

State of the catchments 2010

# Invasive species

## Lower Murray Darling region

### State Plan target

By 2015 there will be a reduction in the impact of invasive species.

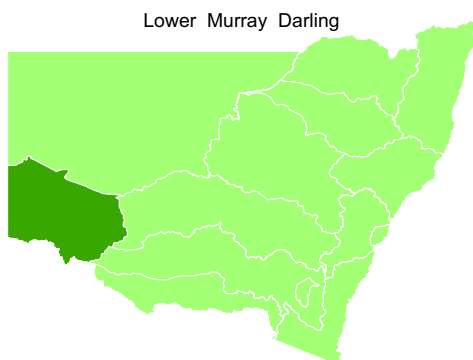
### Background

'Invasive species' is the collective term used to describe weed, pest animal, aquatic pests or invertebrate pest species. These species have been assessed as likely to have significant impacts – or are already impacting significantly – on the environment, production, human health or amenity. Invasive species impact (act as a pressure) on natural resource condition.

A detailed technical report describes the methods used to derive the information contained in this report. At the time of publication of the *State of the catchments (SOC) 2010* reports, the technical reports were being prepared for public release. When complete, they will be available on the I&I website: [www.industry.nsw.gov.au/info/mer](http://www.industry.nsw.gov.au/info/mer).

**Note:** All data on natural resource condition, pressures and management activity included in this SOC report, as well as the technical report, was collected up to January 2009.


## Map of the catchment



## Assessment

### Pressures

#### *Invasive species' impact as a pressure on biodiversity themes*

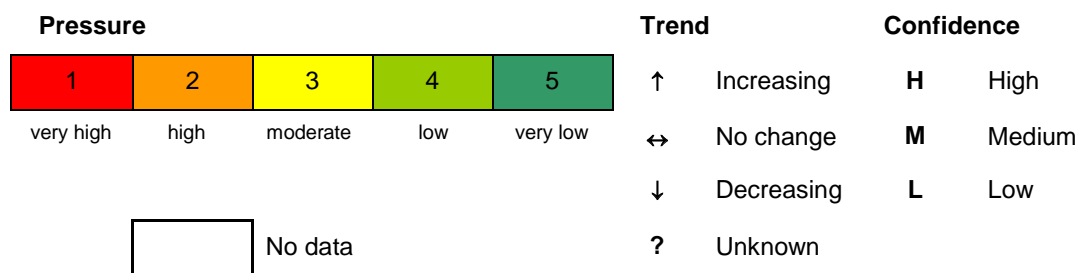
Overall assessment across indicators	Trend	Confidence
 Moderate	?	Medium

The overall assessment is an average of the three indicators: new, emerging and widespread.

While not all invasive species are monitored across New South Wales, these indicators represent some of the highest impacting species. The level of impact assessment (moderate) is unlikely to change in the short term, but the trend for overall impact of the species monitored can show the level of success of invasive species management to exclude and eradicate new threats, protect biodiversity at selected sites from established invasive species, and lessen the negative socio-economic impacts of established invasive species.

**Table 1 Indicator summary**

	Pressure	Baseline data	New data	Trend	Confidence
<b>New invasive species</b>				?	M
Weeds		nil		?	M
<b>Emerging invasive species</b>				?	M
Freshwater pests		3		?	H
Pest animals		1		?	M
Weeds		6		?	M
<b>Widespread invasive species</b>				?	H
Freshwater pests		13.69%		?	H



***New invasive species***

*Indicator 1 – Number of new invasive species; definitions and measurement*

New invasive species are any introduced species that have not been recorded in NSW previously and whose impacts are likely to be significant; alternatively, they are species previously recorded in NSW that have since exhibited invasiveness.

This indicator is measured as the change in number of new invasive species in the region relative to the number reported 12 months previously. Table 1 shows baseline data only, as recorded at the date of this first report. Data is being collected on new priority weeds, new pest animals and new freshwater pests.

**Freshwater pests**

There are no new freshwater pest species reported in the Lower Murray Darling region.



### **Pest animals**

There are no new pest animal species reported in the Lower Murray Darling region.

### **Weeds**

There are no new weed species reported in the Lower Murray Darling region.

### ***Emerging invasive species***

*Indicator 2 – Distribution and abundance of emerging invasive species; definitions and measurement*

An emerging species is a newly established species whose distribution and abundance is increasing.

This indicator is the net change in species trends. For example, 34 species increasing distribution and abundance compared to 11 species decreasing equates to a net increasing trend for this indicator. Data is being collected on emerging priority weeds, emerging pest animals and emerging freshwater pests.

### **Freshwater pests**

There are no emerging freshwater pest species reported in the Lower Murray Darling region.

