Creating a national picture of the environmental impacts of vertebrate pests and weeds – virtual workshop summary

Background

The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), of the Australian Government Department of Agriculture, Fisheries and Forestry has commenced a project that aims to provide a national picture of the extent and magnitude of a range of environmental impacts caused by established vertebrate pests and weeds across Australia. To create this national picture, a national framework/approach will be developed, with the result enabling the Australian Government and other interested parties to facilitate priority setting around invasive species and weed management. It is hoped that the process can be repeated, providing one way of tracking changes in impacts over time. This work is being supported by the Chief Environmental Biosecurity Officer, with funding from the Australian Government Supporting Communities Manage Pest Animals and Weeds Program.

National workshop

A virtual workshop, "Creating a national picture of the environmental impacts of vertebrate pests and weeds" was held by ABARES, on 16 November 2022. Over 100 participants from a broad range of organisations were in attendance, including from Australian and state and territory governments, Natural Resource Management Organisations, non-government organisations, First Nations groups, and researchers. This workshop was the first engagement with stakeholders of the project and aimed at sharing information about the project and eliciting perspectives about how a national picture of the environmental impacts of established pests and weeds could be built.

Dr Robyn Cleland, the former Chief Environmental Biosecurity Officer (CEBO), opened the workshop, providing an overview of the importance of this work to the CEBO. The workshop was organised around three main themes, with introductory presentations to each theme, followed by a series of questions posed by the ABARES project team for participants to discuss during break-out discussion groups and post their thoughts on the online platform Miro™.

There was an overwhelming response to the questions posed. The research team has undertaken a thematic content analysis to summarise the input from workshop participants. This is not intended to provide an exhaustive list of all possible aspects of this project but provides a summary of the critical input to understand wants and needs of a national picture by participants. In some cases, similar responses will appear in multiple sections as they are relevant to multiple areas. Feedback that was given prior to and after the workshop has not been included, only

information captured at the workshop. This additional feedback is being considered by the project team, and we continue to welcome stakeholder perspectives on this important work.

The responses provided by participants will help shape how the project team formulate a method to create this national picture. However, this will not be the only source of input, with more targeted consultation scheduled to occur in the first half of 2023. All options presented will need to be weighed against project criteria to fulfil the policy need from the national perspective, while taking into account the perspectives and knowledge shared by our stakeholders, as well as resources and time available to complete the project.

Workshop summary

At the workshop, 7 questions were asked of participants:

1. What would a national picture look like to you?
2. What information would need to be included for it to be useful to your work?
3. At what geography/scale should we report on environmental impacts? (e.g. Specific locations / Broad geographic scale? Would that influence how we can report on this information at a national scale?)
4. Do you see areas where there may be information gaps?
5. From your perspective who (agency or people) is best placed to report, provide information or input on the environmental impacts of established vertebrate pests and weeds?
6. What process or methods could we use to understand and measure the environmental impacts, e.g. via expert opinion, regional workshops, survey of public land managers? Please provide examples.
7. How can we capture, store and disseminate the information, e.g. databases, spatial analysis tool (GIS), decision-support tool? Please provide examples.

Given the broad nature of some of these questions, there was some repetition across responses to different questions. We have further broken these down into themes to capture all of the responses and for clarity. These themes include:

1. Methodology – approach
2. Methodology – scale
3. Collaboration – partnerships and knowledge
4. Outputs – storage and presentation of data
5. Information gaps

1. Methodology – approach

Across questions, consideration by participants was given to multiple facets of the approach, including the methodology of how to capture and measure impact and the types of impact captured. Across these themes, we identified some important considerations for designing the methodology.

Important considerations

- Method should be designed to establish a baseline and capture trends and change in a timely manner, including replicability and comparability across ecosystems and species.
- Supports long-term monitoring, priority setting and management.
- Uses nationally consistent frameworks/standardised data/monitoring protocols/control options, standardised metrics and measures of impact and has agreed consistent definitions.

- Is able to quantify impact in terms of the extent and condition, as well as be ecologically relevant and informed.
- Incorporates qualitative and quantitative data and information, and Traditional Ecological Knowledge (TEK).
- Uses identified significant ecological assets as a focus of impact.
- Considers taxa beyond vertebrate pests and weeds.
- Includes cultural impacts relevant to First Nations Peoples.
- Supports the ability to aggregate information.
- Aligns with Federal policy direction.

Capturing and measuring impact

A number of responses provided feedback on the type of method that could be used, which were varied, such as using frameworks (such as Environmental Impact Classification for Alien Taxa (EICAT), the National Established Weeds Priorities (NEWP) framework), environmental accounting, and indicator species.

There were many examples of existing systems that could be used to capture data on impacts, such as FeralScan/WeedScan, ALA, as well as methods such as remote sensing. Fulcrum, EpiCollect; ALA, iNaturalist, FeralScan/WeedScan, BDR, LISTmap, Natural Values Atlas, earth observation data and Digital Earth Australia were provided as examples of sources of data by participants. Power BI and ArcGIS were listed as examples of data analysis platforms. Other responses on data included the need for data standards and a data management system.

