



Invasive Animals Cooperative Research Centre

National Land & Water Resources Audit
An Initiative of the Natural Heritage Trust

State/Territory Jurisdictional Workshops

Report on outcomes

July 2006

Mr. Peter West - Invasive Animals CRC



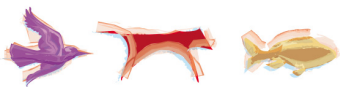
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Invasive Animals Cooperative Research Centre

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Executive Summary

The Invasive Animals Cooperative Research Centre (IA CRC) and the National Land and Water Resources Audit (NLWRA) developed the collaborative National Invasive Animals Project to report on the status of invasive animals in Australia, progress information to facilitate on-going reporting, monitoring and evaluation, and to establish National Indicators, protocol, and information products to meet State and National needs.

To date, the project has involved introductory meetings with State Agencies; the drafting, refinement and recommendation of National Indicators for Vertebrate Pests through staging of a National Workshop; endorsement of National Indicators through the Vertebrate Pest Committee; identification of species for national reporting; a review of current methods used by States/Territories to monitor the distribution and abundance of invasive animals; drafting of Protocol to address the Indicators; a review of current information management systems; and scoping of various products for delivery of information to end-users.

The National Invasive Animals Project, as a collaboration with all States / Territories also, has recently staged a series of State and Territory workshops involving key Government representatives to address reporting of information under the agreed National Indicators. The workshop addressed priorities, issues, available information, future information, as well as internal tasks for States regarding capacity building and infrastructure support of monitoring and evaluation activities.

The State/Territory workshops were successful in addressing the aims of the National Invasive Animals Project. The main outcomes of the State workshops were:

1. Agreement by relevant State and Territory Agencies to determine what information is available to report under the recommended Indicators for Vertebrate Pests;
2. Agreement by the relevant State and Territory Agencies to establish what is required internally for reporting of information to address the National Indicators in an on-going capacity;
3. Drafting of a strategy / plans of implementation for collation of existing information, collection of information where necessary and as a State priority, and reporting of information to address the National Indicators;
4. Identification of actions for project collaborators within each State jurisdiction regarding steps for reporting information;
5. Proposal of a timeframe for addressing the strategy and steps in the process of data collation and reporting within each State/Territory;
6. Identification of issues regarding data access and sharing agreements; and
7. Identification of what resources might be required to facilitate immediate reporting of information under the National Indicators.

The States and Territories raised many immediate issues regarding short and long-term data collection, collation and reporting of information under the agreed National Indicators for Vertebrate Pests. The main issues included:

- Currently, information to address the agreed National Indicator for Vertebrate Pests and relevant species can be obtained from most States and Territories, however state-wide data-sets for many species are lacking.

Information needs

- It remains unclear whether broad-scale state-wide descriptive and qualitative estimates of pest animal populations is meaningful for State management activities;
- Some States proposed that a scale data of 1:25,000 is more suited to their requirements than 1:100,000. It is important to consider fitness for purpose when deciding on a reporting scale; and
- Some States/Territories have the capacity to report information for species other than those identified as having national significance.

Data issues (current, potential and future)

- Mapping distribution and abundance has not previously been considered a major management priority. Similarly, measuring impacts has not been a priority. Most operation resources are directed towards on-ground control activities and some control monitoring; and
- Some States indicated that developing maps and reporting information on widespread and largely uncontrollable species, such as feral cats is meaningless for State management.

Policy and Management

- There are many political ramifications of generating national maps of pest animals, and many consequences of presenting qualitative information in the public arena; and
- For States that have multiple Government Agencies managing pest animals, reporting information in an on-going capacity may be difficult under current institutional frameworks.

Quality assurance and control

- The quality of most State-based qualitative information is questionable; and
- Distribution and abundance DO NOT necessarily equate to impacts – The States are concerned that broad-scale information on distribution will be interpreted as equating to impacts and lead to misrepresentation of problems and priorities, and misguide allocation of funding.

Infrastructure and Resourcing.

- Several States indicated that there are resource limitations for immediate and long-term monitoring, evaluation and reporting for invasive species.

Information Products

- The potential range of species can provide valuable information for decision-makers at State/Territory and National levels simultaneously. If potential distribution information can be incorporated in Products, then this may assist decision-makers; and
- Trend information is also important to collect and report at State and National levels, allowing priorities to be assigned based on current population trends.

The States and Territories also made many recommendations regarding data collection, collation and reporting of vertebrate pest animals information. Specific recommendations from the relevant State and Territory Agencies/Authorities were:

- The proposed national reporting scale (1:100,000 or 0.5 degree mapping) may not be sensitive and robust enough for detecting and reporting changes in populations in response to management activities, investment, on-ground control activities supported by NHT;

- Resources are often not available to adequately collect information for monitoring at a scale suited to evaluating management and investment. This is a significant long-term and national issue.
- Existing data within most States/Territories require significant interpretation, so it is imperative to allow State authorities to have the final comment regarding the classification of State data at a national scale, to overcome problems that have previously emerged where national data fails to resemble state-data;
- The development of nationally meaningful products for reporting of invasive animal populations based on information across jurisdictions relies on either:
 1. Agreement and adoption of consistent methods for data collection between each State / Territory jurisdiction, or
 2. Agreement on a method for data aggregation/transformation to facilitate comparisons between existing (and differing) data types between State/ Territory jurisdictions;
- Priority should be directed to developing an agreed method to utilise differing State/Territory datasets (regardless of the techniques used to collect the data), for uniform reporting across all jurisdictions. This will allow the States to continue with their current practices while meeting national reporting needs;
- During national product development, acknowledgement that the States and Territories use differing methods to collect information under the Indicators is required for accurate interpretation;
- Clarity is required regarding reporting of information to address the Impacts Indicator;
- Information on impacts may be potentially available from case studies, research programs, and literature if criteria are clearly defined within the Indicator Protocol;
- A formal request may be required from the NLWRA to access information from all States/Territories for national reporting;
- The resources to address immediate data collation needs under the Framework are lacking in many States, so a formal request may be made from those State Governments for Australian Government support
- On-going support from the Australian Government may be needed to support data collection, collation and reporting. Long-term funding issues will have to be resolved between Governments

The States /Territories are currently addressing immediate and long-term commitments to collection, collation and reporting of vertebrate pests information. Several States have commenced data collation to address immediate reporting requirements under the National Indicators for Vertebrate Pests. Where information are lacking to address the Distribution and Abundance Indicator, several States and Territories have recommended that the Queensland's APDS methodology could allow them to address current reporting commitments, and many are currently gathering datasets to apply the APDS method. Several State-organised regional meetings have also been scheduled for data collation.

It has been tentatively proposed that completion of data collation to address the Distribution and Abundance Indicator could be October 2006 for Queensland, October/November for South Australia, Victoria, Tasmania, New South Wales, November 2006 for Western Australia, and November/December 2006 for the Northern Territory, pending data transformations, access arrangements and licensing issues are addressed.

Information to address the Impacts Indicator will take longer to compile, and requires clarity on what information is available, required, recommended by the VPC.

