

What do visitors to Royal National Park know about the endangered broad-headed snake?

A study by Ian Hayes, Ross Goldingay
and Andrew Baker

School of Environmental Science and
Management, Southern Cross University,
Lismore

Introduction

Despite protection within National Parks and other protected areas, humans continue to have a negative impact on wildlife and habitat.

Royal National Park:

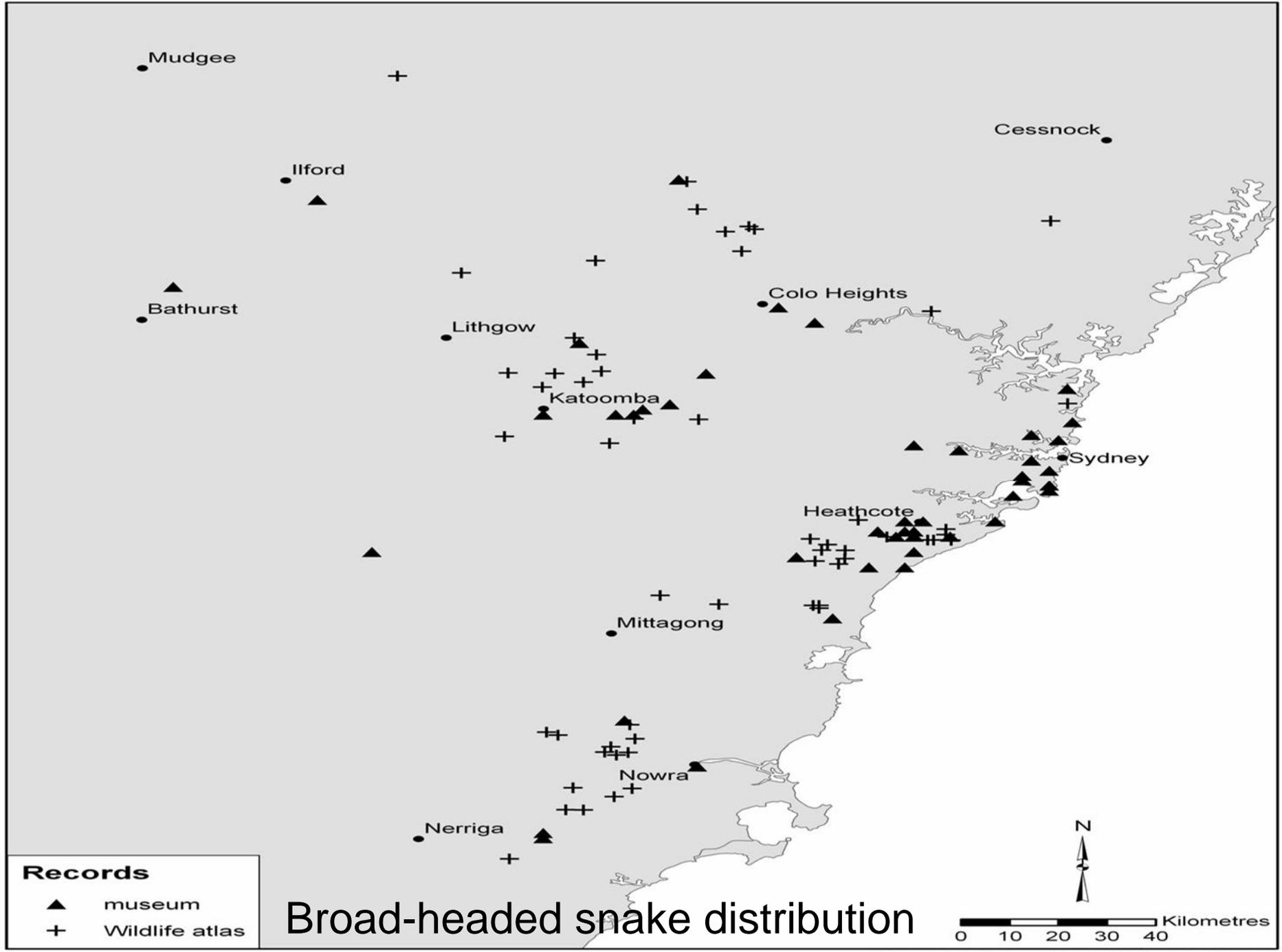
- High number of visitors (est. over 1 million visitors p.a.)
- Highly susceptible to disturbance.
- Home to over 300 native fauna species.
- Over 30 of these species are listed as 'threatened'.