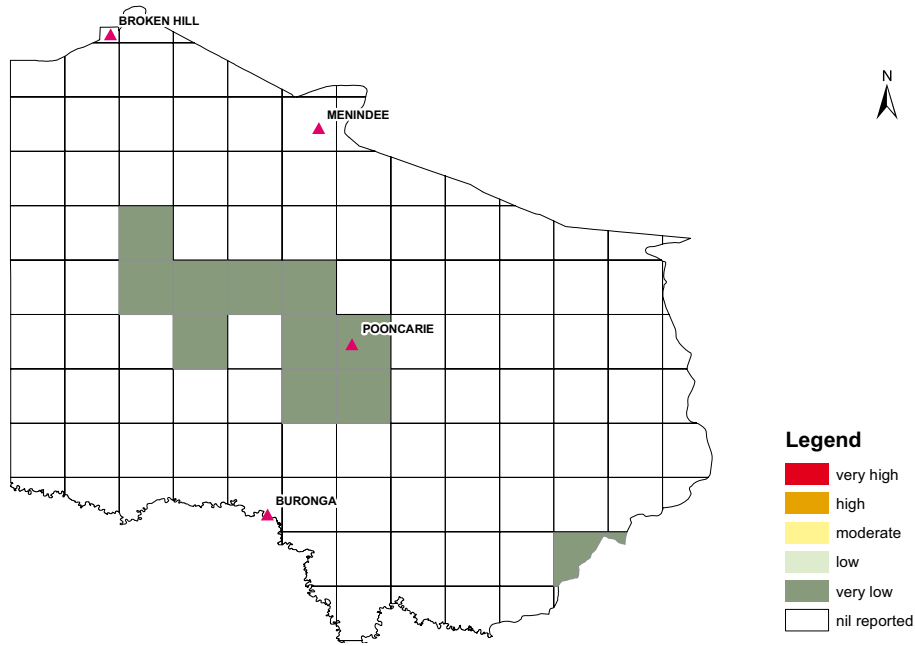
### **Pest animals**

There are two emerging pest animal species reported in the Lower Murray Darling region.

**Table 1 Emerging pest animal species reported in the Lower Murray Darling region by Livestock Health and Pest Authorities**

Scientific Name	Common Name
<i>Equus asinus</i>	donkeys
<i>Dama, Cervus, Axis</i> spp.	feral and wild deer





**Figure 1 New and emerging pest animal index (aggregation of pest animal data for indicators 1 and 2)**

The pest animal index is measured by adding the density scores (Table 2) for all pest animals monitored for each grid square. Species monitored are camels, horses, donkeys, deer and cane toads.

The index classes are:

- Very high      8–10
- High            6–7
- Moderate      4–5
- Low             2–3
- Very low       1

**Table 2 Density classes for pest animal and weed scores**

Density classes	Score	Density
Present-occurrence unknown	1	?
Occasional and localised	1	<1%
Occasional and widespread	2	1% to 10%
Common and localised	3	11% to 50%
Common and widespread	4	11% to 50%

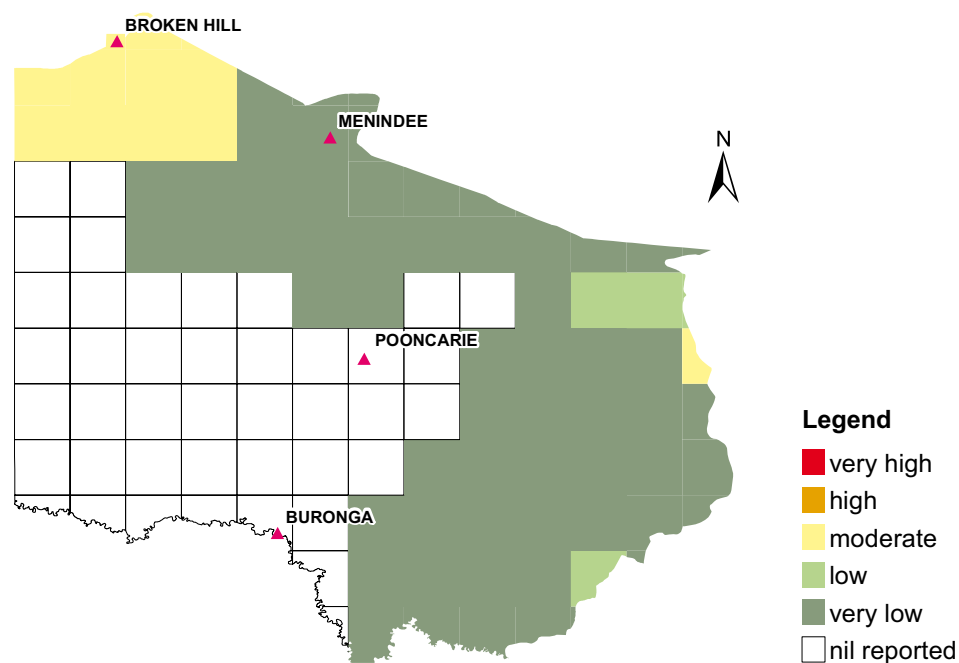
Density classes	Score	Density
Abundant and localised	5	>50 %
Abundant and widespread	6	>50 %

### Weeds

There are six emerging weeds reported in the Lower Murray Darling region.