Abbreviations

APDS	Annual Pest Distribution Survey
CALM	Conservation and Land Management, Western Australia
CDU	Charles Darwin University
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, New South Wales
DEH	Department of Environment and Heritage (Federal)
DNRETA	Department of Natural Resources, Environment and the Arts, NT
DNRM	Department of Natural Resources and Mines
DPI	Department of Primary Industries, New South Wales, and DPI Victoria
DPIW	Department of Primary Industries and Water
DSE	Department of Sustainability and Environment
DWLBC	Department of Water, Land and Biodiversity Conservation (SA)
EPA	Environment Protection Agency, QLD Government
IA CRC	Invasive Animals Cooperative Research Centre
MDBC	Murray-Darling Basin Commission
NLWRA	National Land & Water Resources Audit or the Audit
NM&EF	National Natural Monitoring and Evaluation Framework
NRM	Natural Resource Management
NVA	Natural Values Atlas
PIRSA	Primary Industries and Resources, South Australia
PIMS	Primary Industries Information Management System
PMO	Pest Management Officer, NSW DEC
PV	Parks Victoria
SARDI	South Australian Research and Development Institute
VPC	Vertebrate Pest Committee
WAMG	Wild Animal Management Group

1. Introduction

1.1 Background and purpose

Significant investments are increasingly being made in natural resource management (NRM) via Government Programs such as the National Action Plan for Salinity and Water Quality (NAP) and the Natural Heritage Trust (NHT), in addition to various State/Territory, Community and landholder initiatives. Governments at various levels in addition to regional groups and land managers need access to the best available data and information to assist in the decision making process.

The National Monitoring and Evaluation Framework (NM&EF) has been developed by the Australian and State/Territory Governments to facilitate monitoring and reporting on the impact of the NAP and NHT. The NM&EF identifies natural resource topics – Matters for Target – with the aim of assisting the assessment of the effectiveness of various programs. Each ‘Matter for Target’ has a set of Indicators that will be used as the guideline to monitor and report on the topic.

The collaboration of State/Territory Agencies in the development of national reporting products for invasive animals has involved the drafting, refinement and recommendation of National Indicators for Invasive Animals; the drafting of Protocol to address the Indicators; identification of species for national reporting; a review of current methods used by States/Territories to monitor the distribution and abundance of invasive animals; a review of current information management systems; and scoping of various products for delivery of information to end-users.

The agreed National Indicators identify the fundamental information to measure and report on (at regional, State/Territory and National levels) to assess the status of invasive animals and their impacts to evaluate the effectiveness of management activities, funding initiatives and management priorities. The Australian Vertebrate Pest Committee (VPC) has endorsed the National Indicators for Invasive Vertebrate Pest Animals as:

1. Distribution and abundance of significant invasive vertebrate pests
2. Impacts of significant invasive vertebrate pests

Simultaneously, the VPC has recommended 10 species as priorities for reporting under the Recommended Indicators based on current State/Territory priorities, with intentions on adding species as deemed necessary in the future. They are:

Feral Pigs
Feral Goats
Deer
Red Foxes
Rabbits
Dingoes and other wild dogs
Feral Cats
Cane Toads
European Starlings
Common Carp

The next step of the National Weeds Assessment and Invasive Animals Work Plans involves the establishment of arrangements for the collation of State/ Territory datasets to support reporting

against the Recommended Indicators. To ensure this process delivers the most valuable outcomes to all collaborators, it is imperative that project collaborators establish and agree on arrangements for reporting information on weeds and invasive animals, and on the products to deliver.

While the National Weeds and Invasive Animals Work Plans are being undertaken simultaneously in the interests of State/Territory collaboration, this report summarised outcomes specific to the Invasive Animals Work Plan. It provides clarity on currently available data, relevant issues for data reporting, and the intended process of data collation to address national reporting requirements.

1.2 Workshop meeting objectives and agenda

A series of State/Territory Agency meetings were held during June to establish a strategy for lead Agencies to address current reporting requirements for invasive species under the NM&EF. The meetings were geared towards establishing what information could potentially be reported under the agreed National Indicators, and the development of a draft strategy, list of issues, itemised actions, and a sequence of steps required to report invasive animal's information into a nationally agreed format.

The National Project Coordinators role is to assist the States /Territories in the process of gathering and collating existing data and information to report against the agreed National Indicators for vertebrate pests under their current agreement / commitment to the NM&EF.

The objectives of the meetings were:

2. Progress the National Invasive Animals Work Plan through continued collaboration in collection, collation, reporting of invasive animals information
3. Establish a strategy for addressing current reporting requirements for each species, and determine appropriate actions for collaborators.
4. Establish a suitable timeframe for reporting, and clarify the stages required for reporting of information under the recommended Indicators

The State/Territory meetings addressed these objectives through discussion on the following matters:

1. Reporting of information under NM&EF and national weeds and invasive animals projects
2. Information needs at regional, state and national levels, and all relevant stakeholders for collaboration
3. Information products required by the States/ Territories for reporting, and existing products used to identify National and regional product-needs
4. Data availability to address the Recommended Invasive Animals Indicators
5. Compilation standards: requirements for converting state data to nationally consistent data.
6. Data Quality rating to report on origin and quality of information.
7. Data and information access arrangements, data exchange / sharing agreements

8. What timeframe and stages are suitable for proposed reporting of existing datasets, propose a planned approach for ongoing reporting
9. What resources / facilities and support are needed to collate existing data, and develop data in an on-going capacity. Identify gaps in process.

2. Summary of State/Territory workshops

2.1 Queensland

Queensland Department of Natural Resources and Mines met with the NLWRA Weeds Project Coordinator and the Invasive Animals CRC Project Coordinator in Brisbane on June 7.

Attending the meeting were the following Queensland Government representatives.

Jim Thompson	NRMW	07 34055544	jim.thompson@nrm.qld.gov.au
Moya Calvert	NRMW	07 34055542	moya.calvert@nrm.qld.gov.au
Kevin Strong	NRMW	07 34055529	kevin.strong@nrm.qld.gov.au
Paul Paping	NRMW	07 34055548	paul.paping@nrm.qld.gov.au
Tony Pople	NRMW	07 32247667	tony.pople@nrm.qld.gov.au

Priorities and Recommendations

- Existing distribution and abundance data is available for reporting against most species.
- Information on European Carp and European Starlings can be gathered for State reporting via the Department of Primary Industries and Fisheries, and Birds Australia respectively.
- Clarity is required on ways to report on the impacts of invasive animals.
- Information on impacts can be obtained from relevant case studies, research programs, and literature if criteria are defined for selection.
- It was recommended that impacts information may be available from work by Jim Mitchell, Lee Allen, and the EPA. The economic impacts of wild dogs may be obtainable from some research.
- The importance of establishing agreed reporting format across jurisdictions, or a method to transform different methods used across States simultaneously, is important for national products to be meaningful.
- DNRM recommended that a formal request from the NLWRA regarding exchange and access to distribution and abundance information would be required. Equally, access to impacts information may require equivalent formalised request.
- Important to allow State authorities to have final say regarding the final classification of all National Maps developed through the projects.
- Access to Queensland APDS survey data (and other datasets) for the NLWRA may require a specific request from NLWRA for the data.
- DNRM propose to report on Water Buffalo and Red-eared Slider Turtles also.