Broad-headed snake (*Hoplocephalus bungaroides*)

Endangered in NSW
(TSC Act, 1995).

Vulnerable
nationally
(EPBC Act, 1999).





Mudgee

Ilford

Bathurst

Lithgow

Katoomba

Colo Heights

Cessnock

Sydney

Heathcote

Mittagong

Nowra

Nerriga

Habitat Use by the Broad-headed Snake:



During warmer months, broad-headed snakes shelter in tree hollows, rock crevices and logs on the ground.

During cooler months, they shelter under loose rocks on rock platforms

Webb & Shine
(1997)



Broad-headed snake (*Hoplocephalus bungaroides*)

Ecology

- Arboreal; saxicolous (rock dwelling).
- Slow to mature, taking 4-6 years.
- Live-bearing; low fecundity, litters between 4-12.
- Neonates (new-born) range from 22-28 cm.



Broad-headed snake (*Hoplocephalus bungaroides*)

Feeding

- Nocturnal to crepuscular (ie. active at dusk).
- Sit and wait ambush predator.
- Feeds on lizards, particularly velvet geckos (*Oedura lesueurii*).



Broad-headed snake (*Hoplocephalus bungaroides*)

Threatening processes:

- loss of habitat due to urbanisation or clearing;
- bush rock removal or rock disturbance;
- illegal collection of snakes;
- high frequency fire events, causing mortality and loss of tree hollows;
- predation by feral cats and foxes;
- habitat alteration by feral goats; and,
- anthropogenic climate change.

Broad-headed snake (*Hoplocephalus bungaroides*)

Threatening processes:

- Bush rock removal – a key threatening process.
- Widespread rock disturbance caused by vandals, hikers and poachers (Goldingay and Newell 2000; Webb, Brook and Shine 2002; Newell and Goldingay 2005).
- Extensive disturbance to rock habitat occurring in Royal NP.

Royal NP rock disturbance by reptile poachers



Royal NP rock disturbance by vandals



Royal NP visitor surveys

Loss of rock habitat = the need for habitat restoration and public education.

Aim:

- to describe the knowledge that Park users have of the broad-headed snake; and
- assess the effectiveness of providing information designed to reduce habitat disturbance.

Royal NP visitor surveys

Objectives:

- Improve public knowledge to help reduce threatening processes affecting the broad-headed snake by conducting surveys of Royal NP users;
- Obtain information on the patterns of knowledge of Royal NP users to guide Park management.

Royal NP visitor surveys

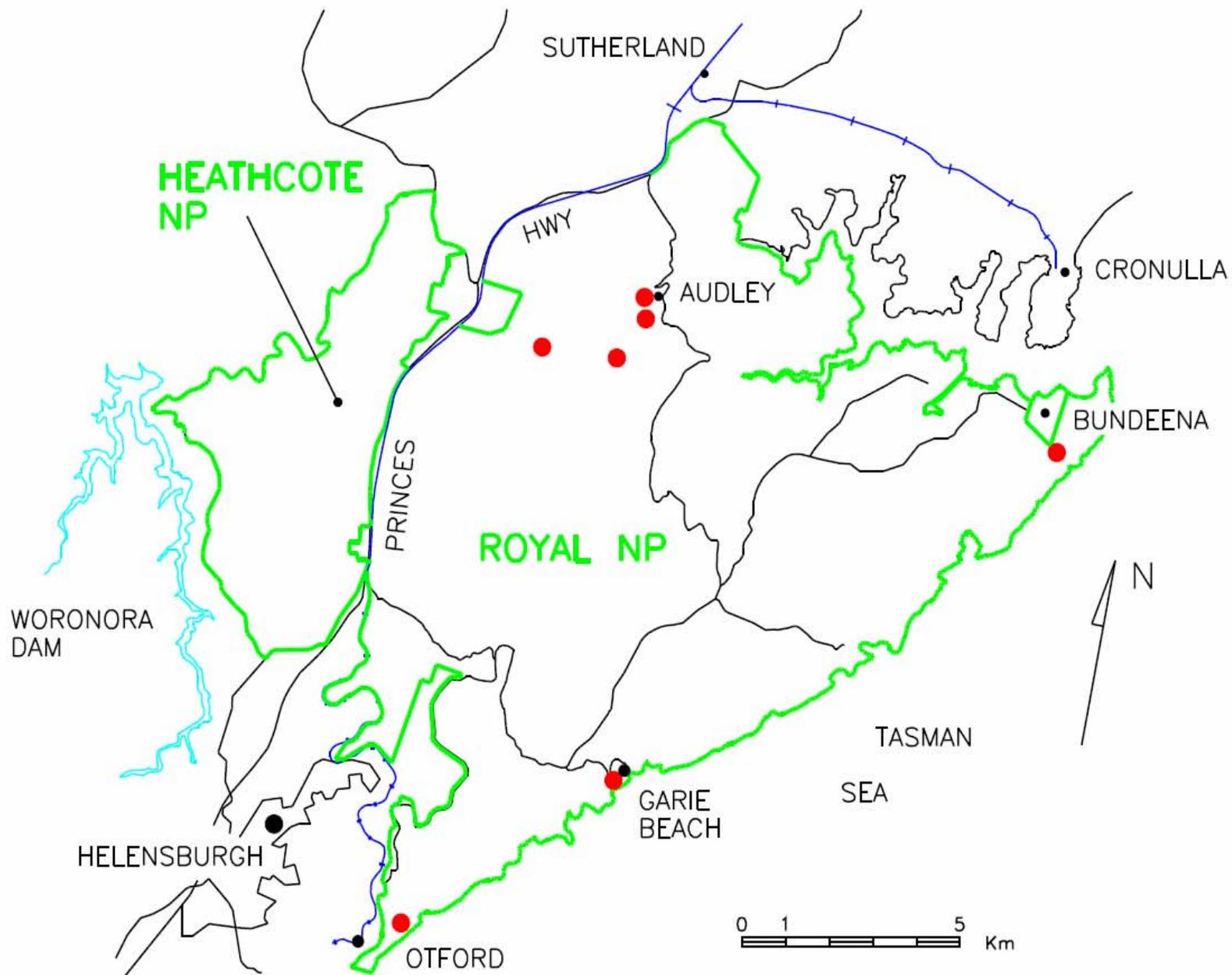
Method:

