Ecological Health Performance Scorecards Q&A

What is the purpose of the Ecohealth Scorecards program?

NSW national parks are the jewels in the crown when it comes to the state's biodiversity.

The Ecohealth Scorecards program will drive improvements in the health of national parks by:

- measuring and reporting, at regular intervals, on the ecological health of our national parks
- reporting on the level of investment in park management activities such as feral animal control, weed management and fire management
- using this knowledge to inform decisions about park management.

The program will ensure management decisions are based on ecological, management and financial data that is collected systematically and at regular intervals using the best science.

This will help the National Parks and Wildlife Service (NPWS) deliver the biggest ecological benefits for available funds.

Will the Ecohealth Scorecard results improve transparency?

The program will provide greater transparency about the health of our parks and the level of investment in park management activities. The community will be able to track:

- whether populations of native species, and the quality of their habitats, are stable, improving or declining
- whether threats – such as the population of feral animals and the extent of weeds – are increasing or reducing across the national park estate.

For example, data provided by the program will identify the level of NPWS management activity (such as the number of hours of aerial shooting) and the ecological health outcomes (such as whether feral animal populations are being reduced and whether native species populations are stable or improving).

In turn, this information will help determine whether the level of park management investment and activity is sufficient to maintain or improve ecological health in our parks.

What is being measured?

The Ecohealth Scorecards program is measuring:

- the health of native species – for example, the population of threatened and indicator species such as forest owls, rock-wallabies, koalas, greater gliders, bilbies and pilotbirds
- the quality of habitats and ecological processes – for example, vegetation structure, water quality and soil chemistry
- the level of threats – for example, the extent of weeds and density (or other measure) of feral animal populations such as cats, foxes and deer
- fire patterns – for example, fire severity, extent and frequency of wildfires.

How is ecological health being measured?

There are 4 broad categories of ecological health monitoring:

- park-wide surveillance monitoring for trends in mammal, bird, frog and reptile populations and habitat condition or function – this involves an array of camera traps and acoustic monitors deployed at permanent monitoring sites across the park's major habitat types, as well as vegetation surveys and soil samples
- targeted surveys for threatened species such as koalas, greater gliders and Wollemi pines
- measurement of fire metrics using satellite imagery
- monitoring of threatening processes including feral animal surveys and measuring weed distribution.

A range of modern survey techniques are being deployed across the state. Innovations including improved drone and acoustic technology, advances in thermal imagery and remote sensing and the use of AI and eDNA techniques will be deployed as appropriate.

Is this the biggest systematic monitoring program ever undertaken by NPWS?

Yes. The Ecohealth Scorecards program is the largest, systematic monitoring program ever undertaken across the NSW national park estate. The scale and extent of scientific monitoring is massive (**refer to Table 1)**. Across the 8 park aggregations, a single round of surveillance monitoring (not including targeted surveys) will involve:

- 657 permanent monitoring sites
- approximately 80,000 camera trap nights
- approximately 39,000 acoustic trap nights
- approximately 1,300 bird surveys.

The amount of data subsequently generated and analysed is substantial. As an illustration, the first Ecohealth Scorecard for Royal-Heathcote-Garawarra alone resulted in:

- over 250,000 camera images of animals
- 261,327 audio files
- 2,633 bird records
- 2,395 plant records
- 200 soil samples
- 40 water quality samples.

What makes the program ground-breaking?

The Ecohealth Scorecards program is ground-breaking for 3 reasons:

- It involves a commitment to large-scale scientific monitoring that is conducted at regular intervals – in practice, there are few examples of long-term, systematic monitoring at this scale anywhere around the world.
- It positions New South Wales and NPWS as an international leader in protected area management – it is perhaps the first program globally to integrate ecological health data with financial data and management activity to drive continuous improvement in park management.
- It introduces a new level of transparency – reporting to the community on populations of native animals and plants, the condition of habitats, the densities of feral animals and weeds and other matters.

Until now, there has been no systematic and comprehensive monitoring of the health of our national park estate. This program will generate a wealth of new data:

- regular and systematic monitoring of feral animal activity and density, as well as the extent of weeds
- a new approach to analysing and reporting the ecological effect of fire management
- a network of permanent monitoring sites that capture a range of data related to wildlife and habitats
- improved data on the cost of park management activities.

How does the information from the Ecohealth Scorecard program help inform management?

The program will ensure management decisions are based on ecological, land management and financial data that is collected systematically and at regular intervals using the best science.

NPWS management will review data regularly. Where health is declining, management activities will be adjusted.

For example, in Royal National Park:

- Park-wide surveys found widespread fox activity – the management response has been to introduce annual park-wide aerial baiting for foxes.
- Data on the distribution of deer will be used to better target the aerial shooting program.
- New management actions have been introduced to address the threat of myrtle rust to the critically endangered scrub turpentine population.
- New reporting and analysis of fire regimes will be incorporated into fire management including the planning of hazard reduction burns and the implementation of wildfire response strategies.

Does a decline in ecological health mean that management by NPWS has been poor?

Not necessarily. Some of the drivers that may cause a decline in the ecological health of a national park are caused by factors that are beyond the control of park management. For example, ecological changes resulting from global climate change, impacts resulting from changes in land use on adjoining properties, and the ongoing impact of some threatening processes, such as mortality caused by chytrid fungus, cannot be addressed by NPWS management. Each of these factors may cause a decline in ecological health even when NPWS management is effective.