Actions

- DNR&M to clarify what data may be available to report against Invasive Animals Indicators.
- DNR&M to clarify what QLD DPI&F information is available for Common Carp.
- Project coordinators to facilitate a process of clarifying what is required for addressing the Impacts Indicators, report to Queensland and other States/Territories through Committees.
- Invasive Animals Project Coordinator to approach Birds Australia regarding suitable Birds data for Queensland.

Strategy for collation of information to report against National Indicator for distribution and abundance: Steps required for reporting information

1. Aggregate any previous APDS information on the east coast of Queensland (from 0.125 degree to 0.5 degree data) for national reporting for species marked as nationally significant.
2. Approach Birds Australia regarding access to Queensland Starling data.
3. Contact Department of Primary Industries and Fisheries regarding Carp data for Queensland.
4. Discuss what options there are for reporting against the Indicators for invasive vertebrate pest impacts.
5. Organise projection of all species distribution data to uniform format for national reporting.
6. Determine whether there is a need to aggregate deer species information to address all species simultaneously, or whether separate species maps should be prepared.
7. Need to address alignment of existing 0.5degree map-data with 1:100K map sheet series intended for national mapping projects.

Completion date for data collation and reporting

It is anticipated that data from the APDS, data from Queensland DPI&F on carp, data from Birds Australia on Starlings, and any available information on Cane Toads could be collated by October 2006, pending any required data transformations, access arrangements and licensing with collaborators.

2.2 South Australia

The South Australian Department of Water, Land and Biodiversity Conservation and Department of Heritage met with the NLWRA Weeds Project Coordinator and the Invasive Animals CRC Project Coordinator in Adelaide on June 15.

Attending the meeting were the following South Australian Government representatives.

David Peacock	DWLBC	8303 9504	peacock.david@saugov.sa.gov.au
David Cooke	DWLBC	8303 9510	cooke.david@saugov.sa.gov.au
Chris Holden	DEH	8222 9439	holden.chris@saugov.sa.gov.au
Mark Ramsay	DWLBC	8303 9530	ramsey.mark@saugov.sa.gov.au
Greg Mutze	DWLBC	8303 9505	mutze.greg@saugov.sa.gov.au
Mark Williams	DWLBC	8303 9520	williams.mark@saugov.sa.gov.au

Priorities and Recommendations

- Clarity is required on ways to report on the impacts of invasive animals.
- Information on impacts can be obtained from relevant case studies, research programs, and literature if criteria are defined for selection.
- Existing data is available for reporting on most species for distribution and abundance.
- DWLBC proposed that a reassessment of distribution and abundance data could be undertaken by rapidly constructing draft maps of species then consulting an expert group (including DEH) to review maps.
- Other species could be included in SA surveys, and trend information for change across time is also important for SA Government.
- Quality assurance of subjective distribution and abundance data is currently low and was generated through several people.
- Important to allow State authorities to have final comment regarding the final maps used to construct National Maps.

- Concerns were raised regarding reporting channels between NRM Boards, State Government and Australian Government.
- The benefits to the SA Government in mapping distribution and abundance of invasive animals is unclear.
- Camels, Donkey, Horses and Indian Myna may also be valuable to report on throughout SA.

Actions

- DWLBC (Mark Williams) to organise for reproduction of pest animal distribution and abundance maps, and draft of any new species maps for assessment by expert group (and regional groups and DEH) during August/Sept.
- Assemble group/s to review maps and update data during August and/or September.
- Incorporate camels, horses, donkeys and Indian Mynas into surveys where feasible.
- Incorporate collection of trend information where feasible, using questions about change in species e.g. have species changed in last 2 years (for emerging species) and 5 years (for established species)?
- Project coordinators to facilitate a process of clarifying what is required for addressing the Impacts Indicators, report to South Australia and other States/Territories through Committees.
- Invasive Animals Project Coordinator to approach Birds Australia regarding suitable Birds data for South Australia.

Strategy for collation of information to report against National Indicator for distribution and abundance: Steps required for reporting information

Collation of invasive animal data for South Australia requires 3 steps

- A) Drafting of invasive animal maps by DWLBC (based on previous 2005 maps), and drafting of new species maps.
- B) Consultation with expert groups and relevant stakeholders with drafts to make refinements
- C) Aggregation and transformation of data to national mapping grid (e.g. 100K map sheet series).

Therefore the steps required to collate data for South Australia are:

1. Mark Williams to prepare distribution and abundance maps for existing pest animals in question, and have a first attempt at DRAFT maps for any relevant additional species (namely camels, horses, donkeys and indian mynas) in preparation for consultation with expert group in a regional meeting/s.
2. Identify most suitable people to consult as part of expert group regarding maps (including DEH).
3. Stage a round table meeting to refine DRAFT maps with knowledge from within DWLBC/DEH as needed.
4. Stage a regional meeting/s involving expert group/s (during August/Sept) to examine and refine Mark Williams 2006 draft maps, and use appropriate support material (e.g. water source maps) to assist process.
5. Incorporate collection of trend information where feasible, using questions about change in species e.g. have species changed in last 2 years (for emerging species) and 5 years (for established species)?
6. Peter West to approach Birds Australia, SA Ornithologists Association and Ron Sinclair regarding any South Australian Starling data.
7. Discuss what options there are for reporting against the Indicators for invasive vertebrate pest IMPACTS - Project Coordinators to facilitate and report to South Australia and other States/Territories through Committees.

8. Organise projection of all species distribution data to uniform format for national reporting (1:100K or 1:25K as appropriate / as recommended)
9. Determine whether there is a need to aggregate deer species information to address all species simultaneously, or whether separate species maps should be prepared.
10. Need to address alignment of existing map data with 1:100K map sheet series intended for national mapping projects

Completion date for data collation and reporting

Collation of data for South Australia is dependent on:

1. DWLBC developing draft distribution and abundance maps for species where no previous data exists;
2. Engaging expert group/s to refine existing maps and draft maps.
3. Aggregating and aligning map data with 100K map sheet series maps

It is anticipated that this process will be undertaken by October.

2.3 Victoria

The Victorian Department of Sustainability and Environment, Department of Primary Industries and Parks Victoria met with the NLWRA Weeds Project Coordinator and the Invasive Animals CRC Project Coordinator in Melbourne on June 16.

Attending the meeting were the following Victorian Government representatives.