Questionnaire using 15 MC answer questions:

- To gauge visitor's knowledge of the snake; and
- Provide information on the snake, threats to its habitat and NP rules relating to the snake.

Surveys were conducted in 2010.

Seven locations within Royal NP.



Royal NP visitor surveys

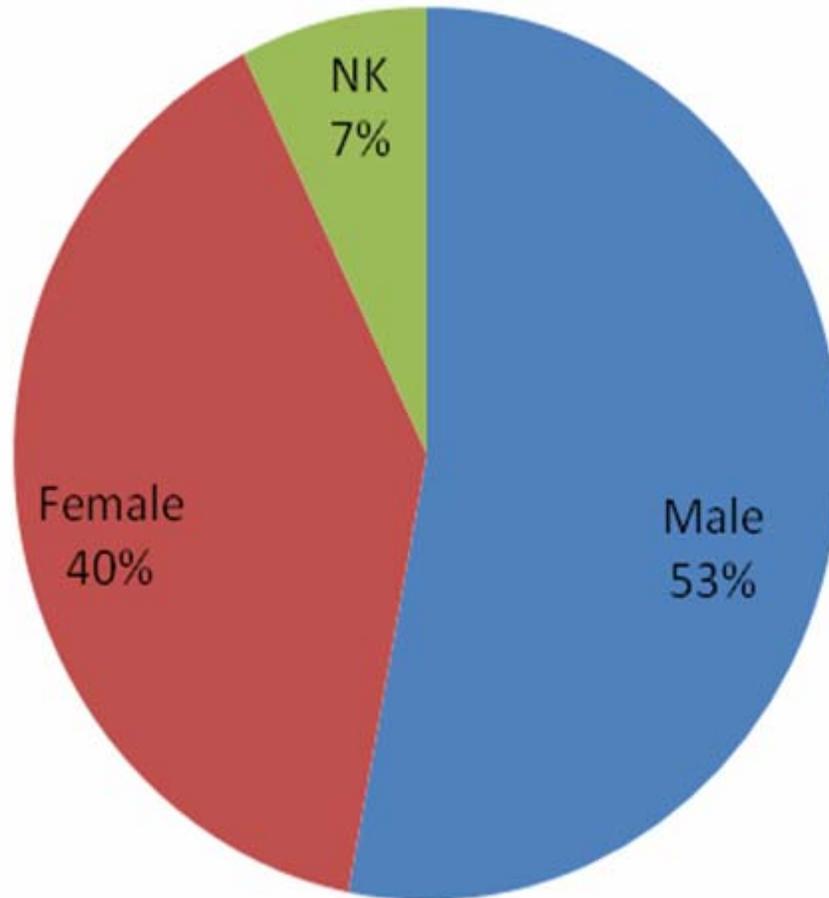
Results:

- 181 respondents (84% response rate).
- 1,748 visits to Royal NP annually.

