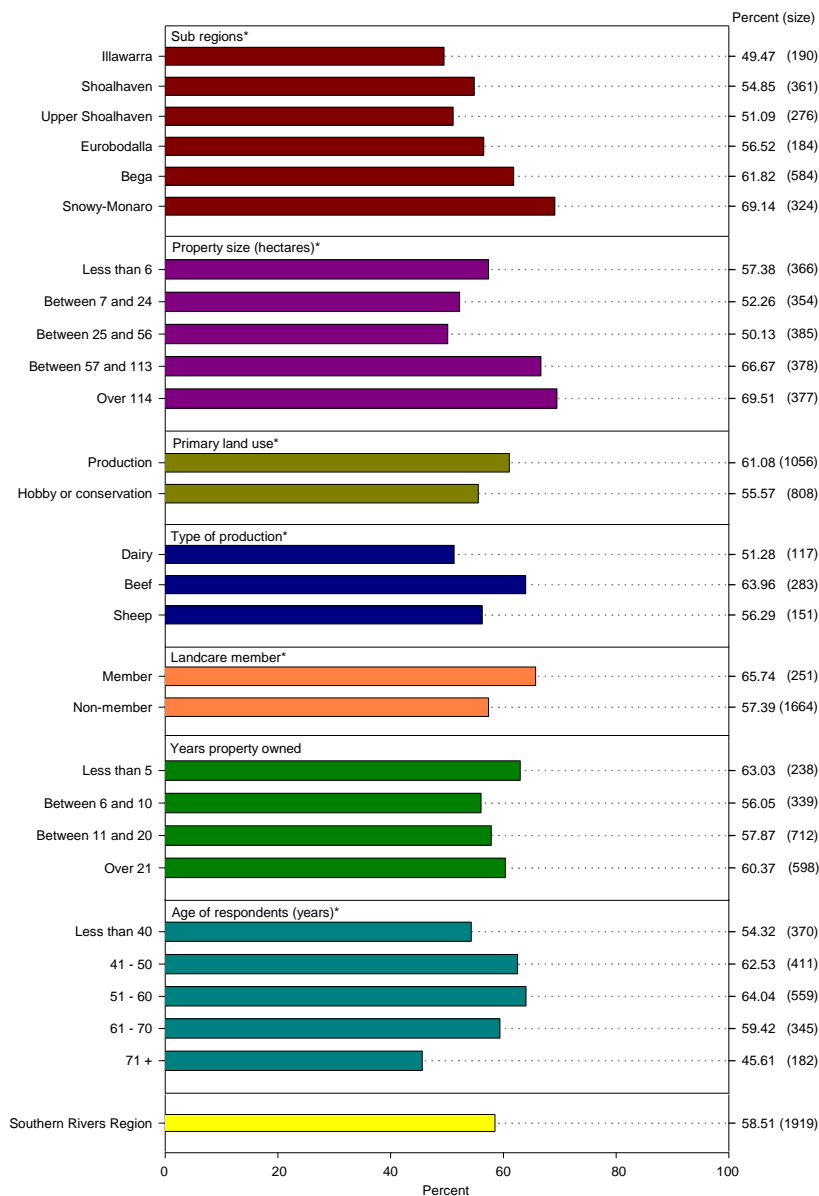


Figure 52. “If asked I would participate in activities to improve the health of land and water in this area”

8.5 Interest in Land and Water Issues

Less than half of all landholders (47%) expressed an interest in finding out about land and water issues in their area (Figure 53). However there were very significant variations across all factors assessed in Figure 53, with higher percentages occurring in the Snowy-Monaro subregion; amongst smaller property owners; hobby farmers; beef producers; Landcare members; those who had owned their property for a relatively short period of time; and older landholders.

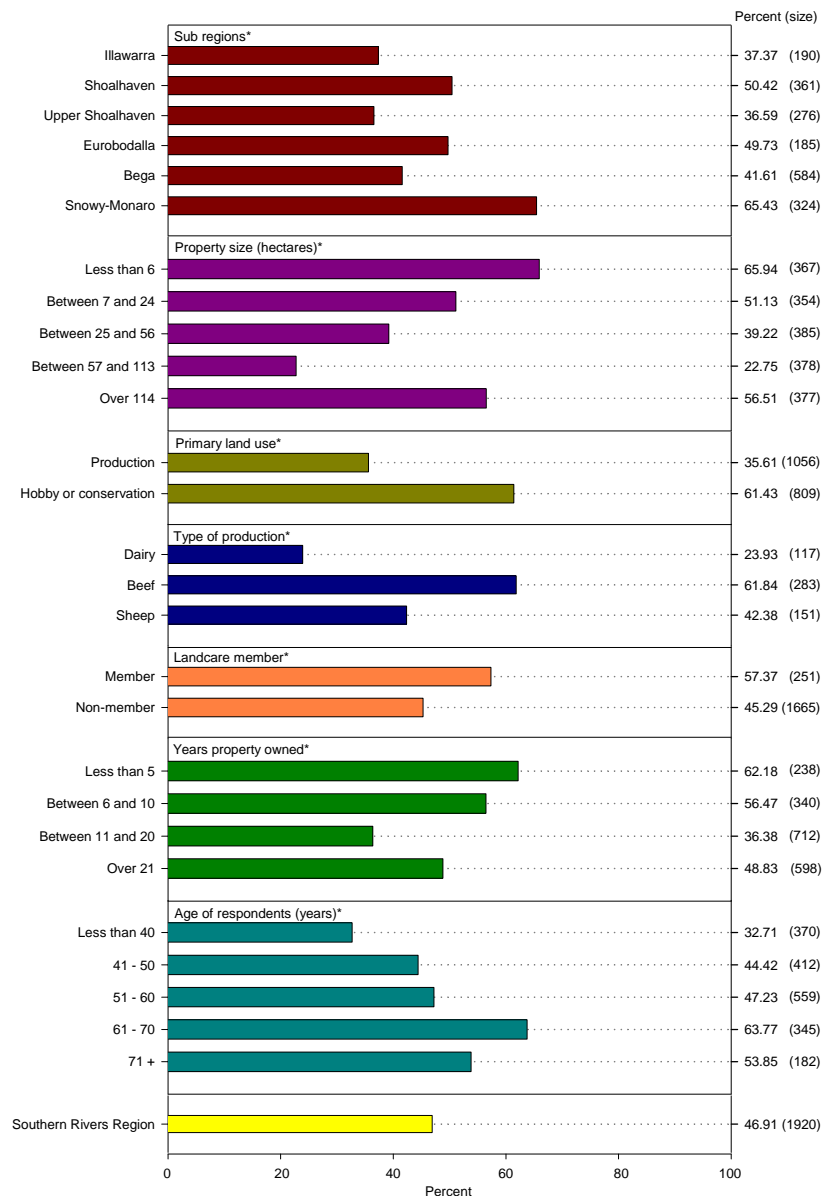


Figure 53. “I am interested in finding out about land and water issues in this area”

8.6 Experience and Knowledge in Addressing NRM Issues

Forty-six percent of landholders indicated they had the experience and knowledge to address land and water issues in their area (Figure 54). The highest levels of knowledge and experience were found amongst landholders in the Snowy-Monaro subregion; those on large properties; those involved in production; beef producers; those who had owned their property for a relatively longer period of time; and older landholders.

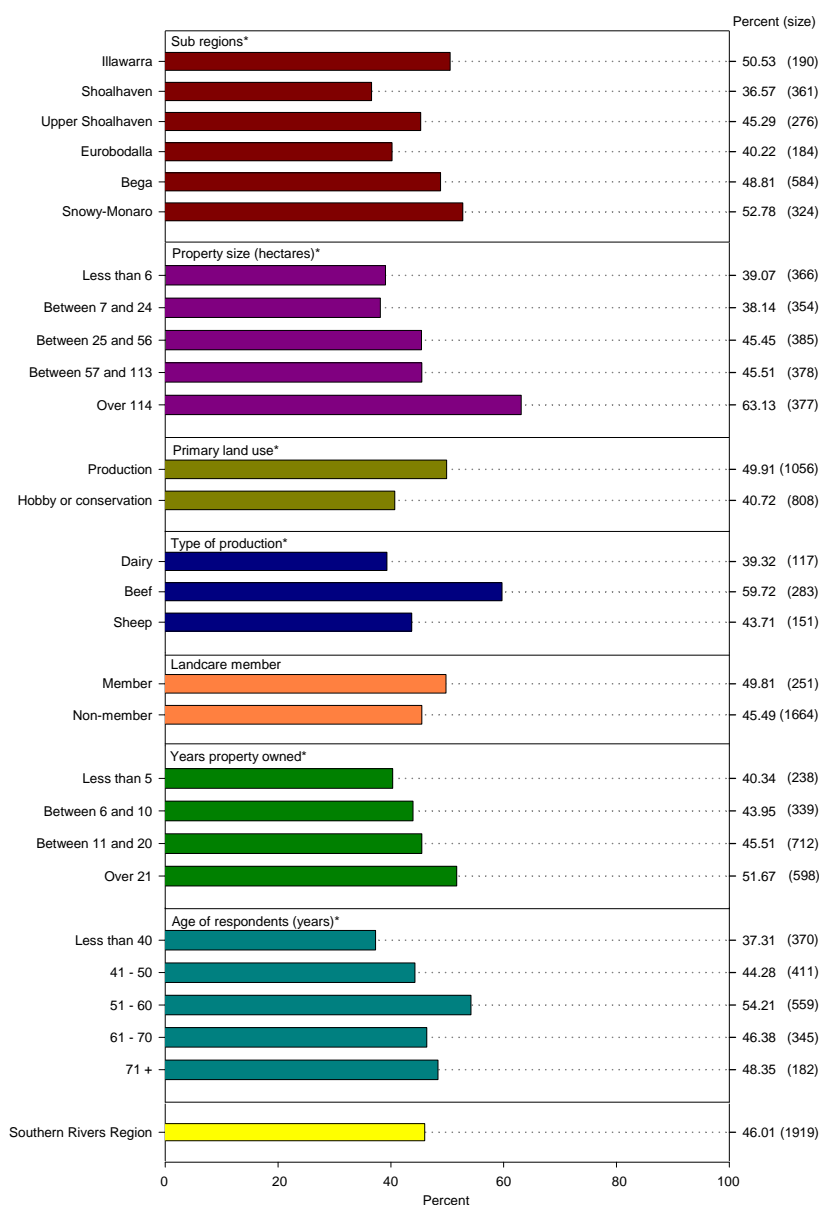


Figure 54. "I have the experience and knowledge to help address land and water issues in this area"

8.7 Skills and Training to Address NRM Issues

Only 31% of landholders indicated they had the skills and training to address land and water issues in their local area (Figure 55). The percentage with skills and training was highest amongst larger property owners; those involved in production; Landcare members; those who had owned their property for a relatively long period of time; and younger landholders.

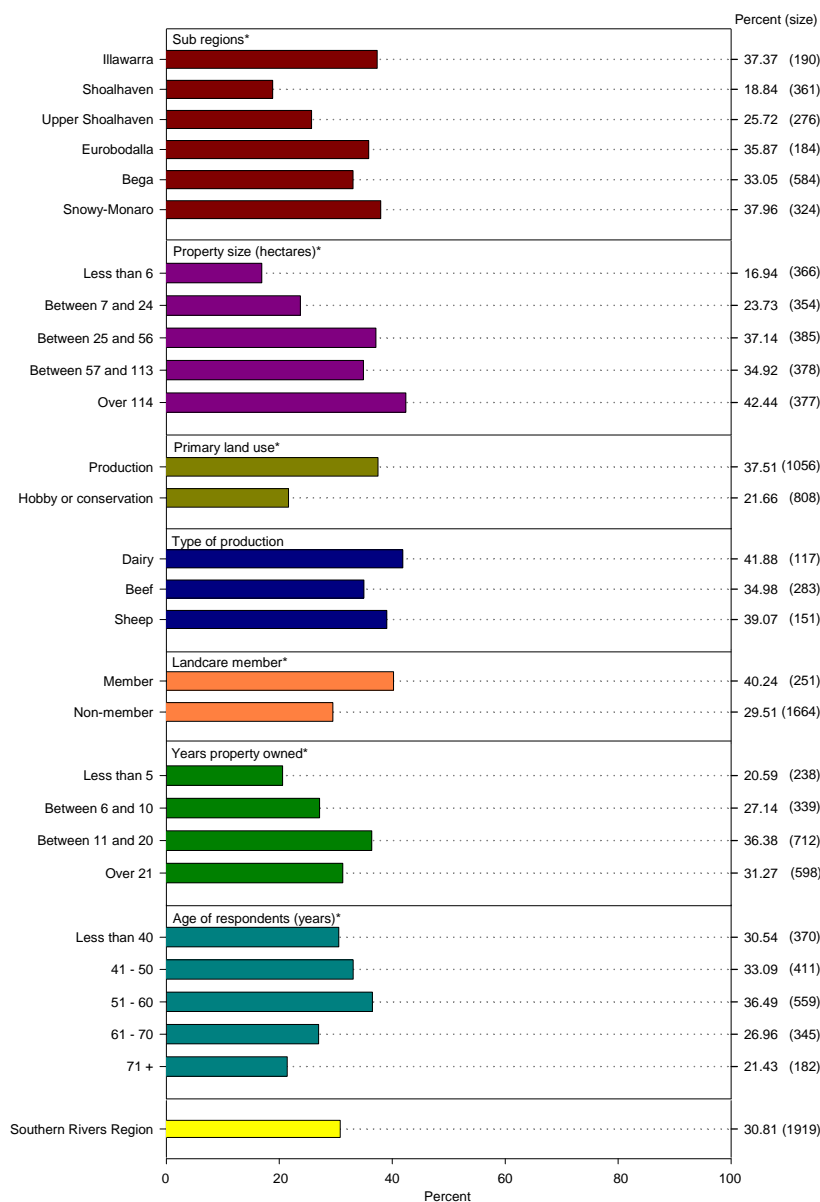


Figure 55. "I have the skills and training to help address land and water issues in this area"

8.8 Capacity to Influence Decisions about NRM

Only 17% of all landholders believed they had the capacity to influence decisions about NRM in their local area (Figure 56). The capacity to influence NRM decision making was highest in the Snowy-Monaro subregion; amongst large property owners; Landcare members and older landholders.