John Burley	DSE	03 96378395	john.burley@dse.vic.gov.au
Vanessa Stubbs	DSE	0413296609	vanessa.stubbs@dse.vic.gov.au
Anne Dennis	DSE	03 96378046	anne.dennis@dse.vic.gov.au
Jim Backholer	DPI	03 97851050	jim.backholer@dpi.vic.gov.au
Naomi Wilson	DPI	03 57033371	naomi.wilson@dpi.vic.gov.au
Phil Pegler	PV	03 86274838	ppegler@parks.vic.gov.au

Priorities and Recommendations

- Clarity is required on ways to report on the impacts of invasive animals.
- Existing data is available for reporting on most species for distribution and abundance.
- Collectively, the Agencies proposed that a 0.5degree dataset should be feasible to generate for pest animals based on existing databases and individual records, but a nested approach, and a 1:25,000 scale dataset would be more meaningful to the State.
- Existing data requires significant interpretation from all Agencies and multiple information sources to be included for accurate and meaningful outcomes.
- Group proposed that various datasets can be drawn together to create a 1:25,000 maps for pest animals in Victoria.
- Formal process of request for access to data from NLWRA required to DSE and DPI.
- DSE can supply data from survey site areas to support map construction
- Meeting in late July should be arranged to progress data collation, followed by a meeting in August to refine products produced from mapping exercise.
- State-wide coverage for all species are lacking, and there are significant gaps in existing data.
- There are many ramifications of generating a national map of pest animals.
- Information on impacts can be obtained in theory from relevant case studies, research programs, and literature if criteria are defined for selection.
- Important to allow State authorities to have final comment regarding the final maps used to construct National Maps.

Actions

- Project coordinator to communicate proposed sequence of events to DSE, DPI, PV.
- DSE (through John Burley and Vanessa Stubbs) to assess existing invasive animal data within the Atlas of Victorian Wildlife for production of State-wide distribution and abundance maps, using occasional / common / abundant categories.
- DSE to identify and advise stakeholder group (those for consultation regarding draft maps) during August.
- DSE and DPI to prepare draft maps using 1:25,000 map sheet series to represent distribution and abundance of pest animal based on existing Atlas of Victorian Wildlife and any additional database information. Proposed for July.
- Draft maps, consult with relevant stakeholders and refinement where required by August / September.
- DSE to examine VIC Aquatic Fauna Database to establish where Carp can be reported on using complementary process.
- Project coordinators and NLWRA to aggregate for national reporting at 1:100K map sheet scale.
- Project coordinators to facilitate a process of clarifying what is required for addressing the Impacts Indicators, report to Victoria and other States/Territories through Committees.

Strategy for collation of information to report against National Indicator for distribution and abundance: Steps required for reporting information

Collation of invasive animal data for Victoria requires 3 steps:

- A) Drafting of invasive animal maps by DSE, DPI and PV (based on various database information) at a scale of 1:25,000 for species.
- B) Consultation with expert groups and relevant stakeholders with drafts to make refinements
- C) Aggregation and transformation of data to national mapping grid (e.g. 100K map sheet series).

Therefore the steps required to collate data for Victoria are:

1. Propose sequence of events to DSE (John Burley, Vanessa Stubbs and Leslie Rowell).
2. DSE to supply pest animal information to identify usefulness of information to address requirements.
3. Identify gaps in information
4. Identify most suitable people to consult in preparation of draft maps.
5. Prepare draft maps using 1:25,000 map sheet series to represent best knowledge of distribution and abundance based on existing Atlas of Victorian Wildlife and any additional database information. Proposed for July.
6. Draft maps, consult with relevant stakeholders and refinement where required by August / September.
7. Examine VIC Aquatic Fauna Database to establish where Carp can be reported on using complementary process.
8. June – establish datasets that could potentially be used in reporting
9. July – commence populating 1:25,000 map sheet array based on Atlas of Victorian Wildlife data and any other information (including Aquatic Fauna Database)
10. August – consult relevant stakeholders and refine maps are necessary
11. Aggregate for national reporting at 1:100K map sheet scale
12. Discuss what options there are for reporting against the Indicators for invasive vertebrate pest impacts.

Completion date for data collation and reporting

Collation of data for Victoria is dependent on:

1. Accessing existing data via the Atlas of Victorian Wildlife;
2. Drafting appropriate maps at 1:25,000 map sheet scale
3. Engaging stakeholders to refine draft maps.
4. Aggregating and aligning map data with 100K map sheet series maps

It is anticipated that this process will be completed by September/October.

2.4 Tasmania

The Tasmanian Department of Primary Industries and Water met with the NLWRA Weeds Project Coordinator and the Invasive Animals CRC Project Coordinator in Hobart on June 19.

Attending the meeting were the following Tasmanian Government representatives.

Michael Driessen	DPIW	03 62333751	michael.driessen@dpiw.tas.gov.au
Sandy Leighton	DPIW	03 62333197	sandy.leighton@dpiw.tas.gov.au
Christian Goninon	DPIW	03 62333654	christian.goninon@dpiw.tas.gov.au
John Harkin	DPIW	03 62335439	john.harkin@dpiw.tas.gov.au
Nick Mooney	DPIW	03 62336018	nick.mooney@dpiw.tas.gov.au
Andrew Crane	DPIW	03 62333650	andrew.crane@dpiw.tas.gov.au

Priorities and Recommendations

- Clarity is required on ways to report on the impacts of invasive animals.
- Existing data is potentially available for reporting on most species for distribution and abundance.
- DPIW proposed that a process of drawing on existing information (mainly from the Natural Values Atlas/database) to generate 1:25,000 scale maps of the distribution and abundance of pest animals using occasional/common/abundant criteria could be feasible with some support from Federal Government.
- DPIW recommended that a skilled technician would be required to pull-together existing data and the process may take several weeks.
- Staging of workshop to collate data is dependent on organising meeting with the best people (and their availability).
- A 1:25,000 scale dataset would be more meaningful to Tasmania than a 1:100K map sheet series.
- Group recommended a workshop in late July or August (depending on the ability of DPIW to quickly gather relevant datasets for the meeting, and availability of staff) to examine existing NVA data and populate a 1:25,000 map sheet with occasional/ common/ abundant categories.
- Maintenance of state-wide data for reporting condition of invasive species requires on-going Federal support, as it is not considered a State priority.
- Regional involvement in reporting invasive species information is constrained by lack of resources.
- Group recommended that liaison with Mike Perberton and Gary Davies is required hereafter regarding resources, timeframe and outputs.
- Information on impacts is potentially available through case studies on rabbits in central plateau, starling impacts on Orange Bellied Parrots, and other research.
- Concerns were raised whether the inclusion of fish under the current framework was going to require reassessment of the recommended Indicators?

- Important to allow State authorities to have final comment regarding the final maps used to construct National Maps.
- The benefits to the Tasmanian Government in broad-scale mapping of the distribution and abundance of invasive animals is unclear.

Possible information on Impacts

- Information to address impacts Indicators were discussed and include research by various Branches and research bodies such as feral pigs on vegetation on Flinders Island; impacts on livestock production by dogs in east Tasmania; cat impacts on wildlife from scat analysis; and rabbit impacts on pasture production.

Actions

- DPIW to organise meeting late July/early August to examine existing NVA data to populate maps with occasional/common/abundant categories.
- DPIW to organise for production of pest animal distribution and abundance maps during August based on 1:25,000 map sheet for examination by expert group.
- Project Coordinator to liaise with Mike Perberton and Gary Davies regarding project hereafter.
- DPIW to assemble group/s to review draft maps and update data during August/September.
- DPIW assess whether resources for technician are required to assemble existing datasets, and approach NLWRA for support if necessary.
- Project coordinators to facilitate a process of clarifying what is required for addressing the Impacts Indicators, report to Tasmania and other States/Territories through Committees.
- Invasive Animals Project Coordinator to approach Birds Australia regarding suitable Birds data for Tasmania.