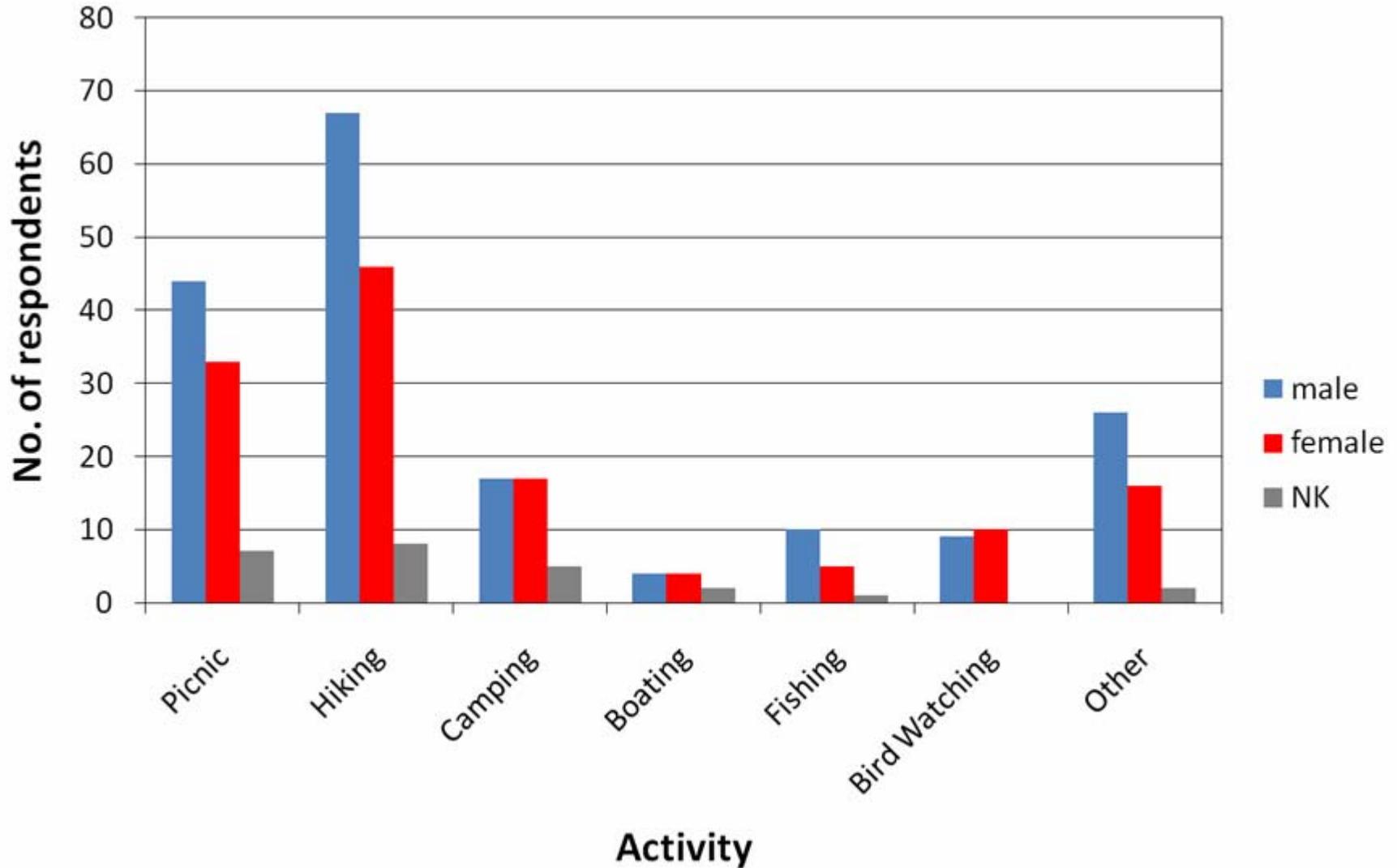


Survey results

Gender



Activities of respondents within Royal NP



Do you read and observe information signs that are provided in Royal NP?

98% (n=178) indicated they observed signage.

AREA CLOSED



This area has been closed to protect habitat of the Broad Headed Snake. This species is listed as an endangered species & is protected under the National Parks & Wildlife Act 1974.