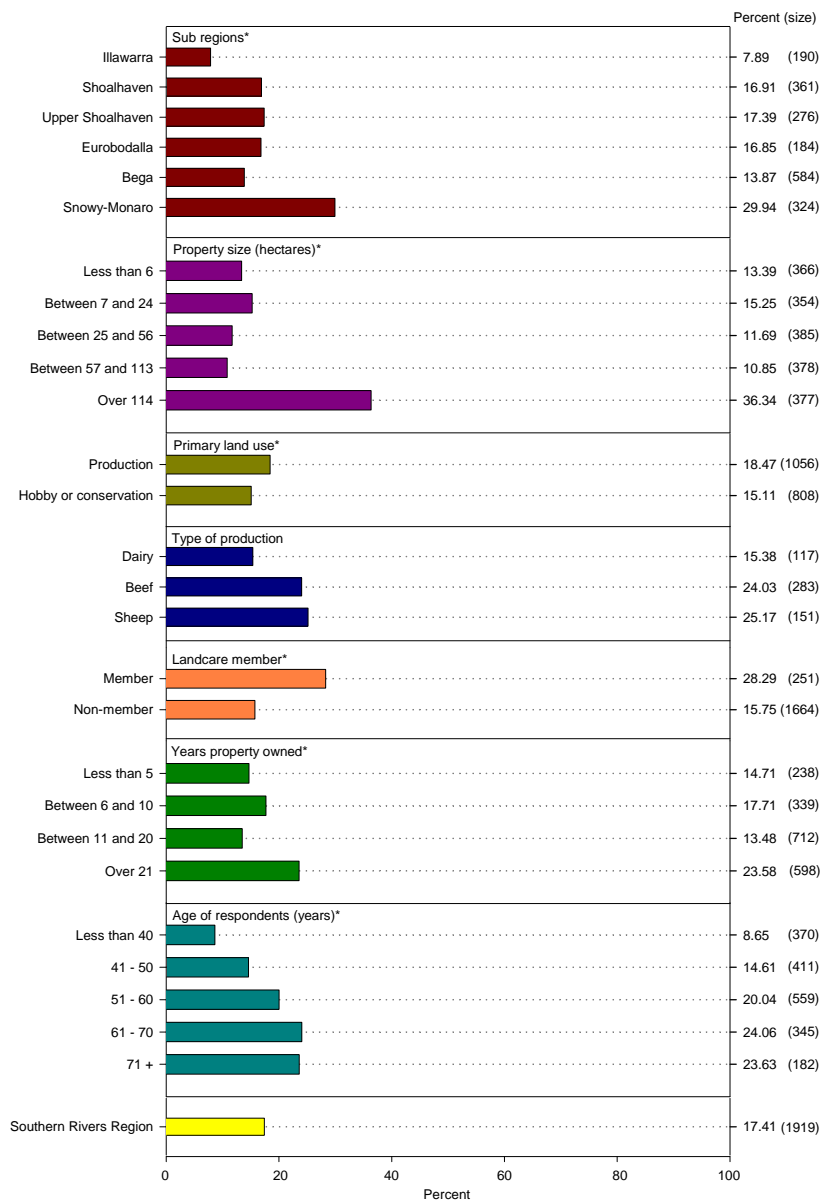


Figure 56. "I feel I would be able to influence decisions about improving the health of land and water in this area."

9 EXTERNAL SUPPORT AND INFORMATION

All landholders were asked (Appendix A) about where they sourced information on environmental issues; their membership of Landcare and other NRM organisations; and whether they had requested support and undertaken training in order to improve the health of their properties.

9.1 Sources of Information about Environmental Issues

Table 13 shows the sources of information landholders use in acquiring information about environmental issues on their land and in their local area. Across the Southern Rivers region the three most common sources of information were (i) Local Government Authorities; (ii) State agencies and (iii) Landcare groups. However, Table 13 shows some variation across landholder characteristics in the importance of these sources of information.

Table 13. "If you wanted to know something about and environmental issue issues on your land or in your local area, where would you go to get this information" (percentages)

	CMA	Other farmers	Friends & Family	Landcare groups	Internet	LGA	State agencies	Rural organisations
Subregion								
Illawarra	7.0	27.4	7.0	52.7	7.0	41.4	43.0	24.2
Shoalhaven	10.2	23.0	12.5	26.0	15.8	59.0	46.5	11.1
Upper Shoalhaven	18.9	22.0	8.0	50.0	9.5	48.5	54.9	14.0
Eurobodalla	8.4	14.6	10.7	38.2	11.2	53.9	31.5	19.1
Bega	10.1	24.5	9.1	53.5	8.9	41.9	49.7	15.5
Snowy-Monaro	15.6	29.3	14.3	36.6	12.1	36.3	40.4	18.5
Property size (ha)								
Less than 6	4.3	14.8	13.7	12.5	17.4	48.4	35.9	6.3
7 – 24	15.2	22.7	11.9	34.0	14.9	47.2	48.4	11.9
25 – 56	10.1	25.1	8.2	55.3	10.6	45.8	46.3	28.3
57 – 113	7.3	28.2	5.7	68.0	4.3	47.4	52.3	18.7
Over 114	22.1	29.1	12.7	44.2	8.6	44.2	44.7	14.8
Primary land use								
Production	13.2	27.1	7.2	59.8	7.2	47.2	48.5	19.5
Hobby or conservation	9.4	19.9	14.6	22.7	15.6	45.3	41.9	12.0
Type of production								
Dairy	8.0	31.0	2.7	66.4	8.0	52.2	44.2	27.4
Beef	7.6	25.7	10.5	29.3	8.3	42.0	43.5	18.8
Sheep	33.6	37.6	16.8	67.1	8.1	49.7	43.6	20.1
Landcare member								
Member	40.6	27.5	13.9	54.1	8.6	45.5	45.1	15.2
Non-member	7.4	23.5	9.8	41.7	11.0	46.4	46.1	16.2
Years property owned								
Less than 5	13.2	25.0	12.7	25.9	18.9	51.3	41.7	10.5
6 – 10	14.9	18.9	11.1	39.0	13.9	47.1	42.4	14.6
11 – 20	9.3	25.8	9.0	53.9	9.0	47.1	46.9	20.7
Over 21	12.0	24.8	11.1	39.5	8.4	43.1	47.4	13.3
Age of respondents								
Less than 40	13.9	25.9	6.8	55.6	14.2	55.0	46.3	18.8
41 -50	8.9	22.3	8.7	48.1	13.6	48.4	47.6	16.4
51 – 60	12.6	24.0	12.1	48.0	9.1	42.9	47.8	15.6
61 – 70	11.3	23.6	11.7	29.1	9.2	41.4	42.9	13.5
71 +	9.4	26.1	15.6	18.3	5.0	43.3	38.3	17.8
Southern Rivers Region	11.8	24.0	10.4	43.3	10.9	46.3	45.9	16.1

Note: CMA means the Southern Rivers CMA.

LGA means Local Government Authorities.

Rural organisations includes stock and station agents, rural merchandising and other rural organisations.

This is a multiple response table which means that for each row an individual may be counted in multiple columns.

Source: EBC (2008)

9.2 Membership of Landcare

Thirteen percent of landholders interviewed indicated they were a member of a Landcare group (Figure 57). Membership was highest in the Snowy-Monaro subregion; amongst large property owners; and those involved in sheep production.

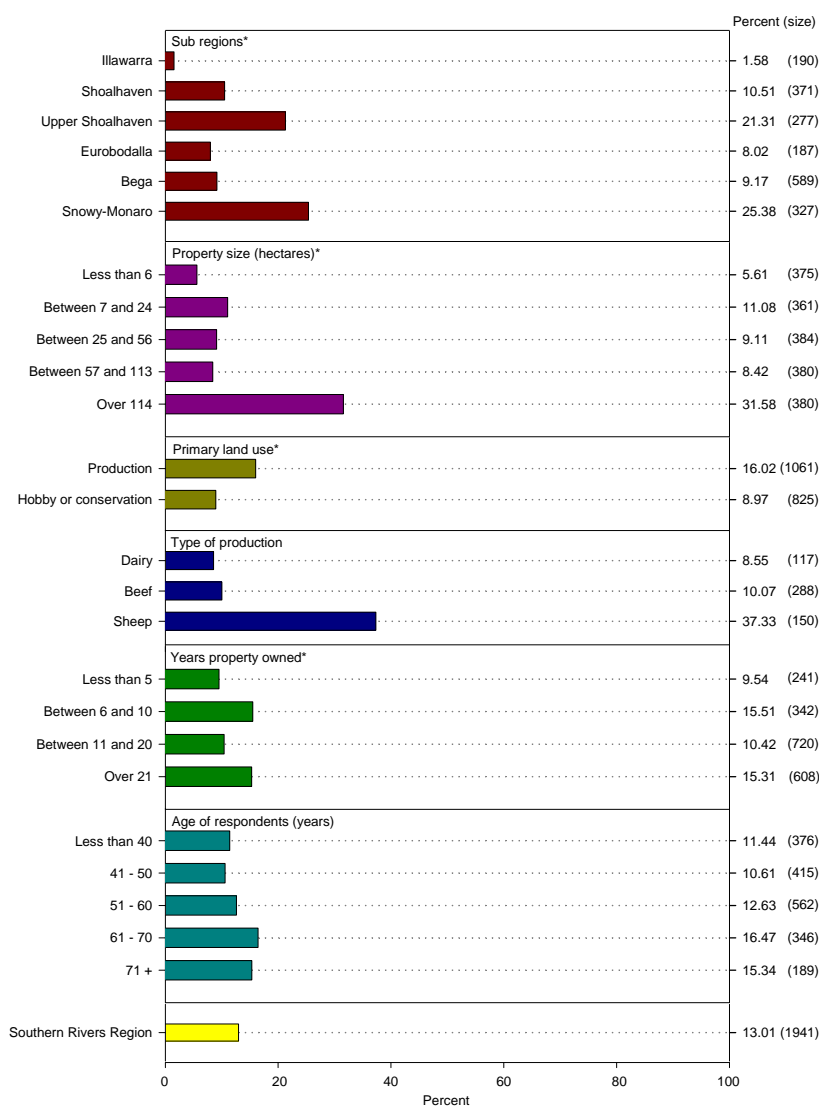


Figure 57. “Are you a member of a Landcare group?”

9.3 Membership of an NRM Group or Network (other than Landcare)

All landholders were also asked if they were a member of any other NRM network or group other than Landcare. Figure 57 shows 7% of landholders were members of other NRM networks or groups, with this being highest amongst Landcare members themselves; hobby farmers and older landholders. Table 14 shows the type of NRM networks and groups landholders indicated they were members of.

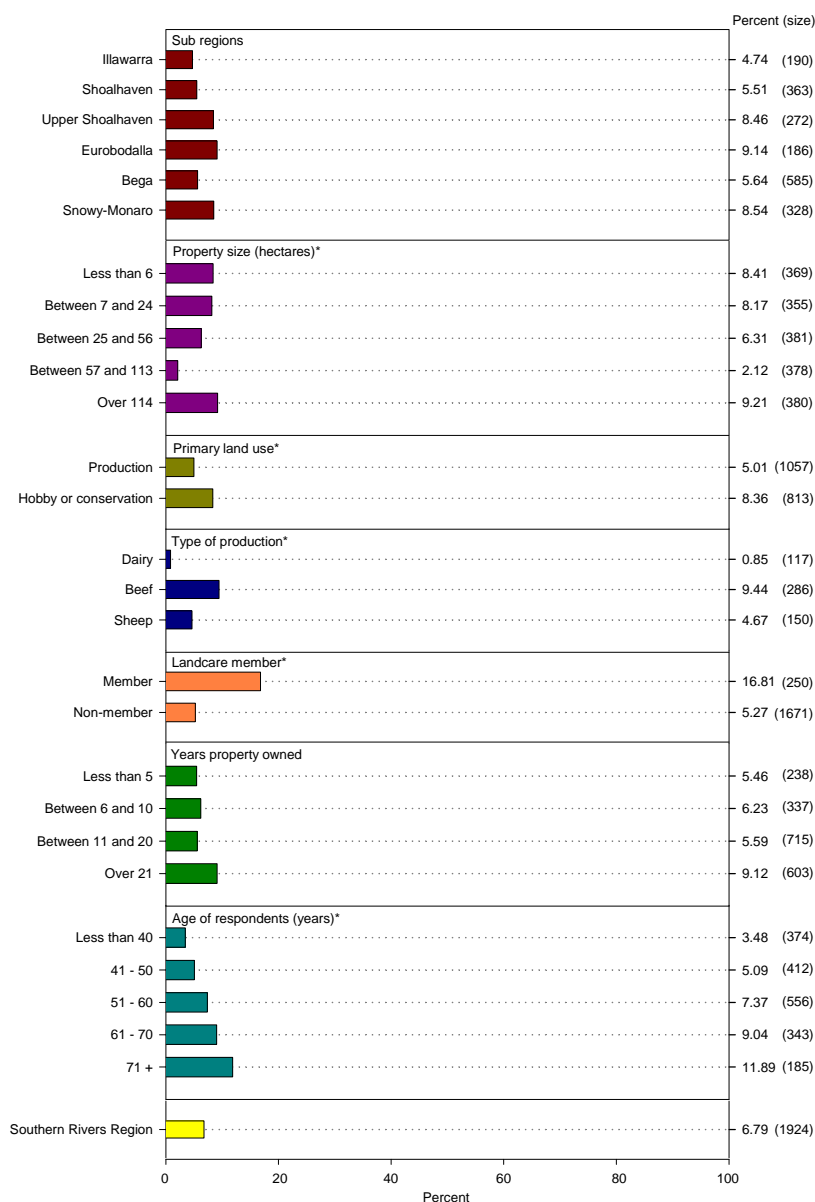


Figure 57. “Are you a member of any other NRM network or group?”

Table 14. Landholder membership of groups and organisations

Organisation or group	Count	Percent
Country Fire Authority	10	10.8
E Farm group	4	4.3
Small Farms Network	4	4.3
Environmental group	3	3.2
Natural Sequence Farming Group	3	3.2
Toolijooa Protection Group	3	3.2
ACF	2	2.2
Australian Plant Society	2	2.2
Coastal Management Network	2	2.2
Greenpeace	2	2.2
National Parks	2	2.2
Pastures Protection Board	2	2.2
VCA	2	2.2
Wilderness and Conservation Society	2	2.2
Wildlife Carer	2	2.2
Wires	2	2.2
ABC Group	1	1.1
Alpaca Association Ltd	1	1.1
Aralven Water Users Association	1	1.1
ATEA and ATC	1	1.1
Bambooka Platypus Pals	1	1.1
Bega Cheese steering committee	1	1.1
Bega river and wetlands	1	1.1
Berry Garden Club	1	1.1
Biodynamic Agriculture Australia	1	1.1
Bombala Soil Group	1	1.1
Bush Heritage Fund	1	1.1
Carrington Falls Management Board	1	1.1
Clean Energy for Eternity	1	1.1
Clyde Estuary Management	1	1.1
Coastwatch	1	1.1
Conservation Australia	1	1.1
Far South Coast Species Network	1	1.1
Farmsafe	1	1.1
Firewise	1	1.1
Friends Mongalo River Group	1	1.1
FSCLA	1	1.1
Grape Growers Association	1	1.1
Greencorp Member	1	1.1
Greening Australia	1	1.1
Jindabyne Energy Group	1	1.1
Kondinin Research Group	1	1.1
MA Society Trout Stockers	1	1.1
Marine Park Advisory Volunteer	1	1.1
Monaro Grassland Organization	1	1.1
Murrumbidgee Catchment Authority	1	1.1
NANA	1	1.1
Pambula Lake Steering Committee	1	1.1
Pambula River Association	1	1.1
Principle Focuss	1	1.1
REP society	1	1.1
Seed Savers Group	1	1.1
Snowy River Alliance	1	1.1
South Coast Producers Association	1	1.1
Tallong Park Association	1	1.1
The Robertson Environmental Project	1	1.1
Tree Management Group	1	1.1
Upper Dean Catchment Area	1	1.1
Water Infrastructure Group	1	1.1
Wetlands Group	1	1.1
Wollongong Botanical Gardens	1	1.1
Yurangatto Inc	1	1.1
Total	93	100.0

9.4 Percent Requesting Support to Improve the Health of their Property

Thirteen percent of landholders indicated they sought support or advice in the last two years about improving the health of their property (Figure 58). Seeking support and advice was most common amongst landholders in the Snowy-Monaro subregion; those on large properties and those who were Landcare members.