Strategy for collation of information to report against National Indicator for distribution and abundance: Steps required for reporting information

Collation of invasive animals data for Tasmania requires many stages that may require some support from the Federal Government considering the timeframe for reporting. These are:

1. DPIW to organise meeting late July/early August to examine existing NVA data to populate maps with occasional/common/abundant categories.
2. DPIW to organise for production of DRAFT pest animal distribution and abundance maps during August based on 1:25,000 map sheet for examination by expert group.
3. Project Coordinator to liaise with Mike Pemberton and Gary Davies regarding project hereafter.
4. DPIW to assemble appropriate experts (namely Mick Stathum, Jeff Copson, Nick Mooney, Glen Atkinson, Mark Holdsworth, Chris Spencer, Greg Hocking and Wild Animals Management Group) to review draft maps and update data during August/September.
5. DPIW assess whether resources for technician are required to assemble existing datasets, and approach NLWRA for support if necessary.
6. Project coordinators to facilitate a process of clarifying what is required for addressing the Impacts Indicators, report to Tasmania and other States/Territories through Committees.
7. Invasive Animals Project Coordinator to approach Birds Australia regarding suitable Birds data for Tasmania.
8. Project Coordinator to aggregate and transform data to national mapping grid (e.g. 100K map sheet series) as required. In other words, organise projection of all species distribution data to uniform format for national reporting

9. Discuss what options there are for reporting against the Indicators for invasive vertebrate pest impacts.

Completion date for data collation and reporting

Given the current restructuring within DPIW and associated negotiations on management responsibilities, there may be delays in collation of data from within DPIW for national reporting unless support can be offered to hasten the tasks itemised above. Collation of data for Tasmania is dependent on:

1. DPIW examining existing datasets for suitable information;
2. Developing draft distribution and abundance maps;
3. Engaging experts to refine the draft maps; and
4. Aggregating and aligning map data with 100K map sheet series maps

It is anticipated that this process will be undertaken by October/November pending availability of staff for the tasks, and funds for data collation.

2.5 Western Australia

The Department of Agriculture and Food, Western Australian met with the NLWRA Weeds Project Coordinator and the Invasive Animals CRC Project Coordinator in Perth on June 21.

Attending the meeting were the following Western Australian Government representatives.

Andrew Woolnough	DAFWA	9366 2327	awoolnough@aric.wa.gov.au
Damien Shepherd	DAFWA	9308 3853	dshepherd@agric.wa.gov.au
Simon Merewether	DAFWA	0404819606	smerewether@agric.wa.gov.au
Sandy Lloyd	DAFWA	9368 3760	slloyd@agric.wa.gov.au
Tony Higgs	DAFWA	9892 8479	thiggs@agric.wa.gov.au
Rod Randall	DAFWA	9368 3443	rprandall@agric.wa.gov.au
Bronwyn Ray	NRM	9368 3191	bray@agric.wa.gov.au
Shane French	CALM	9334 0352	shenef@calm.wa.gov.au
John Asher	CALM	9725 5951	johna@calm.wa.gov.au
Nicky Marlow	CALM	9405 5120	nickym@calm.wa.gov.au
Peter Mawson	CALM	9334 0421	peterm@calm.wa.gov.au
Michael Grasby	DEH	9333 6804	michael.grasby@csiro.au

Priorities and Recommendations

- Clarity is required on ways to report on the impacts of invasive animals.
- Information on impacts can be obtained from relevant case studies, research programs, and literature if criteria are defined for selection, such as Western Shield.
- Existing data for pigs, goats, deer, wild dogs is available for reporting against distribution and abundance Indicator.
- Other species could be included in WA datasets, namely horses, donkey, camel and feral livestock
- DAFWA and CALM recommended that reporting on the status of cats, foxes and rabbits is largely meaningless to their management in WA, but proposed to have a discussion about whether to map cat, fox and rabbit abundance to address requirements.
- Aggregating existing data and possibly generating data to comply with 1:100K map sheet series may be feasible with the right process of requests.
- Consulting an expert group (including CALM) on existing and drafted maps might be feasible in next few months.

- If NLWRA intend to draw on existing information via State-based information systems, that DAFWA potentially have suitable systems, but that CALM lacks a system for such reporting.
- Concerns were raised that existing broad-scale data will not be sufficient to assess local-scale NHT investment.
- Concerns were raised that crude reporting of information from all States/Territories may be ineffective at evaluating outcomes of NHT funding/investment in on-ground activities.
- Concerns were also raised that current investment is not going to generalised distribution and abundance mapping, but control of species impact/potential impacts.
- It was proposed that even generalised data can be beneficial to biosecurity.
- DAFWA and CALM recommended October as a suitable time to organise a group/s to review existing data and/or generate new datasets (for widespread sp.) at a workshop forum. Support in getting appropriate people to the meeting might be required.
- Case studies may be suitable methods for reporting impacts information under the NM&EF.
- Important to allow State authorities to have final comment regarding the final maps used to construct National Maps.
- The WA Government commented that mapping the distribution and abundance of some invasive animals was of limited value to their management.
- Camels, Donkey, Horses, Sheep and Cattle may also be valuable to report on throughout WA.

Actions

- DAFWA and CALM to identify suitability of existing data to address current national reporting needs.
- DAFWA and CALM to discuss feasibility of developing datasets for wide-ranging feral cats, foxes, and rabbits under National M&EF during August/September.
- DAFWA and CALM to determine whether a workshop in October is feasible for collecting /collating data for cats, foxes, and rabbits, and also determine whether funding support is required to facilitate this task – communicate to Invasive Animals CRC project coordinator.
- DAFWA and CALM to discuss process of reporting on CALM administered regions of WA.
- DAFWA and CALM to discuss reporting on camels, horses, donkeys and feral livestock where feasible.
- DAFWA and CALM to discuss with Department of Fisheries (Craig Astbury) regarding reporting of existing Carp information
- Project coordinators to facilitate a process of clarifying what is required for addressing the Impacts Indicators, report to Western Australia and other States/Territories through Committees.
- Invasive Animals CRC project coordinator to discuss with A. Woolnough and D. Shephard using existing state-wide data and joining with 50km grid data

Strategy for collation of information to report against National Indicator for distribution and abundance: Steps required for reporting information

Collation of invasive animal data for Western Australia requires 4 steps

- A) Determining if existing invasive animal information is suitable for reporting against distribution and abundance Indicator.
- B) Refine existing data through consultation with expert groups and relevant stakeholders
- C) If suitable, generating data for species deficient in information.
- D) Aggregation of data to agreed mapping grid.

