NSW GOVERNMENT

State of the catchments 2010

Invasive species

Border Rivers–Gwydir region

State Plan target

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

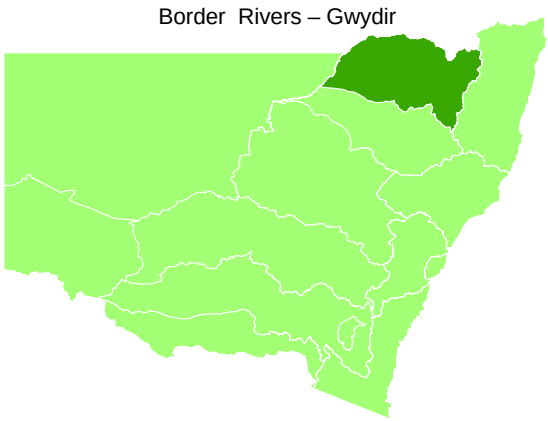
Background

'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.

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

Overall assessment across indicators	Trend	Confidence
Moderate	?	Medium

Invasive species' impact as a pressure on biodiversity themes

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
New invasive species				?	M
Weeds		4		?	M
Emerging invasive species				?	M
Freshwater pests		3		?	H
Pest animals		2		?	M
Weeds		18		?	M
Widespread invasive species				?	M
Freshwater pests		54.10%		?	H
Wild dog losses		3092		?	L

Pressure

1	2	3	4	5
very high	high	moderate	low	very low

No data

Trend

↑	Increasing
↔	No change
↓	Decreasing
?	Unknown

Confidence

H	High
M	Medium
L	Low

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 Border Rivers–Gwydir region.

Pest animals

There are no new pest animal species reported in the Border Rivers–Gwydir region.

Weeds

There are four new weed species reported in the Border Rivers–Gwydir region.

Table 2 New weed species reported in the Border Rivers–Gwydir region by local government

Scientific Name	Common Name
Acetosa sagittata	rambling dock/turkey rhubarb
Parthenium hysterophorus	parthenium weed
Pereskia aculeata	leaf cactus
Pistia stratiotes	water lettuce

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 three emerging freshwater pest species reported in the Border Rivers–Gwydir region.

Table 3 Emerging freshwater pest species reported in the Border Rivers–Gwydir region by Industry & Investment NSW (I&I)

Scientific Name	Common Name
Oncorhynchus mykiss	rainbow trout
Perca fluviatilis	redfin perch
Salmo trutta	brown trout

Pest animals

There are two emerging pest animal species reported in the Border Rivers–Gwydir region.

Table 4 Emerging pest animal species reported in the Border Rivers–Gwydir region by Livestock Health and Pest Authorities (LHPAs)

Scientific Name	Common Name
Equus caballus	feral horses
Dama, Cervus, Axis spp.	feral and wild deer

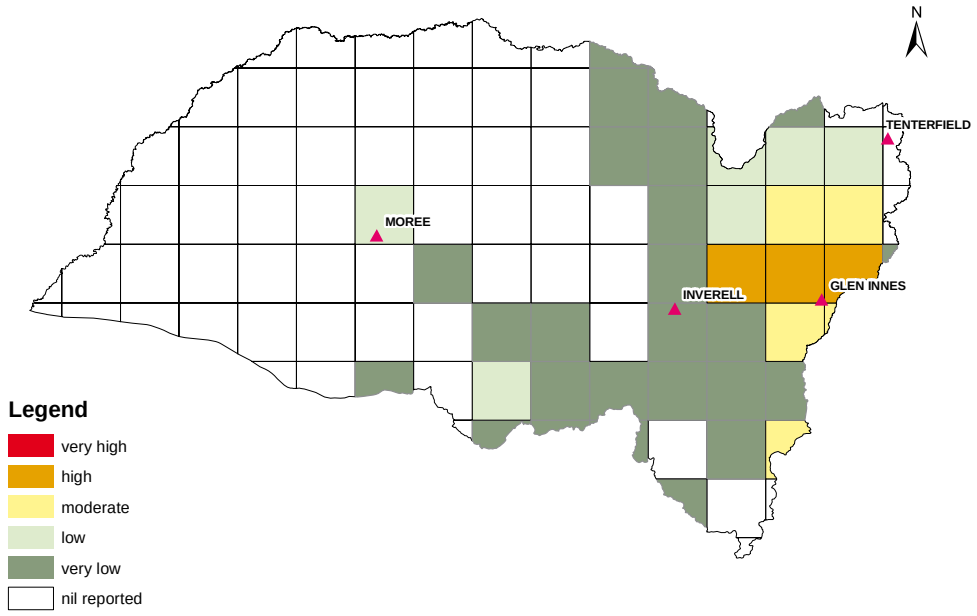


Figure 1 New and emerging pest animal index (aggregation of pest animal data for indicators 1 and 2)

The pest animal index is measured by adding the density scores (Table 5) 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 5 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%
Abundant and localised	5	>50 %
Abundant and widespread	6	>50 %

Weeds

There are 18 emerging weeds reported in the Border Rivers–Gwydir region.