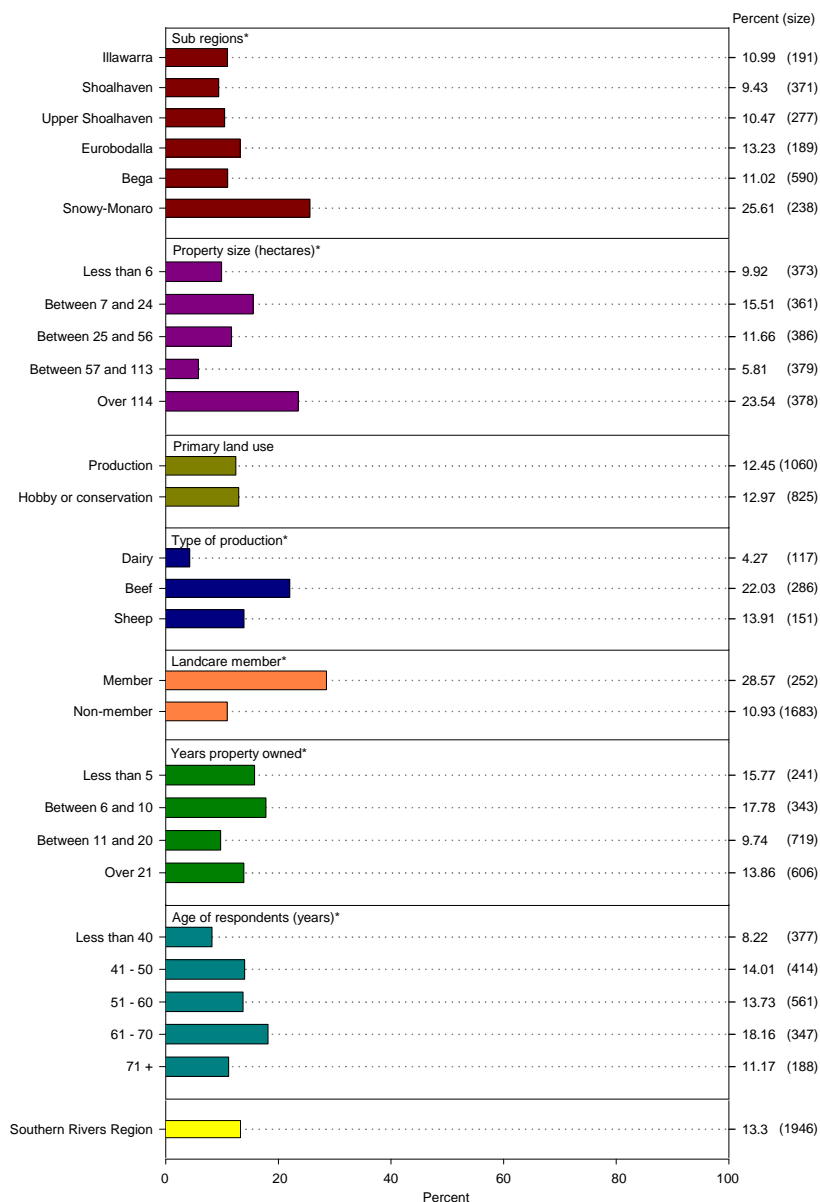


Figure 58. “In the last two years have you requested any support or advice from any organisation or group about improving the health of land, vegetation or water on your property?”

All respondents were also asked to identify the type of support or advice they had requested. Many of the responses to this question focussed solely on the name of the organisation or group from which advice was sought. However, Table 15 provides a general indication of the range of topics on which advice was sought.

Table 15. Type of support and advice requested

Response	Count	Percent
How to eradicate weeds	19	22.4
Soil testing	12	14.1
How to control pest animals	8	9.4
Erosion control	6	7.1
Help with the land (general)	6	7.1
Improving water management	5	5.9
Improving soil and pasture	3	3.5
Rural assistance	3	3.5
Assistance to fence creeks and river from cattle	2	2.4
Fencing	2	2.4
Improving river and waterways	2	2.4
VCA agreement	2	2.4
A fish dam	1	1.2
About salinity	1	1.2
Advice on remineralising soil	1	1.2
Asked local council to divert water off their land	1	1.2
Bush Incentives Scheme	1	1.2
City to soil program	1	1.2
Fire control	1	1.2
Fodder relief	1	1.2
How to use fertilizer	1	1.2
Maintenance of native vegetation	1	1.2
Nursery advice	1	1.2
Permaculture	1	1.2
Spoke to National Parks about problems	1	1.2
Use of 4WD in national parks	1	1.2
Vegetation identification	1	1.2
Total	85	100.0

Source: EBC (2008)

9.5 Percent Undertaking Training to Improve the Health of their Property

Only 5% of landholders had undertaken training in the last two years to improve the health of their property (Figure 59). Those who had undertaken training were most commonly landholders in the Snowy-Monaro subregion; those on large properties and those who were Landcare members.

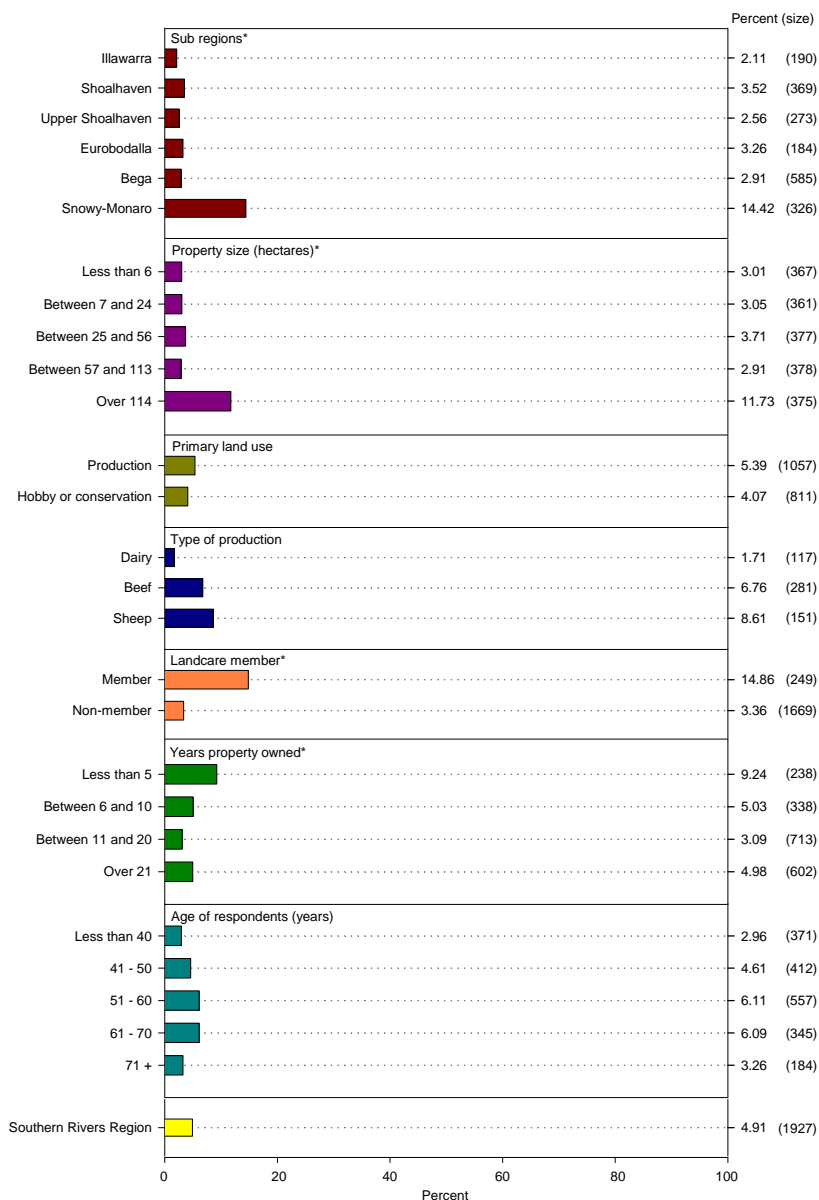


Figure 59. "Have you undertaken any training in the last two years to improve the health of land, vegetation or water on your property?"

All respondents were also asked to identify the type of training they had undertaken in the last two years. As with the previous question, many landholders responded to this question by reporting the name of the organisation or group from which training was sought. However, Table 16 provides some indication of the range of topics on which training had been undertaken.

Table 16. Type of training received

Response	Count	Percent
Chemical Course	14	31.8
Land management (general)	5	11.4
Weed management	4	9.1
Premaculture Course	3	6.8
Vegetation management (identification)	3	6.8
Soil testing	2	4.5
Alternatives to super fertilizer	1	2.3
Biology lecture	1	2.3
Composting course	1	2.3
Environment seminar	1	2.3
Equipment operation	1	2.3
Farm management (general)	1	2.3
Grape Industry Information Sessions	1	2.3
Horticulture certificate	1	2.3
Landscan	1	2.3
Management Course	1	2.3
Native grass workshop	1	2.3
Pasture improvement course	1	2.3
Pro graze	1	2.3
Total	44	100.0

Source: EBC (2008)

All landholders were informed that the Southern Rivers CMA provides advice to landholders about improving the health of land, vegetation and water on their properties. They were then also asked to identify one question about improving the health of their property that they would like to ask the CMA.

Table 17 shows the range of responses to this question. Nearly a third (29%) of all responses related to weed management and specifically issues with the eradication of weeds. A further 15% of questions from landholders focussed on water management and 10% focussed on the removal and control of pest animals. These three issues (pest plants and animals and water management) accounted for over half of all the questions landholders indicated they would like to ask the CMA.

Table 17. “The CMA provides advice to landholders about improving the health of land, vegetation and water on their property. If you were to ask the CMA one question about improving the health of land and water on your property what would it be? ”

Issue	Count	Percent
Weed management		
How to eradicate weeds	48	20.5
How to stop weeds in river beds	4	1.7
How to remove willows	3	1.3
Are they going to clean up poisoned willows in river	3	1.3
How we can get weed control across the neighbouring properties	2	0.9
What pesticides should I use to kill weeds without harming the environment	1	0.4
How to eradicate pests - animals and weeds from a nature corridor	1	0.4
How to remove weeds without chemicals	1	0.4
When are they going to get rid of pine trees	1	0.4
Why focus on one weed and not others	1	0.4
Why do weeds grow faster than pasture	1	0.4
How to better manage Broom	1	0.4
Need to spray weeds or we get fined but what do we do about it	1	0.4
Total	68	28.9
Water management		
Ask about water management	15	6.4
Accessing info about how to build a dam for ground water	3	1.3
Can I have more dams on property	2	0.9
Would like to speak to someone at CMA regarding water management	2	0.9
Will water taken from rivers be reduced	2	0.9
How to stop neighbours pumping all water out of creek	2	0.9
How healthy are the local creeks	1	0.4
Why does council charge for excess water	1	0.4
Where to bore more water from	1	0.4
How to waterproof dam	1	0.4
Should I sink my bore	1	0.4
How do you get water on top of the hill	1	0.4
Why don't they make the Tantawangalo dam bigger	1	0.4
How to keep water on land and not drain off	1	0.4
How to keep water and flow from leaving Lake Eucumbene	1	0.4
Total	35	14.9
Pest animals		
How to remove pest animals	10	4.3
How to remove rabbits	4	1.7
How to remove wombats	3	1.3
How to remove of deer	3	1.3
How to remove foxes	1	0.4
How to remove European wasps	1	0.4
How to remove grasshoppers organically	1	0.4
What to do about foxes getting in from national parks	1	0.4
Total	24	10.2
Vegetation management		
Ask about native vegetation	3	1.3
How to keep the vegetation going	2	0.9
How to handle land and plants better	2	0.9
What trees to plant	2	0.9
Are they continuing vegetation management in rivers	1	0.4
How to get most nutritional value from native grasses	1	0.4
Which species are native to property	1	0.4
How to grow better native pasture	1	0.4
What species would be recommended for ground cover	1	0.4
What can I do legally to thin out some of the native vegetation	1	0.4
How to generate vegetation on river	1	0.4
Total	16	6.8

...continued

Table 7. “The CMA provides advice to landholders about improving the health of land, vegetation and water on their property. If you were to ask the CMA one question about improving the health of land and water on your property what would it be? ” (continued)

Issue	Count	Percent
River health		
How do we clean up the river	4	1.7
Can they test river water quality on property	3	1.3
River health - Broom and Willows	1	0.4
Assistance to fence off creeks and river ways from cattle	1	0.4
How to get everyone to get their stock out of the creek	1	0.4
Why is it so important to fence off all creeks	1	0.4
How can we restock Bass into local waterways	1	0.4
How to fix Minnamurra river as floods are washing the banks	1	0.4
How can I legally restore the creek to former glory	1	0.4
What are the CMA views are on fencing riparian zones in local areas	1	0.4
Total	15	6.2
Land management and health (general)		
More information available on our land	3	1.3
How to improve the health of the land	3	1.3
Help with the land	2	0.9
Land issues	2	0.9
How to care for wildlife and the habitats	1	0.4
How to manage/improve biodiversity on my farm	1	0.4
What is simple and safe way to maintain property	1	0.4
What to do to keep bush unspoilt	1	0.4
Total	14	6.0
Erosion		
Erosion control	12	5.1
How do I manage natural erosion	2	0.9
Total	14	6.0
Soils and pasture		
How to improve soil	5	2.1
Need indications of soil health of property	2	0.9
How to have the best suitable pasture with acid soils	1	0.4
What are alternatives to super fertiliser	1	0.4
What is the best way to increase the carbon biomass in granite	1	0.4
How to deal with soil compaction from horses	1	0.4
How to encourage land nutrients	1	0.4
Regarding nutrient retention	1	0.4
Total	13	5.4
Funding		
Ask for money	4	1.7
Grant for fencing	1	0.4
Rural assistance	1	0.4
How to get funding for native corridor on property	1	0.4
Total	7	2.9
Southern Rivers CMA		
What programs do they have in place	2	0.9
Is the CMA to be involved in decision making for water quality	1	0.4
When do they plan to communicate with people	1	0.4
Do more practical and less office work	1	0.4
What percent funding for administration and ground work	1	0.4
Total	6	2.5
Waste management		
How to deal with green waste	2	0.9
How to stop sewerage plant releasing into creek	1	0.4
Can anything be done about illegal dumping of rubbish in waterways	1	0.4
Total	4	1.7

...continued

Table 7. “The CMA provides advice to landholders about improving the health of land, vegetation and water on their property. If you were to ask the CMA one question about improving the health of land and water on your property what would it be? ” *(continued)*

Issue	Count	Percent
Fire management		
Fire control	2	0.9
Will they increase fire breaks to reduce bushfire risk	1	0.4
Why do they have to burn off on such a regular basis	1	0.4
Total	4	1.7
Farming and production		
Promoting about key-line farming	1	0.4
Grazing management	1	0.4
Stock populations in future years	1	0.4
Total	3	1.2
Other issues		
Solar or wind energy information	2	0.9
Climate change effects	1	0.4
Are we in Southern Rivers or Sydney	1	0.4
What is the future of my property under escarpment plan	1	0.4
What legal restrictions do motorbikes and speedboats have	1	0.4
What can be done about logging in the area	1	0.4
Would like track cut near fence line	1	0.4
About salinity and getting it under control	1	0.4
How to get community members to be responsible for their properties	1	0.4
How to get rid of dead timber	1	0.4
Total	11	4.5
Total respondents	234	100.0

Source: EBC (2008)

10 AWARENESS AND INVOLVEMENT WITH THE SOUTHERN RIVERS CMA

Three questions (Appendix A) focussed on landholder awareness and involvement with the Southern Rivers CMA. These questions included the level of awareness of the CMA amongst landholders; whether there had been direct contact or communication between the landholder and the CMA; and landholder beliefs about the preferred method through which the CMA should communicate with landholders.