Therefore the steps required to collate data for Western Australia are:

1. DAFWA and CALM to:

- identify suitability of existing data to address current national reporting needs,
 - discuss feasibility of developing datasets for wide-ranging feral cats, foxes, and rabbits under National M&EF during August/September,
 - determine whether a workshop in October is feasible for collecting /collating data for cats, foxes, and rabbits,
 - identify most suitable people to consult as part of expert group regarding maps.
 - determine whether funding support is required to facilitate this task – communicate to Invasive Animals CRC project coordinator
 - stage a regional meeting involving expert group to examine, update, generate maps, and use appropriate support material (e.g. water source maps) to assist process.
 - discuss process of reporting on CALM administered regions of WA.
 - discuss incorporating camels, horses, donkeys and feral livestock in data reporting
 - discuss with Department of Fisheries (Craig Astbury) regarding reporting of existing Carp information
2. Invasive Animals CRC project coordinator to:
- facilitate a process of clarifying what is required for addressing the Impacts Indicators
 - report to Western Australia and other States/Territories through Committees
 - discuss with A. Woolnough and D. Shephard using existing state-wide data and joining with 50km grid data

Completion date for data collation and reporting

Collation of data for Western Australia is dependent on:

1. DAFWA and CALM making existing information available for reporting;
2. Developing draft distribution and abundance maps for species where no previous data exists;
3. Engaging expert group/s to refine existing maps and draft maps; and
4. Aggregating and aligning map data with agreed grid format.

It is anticipated that this process will be undertaken by October/November.

2.6 Northern Territory

The Northern Territory Department of Natural Resources, Environment and the Arts (NRETA) met with the NLWRA Weeds Project Coordinator and the Invasive Animals CRC Project Coordinator in Darwin on June 27.

Attending the meeting were the following Northern Territory Government representatives.

Robyn Delaney	DNRETA	08 8999 4847	robyn.delaney@nt.gov.au
Aidan Smith	DNRETA	08 8999 4522	aidan.smith@nt.gov.au
John Brisbin	NRM	0428580099	john.brisbin@nt.gov.au
Alice Beilby	DNRETA	08 8973 8101	alice.beilby@nt.gov.au
Peter Jacklyn	CDU	08 89466285	peter.jacklyn@cdu.edu.au

Priorities and Recommendations

- Clarity is required on ways to report on the impacts of invasive animals.
- Existing data can theoretically be collated for reporting on most species for distribution and abundance.
- DNRETA proposed that an assessment of distribution and abundance data could be undertaken by examining existing data from various data sources and constructing draft maps

of species using either 1:100K map sheet series (equivalent to 0.5degree or 50km grid) or even 25km grid array.

- Other large herbivore species could be included in NT datasets for water buffalo, camels, horses and donkey.
- 1999 State of Environment reporting for NT involved drafting of maps for weeds, similar process can be undertaken for pest animals using existing data.
- Proposed using existing point data to aggregate to grid array
- Robyn Delaney (in consultation with wildlife ecologists and survey personnel Keith Saalfeld) will lead collation and collection of information on distribution and abundance for NT.
- Information on impacts can be obtained from relevant case studies, modelling, research programs, and literature if criteria are defined for selection. For example, Jim Mitchell's impact monitoring in northern QLD.
- Important to allow State authorities to have final comment regarding the final maps used to construct National Maps.
- Camels, Donkey, Horses and Water Buffalo could also be valuable to report on throughout NT.
- Data access and licensing arrangement are required between NLWRA and States.
- NRETA are moving towards web-publishing of data.

Actions

- DNRETA (R. Delaney) to establish whether existing data and information is suitable for reporting against distribution and abundance Indicator.
- DNRETA to establish whether collection of data at 1:100K using occasional/ common/ abundant categories is meaningful and feasible for on-going reporting.
- DNRETA determine strategy for collating existing data and collecting data using categories and 1:100K map sheet series for national reporting.
- DNRETA establish what steps may be required to facilitate access by NLWRA to data.
- Project coordinator to liaise with Robyn Delaney (during July) regarding proposed procedure and planning of data collation. Invasive Animals Project Coordinator to provide summary of proposed strategy of data collation to NRETA following meeting.
- Assemble group/s to review draft maps during August and September.
- Incorporate information on camels, horses, donkeys and water buffalo where feasible.
- Project coordinators to facilitate a process of clarifying what is required for addressing the Impacts Indicators, report to Northern Territory and other States/Territories through Committees.
- Invasive Animals Project Coordinator to approach Birds Australia regarding suitable Birds data for Northern Territory.

Strategy for collation of information to report against National Indicator for distribution and abundance: Steps required for reporting information

Collation of invasive animal data for the Northern Territory requires 4 steps

- A) Examine existing invasive animals data for suitability for task;
- B) Draft maps using agreed categories and suitable datasets;
- C) Consult relevant experts regarding drafts to make refinements; and
- D) Aggregate and transform data to national mapping grid (e.g. 100K map sheet series).

This will require:

- DNRETA (R. Delaney) to establish strategy for collecting/collating existing data and information for reporting against distribution and abundance Indicator, and identify whether

collection of data at 1:100K or 1:25K map sheet using occasional/ common/ abundant categories is meaningful and feasible for on-going reporting.

- DNRETA establish what steps may be required to facilitate access by NLWRA to data, generate draft maps, and assemble group/s to review draft maps during August and September.
- Project coordinator to liaise with Robyn Delaney (during July/August) regarding proposed procedure and planning of data collation, and facilitate a process of clarifying what is required for addressing the Impacts Indicators.
- Invasive Animals Project Coordinator to approach Birds Australia regarding suitable Birds data for Northern Territory.

Completion date for data collation and reporting

Collation of data for Northern Territory is dependent on:

1. Available data being suitable for the task/s
2. DNRETA developing draft distribution and abundance maps and engaging expert group/s to refine maps.
3. Aggregating and aligning map data with 100K map sheet series maps

It is anticipated that this process will be undertaken by November/December.

2.7 New South Wales

New South Wales Department of Primary Industries and Department of Environment and Conservation met with the Invasive Animals CRC Project Coordinator and spoke with the NLWRA Weeds Project Coordinator (via teleconference) in Orange on June 28.

Attending the meeting were the following New South Wales Government representatives.

Barry Kay	DPI	02 63913539	barry.kay@dpi.nsw.gov.au
Alan Maguire	DPI	02 67631131	alan.maguire@dpi.nsw.gov.au
Ian McGowan	DPI	02 63913195	ian.mcgowen@dpi.nsw.gov.au
Richard Roger	DPI	02 63913697	richard.roger@dpi.nsw.gov.au
Andrew Leys	DEC	02 95856651	andrew.leys@npws.nsw.gov.au
Paul Mahon	DEC	02 95856424	paul.mahon@npws.nsw.gov.au

Priorities and Recommendations

- Clarity is required on ways to report on the impacts of invasive animals. A discussion paper on recommended ways to report against Impacts Indicators is required for weeds and invasive animals simultaneously.
- Existing data is available for reporting on most species for distribution and abundance.
- NSW DEC can provide some input towards generating distribution and abundance maps for invasive animals, however resources are currently stretched.
- Recent NSW Natural Resources Commission paper indicates that measuring distribution and abundance for emerging species is more valuable than measuring impact.
- Multiple Agencies in NSW makes on-going reporting difficult under current institutional frameworks
- It is critical to have the States do the final interpretation of data. Concerns were raised that data provided to Australian Government may lack adequate interpretation.