Table 6 Emerging weeds reported in the Border Rivers–Gwydir region

Scientific Name	Common Name
Araujia sericifera	moth plant/moth vine
Arundo donax	giant reed/elephant grass
Asparagus asparagoides	bridal creeper
Cardiospermum grandiflorum	balloon vine
Cytisus scoparius	Scotch, English and Spanish broom
Eichhornia crassipes	water hyacinth
Genista monspessulana	montpellier broom/cape broom
Ipomea indica	morning glory (purple)
Lonicera japonica	Japanese honeysuckle
Nassella tenuissima	Mexican feather grass
Nassella trichotoma	serrated tussock

Scientific Name	Common Name
Olea europaea ssp. *europaea*	feral olive
Pennisetum setaceum	fountain grass
Pennisetum villosum	long-style feather grass
Sagittaria platyphylla	Sagittaria
Scolymus maculatus	spotted golden thistle
Sporobolus fertilis (S.indicus)	giant Parramatta grass
Ulex europaeus	Gorse

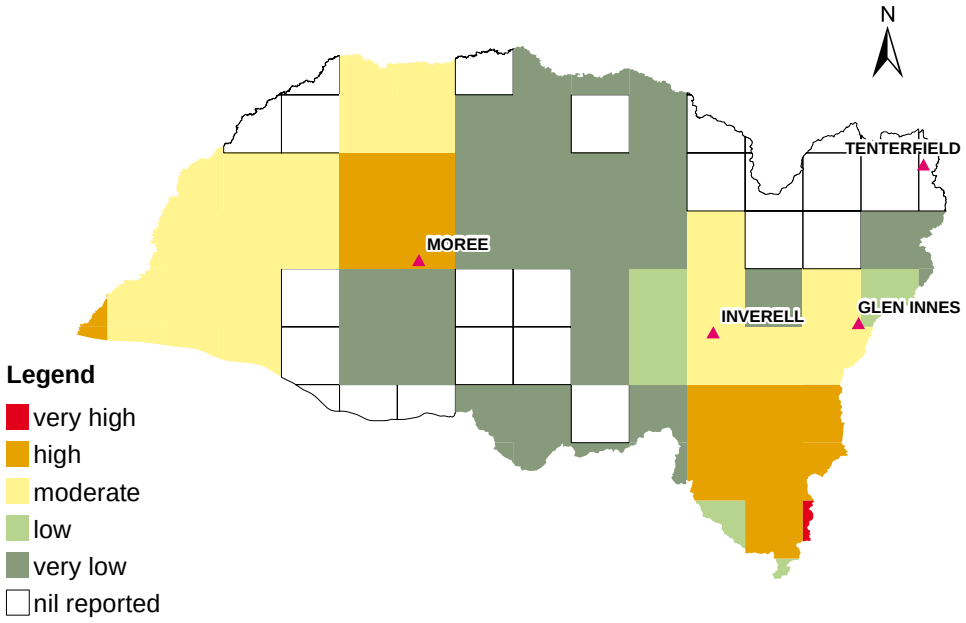


Figure 2 New and emerging weeds index (aggregation of weeds data for indicators 1 and 2)

The index is measured by adding the density scores (see Table 5) 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 number of stock losses attributed to wild dogs and the number of alien fish as a percentage of total fish at sampling sites.

Freshwater pests

Data on freshwater pests is being collected by 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 Border Rivers–Gwydir region is 54.10 per cent.

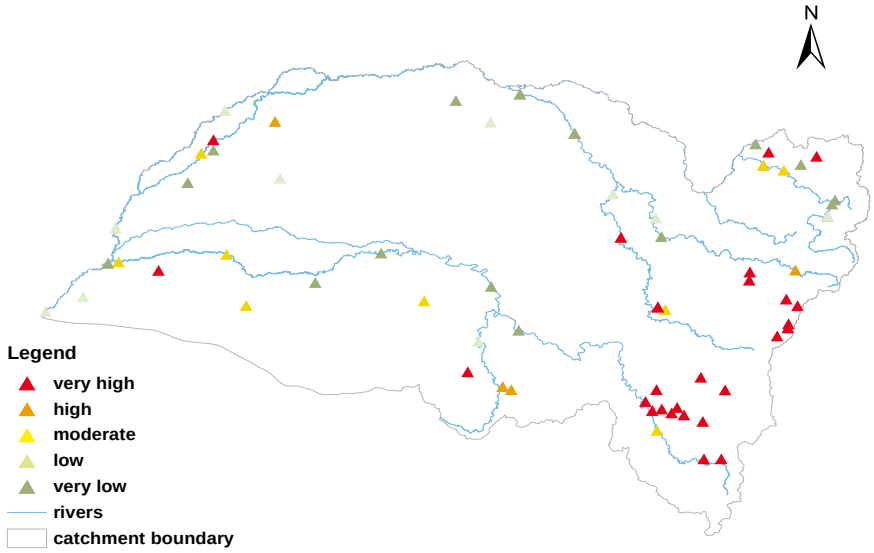


Figure 3 Alien fish percentage in the Border Rivers–Gwydir region

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%

Wild dog stock losses

In the Border Rivers–Gwydir region, 3092 stock losses attributed to wild dogs were reported to I&I during the period 2004–2007.