10.1 Awareness of the Southern Rivers CMA

Forty-seven percent of landholders indicated they had heard of the Southern Rivers CMA (Figure 60). Awareness of the CMA was most common in the Upper Shoalhaven and Snowy-Monaro subregions; amongst landholders with relatively small (7-24 hectares) and large landholdings; amongst hobby farmers; Landcare members; and older landholders.

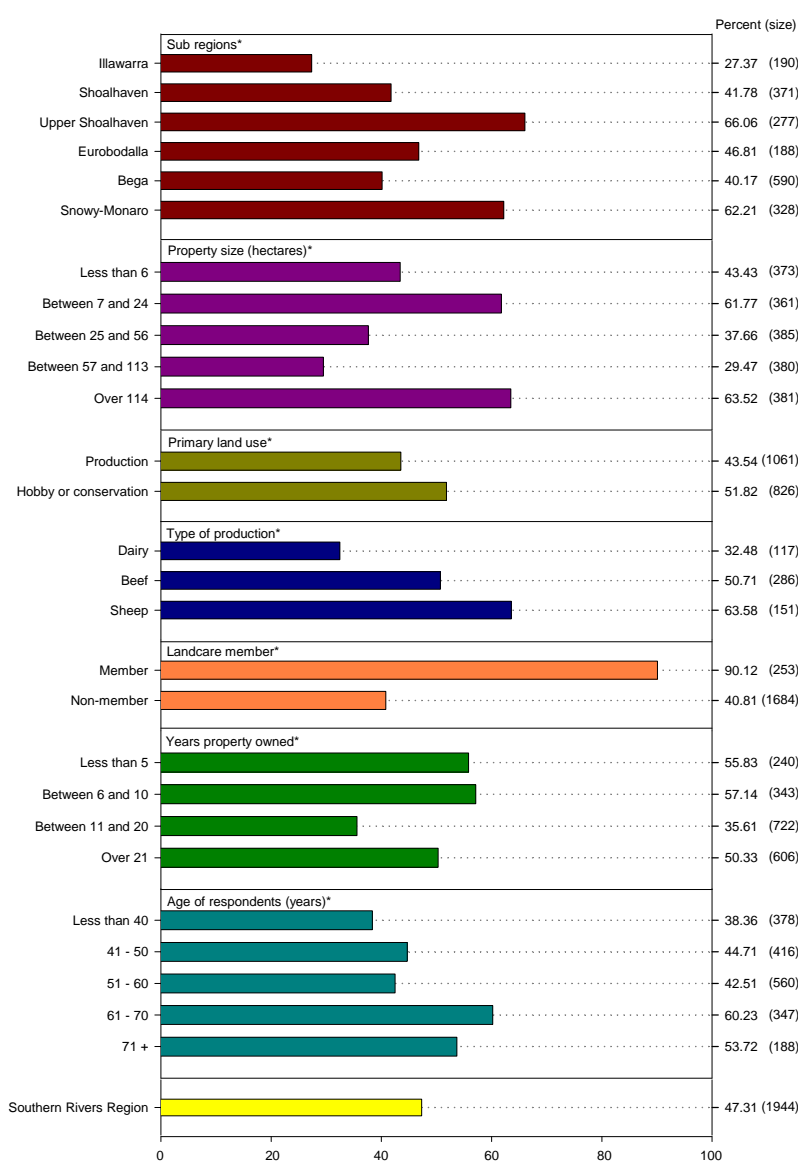


Figure 60. "Have you heard of the Southern Rivers Catchment Management Authority or CMA?"

10.2 Contact or Communication with the Southern Rivers CMA

Across the Southern Rivers region, 17% of landholders indicated they had had contact or communication with the CMA. This percentage was highest amongst landholders in the Upper Shoalhaven and Snowy-Monaro subregions; amongst landholders on large properties; and amongst Landcare members.

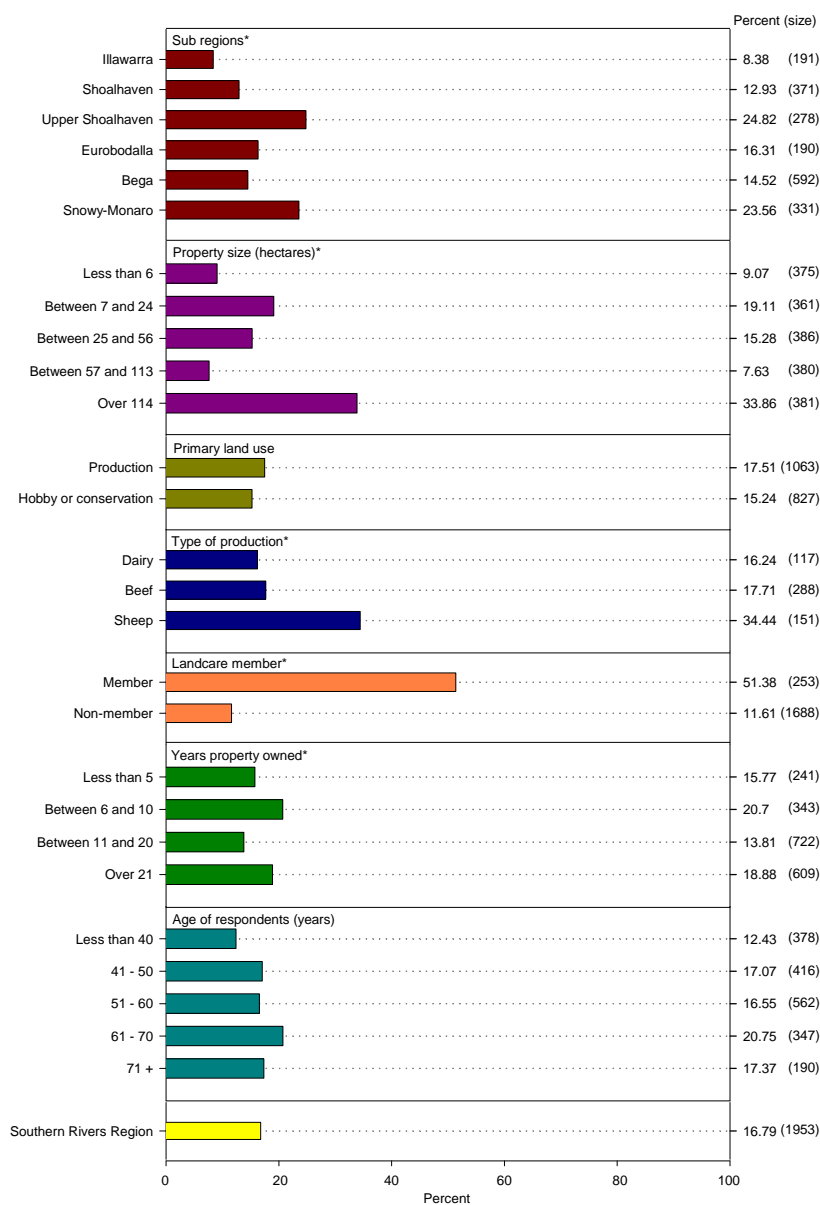


Figure 61. “Have you had any contact or communication with the CMA?”

Table 18 shows the type of contact or communication landholders reported with the CMA. The most common form of contact was speaking with someone from the CMA (35%) and attending a meeting organised by the CMA (26%).

Table 18. Type of contact or communication with the CMA

Response	Count	Percent
Talked to someone from the CMA	109	34.5
Attended a meeting organised by the CMA	83	26.3
Attended a training or field day	74	23.4
Received newsletter or other materials	61	19.3
Worked with the CMA on projects	56	17.7
Tried to obtain funding or incentives through the CMA	22	7.0
Obtained funding or incentives through the CMA	17	5.4
Have a property agreement with the CMA	12	3.8
Total	316	100.0

Note: This is a multiple response table which means that for each row an individual may be counted in multiple columns.
Based on free recall of responses.

Source: EBC (2008)

10.3 Preferred Methods for Southern Rivers CMA Communication

Table 19 shows the two most preferred methods of communication to be posting material in the mail and the use of the local newspaper.

Table 19. "If the CMA wanted to communicate information to people in your local area, what do you think would be the best way to do this" (percentages)

	Visit people	Local newspaper	CMA Radio	CMA website	Field TV	Community days	Community meeting	Post info	Email	Letterbox drop
Subregion										
Illawarra	34.9	25.8	30.6	3.8	23.7	31.7	31.2	57.0	8.1	12.4
Shoalhaven	18.4	43.0	19.8	7.3	5.6	34.4	38.3	28.8	14.2	31.3
Upper Shoalhaven	20.0	32.6	18.9	9.3	13.3	23.3	27.8	33.0	13.7	21.5
Eurobodalla	21.5	35.9	24.3	2.2	17.7	20.4	24.3	48.1	7.2	23.8
Bega	29.1	35.3	27.6	4.7	26.6	26.5	28.1	47.2	6.2	10.2
Snowy-Monaro	25.8	47.8	29.0	12.1	12.7	37.9	34.1	32.2	12.1	28.0
Property size (ha)										
Less than 6	10.1	52.2	26.1	3.9	7.0	14.6	21.6	36.0	12.4	28.7
7 – 24	18.4	36.5	26.4	9.5	12.9	23.6	25.6	38.8	16.7	20.7
25 – 56	28.5	35.6	30.1	6.5	22.3	34.6	33.0	50.0	8.6	15.2
57 – 113	35.9	24.1	22.5	5.4	31.4	34.0	37.8	48.0	5.4	16.9
Over 114	33.1	41.1	20.4	8.6	13.4	39.0	37.9	28.8	8.9	20.2
Primary land use										
Production	32.9	31.3	23.1	6.5	23.0	36.5	36.7	40.8	7.0	17.8
Hobby or conservation	15.1	45.4	27.2	6.9	9.9	19.1	23.0	39.3	13.5	24.0
Type of production										
Dairy	42.1	23.7	18.4	4.4	31.6	36.0	41.2	45.6	6.1	10.5
Beef	20.9	42.6	28.7	3.2	12.4	25.5	30.1	44.0	6.4	19.1
Sheep	40.9	40.9	24.2	10.7	23.5	43.0	38.3	29.5	10.1	12.8
Landcare member										
Member	29.2	38.3	21.0	8.2	8.2	37.4	27.6	24.7	12.3	23.9
Non-member	24.4	37.5	25.8	6.5	18.6	27.8	31.4	42.6	9.7	19.8
Years property owned										
Less than 5	14.2	45.3	23.3	11.2	8.6	20.3	25.4	31.0	17.7	24.6
6 – 10	18.2	38.2	22.4	10.9	11.2	25.5	25.5	42.7	16.7	20.9
11 – 20	29.8	38.2	28.5	5.3	25.1	32.1	33.8	43.1	8.1	17.4
Over 21	28.1	34.7	24.1	4.5	15.5	31.1	32.8	39.6	8.1	20.9
Age of respondents										
Less than 40	23.7	35.8	26.7	12.7	20.2	31.3	28.8	39.6	16.2	17.3
41 -50	25.5	35.1	23.5	6.2	20.8	28.2	35.9	44.3	10.6	19.6
51 – 60	27.8	36.0	24.3	4.9	21.0	34.6	32.4	42.4	8.8	20.3
61 – 70	23.8	43.5	23.2	4.8	11.0	22.6	27.4	37.8	7.7	22.6
71 +	24.0	43.6	33.0	4.5	7.3	22.9	26.8	31.3	3.9	21.8
Southern Rivers	25.1	37.6	25.1	6.7	17.3	29.1	30.9	40.2	10.1	20.4

Note: This is a multiple response table which means that for each row an individual may be counted in multiple columns.

Source: EBC (2008)

11 BELIEFS ABOUT ABORIGINAL LAND MANAGEMENT ISSUES

Landholders were asked if Aboriginal people should have the right to access properties for management and traditional cultural practices if the land was their traditional land. Landholders response to this question is shown in Figure 62, where approximately 45% were found to agree with the statement and 55% were found to disagree with the statement. None of the factors used in Figure 62 (subregions, property size etc) appeared to explain the variation in landholder responses.

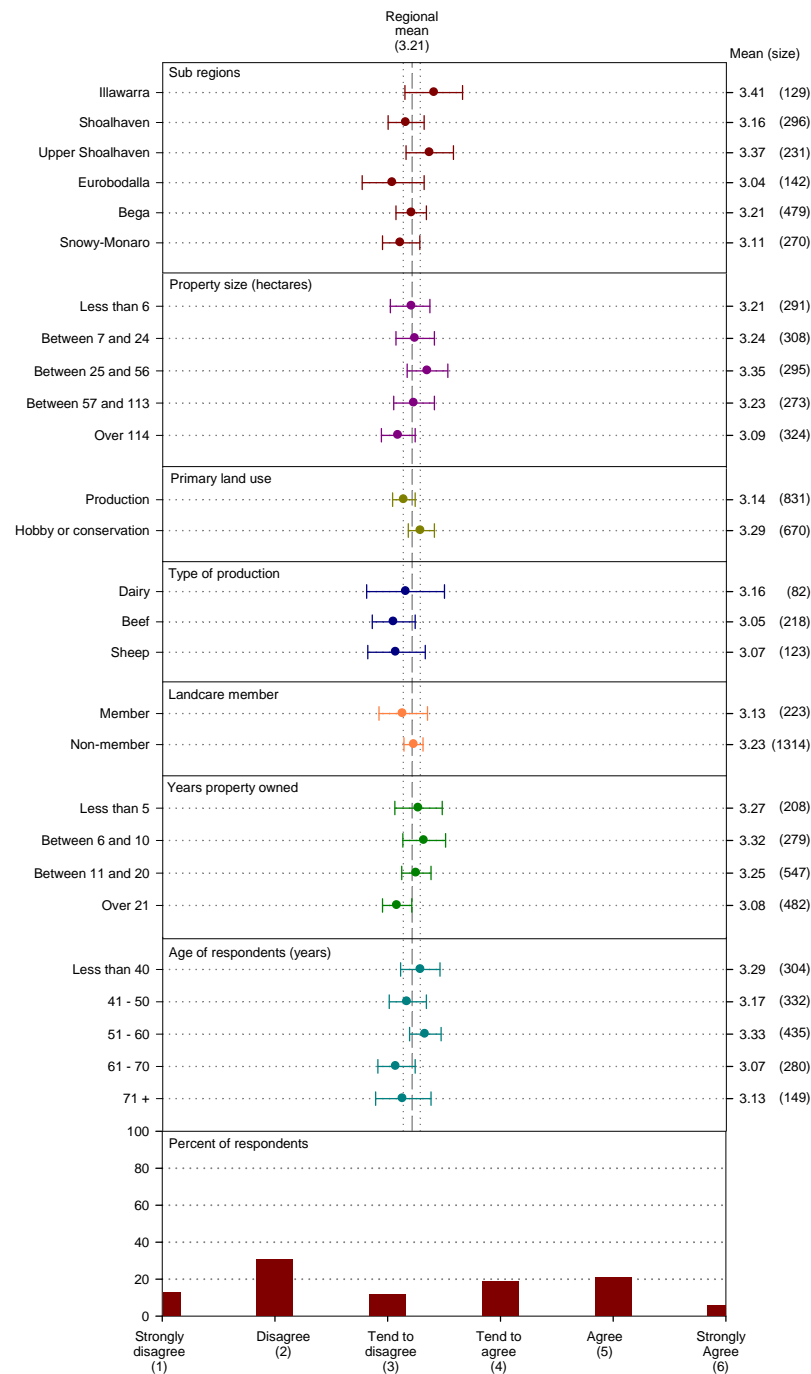


Figure 62. "Aboriginal people should have the right to access my property for management and traditional cultural practices if it is their traditional land"

Landholders were also asked if they believed Aboriginal people possessed traditional ecological knowledge which could benefit the management of land and water in the region (Figure 63). Across all landholders 59% agreed with this statement and 41% disagreed with the statement. Those landholders who were most likely to support this belief were usually landholders from relatively smaller properties; hobby farmers; and who had owned their land for only a short period of time.