- NSW can utilise existing DPI state-wide survey data for 6 species and can generate species distribution maps for 4 remaining species through consultation with DPI, DEC and relevant stakeholders.
- NSW DEC recommended the Project Coordinator implement a survey of Northern Branch Pest Management Officers in September (during a regional meeting) to generate a Cane Toad distribution and abundance map.
- Recent NSW DEC state-wide surveys may provide data for cane toads in NSW to complement data obtained from the September Northern Branch regional meeting.
- It was recommended that key species be selected for reporting on impacts, such as foxes in protected areas and wild dogs in agricultural landscapes.
- It was proposed that information to address the Nationally recommended Indicators could consist of State-wide maps of pest species complemented by impacts information that could consist of reports, figures, maps, text, interpretive notes, and graphs.
- Current data on distribution and abundance of invasive animals is spatially accurate, yet unlikely to be suitable for measuring the success of NHT funding programs.
- Information on impacts can be obtained from relevant case studies, research programs, and literature if criteria are defined for selection.

Possible information on Impacts

- Information to address impacts Indicators were discussed and include research by DEC on threatening species to biodiversity (cats, foxes); agricultural production, (dogs, starlings, and rabbits). Options for reporting Impacts could include top research papers on known impacts per species under consideration. Unfortunately, most impact research is dominated by one-off studies.

Actions

- Invasive animals Project Coordinator to coordinate collection of data on cane toads in NSW through NSW DEC survey and DEC Northern Branch Pest Officers meeting in September.
- Invasive animals Project Coordinator to approach Birds Australia regarding bird data for New South Wales, and consult with DEC for refinements.
- NSW DPI Fisheries to provide carp information where feasible.
- NSW DPI Agricultural Protection Officers to generate state-wide map for feral cats, and consult with DEC for protected areas.

Strategy for collation of information to report against National Indicator for distribution and abundance: Steps required for reporting information

1. Approach Birds Australia regarding NSW DPI access to New South Wales Starling data.
2. Contact DPI&F regarding carp data for New South Wales. Consultation with MDBC may be necessary.
3. Access NSW DEC cane toad survey data and engage Northern Branch Pest Management Officers in September for generating map using 5x5km grid.
4. Engage NSW DPI APO's in survey of feral cats using 5x5km grid and consult with NSW DEC regarding protected areas.

Completion date for data collation and reporting

Provision of data addressing the distribution and abundance Indicator can be gained through existing and rapidly assembled data. This task is expected to be finalised by October 2006 and involves NSW DEC and NSW DPI.

3. Development of a National Invasive Animals dataset

3.1 Collation of State/Territory data for national reporting

The National Invasive Animals Project aims to support the collation of existing information and data to address the agreed National Indicators for Vertebrate Pests. While the Indicators serve to provide agreement and direction for State-driven monitoring and evaluation, there are several immediate benefits of facilitating the collation of data from the separate State/Territory jurisdictions throughout this short-term project. These benefits are:

- Identify the operational requirements for on-going reporting of information
- Establish a clear and transparent process of information collection, collation and reporting to allow for on-going activities
- Determine commonality between reporting approaches between jurisdictions
- Identify requirements for information systems support of information collection, collation and reporting.
- Trial products to deliver information to decision-makers.

Therefore, this project aims to gather State-datasets and example products to support longer-term monitoring, reporting and evaluation responsibilities of the State/Territory jurisdictions.

A range of information types have been proposed to address immediate data collation and longer-term reporting requirements. However, most datasets collected at the State/Territory jurisdictional level have been collected using differing methods, making comparisons between jurisdictions problematic.

Distribution and abundance information

The first agreed National Indicator for Vertebrate Pests is: 'Distribution and abundance of significant invasive vertebrate pests'

To address this Indicator, qualitative and quantitative information from broad-scale and regional monitoring activities of the States and Territories has been proposed to be collated to supply national information on the distribution and abundance of vertebrate pest animals. However, many States/ Territories use different methods/techniques to collect information on species. It has been recommended that applying an agreed reporting standard and national grid of 0.5degree (equating to approximately 50x50km grid) can facilitate consistency in data reporting across jurisdictions and allow for national reporting to meet immediate reporting needs. Agreement on longer-term reporting scales and frequency has not yet been finalised.

Aggregating existing data

The States/Territories have proposed to use a range of existing information, often dispersed across multiple varied spatial and non-spatial databases to address immediate reporting requirements. For those States where existing data are not spatially referenced or presented in formats directly compatible to that of the recommended national grid (0.5 degrees), it has been proposed that

aggregation of data to a compatible grid would set the scene for immediate and on-going reporting.

To aggregate existing information to address State/Territory and National reporting requirements, and agreed procedure is required. Most States/ Territories have previously relied on qualitative measures of species distribution and abundance. Where information to address Indicator 1 are lacking (or where existing data are located within various independent data sets), it has been recommended by most State and Territory Agencies that a suitable approach for use of existing information, is the adoption of a qualitative assessment equivalent to the Queensland Annual Pest Distribution Survey (APDS). This approach would involve aggregating existing independent spatial data using agreed descriptive categories to provide a State-wide representation of invasive animal distribution and abundance (see: http://www.nrm.qld.gov.au/pests/maps/pest_distribution/collection_process.html)(Appendix 1).

The adoption of the national grid reporting (or compatible State-grids that can be aggregated), and the Queensland qualitative reporting formats could be used to facilitate reporting of State/Territory information to meet immediate reporting requirements under the NM&EF.

The States/Territories are currently determining how to collate existing data to meet reporting requirements. Some States are drawing on data from various databases to develop a grid-array including data from State Atlas databases, local and regional species-specific surveys, and national databases such as Birds Australia datasets.

The States/Territories are currently collating (and in some cases generating datasets from information from various databases) for the 10 national priority species for reporting under the National Indicators (table 1), and a number of additional species considered relevant at State/Territory levels (table 2).

Impacts Information

The second agreed National Indicator for Vertebrate Pests is: '*Impacts of significant invasive vertebrate pests*'.

To address this Indicator, the States/Territories have proposed a range of options for short and long-term reporting. These options include the use of relevant case-studies involving monitoring programs, research and monitoring projects, modelling, and literature review approaches.

The Invasive Animals Project Coordinator through the Vertebrate Pest Committee and relevant State /Territory authorities will clarify suitable methods for reporting on impacts information under the recommended National Indicators. This will be undertaken in conjunction with development of Indicator Protocol.