Illegal trails have formed in this area and present an unacceptable threat to this fragile population.

NPWS is responsible for protecting threatened species and their habitat, and this action is crucial to ensure species survival.

Broad Headed Snake habitat is found only within the Sydney basin. This limited range is being drastically reduced through human disturbance.

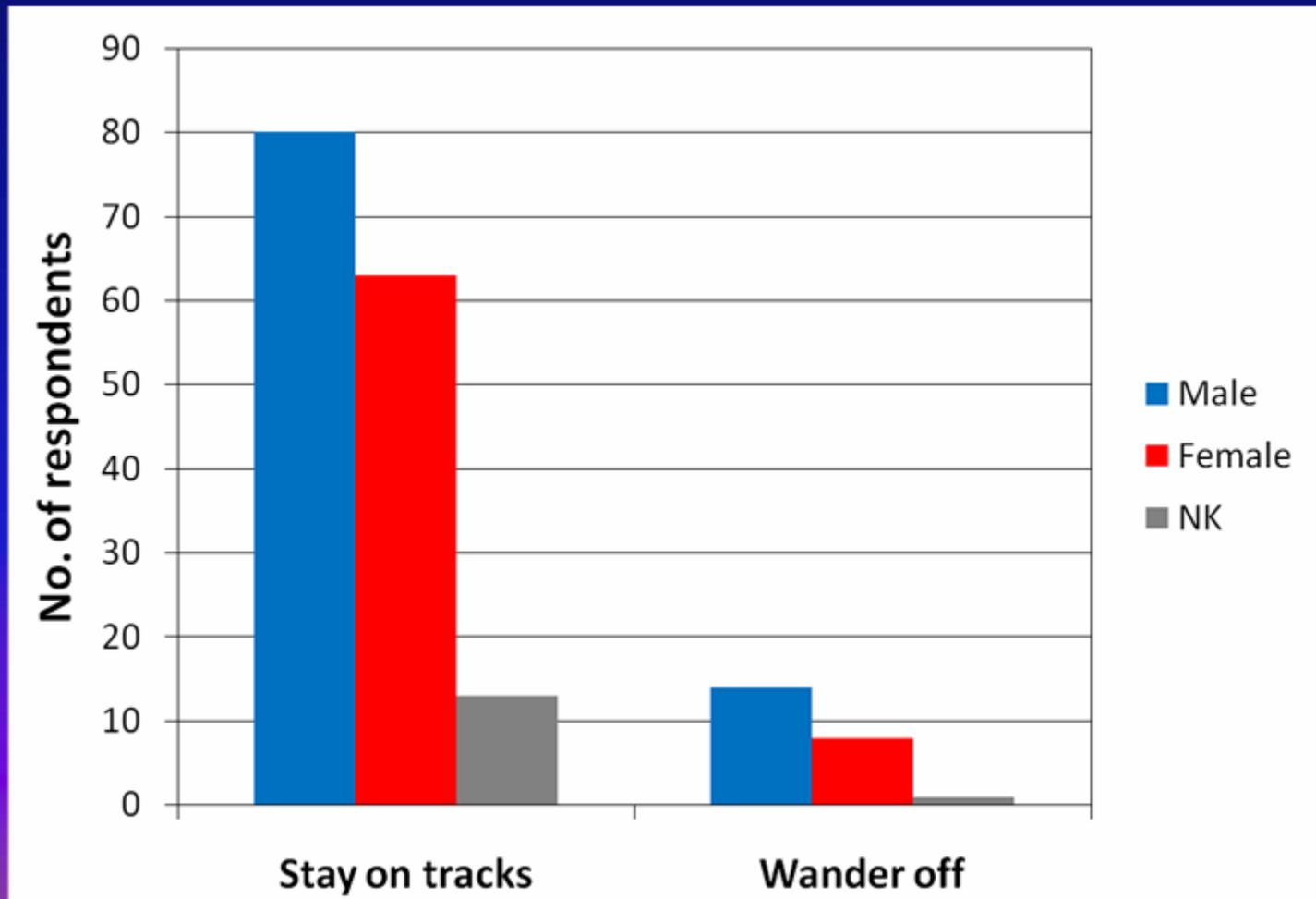


Broad Headed Snake
Photo by S. Cohen DEC

Access to this area is prohibited. Maximum Penalties include: \$110,000 or one year imprisonment, or both for damage to habitat, & \$3,300 for entering a closed area.

If you go on a hike, would you stay on formal walking tracks?

23 individuals (13%) wandered off tracks.