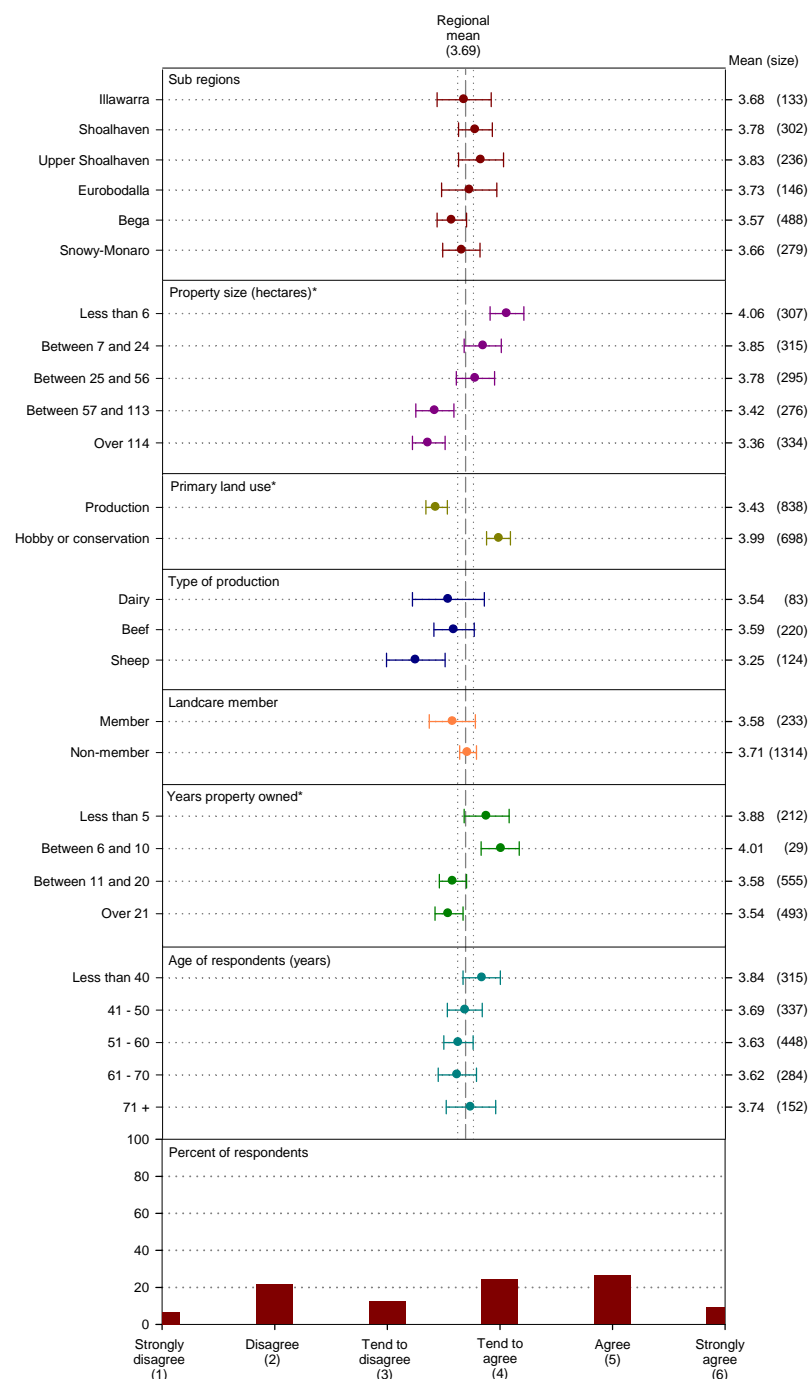


Figure 63. “Aboriginal people possess traditional ecological knowledge which could benefit how we manage and look after land and water in the region”

12 PROPERTY AND LANDHOLDER CHARACTERISTICS

The sample consisted of 56.5% males and 43.5% females. In addition 95.8% of landholders indicated they lived on their property and 4.2% indicated they did not or only ‘sometimes’ lived on the property.

12.1 Irrigated Properties

Seven percent of properties were found to be irrigated, with irrigation occurring most commonly in the Shoalhaven and Snowy-Monaro subregions (Figure 64).

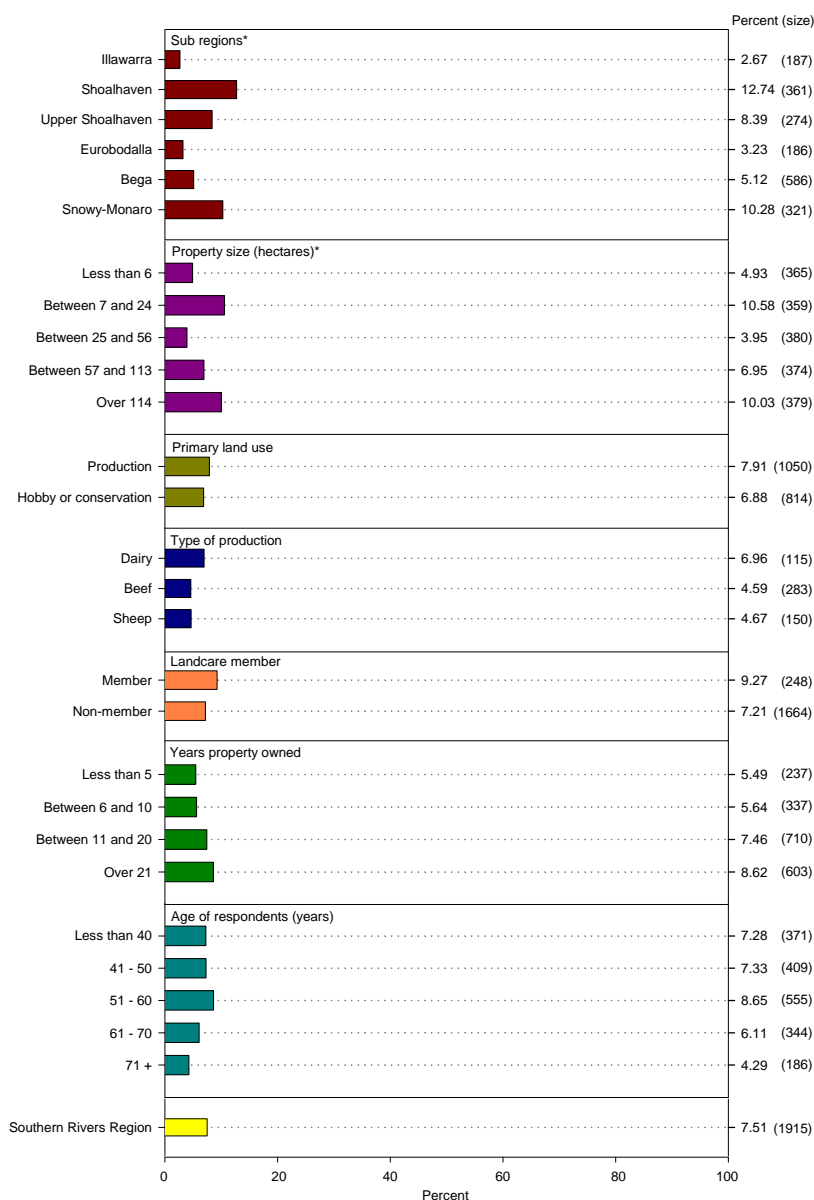


Figure 64. “Is your property usually irrigated?”

12.2 Properties Used for Production

Fifty-six percent of properties in the region were used for the production of crops, pastures and livestock (Figure 65). The percentage of properties used for production was highest amongst properties in the Illawarra subregion; relatively larger properties; amongst Landcare members; amongst landholders on properties owned for a relatively long periods of time and amongst those properties with younger landholders.

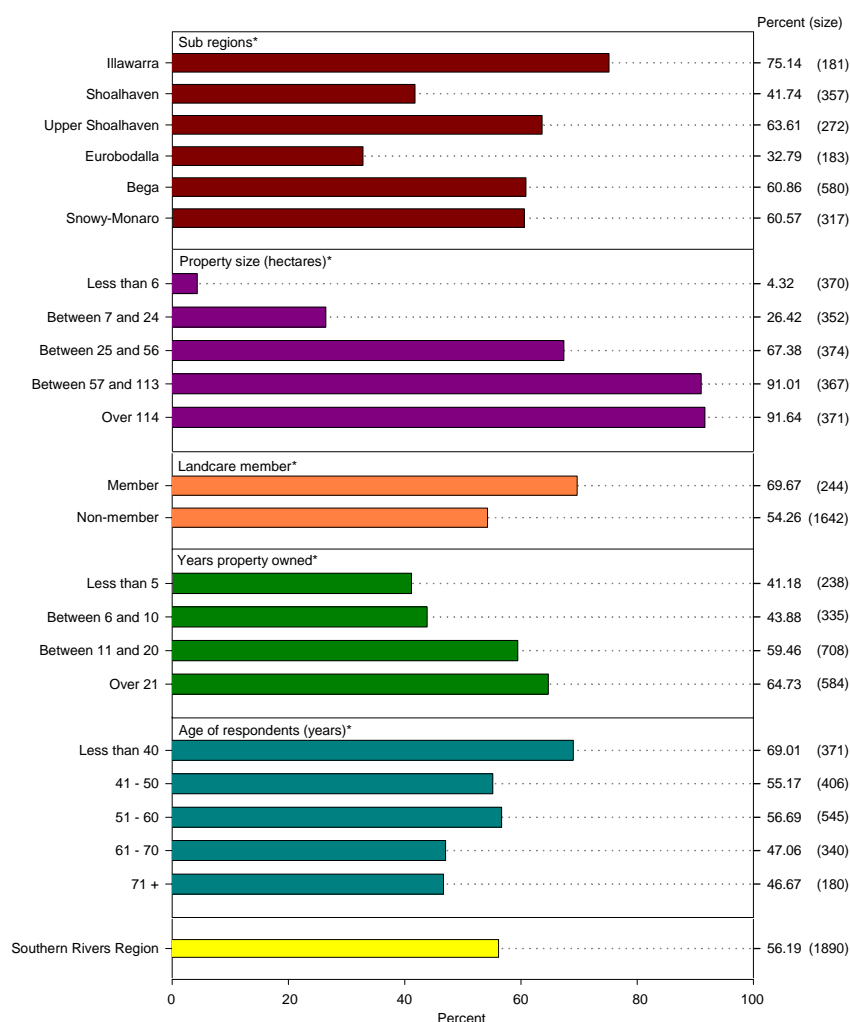


Figure 65. “Would you say your property is used primarily for the production of crops, pasture or livestock”

12.3 Hobby and Lifestyle Farms or Land Use for Conservation

Forty-four percent of properties in the region were hobby or lifestyle farms or properties used for conservation (Figure 66). The percentage of these properties was highest amongst landholders in the Shoalhaven and Eurobodalla subregions; amongst relatively smaller properties; amongst non Landcare members; amongst landholders with properties owned for a relatively short periods of time and amongst those properties with older landholders.

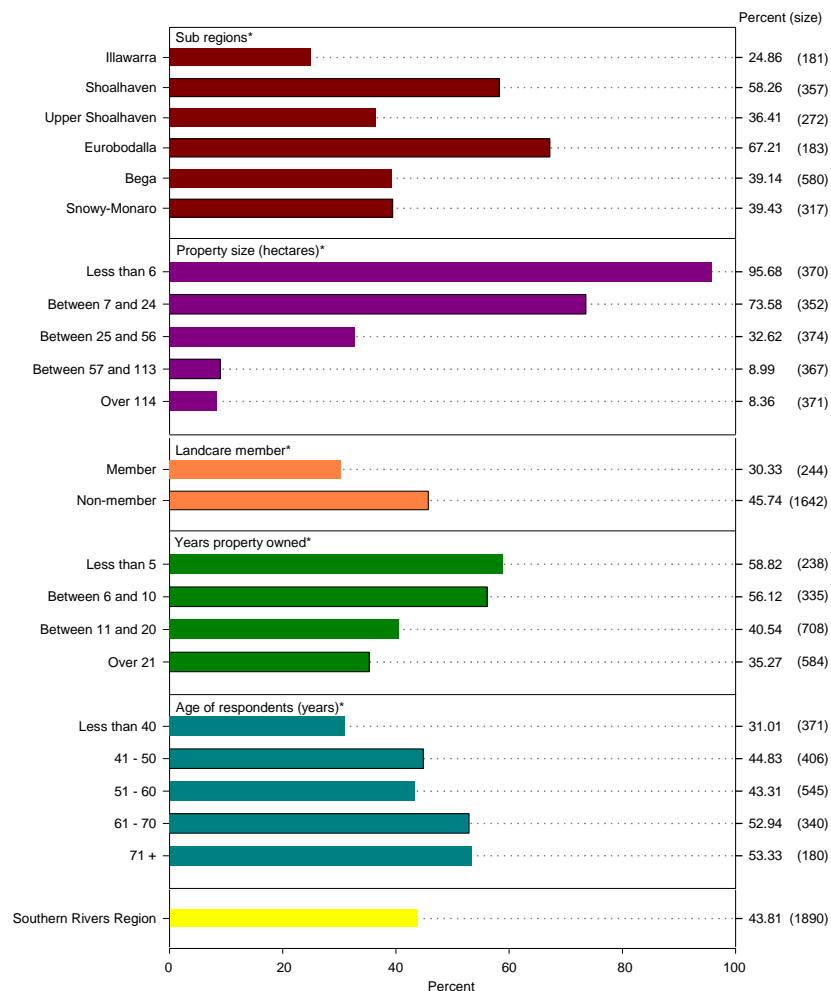


Figure 66. “Would you say your property is primarily used for the conservation of native plants and animals, a hobby or lifestyle farm with non or minor production”

12.4 Years Lived on Current Property

Figure 67 shows landholders had been on their current property for an average of 20 years. The number of years landholders had been on their property was highest in the Illawarra and Snowy-Monaro subregions; amongst larger properties; those used for production; and those properties with older landholders.