**Table 3 Emerging weeds reported in the Lower Murray Darling region**

Scientific Name	Common Name
<i>Asparagus asparagoides</i>	bridal creeper
<i>Chrysanthemoides monilifera</i>	boneseed
<i>Pennisetum setaceum</i>	fountain grass
<i>Prosopis</i> spp.	mesquite
<i>Solanum elaeagnifolium</i>	silver-leaf nightshade
<i>Tamarix</i> spp.	athel pine



**Figure 2 New and emerging weeds index (aggregation of weeds data for indicators 1 and 2)**

The index is measured by adding the density scores (see Table 2) for all weeds monitored for each grid square. There were 134 priority weed species mapped across NSW.

The index classes are:

Very high	12+
High	7–11
Moderate	4–6
Low	3
Very low	1–2

**Widespread invasive species**

*Indicator 3 – Impact of widespread invasive species at priority sites; definitions and measurement*

A widespread species is any species widely distributed in NSW.

This indicator is measured by the change in impact of all the widespread pest species monitored. Data is being collected on the change in impacts of foxes on threatened species at priority sites and the number of alien fish as a percentage of total fish at sampling sites.

**Fox Threat Abatement Plan (Fox TAP)**

The NSW Threat Abatement Plan for predation by the red fox (Fox TAP) establishes priorities for fox control for the conservation of biodiversity across NSW. In particular, the plan identifies which threatened species are most likely to be impacted by fox predation and the sites at which these impacts are predicted to be most critical. In addition, the plan includes monitoring programs to measure the response of priority threatened species to fox control at these sites.

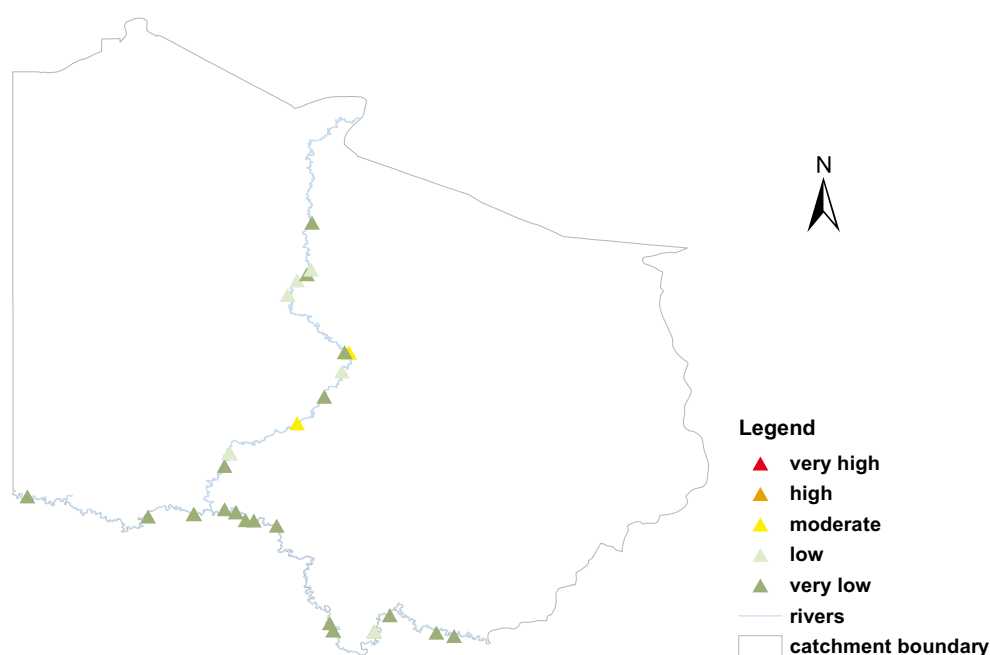
**Table 4 Threatened species protected in the Lower Murray Darling region by fox control**

Threatened species	Population numbers at fox control sites
malleefowl	analyses incomplete

**Freshwater pests**

Data on freshwater pests is being collected by Industry & Investment NSW (I&I). The freshwater sampling provides data for an indicator measuring the impact of alien fish (non-native fish) on native fish. The indicator is measured as the percentage of alien fish counted as part of the total catch at a particular site. The average of all site indicators in the Lower Murray Darling region is 13.69 per cent.