Were you aware that the broad-headed snake exists within Royal NP?

Only 25 respondents (14%) knew that the broad-headed snake existed within Royal NP.

Have you ever seen a broad-headed snake in Royal NP?

- One certain sighting.
- 19 may have seen the snake.



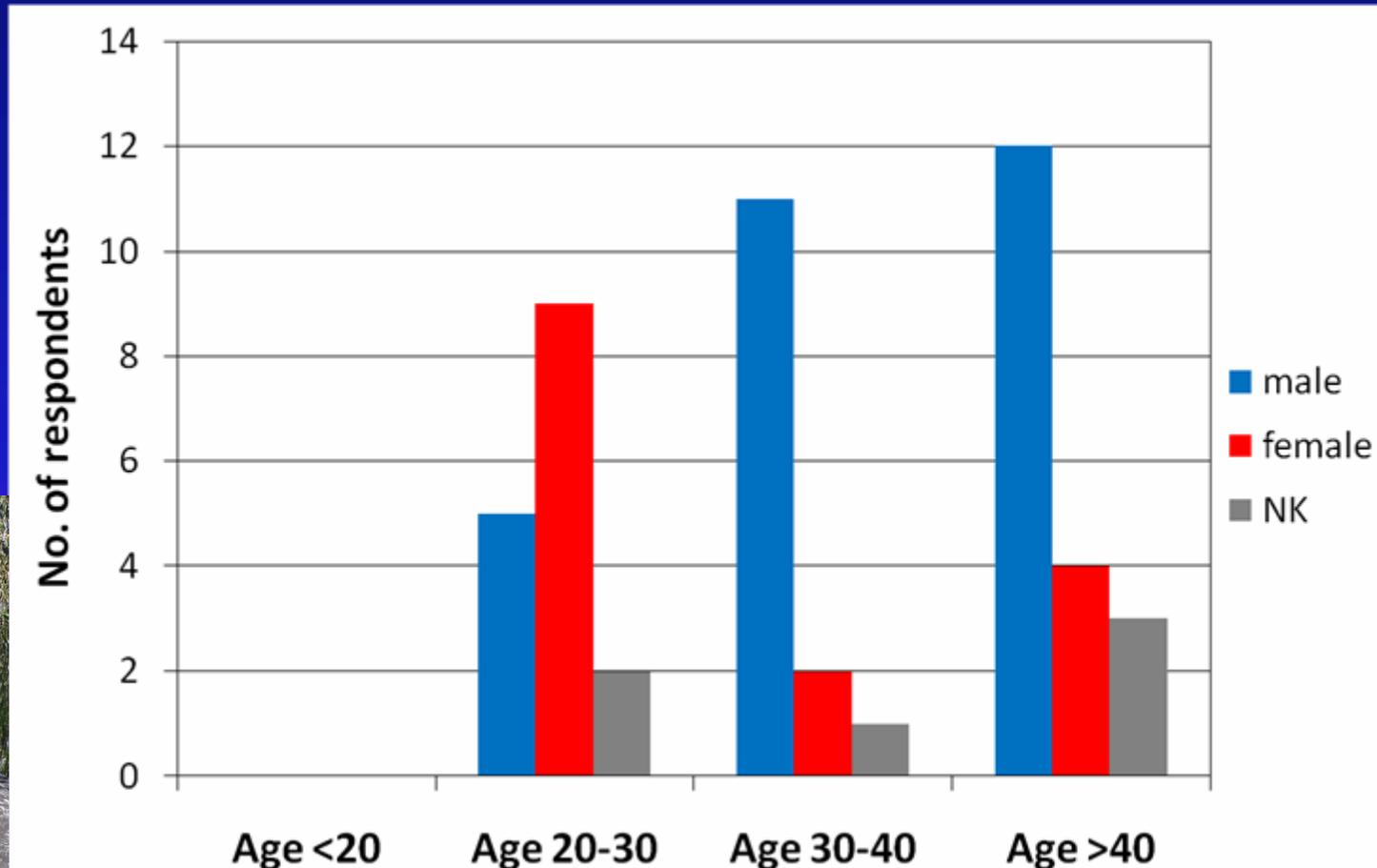
Have you ever observed anybody tampering with or removing sandstone bush-rock from Royal NP?

Ten respondents (6%) had observed rock disturbance.



Did you know it's illegal to interfere with rock habitats within a National Park?

49 respondents (27%) did not know it was illegal to interfere with rock habitat.