In addition, the level of management intervention by NPWS is determined by the resources available. The Ecohealth Scorecard results will help identify whether the resources available to NPWS are sufficient to support the level of intervention (e.g. the level of feral animal control) that is required to maintain the health of our park estate.

Does the Ecohealth Scorecards program tell us why things are changing?

The Ecohealth Scorecards program seeks to measure **whether** there are changes in ecological health and the **extent** of those changes. For example, it will measure whether small mammal populations are increasing and by how much.

The program is not structured as a research program and so does not seek to determine **why** a change is occurring.

Previous and ongoing scientific research, and decades of practical experience, means many ecological and management responses are already well understood – that is, we already know why many changes occur and can adjust our management accordingly. For example, we know that foxes suppress small-medium sized mammal populations and that baiting will reduce fox activity.

However, where the results of monitoring reveal changes that cannot be explained, or when a new management strategy needs to be evaluated, additional research will be undertaken to better understand those changes and to inform decisions about management. In this case, the Ecohealth Scorecard program will integrate with targeted research projects to provide additional guidance to park managers.

Which national parks are covered initially? How often will monitoring occur?

The program's first 2 Ecohealth Scorecards are the Royal National Park aggregate (Royal–Heathcote–Garawarra) and Kosciuszko National Park.

By late 2025, Ecohealth Scorecards will be published for 8 key NSW national park sites covering around 30% of the national park estate and representing major NSW ecosystems.

The groupings have been chosen to best represent the broader national park system.

- Royal–Heathcote–Garawarra
- Kosciuszko
- Greater Blue Mountains
- Great Divide Northern Forests
- Myall Lakes
- Pilliga–Warrumbungles
- Narriearra–Thurloo Downs
- Macquarie Marshes

Monitoring will occur at regular intervals at each park aggregation. Timeframes will be driven by ecological factors but typically will occur every 2 to 3 years. The program is intended to be long-term, recognising the critical value of data collected consistently over many years.

How do we choose what attributes (indicators) to measure?

It is not feasible to measure or monitor every animal and plant species or every component of the ecosystems in our national parks. There is simply not enough time and available resources.

Accordingly, NPWS has chosen an initial suite of attributes (indicators) for each national park aggregation covered by the program. The initial selection has been guided by an understanding of how the ecosystems in each park function and relate to each other, as well as a range of pragmatic considerations such as cost, feasibility and relevance to management.

High priority has been given to choosing species or habitats that are threatened and declining; species that play a special role in the functioning of ecosystems (e.g. ecosystem engineers); species that provide a good signal of ecological health and species and habitats for which monitoring strategies will be effective. Those threats that are having the greatest impact on ecological health in our national parks – typically feral animals, weeds, altered fire regimes and disease – will be measured at each site.

Will more species and other indicators be measured in future?

Yes. The first Ecohealth Scorecards at each park contain our initial list of indicators. Over time, more indicators will be added as:

- the program is rolled out in stages at each national park
- our knowledge about each park improves
- any new threats emerge
- technology improves our capacity for monitoring.

For example, the second report for Royal National Park will include results for koalas, greater gliders and forest owls.

A future priority will be adding species that are of cultural significance to Aboriginal owners.

Is there a role for citizen scientists and students?

Yes. The data contributed by citizen scientists through platforms such as eBird, iNaturalist and Atlas of Living Australia are collated and utilised in the program and help to increase knowledge on species' occurrence.

NPWS-registered volunteers assist in some field surveys and at times with some data processing.

How is the impact of climate change taken into account?

The effects of a changing climate have been widely acknowledged as impacting species and ecosystems, either directly (e.g. prolonged drought) or indirectly (e.g. more severe and frequent fires as a result of prolonged drought). Further, interactions between climate change and other factors, such as feral herbivores and habitat degradation, compound the effects. Understanding broad-scale climate-related effects only becomes achievable with long-term (>10 years) monitoring data and across multiple NPWS parks. As such, possible climate-related factors that may affect species distributions and abundance have not been directly incorporated in the monitoring design but will be addressed analytically as multiple years and sites are completed by the program.

Table 1 Level of monitoring at each site monitored under the Ecological Health Performance Scorecard program

Park / park aggregate	GIS area (ha)	Number of monitoring sites	Camera trap-nights*	Acoustic (audible and ultrasonic) trap-nights*	Bird surveys	Vegetation (floristics and structure) plots	Soil samples	Water quality sites
Kosciuszko National Park^	689,627	125	15,000	7,500	**250**	**125**	**625**	**20**
Royal-Heathcote national parks and Garawarra State Conservation Area	19,144	40	4,800	2,400	80	40	200	20
Myall Lakes National Park	47,961	56	6,840	3,420	114	57	285	12
Great Dividing Range – northern forests^	243,563	86	10,320	5,160	172	86	430	24
Blue Mountains National Parks	842,178	122	14,640	7,320	244	122	610	TBA
The Pilliga	232,496	87	10,440	5,220	174	87	435	TBA
Macquarie Marshes#	22,803	40	4,800	2,400	80	40	200	TBA
Narriearra-Thurloo national parks#	593,790	100	12,000	6,000	200	100	500	TBA
Total	**2,691,562**	**657**	**78,840**	**39,420**	**1,314**	**657**	**3285**	**76**

* Based on a typical 30-day deployment

^ Planned number of monitoring sites

Estimated number of monitoring sites

Environment and Heritage.
Department of Climate Change, Energy, the Environment and Water
Locked Bag 5022, Parramatta NSW 2124; Phone: 1300 361 967
Email: info@environment.nsw.gov.au; www.environment.nsw.gov.au
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