**Figure 3 Alien fish percentage in the Lower Murray Darling region**

The indicator classes are:

Very high	81% to 100%
High	61% to 80%
Moderate	41% to 60%
Low	21% to 40%
Very low	0% to 20%

## Management activity

### State level

The invasive species target is being addressed at the state level by the implementation of the NSW Invasive Species Plan. The plan aims to prevent the introduction of new invasive species, eradicate or contain new incursions that have established and to implement control programs to reduce the impacts of widespread species at priority sites.

Some of the state level initiatives include:

- protection and control, including:
  - protecting environmental assets from widespread weeds; prioritising environmental assets at risk from widespread weeds and sites for control in the Lower Murray Darling region. A draft plan for the Lower Murray Darling region is being developed to guide investment until 2015



- participating in a national effort to control *Salvinia molesta*, one of the 20 Weeds of National Significance. I&I is hosting the Salvinia National Coordinator and staff are rearing the weevil that acts as a biological control (bio-control) agent
- bio-control of Patterson’s curse
- a lantana rust bio-control project
- implementing strategic fencing in national parks to manage feral goats
- a serrated tussock coordination project
- pest animal regional strategies (pest plan)
- best management practice for:
  - alligator weed
  - cabomba
  - dryland cropping systems (weeds)
  - regional fox control
- education, including:
  - ‘Weed Warriors’ schools project
  - ‘What does your garden grow?’ community capacity project
  - I&I courses on topics such as vertebrate pest management and planning for pest management. For more information go to [www.dpi.nsw.gov.au/agriculture/profarm/courses](http://www.dpi.nsw.gov.au/agriculture/profarm/courses)
- research, including:
  - an early detection program for aquatic weeds
  - resistance of herbicides in the northern grain cropping belt
  - vine weed research project (cats claw creeper and madeira vine)
  - South East NSW and Australian Capital Territory (ACT) wild dog project
  - assessing the risks of wild deer in NSW
  - causes in variation of the rabbit haemorrhagic disease virus in wild rabbit populations
  - commercial use of pest animals (production and conservation values)
  - modelling management options for camels
  - a scoping study for the release of sterility agents for foxes and rabbits
  - improving the management of Australia’s pest birds
- monitoring, evaluation and reporting (MER), through:
  - state of the catchments (SOC) reports – invasive species data collection
  - SOC MER data collected as support to DECCW’s state of the environment report
  - Fox TAP; the monitoring of biodiversity and foxes in response to fox control at priority sites. Priority sites in the Lower Murray Darling region include conservation reserves and private lands in Tarawi, Wamberra and Mallee Cliffs. The biodiversity response is being analysed as part of the review of the Fox TAP

- a service for the ongoing identification of invasive weed species provided by the Botanic Gardens Trust. It regularly records new invasive species introductions to NSW and the extension of ranges of particular weed species
- estimating feral goat numbers.

## Regional level

At the regional level, the Lower Murray Darling Catchment Management Authority (CMA) is undertaking the following activities as of this reporting date in relation to the invasive species target:

- goat control on 169,402 ha
- carnivorous pest control on 571,473 ha
- control of weeds of national significance on 367,00 ha.

## Further reading

McNaught I, Thackway R, Brown L & Parsons M 2006, *A field manual for surveying and mapping nationally significant weeds*, Bureau of Rural Sciences, Canberra, [[www.weeds.org.au/docs/Weeds\\_Manual.pdf](http://www.weeds.org.au/docs/Weeds_Manual.pdf)].

Murray–Darling Basin Commission 2003, *Fish theme pilot audit technical report – sustainable rivers audit*, [[www.mdbc.gov.au/\\_\\_\\_data/page/64/Web\\_Summary\\_Fish\\_Theme.pdf](http://www.mdbc.gov.au/___data/page/64/Web_Summary_Fish_Theme.pdf)].

National Land and Water Resources Audit 2007, *Vertebrate pests – ecologically significant invasive species*, [[www.nlwra.gov.au/national-land-and-water-resources-audit/vertebrate-pests](http://www.nlwra.gov.au/national-land-and-water-resources-audit/vertebrate-pests)].

National Land and Water Resources Audit 2007, *Weeds – Ecologically significant invasive species*, [[www.nlwra.gov.au/national-land-and-water-resources-audit/weeds](http://www.nlwra.gov.au/national-land-and-water-resources-audit/weeds)].

Natural Resources Commission 2005, *Recommendations, state-wide standards and targets*, [[www.nrc.nsw.gov.au/content/documents/Recommendations%20-%20State-wide%20standard%20and%20targets%20May%202005.pdf](http://www.nrc.nsw.gov.au/content/documents/Recommendations%20-%20State-wide%20standard%20and%20targets%20May%202005.pdf)].

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