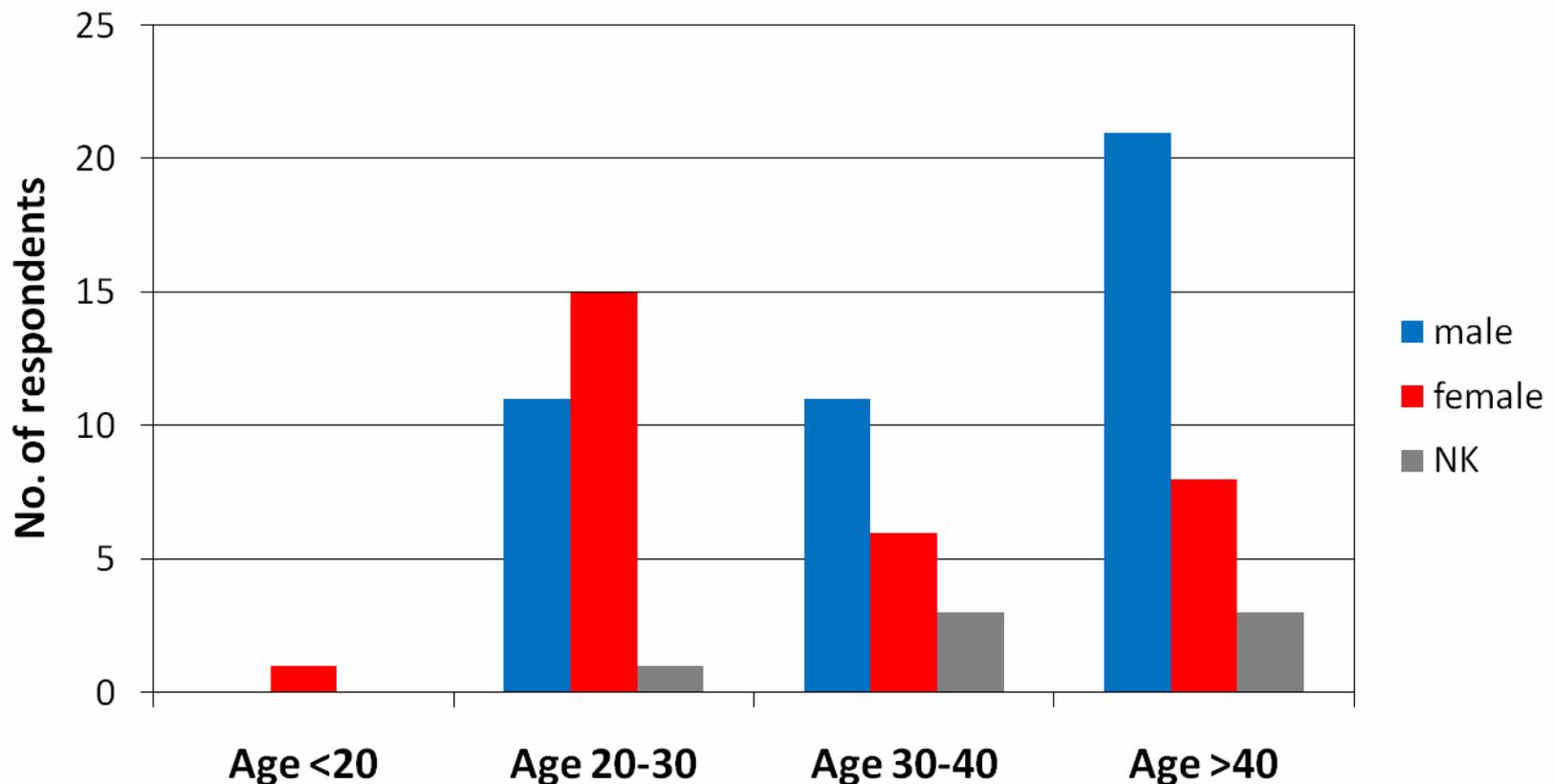


After being informed about the dependence of the endangered broad-headed snake on sandstone habitat, do you think people would be more likely to report activities that disturb this habitat to the Parks and Wildlife Service?

- 25 respondents (14%) did not think that people would be more likely to report acts of disturbance to rock habitat.
- Of these, 17 were male.
- 43 of 49 respondents (88%) who did not know it was illegal to interfere with rock habitat, thought that people would report rock disturbance.

People may inadvertently disturb rock habitats. Do you think this would continue if people were better informed about its impact on an endangered species?

80 respondents (44%) believed that rock disturbance would continue.