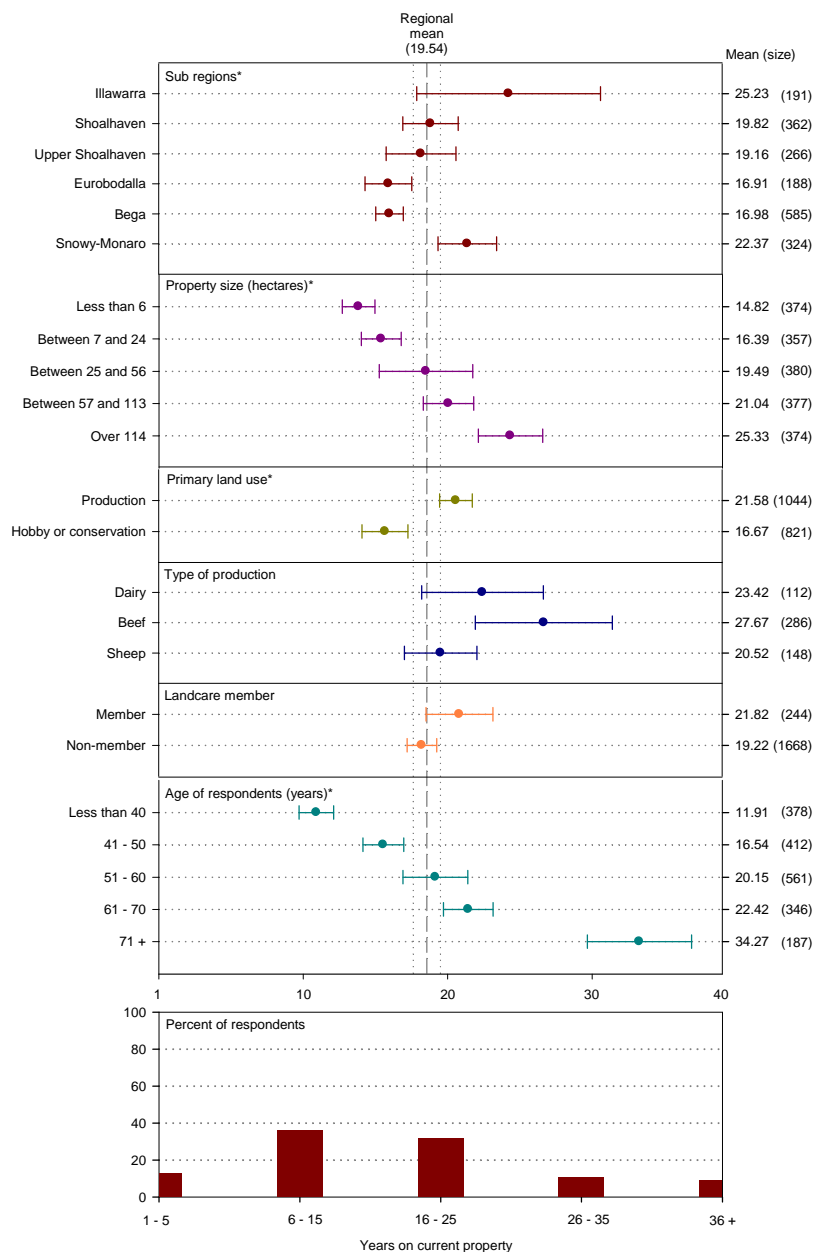


Figure 67. “How many years have you had your current property”

12.5 Age of Landholders

The average age of landholders across the Southern Rivers region was 53 years (Figure 68). Older landholders were typically in the Snowy-Monaro subregion; were on both very large and very small properties; were hobby farmers and Landcare members.

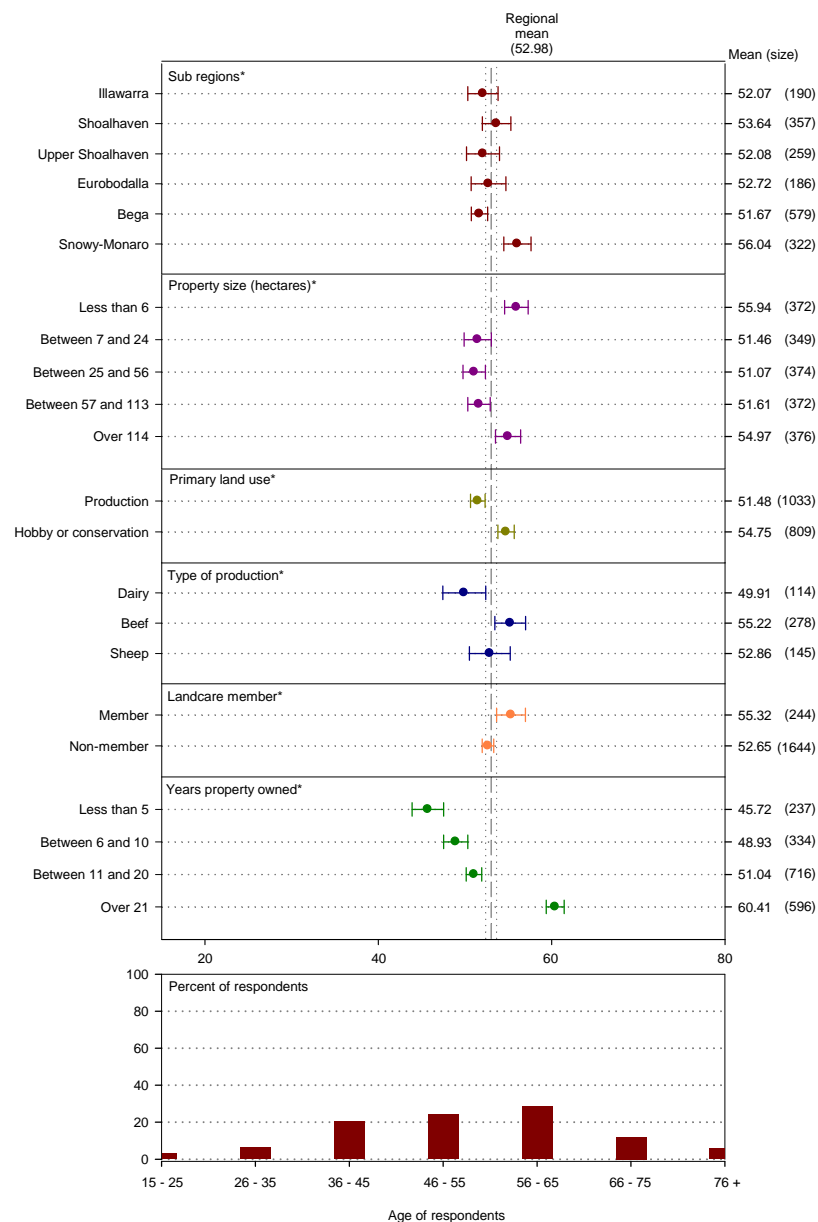


Figure 68. Age of landholders

APPENDIX A:
LANDHOLDER QUESTIONNAIRE

Interview Number: _____ **Interviewer Name:** _____

1. Do you own, live on or look after a farm or rural property?

☐ Yes ☐ No (Conclude interview)

2. I am going to read out a list of possible issues people may have with land and water on their property. As I read each one out, could you tell me if the issue is a problem that has occurred on your land in the last two years?
(Interviewer: if no issues leave all blank)

☐ **SALINITY**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

➡ (c) Why do you say this? (Interviewer: Free recall, May tick more than one)

☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **SOIL EROSION, INCLUDING EROSION TO STREAM BEDS, BANKS AND GULLIES**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

➡ (c) Why do you say this? (Interviewer: Free recall, May tick more than one)

☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **WEEDS**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

➡ (c) Why do you say this? (Interviewer: Free recall, May tick more than one)

☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **A DECLINE IN NATIVE ANIMALS**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

→ (c) Why do you say this? (*Interviewer: Free recall, May tick more than one*)

- ☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **INTRODUCED PEST ANIMALS, SUCH AS FOXES, PIGS AND RABBITS**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

→ (c) Why do you say this? (*Interviewer: Free recall, May tick more than one*)

- ☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **POOR QUALITY GROUND WATER**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

→ (c) Why do you say this? (*Interviewer: Free recall, May tick more than one*)

- ☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **POOR QUALITY WATER IN RIVERS AND STREAMS**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

→ (c) Why do you say this? (*Interviewer: Free recall, May tick more than one*)

- ☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **POOR SOIL CONDITION, SUCH AS NUTRIENT DEFICIENCY, ACIDITY AND COMPACTION**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

→ (c) Why do you say this? (*Interviewer: Free recall, May tick more than one*)

- ☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **REDUCED NATIVE VEGETATION COVER, INCLUDING GROUND COVER**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

→ (c) Why do you say this? (*Interviewer: Free recall, May tick more than one*)

- ☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

☐ **POOR CONDITION OF NATIVE VEGETATION**

(a) Is this a... ☐ Minor ☐ Moderate ☐ Major problem?

(b) Would you say your ability to address this issue is... ☐ Very low ☐ Low ☐ Moderate ☐ High ☐ Very high

→ (c) Why do you say this? (*Interviewer: Free recall, May tick more than one*)

- ☐ Lack of money ☐ Lack of time/too busy ☐ Lack of knowledge (don't know how to fix it)
☐ Not interested ☐ Too old ☐ Lack of equipment (ie. machinery, tractors)
☐ Don't live on the property ☐ Cannot be fixed

Other _____

(d) In the last 12 months have you done anything to address this issue? ☐ Yes ☐ No

Notes: _____

3. Thinking about these issues, if you were to judge the health of the land, vegetation and water on your property, on a scale from one (1) to ten (10), with one (1) being very unhealthy and ten (10) being very healthy, what score would you give it?

Score ____ ☐ Don't know

4. Thinking back 5 years, and again on a scale from one (1) to ten (10) how would you have judged the health of your property then?

Score ____ ☐ Don't know (inc. not on the property back then)

5. In the last two years have you requested any support or advice from any organisation or group about improving the health of land, vegetation or water on your property?

☐ No

☐ Yes ...what was the support or advice you requested?

.....

6. Have you undertaken any training in the last two years to improve the health of land, vegetation or water on your property?

☐ No

☐ Yes ...what was the training you received?

.....

I am going to read out some statements. Please tell me if you strongly agree, agree, tend to agree, tend to disagree, disagree or strongly disagree with each statement. (*Interviewer: If undecided or can't answer leave blank*)

7. Aboriginal people should have the right to access my property for management and traditional cultural practices if it is their traditional land..... SA A TA TD D SD

8. Aboriginal people possess traditional ecological knowledge which could benefit how we manage and look after land and water in the region SA A TA TD D SD

-
9. Native vegetation includes all the trees, plants, ground cover and native pasture that occurs naturally or is indigenous on your property. Do you have any native vegetation on your property?

☐ No (*Go to question 17*)

☐ Yes

Now some additional statements...tell me again if you strongly agree or disagree with each statement

10. The native vegetation on my property contributes to my economic production..... SA A TA TD D SD
11. The native vegetation on my property contributes to the health of the local environment SA A TA TD D SD
12. Native vegetation needs to be managed to be healthy SA A TA TD D SD
13. I am interested in managing the native vegetation to be as healthy as possible..... SA A TA TD D SD
14. I can name most of the native plants on my property SA A TA TD D SD
15. I would like to manage the native vegetation on my property, but it is low on my list of things to do on the property SA A TA TD D SD
16. I would accept advice on how to do more to manage the native vegetation on my property .. SA A TA TD D SD

-
17. If you wanted to know something about an environmental issue on your land or in your local area, where would you go to get this information? (*Interviewer: Free recall, allow multiple responses*)

☐ Southern Rivers CMA

☐ Local Government, Council or Shire

☐ Ask other farmers

☐ State Government agencies (inc. DNR, DPI, Lands Dept, Dept of Agriculture)

☐ Ask friends or family

☐ Stock and station agent/rural merchandising

☐ A Landcare group

☐ Other rural and agricultural organisations

☐ Internet /websites

Other

18. Have you thought about climate change and how it might affect your property and the way you might manage it?

☐ No

☐ Yes

-
19. Have you heard of the Southern Rivers Catchment Management Authority or CMA?

☐ Yes

☐ Unsure (go to Question 21)

☐ No (go to Question 21)

20. Have you had any contact or communication with the CMA?

☐ No

☐ Yes...what was it? (*Free recall*)

☐ Attended a meeting organised by the CMA

☐ Attended training or field day

☐ Have a property agreement with the CMA

☐ Obtained funding or incentives through the CMA

☐ Received newsletter or other materials

☐ Talked to someone from the CMA

☐ Tried to obtain funding or incentives through the CMA

☐ Worked with the CMA on projects

Other

21. The CMA is responsible for supporting the management of natural resource in the region. If the CMA wanted to communicate information to people in your local area, what do you think would be the best way for the CMA to do this?
(Interviewer: Read out alternatives)
- | | |
|--|--|
| <input type="checkbox"/> Visit people at their homes or properties | <input type="checkbox"/> Have a field day |
| <input type="checkbox"/> Put information in the local newspaper | <input type="checkbox"/> Hold community meetings |
| <input type="checkbox"/> Put information on the radio | <input type="checkbox"/> Post information through the mail |
| <input type="checkbox"/> Place information on the CMA website | <input type="checkbox"/> Email information |
| <input type="checkbox"/> Place TV advertisements | <input type="checkbox"/> Letterbox drop |
| <input type="checkbox"/> Other | |
22. The CMA provides advice to landholders about improving the health of land, vegetation and water on their property. If you were to ask the CMA one question about improving the health of land and water on your property, what would it be?
- ☐ Don't know
- I would ask _____
- _____
23. Tell me if you agree with any of these statements...
- ☐ I am aware of what the land and water issues are in this area
 - ☐ I am interested in finding out about land and water issues in this area
 - ☐ I would work with my neighbours to address common problems that we might have
 - ☐ If asked I would participate in activities to improve the health of land and water in this area
 - ☐ I know about the things the local Landcare group does in this area
 - ☐ I have the skills and training to help address land and water issues in this area
 - ☐ I have the experience and knowledge to help address land and water issues in this area
 - ☐ I feel I would be able to influence decisions about improving the health of land and water in this area
24. Are you a member of a Landcare group?
- ☐ Yes ☐ No
25. Are you a member of any other natural resource management network or group?
- ☐ No
- ☐ Yes ...what group or network? _____
26. What is the nearest town to your property? _____
27. What is the name of the nearest road to your property? _____
28. Do you live on your property?
- ☐ Yes ☐ Sometimes or part-time
- ☐ No...in what town do you live? _____
29. How large is your property?
- _____ Acres or _____ Hectares

30. Is your property usually irrigated?

☐ Yes ☐ No

31. Would you say your property is primarily...

☐ ...used for the production of crops, pastures or livestock

☐ ...used for the conservation of native plants and animals (*Go to Question 33*)

☐ ...a hobby or lifestyle farm with none or minor production (*Go to Question 33*)

32. What are the main things you produce on your property? (*Interviewer: May tick more than one*)

☐ Dairy

☐ Vegetables

☐ Beef cattle

☐ Sheep (wool and meat)

☐ Pastures for hay (i.e., Lucerne)

☐ Horses

☐ Cereal crops (maize, sorghum, oats, wheat, barley, rice)