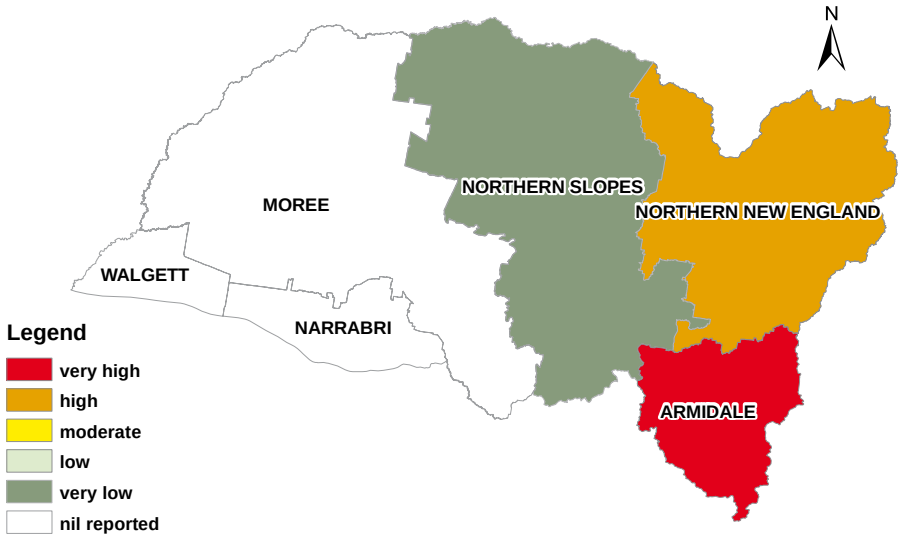


Figure 4 Wild dog stock losses in the Border Rivers–Gwydir region

The indicator classes are:

Very high	>1000
High	301–1000
Moderate	151–300
Low	51–150
Very low	1–50

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:
  - 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

  - determining regional weed management priorities for the conservation of biodiversity
  - integrated control of water lettuce in the Gwydir Wetlands
  - pest animal regional strategies (pest plan)
- other control and research projects, such as:
  - protecting environmental assets from widespread weeds; prioritising environmental assets at risk from widespread weeds and sites for control in the Border Rivers–Gwydir region. A draft plan for the Border Rivers–Gwydir region is being developed to guide investment until 2015
- 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
- research, including:
  - an early detection program for aquatic weeds
  - herbicide resistance in the northern grain cropping belt
  - vine weed research project (cats claw creeper and madeira vine)
  - 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 the DECCW's state of the environment report
  - estimating feral goat numbers.

Regional level

At the regional level, the Border Rivers–Gwydir Catchment Management Authority (CMA) is undertaking the following activities as of this reporting date in relation to the invasive species target:

- funding the Northern Slopes LHPA to conduct a large-scale aerial pig reduction project with supplementary ground-baiting – over 1000 pigs were shot
- funding a machine to remove the noxious weed, water hyacinth, from the Gingham waterhole near Moree
- sponsoring a landholder to attend the state working group on improving the management of serrated tussock
- implementing management practices across 200,000 hectares for the removal of weeds and feral animals
- holding workshops on weeds and feral animals including information about identification and removal
- targeting the area west of Inverell to Moree for the removal of weeds and feral animals that have a significant impact on biodiversity
- supporting community education and awareness through workshops, media and the publication of fact sheets.

Local level

There are a number of other groups undertaking significant work in the region that is contributing to better outcomes for invasive species management. These groups include:

- local Landcare groups, which have implemented projects that include identifying and removing woody weeds, preparing information brochures on fox control, and running workshops on weed identification and control
- LHPAs, which conduct an aerial baiting program for wild dogs
- the University of New England, which is studying the distribution and characteristics of agronomic weeds to advance weed removal and management and assist local landholders
- local councils, which are managing weeds through the Northern Inland Weeds Advisory Council (NIWAC). The NIWAC provides coordinated weeds management across the New England and North West region, through the media and field days with local landholders. Weeds targeted have included parthenium weed. In the future, NIWAC will be targeting species including mimosa bush, serrated tussock and African boxthorn.

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].

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