A number of responses suggested the use of experts, including those on-ground, to understand and measure environmental impacts. To obtain this information, a number of approaches were suggested, such as:

- questionnaire based survey, at either NRM, local level

- workshops in regions

- working groups

- elicitation

- ranger forums

- community discussion and forums

- on ground surveys

- culturally appropriate engagement

- advisory groups.

Type of impact captured

Many responses related to what components of impact should be included such as looking at both negative and positive impacts, cultural impacts, expressing impacts in monetary terms (often referred to as non-market estimates), as well as impacts on high value ecological assets.

2. Methodology – Scale

Stakeholders highlighted important considerations relating to the scale at which impacts could be measured, some related to defined boundaries, whereas others suggested locations, or reporting at broad ecological scales.

Important considerations

- There should be sufficient granularity as well as an ability to aggregate data and information to higher spatial units and standard geographies, e.g. sub-IBRA and IBRA or local government areas, catchments and region or Indigenous Protected Areas or ecological communities.

There were a number of responses that suggested that the impacts should be reported at multiple scales, with some suggesting these could then be aggregated from local to NRM level. Of those responses suggesting defined boundaries, these included:

- NRM

- IBRA/sub-IBRA

- local/catchment/regional

- local government level.

For reporting at specific locations, respondents suggested assets and priority places.

There were many suggestions that were focussed on reporting at more broad ecological scales, including scales that are:

- species specific

- scale of impacted species and ecological communities

- vegetation community types

- ecosystem.

The ability to report without boundaries (as pests and weeds don't know boundaries) was also suggested. Sea country, nature of impact, scale of management, and overlaps of ecological communities and biosecurity threats were also suggested.

Important considerations about scale were also documented, including that it is determined by the question, and available time and resources. Participants also suggested that the scale should be at the finest possible to allow for environmental/climatic associations, and take into consideration the scale that the data is at.

3. Collaboration – Partnerships and knowledge

Important considerations

- Facilitates collaboration across all stakeholder groups and land tenures, including all levels of government, First Nations Peoples, non-government organisations and private landholders.
- Facilitates commitment of stakeholders to enduring resourcing, bipartisan alignment of legislation on control and nil-tenure.

Knowledge

There were many responses relating to who could report and provide information on the environmental impacts of pest and weeds. These broadly include:

- government – State and Territory (environment/conservation departments/parks), Local, LLS, Commonwealth (Defence, DCCEEW Biodiversity Data Repository, DAFF, parks), Rangers, Landscape boards
- non-Government organisations: National bodies and National Coordinators; Environmental groups
- First Nations People – Indigenous rangers, Traditional Owners, Elders, Indigenous organisations, Indigenous land managers
- citizen science and community groups (Landcare, Feral scan, weed scan, ALA)
- research agencies (CSIRO), research bodies, and universities/researchers
- landholders and land managers
- funding bodies
- advisory groups
- consultants.

4. Outputs – storage and presentation of data

Important considerations
- data, information and outputs are centrally hosted and maintained
- outputs are user friendly for all end users, including the general public
- outputs should include a dynamic map, spatial representation of information and data that is scalable
- enable integration (layers) with other data and information
- includes TEK.

Many respondents emphasised using existing systems and ensuring a high degree of accessibility.

The majority of participants suggested that the data should be stored on data platforms using existing funded systems, but there were diverse views about what this should be. For example, people suggested systems such as ALA, state and territory atlases, MERIT, and the Biodiversity Data repository (BDR).

There were a few responses on how the information could be presented. This included having one site for all information, having a database of information, a map that is dynamic and involves GIS layering, information that is accessible, having case studies, as well as graphs of trends.

There were a number of responses on how the information could be disseminated, such as web based analysis systems such as Power BI, ArcGIS, Quantum GIS (QGIS), LISTmap, Google Earth, as well as web based data capture systems such as FeralScan/WeedScan, ALA, State and territory atlases. There were also suggestions of other forms of communication such as factsheets, papers, face to face, maps, websites.

5. Information gaps and potential issues

Stakeholders shared a whole range of information gaps and potential issues that could impact the outcomes of this project. These are summarised below.

- Location issues – unpopulated areas and marine and aquatic habitats being a gap, and a bias toward information in populated areas.
- Methodology related issues – difficulty in measuring impacts caused by multiple invasive species in the same area; gaps in understanding cumulative impacts, gaps in assessing impacts on ecosystem function; the need to establish minimum data standards.
- Monitoring – the need for agreed standardised metrics; long term monitoring required but doesn't happen; not enough resources on ground.
- Data issues – time lag in data availability, availability of data/reporting from funded projects, no long term or baseline distribution data, data to inform management, as well as the difficulty of too many sources of data, not all in one system.
- Communication – including issues around information sharing, translation of science to those on the ground and communication of data (mapping impacts geospatially).
- Management – gaps in control options, barriers – different impacts in each state, time spent on management.
- Policy –priority species in different regions; conflicting policy across jurisdictions, short-term funding cycles.
- Cultural gaps – incorporating cultural scales and First Nations perspectives, TEK.
- Modelling – a gap in climate and other modelling to predict future species distribution for proactive management.
- Taxa related issues-including a lack of information about particular species (such as pig and deer); invertebrates; vulnerability of plants to myrtle rust, invasion pressure/invasiveness/impacts information.