☐ Orchard trees (oranges, citrus, apples, pears, peaches, apricots, mangoes, macadamias)

Other (describe)

33. How many years have you had your current property _____ years

34. In what year were you born? 19_____

Interviewer: *Record Male or Female*

☐ Male

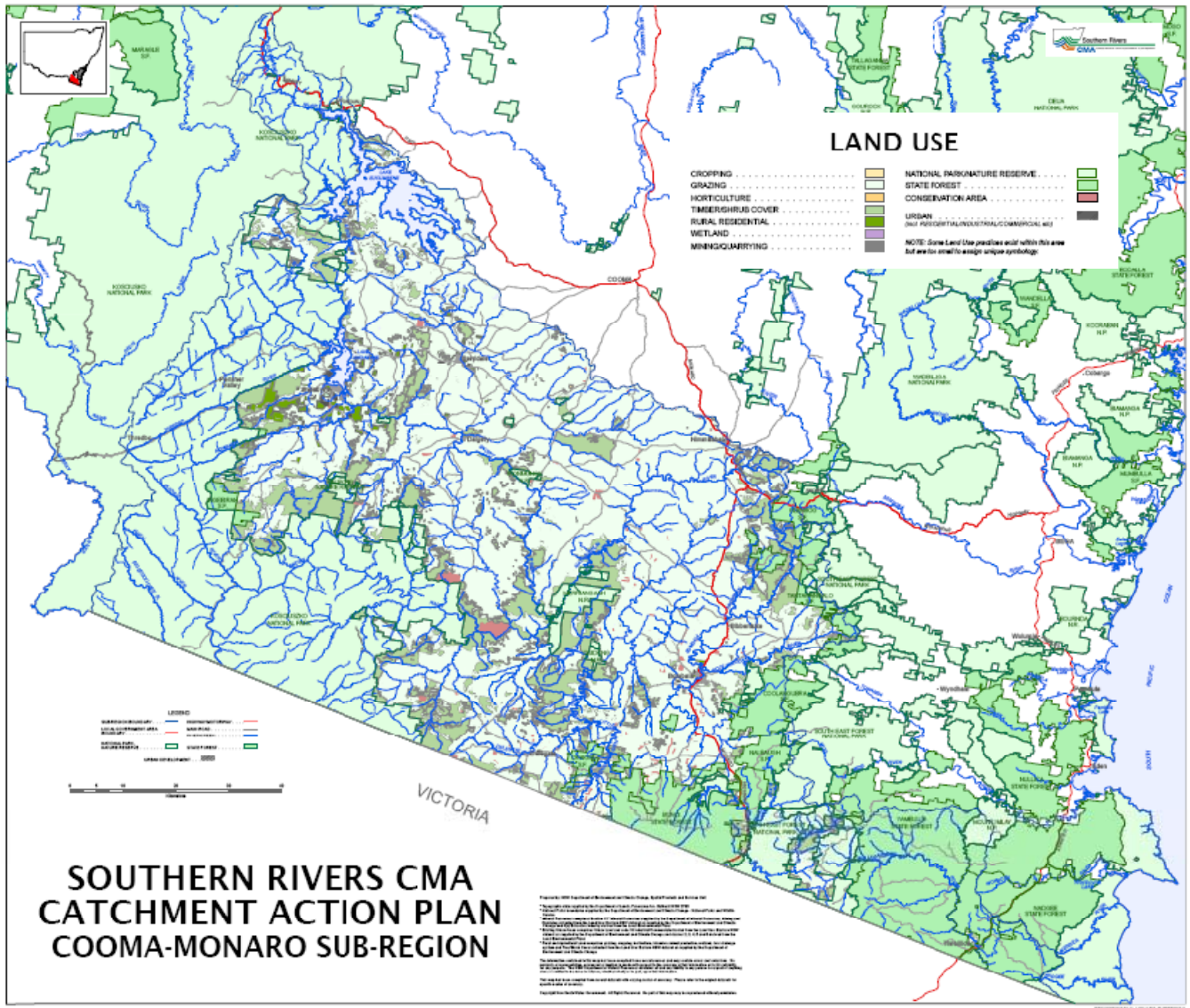
☐ Female

APPENDIX B:
SUB REGIONAL LAND USE INFORMATION

[illegible]

BEGA SUB REGIONAL LAND USE INFORMATION

LAND USAGE	Count	Area ha (z55)	Percentage
	0	2990	0.60
BEACH	176	747	0.15
CLIFF/ROCK	125	135	0.03
CONSERVATION AREA	633	878	0.18
CROPPING	3	21	0.00
DEFENCE FACILITY	1	2	0.00
FARM INFRASTRUCTURE	18	29	0.01
GRAZING	2574	120645	24.19
HORTICULTURE	74	164	0.03
INFRASTRUCTURE	48	150	0.03
INTENSIVE ANIMAL PRODUCTION	107	60	0.01
MINING/QUARRYING	43	75	0.02
NATIONAL PARK	127	195387	39.18
NNDD	14	38	0.01
STATE FOREST	197	95426	19.14
TIMBER/SHRUB COVER	1907	62903	12.61
TRANSPORT	149	2162	0.43
URBAN-INDUSTRIAL/COMMERCIAL	69	344	0.07
URBAN-OTHER	167	1389	0.28
URBAN-RESIDENTIAL	92	1757	0.35
URBAN-RURAL RESIDENTIAL	254	7221	1.45
WATER	1375	4830	0.97
WETLAND	361	1338	0.27
Total	8514	498691	100
Rural			
CROPPING	3	21	
FARM INFRASTRUCTURE	18	29	
GRAZING	2574	120645	
HORTICULTURE	74	164	
INTENSIVE ANIMAL PRODUCTION	107	60	
Total	2776	120919	24.25
Reserve			
CONSERVATION AREA	633	878	
NATIONAL PARK	127	195387	
STATE FOREST	197	95426	
Total	957	291691	58.49
Urban			
URBAN-INDUSTRIAL/COMMERCIAL	69	344	
URBAN-OTHER	167	1389	
URBAN-RESIDENTIAL	92	1757	
URBAN-RURAL RESIDENTIAL	254	7221	
Total	582	10711	2.15



COOMA-MONARO SUB REGIONAL LAND USE INFORMATION

LAND USAGE	Count	Area ha (Z55)	Percentage
CONSERVATION AREA	352	3908	0.39
CROPPING	6	161	0.02
FARM INFRASTRUCTURE	2	39	0.00
GRAZING	2101	427214	42.47
HORTICULTURE	9	33	0.00
INFRASTRUCTURE	2	32	0.00
INTENSIVE ANIMAL PRODUCTION	5	18	0.00
MINING/QUARRYING	45	173	0.02
NATIONAL PARK	111	301526	29.98
RAILWAY	14	137	0.01
ROAD	308	3290	0.33
ROCK	1	1	0.00
RURAL RESIDENTIAL	219	6620	0.66
STATE FOREST	1133	111426	11.08
TIMBER/SHRUB COVER	1943	124957	12.42
TRANSPORT	5	74	0.01
URBAN-INDUSTRIAL/COMMERCIAL	28	124	0.01
URBAN-OTHER	44	450	0.04
URBAN-RECREATION	42	724	0.07
URBAN-RESIDENTIAL	67	696	0.07
URBAN-RURAL RESIDENTIAL	6	1048	0.10
VICTORIA	1	26	0.00
WATER	311	22632	2.25
WETLAND	56	537	0.05
TOTAL	6811	1005846	100

Rural

CROPPING	6	161	
FARM INFRASTRUCTURE	2	39	
GRAZING	2101	427214	
HORTICULTURE	9	33	
INTENSIVE ANIMAL PRODUCTION	5	18	
TOTAL	2123	427465	42.50

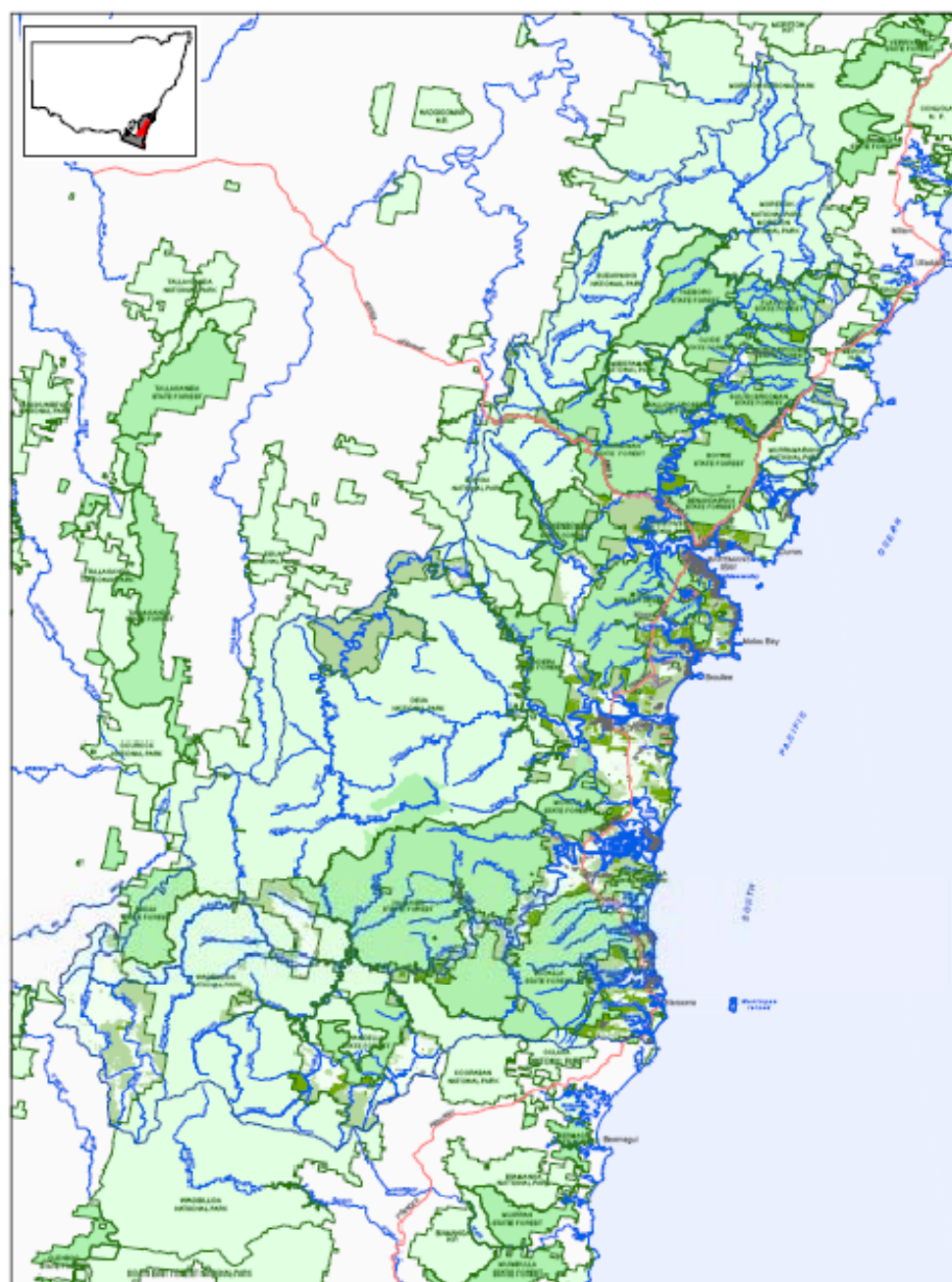
Reserve

CONSERVATION AREA	352	3908	
NATIONAL PARK	111	301526	
STATE FOREST	1133	111426	
TOTAL	1596	416860	41.44








Urban

RURAL RESIDENTIAL	219	6620	
URBAN-INDUSTRIAL/COMMERCIAL	28	124	
URBAN-OTHER	44	450	
URBAN-RECREATION	42	724	
URBAN-RESIDENTIAL	67	696	
URBAN-RURAL RESIDENTIAL	6	1048	
TOTAL	406	9662	0.96

**SOUTHERN RIVERS CMA
CATCHMENT ACTION PLAN
EUROBODALLA SUB-REGION**



LAND USE

CROPPING		NATIONAL PATRIGNATURE RESERVE
GRAZING		STATE FOREST
HORTICULTURE		CONSERVATION AREA
TIMBER/SHRUB COVER		URBAN
RURAL RESIDENTIAL		(incl. RESIDENTIAL/INDUSTRIAL/COMMERCIAL, etc.)
WETLAND		
MINING/QUARRYING		

NOTE: Some Land Use practices exist within two or more categories.



LEGEND

EUROPEAN COUNCIL	EUROPEAN COMMISSION
LOCAL GOVERNMENT AND COUNCILS	MINISTERS
NATIONAL PARTY COUNCIL/MEETING	STATE FORMER

For more information, visit www.pearsoncmg.com

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¹ *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 10, 1203-1210.

Source: *Journal of the American Statistical Association*, 1997, Vol. 92, No. 439, pp. 1092-1103. Reprinted by permission of the American Statistical Association.

¹ For a full discussion of the importance of the legal system in the development of a nation, see the work of the World Bank, which has been instrumental in the development of the legal system in many developing countries.

*Rural and agricultural land comprises: grazing, cropping, horticulture, intensive arable production, forestry, woodland, and other land uses.

Abstract and **Keywords** are provided for each article.