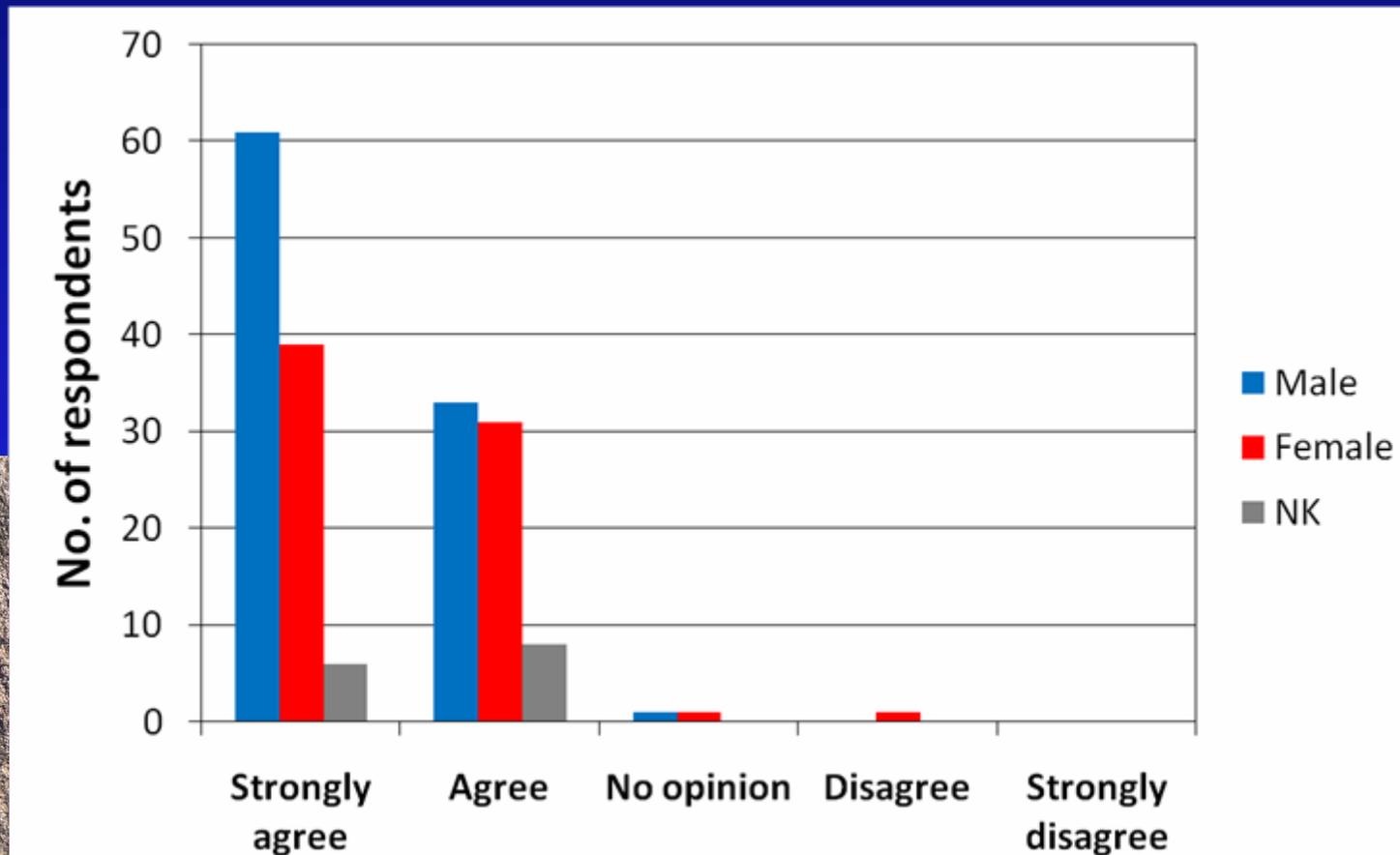
Should money be spent to restore and conserve the habitat of the broad-headed snake?

95% of respondents agreed that restoring and conserving broad-headed snake habitat should be funded.



Please indicate how you feel about the following statement:
'Venomous snakes have a place in nature'.

98% of respondents agreed that venomous snakes have a place in nature.



Conclusion

- Urgent need to educate Park users.
- Disturbance to rock habitat is an on-going issue, even within conservation reserves.
- Immediate management action needed to reduce rock disturbance.
- Overwhelming public support to conserve broad-headed snake habitat.



Thank you.

Questions?