The education community may find that implementing virtual schools will not only bring parents to representative programs, it will also help support the common effort to improve the entire education system. The 2001 legislation in Illinois, for example, states that any virtual

Source: *Adapted by the author from the original, published in 1975, by the author.*

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25004

EUROBODALLA SUB REGIONAL LAND USE INFORMATION

LAND USAGE	Count	Area ha (Z55)	Percentage
	9	141	0.03
BEACH	75	398	0.08
CONSERVATION AREA	38	405	0.08
CROPPING	10	102	0.02
GRAZING	1116	39195	7.44
HORTICULTURE	30	125	0.02
INTENSIVE ANIMAL PRODUCTION	35	38	0.01
MINING & QUARRYING	29	264	0.05
NATIONAL PARK	75	246831	46.85
POWER GENERATION	82	248	0.05
SPECIAL CATEGORY	18	45	0.01
STATE FOREST	67	158899	30.16
TIMBER/SHRUB COVER	1173	53949	10.24
TRANSPORT	112	1320	0.25
URBAN-INDUSTRIAL COMMERCIAL	46	190	0.04
URBAN-OTHER	65	451	0.09
URBAN-RECREATION	82	625	0.12
URBAN-RESIDENTIAL	112	2394	0.45
URBAN-RURAL RECREATION	3	80	0.02
URBAN-RURAL RESIDENTIAL	391	15096	2.87
WATER	248	4321	0.82
WETLAND	285	1683	0.32
TOTAL	4101	526800	100
Rural			
CROPPING	10	102	
GRAZING	1116	39195	
HORTICULTURE	30	125	
INTENSIVE ANIMAL PRODUCTION	35	38	
TOTAL	1191	39460	7.49
Reserve			
CONSERVATION AREA	38	405	
NATIONAL PARK	75	246831	
STATE FOREST	67	158899	
TOTAL	180	406135	77.09
Urban			
URBAN-INDUSTRIAL COMMERCIAL	46	190	
URBAN-OTHER	65	451	
URBAN-RECREATION	82	625	
URBAN-RESIDENTIAL	112	2394	
URBAN-RURAL RECREATION	3	80	
URBAN-RURAL RESIDENTIAL	391	15096	
TOTAL	699	18836	3.58

SOUTHERN RIVERS CMA CATCHMENT ACTION PLAN ILLAWARRA SUB-REGION



LAND USE

CROPPING	NATIONAL PARK/NATURE RESERVE	STATE FOREST
GRAZING	CONSERVATION AREA	INTENSIVE ANIMAL PRODUCTION
HORTICULTURE	URBAN	URBAN
TIMBER/SHRUB COVER	RESIDENTIAL/INDUSTRIAL/COMMERCIAL	
RURAL RESIDENTIAL		
WETLAND		
MINING/QUARRYING		

NOTE: Some Land Use polygons exist within this area but are too small to assign unique symbology

LEGEND

SUB-REGIONAL BOUNDARY
LOCAL GOVERNMENT AREA BOUNDARY
OFFICIAL PUBLIC RESERVE RESERVE
URBAN DEVELOPMENT

RESIDENTIAL
INDUSTRIAL
COMMERCIAL
STATE FOREST

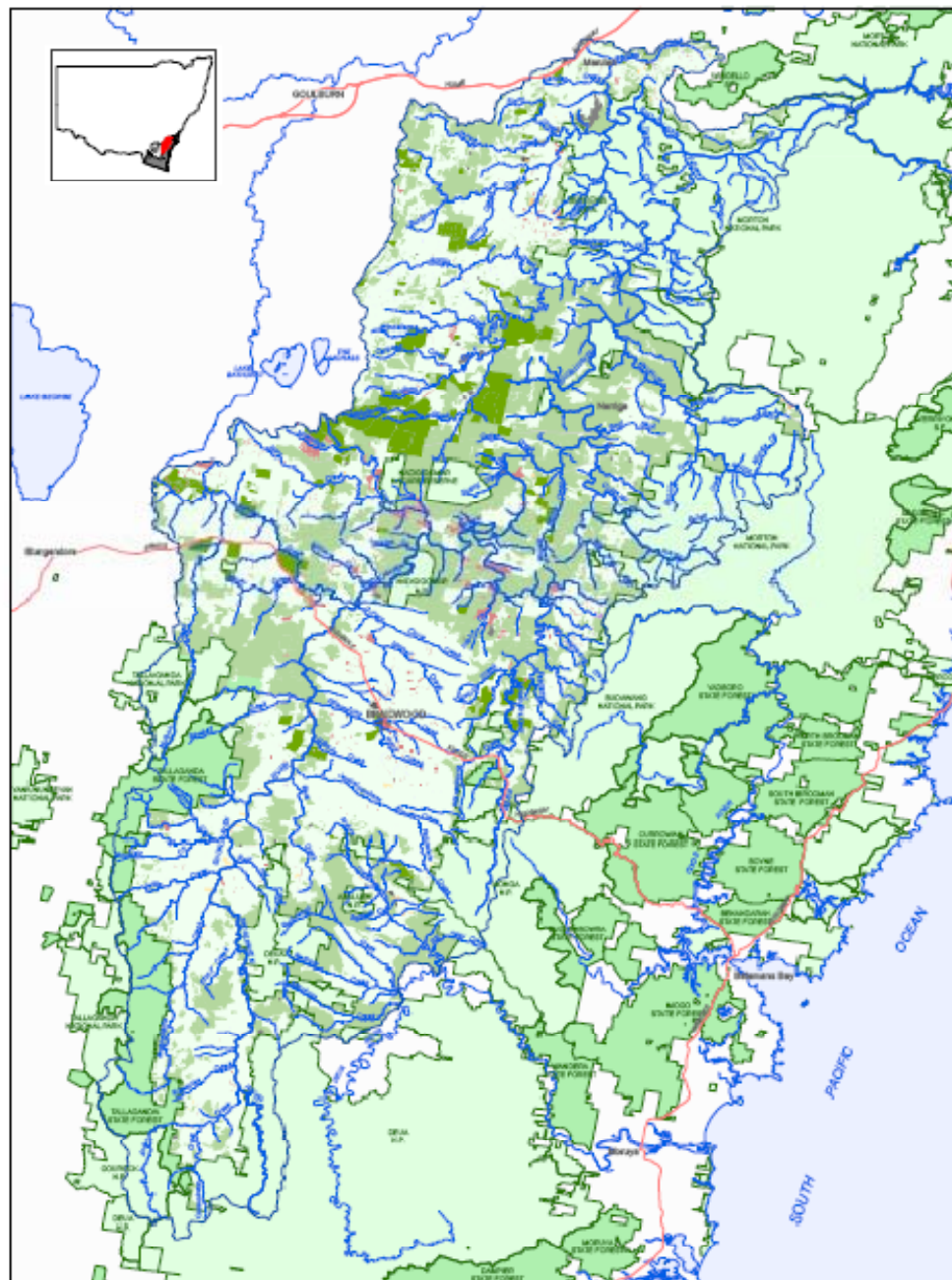
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DEC 2008 ILLAWARRA SUB-REGION

ILLAWARRA SUB REGIONAL LAND USE INFORMATION

LAND USAGE	Count	Area ha (Z56)	Percentage
BEACH	52	589	0.99
CONSERVATION AREA	166	394	0.66
DEFENCE FACILITY	1	2	0.00
FARM INFRASTRUCTURE	16	17	0.03
GRAZING	738	22399	37.78
HORTICULTURE	11	21	0.04
HORTICULTURE-IRRIGATED	22	60	0.10
INFRASTRUCTURE	28	92	0.16
INTENSIVE ANIMAL PRODUCTION	39	173	0.29
MINING/QUARRYING	108	971	1.64
NATIONAL PARK	51	3211	5.42
NATURE RESERVE	1	126	0.21
RAILWAY	12	438	0.74
ROAD	28	736	1.24
ROCK OUTCROP	38	152	0.26
STATE FOREST	3	179	0.30
TIMBER/SHRUB COVER	352	12213	20.60
TRANSPORT	8	210	0.35
URBAN-INDUSTRIAL/COMMERCIAL	148	2429	4.10
URBAN-OTHER	188	1023	1.73
URBAN-RECREATION	405	3364	5.67
URBAN-RESIDENTIAL	155	8238	13.89
URBAN-RURAL RESIDENTIAL	90	1600	2.70
WATER	239	416	0.70
WETLAND	37	238	0.40
TOTAL	2936	59291	100
Rural			
FARM INFRASTRUCTURE	16	17	
GRAZING	738	22399	
HORTICULTURE	11	21	
HORTICULTURE-IRRIGATED	22	60	
INTENSIVE ANIMAL PRODUCTION	39	173	
TOTAL	826	22670	38.24
Reserve			
CONSERVATION AREA	166	394	
NATIONAL PARK	51	3211	
NATURE RESERVE	1	126	
STATE FOREST	3	179	
TOTAL	221	3910	6.59
Urban			
URBAN-INDUSTRIAL/COMMERCIAL	148	2429	
URBAN-OTHER	188	1023	
URBAN-RECREATION	405	3364	
URBAN-RESIDENTIAL	155	8238	
URBAN-RURAL RESIDENTIAL	90	1600	
TOTAL	986	16654	28.09

SOUTHERN RIVERS CMA CATCHMENT ACTION PLAN UPPER SHOALHAVEN SUB-REGION



LAND USE

CROPPING		NATIONAL PARK/NATURE RESERVE	
GRAZING		STATE FOREST	
HORTICULTURE		CONSERVATION AREA	
TIMBER/SHRUB COVER		URBAN	
RURAL RESIDENTIAL		(incl. RESIDENTIAL/INDUSTRIAL/COMMERCIAL etc)	
WETLAND			
MINING/QUARRYING			

NOTE: Some Land Use profiles exist within this area but are too small to assign unique symbology.



SUB-REGION BOUNDARY		BOUNDARY	
LOCAL GOVERNMENT AREA		ROAD/RAIL	
BOUNDARY		BOUNDARY	
WATER BODIES		WATER BODIES	
WATER RESERVE		WATER RESERVE	
URBAN DEVELOPMENT		URBAN DEVELOPMENT	

Prepared by: [Name] for the Southern Rivers CMA Catchment Management Authority
 This map is a summary of the land use data for the Upper Shoalhaven Sub-region. It is not intended to be used as a legal document. The data is derived from various sources, including aerial photography, ground surveys, and existing maps. The map is subject to change without notice. The Southern Rivers CMA Catchment Management Authority is not responsible for any errors or omissions in this map. The map is provided for information only. The Southern Rivers CMA Catchment Management Authority is not responsible for any errors or omissions in this map. The map is provided for information only.

DECEMBER 2004

UPPER SHOALHAVEN SUB REGIONAL LAND USE INFORMATION

LAND USAGE	Count	Area ha Z55	Percentage
CONSERVATION AREA	1222	4703	0.92
CROPPING	21	345	0.07
FARM INFRASTRUCTURE	9	41	0.01
GRAZING	2338	190680	37.45
HORTICULTURE	16	54	0.01
HORTICULTURE-IRRIGATED	67	227	0.04
INFRASTRUCTURE	34	217	0.04
INTENSIVE ANIMAL PRODUCTION	12	247	0.05
MINING/QUARRYING	121	700	0.14
NATIONAL PARK	76	112996	22.19
RAILWAY	6	100	0.02
ROAD	105	2230	0.44
RURAL RESIDENTIAL	23	1251	0.25
STATE FOREST	53	24793	4.87
TIMBER/SHRUB COVER	1893	145440	28.56
URBAN-INDUSTRIAL/COMMERCIAL	7	50	0.01
URBAN-OTHER	20	74	0.01
URBAN-RECREATION	9	114	0.02
URBAN-RESIDENTIAL	33	242	0.05
URBAN-RURAL RESIDENTIAL	164	19172	3.77
WATER	1063	5213	1.02
WETLAND	34	288	0.06
TOTAL	7326	509177	100

Rural

CROPPING	21	345	
FARM INFRASTRUCTURE	9	41	
GRAZING	2338	190680	
HORTICULTURE	16	54	
HORTICULTURE-IRRIGATED	67	227	
INTENSIVE ANIMAL PRODUCTION	12	247	
TOTAL	2463	191594	37.63

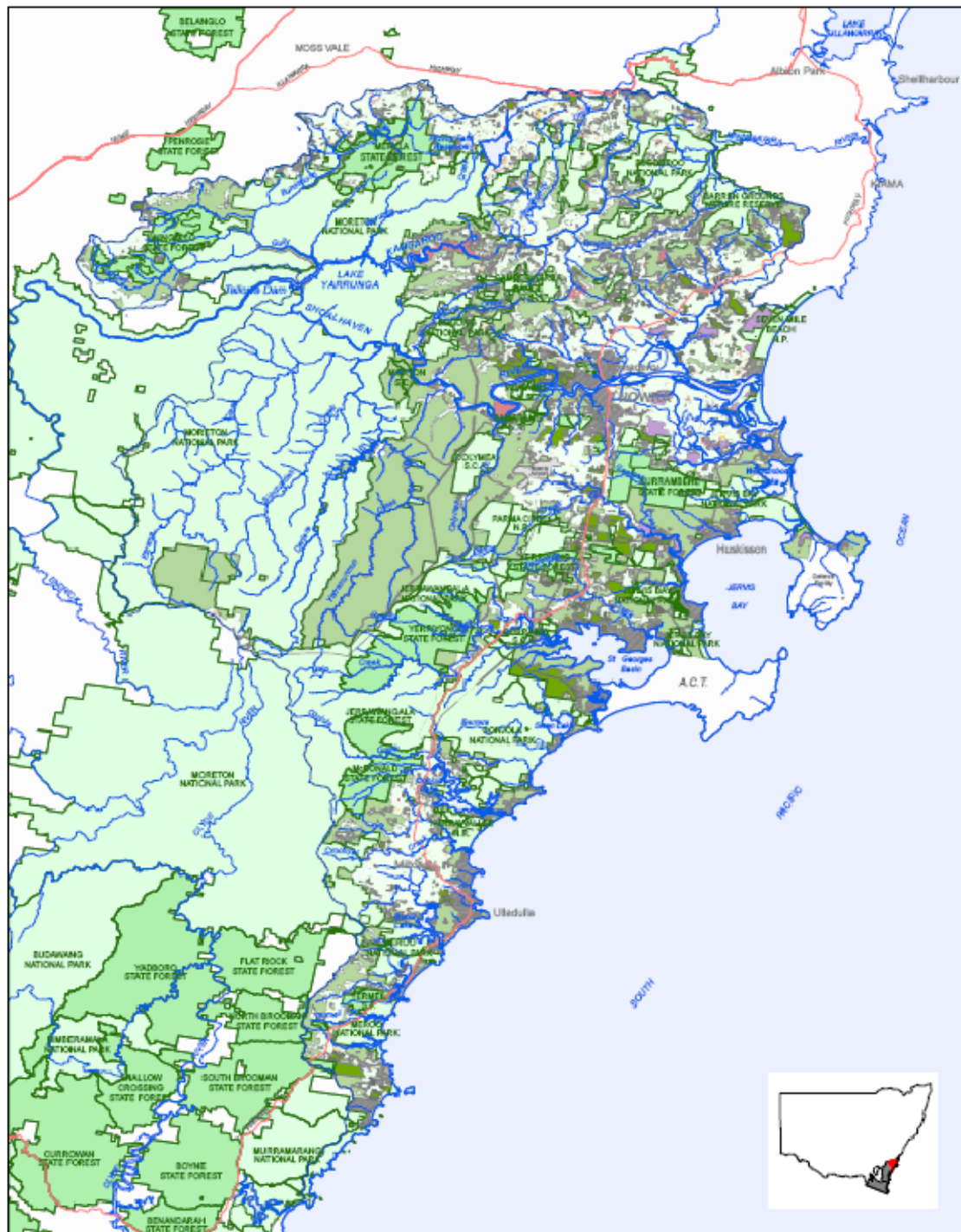
Reserve

CONSERVATION AREA	1222	4703	
NATIONAL PARK	76	112996	
STATE FOREST	53	24793	
TOTAL	1351	142492	27.98

Urban

RURAL RESIDENTIAL	23	1251	
URBAN-INDUSTRIAL/COMMERCIAL	7	50	
URBAN-OTHER	20	74	
URBAN-RECREATION	9	114	
URBAN-RESIDENTIAL	33	242	
URBAN-RURAL RESIDENTIAL	164	19172	
TOTAL	256	20903	4.11

SOUTHERN RIVERS CMA CATCHMENT ACTION PLAN LOWER SHOALHAVEN SUB-REGION



LAND USE

CROPPING		NATIONAL PARK/NATURE RESERVE	
GRAZING		STATE FOREST	
HORTICULTURE		CONSERVATION AREA	
TIMBER/SHRUB COVER		URBAN	
RURAL RESIDENTIAL		(incl. RESIDENTIAL/INDUSTRIAL/COMMERCIAL and	
WETLAND		MINING/QUARRYING	
		NOTE: Some Land Use practices exist within this area	
		but are too small to assign unique symbology.	



LEGEND	
SUBREGION BOUNDARY	INTERGOVERNMENTARY
LOCAL GOVERNMENT AREA	MAIN ROAD
BOUNDARY	WATERBODIES
NATIONAL PARK/	STATE FOREST
WETLAND RESERVE	
URBAN DEVELOPMENT	2000

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