Table 1: State and Territory information for national reporting (10 species of national significance)

Species	NSW	QLD	VIC	NT	WA	SA	TAS	ACT
Feral Pig	✓	✓	●	●	✓●	✓●	●	nsw data
Feral Goat	✓	✓	●	●	✓●	✓●	●	nsw data
Fox	✓	✓	●	X	X	✓●	✓	nsw data
Rabbit	✓	✓	●	X	X	✓●	●	nsw data
Wild Dog/ Dingo	✓	✓	●	●	✓●	●	●	nsw data
Feral Cat	●	✓	●	●	X	✓●	●	nsw data
Cane Toad	●	✓	N/A	●	N/A	N/A	N/A	N/A
Feral Deer	✓	✓	●	N/A	✓●	✓●	●	nsw data
Common Carp	●	●	●	N/A	●	●	●	nsw data
Starling	●	●	●	N/A	●	●	●	●

- ✓ - Data currently available
- X - Data not currently available
- - Data being updated and/or being generated by States/ Territories in next few months
- N/A - Species not present in the State/ Territory

Table 2: State and Territory information for national reporting (species of State/Territory significance)

Species	NSW	QLD	VIC	NT	WA	SA	TAS	ACT
Water Buffalo	N/A	✓	N/A	✓	N/A	N/A	N/A	N/A
Red-eared Slider Turtles	N/A	✓	✓	N/A	N/A	N/A	N/A	✓
Indian Myna	N/A	N/A	N/A	N/A	N/A	✓	N/A	N/A
Camel	N/A	N/A	N/A	✓	✓●	●	N/A	N/A
Donkey	N/A	N/A	N/A	✓	✓●	●	N/A	N/A
Horse	●	N/A	N/A	✓	✓●	●	N/A	N/A
Weather Loach	N/A	N/A	✓	N/A	N/A	N/A	N/A	N/A
Corn Snakes	N/A	N/A	✓	N/A	N/A	N/A	N/A	N/A
Plague Minnow	N/A	N/A	✓	N/A	N/A	N/A	N/A	N/A
Feral Livestock	N/A	N/A	N/A	N/A	✓●	N/A	N/A	N/A

- ✓ - Data currently available
- X - Data not currently available
- - Data being updated and/or being generated by States/ Territories in next few months
- N/A - Species not present in the State/ Territory

3.2 National data collection, collation and reporting standards

Agreement is required on a national approach to collect, collate and report invasive animals information for comparisons between States/ Territories, and the development of meaningful national products. While many State and Territory Governments have invested significant funding towards the collection and reporting of information to address State-specific needs, many lack the ability for comparison between jurisdictions.

The National Invasive Animals Project is currently developing Indicator Protocol containing recommended methods to address the agreed National Indicators for Vertebrate Pests. It is intended that the Protocol be used to promote consistent data collection, collation and reporting to address both State-level and National reporting needs, according to the agreed National Indicators.

The development of nationally meaningful products for reporting of invasive animal populations based on consistent information types across jurisdictions requires either:

- Agreement and adoption of consistent methods for data collection, collation and reporting between each State / Territory jurisdiction
- Agreement on a data aggregation/transformation process to facilitate comparisons between existing and differing data types between State/ Territory jurisdictions.

Neither approach necessarily requires current and planned State / Territory monitoring and mapping methods to be discontinued. To achieve consistency between State/Territory information to address both State and National reporting needs, refinement or further development of existing methods may allow comparisons across jurisdictions.

The development of Indicator Protocol will address these options for reaching consistency in State/ Territory information for comparisons between States and National reporting requirements.

4. Conclusions

4.1. Outcomes

The State/Territory workshops were successful in addressing the aims of the National Invasive Animals Project. The main outcomes of the State workshops were:

1. Agreement by relevant State and Territory Agencies to determine what information is available to report under the recommended Indicators for Vertebrate Pests;
2. Agreement by the relevant State and Territory Agencies to establish what is required internally for reporting of information to address the National Indicators in an on-going capacity;
3. Drafting of a strategy / plans of implementation for collation of existing information, collection of information where necessary and as a State priority, and reporting of information to address the National Indicators;
4. Identification of actions for project collaborators within each State jurisdiction regarding steps for reporting information;
5. Proposal of a timeframe for addressing the strategy and steps in the process of data collation and reporting within each State/Territory;
6. Identification of issues regarding data access and sharing agreements; and
7. Identification of what resources might be required to facilitate immediate reporting of information under the National Indicators.

The States and Territories raised many immediate issues regarding short and long-term data collection, collation and reporting of information under the agreed National Indicators for Vertebrate Pests. The main issues included:

- Currently, information to address the agreed National Indicator for Vertebrate Pests and relevant species can be obtained from most States and Territories, however state-wide data-sets for many species are lacking.

Information needs

- It remains unclear whether broad-scale state-wide descriptive and qualitative estimates of pest animal populations is meaningful for State management activities;
- Some States proposed that a scale data of 1:25,000 is more suited to their requirements than 1:100,000. It is important to consider fitness for purpose when deciding on a reporting scale; and
- Some States/Territories have the capacity to report information for species other than those identified as having national significance.

Data issues (current, potential and future)

- Mapping distribution and abundance has not previously been considered a major management priority. Similarly, measuring impacts has not been a priority. Most operation resources are directed towards on-ground control activities and some control monitoring; and

- Some States indicated that developing maps and reporting information on widespread and largely uncontrollable species, such as feral cats is meaningless for State management.

Policy and Management

- There are many political ramifications of generating national maps of pest animals, and many consequences of presenting qualitative information in the public arena; and
- For States that have multiple Government Agencies managing pest animals, reporting information in an on-going capacity may be difficult under current institutional frameworks.

Quality assurance and control

- The quality of most State-based qualitative information is questionable; and
- Distribution and abundance DO NOT necessarily equate to impacts – The States are concerned that broad-scale information on distribution will be interpreted as equating to impacts and lead to misrepresentation of problems and priorities, and misguide allocation of funding.

Infrastructure and Resourcing.

- Several States indicated that there are resource limitations for immediate and long-term monitoring, evaluation and reporting for invasive species.

Information Products

- The potential range of species can provide valuable information for decision-makers at State/Territory and National levels simultaneously. If potential distribution information can be incorporated in Products, then this may assist decision-makers; and
- Trend information is also important to collect and report at State and National levels, allowing priorities to be assigned based on current population trends.

4.2. Recommendations

The States and Territories also made many recommendations regarding data collection, collation and reporting of vertebrate pest animals information. Specific recommendations from the relevant State and Territory Agencies/Authorities were:

1. The proposed national reporting scale (1:100,000 or 0.5 degree mapping) may not be sensitive and robust enough for detecting and reporting changes in populations in response to management activities, investment, on-ground control activities supported by NHT;
2. Resources are often not available to adequately collect information for monitoring at a scale suited to evaluating management and investment. This is a significant long-term and national issue.
3. Existing data within most States/Territories require significant interpretation, so it is imperative to allow State authorities to have the final comment regarding the classification of State data at a national scale, to overcome problems that have previously emerged where national data fails to resemble state-data;
4. The development of nationally meaningful products for reporting of invasive animal populations based on information across jurisdictions relies on either:
 - Agreement and adoption of consistent methods for data collection between each State / Territory jurisdiction, or

- Agreement on a method for data aggregation/transformation to facilitate comparisons between existing (and differing) data types between State/ Territory jurisdictions;
- 5. Priority should be directed to developing an agreed method to utilise differing State/Territory datasets (regardless of the techniques used to collect the data), for uniform reporting across all jurisdictions. This will allow the States to continue with their current practices while meeting national reporting needs;
- 6. During national product development, acknowledgement that the States and Territories use differing methods to collect information under the Indicators is required for accurate interpretation;
- 7. Clarity is required regarding reporting of information to address the Impacts Indicator;
- 8. Information on impacts may be potentially available from case studies, research programs, and literature if criteria are clearly defined within the Indicator Protocol;
- 9. A formal request may be required from the NLWRA to access information from all States/Territories for national reporting;
- 10. The resources to address immediate data collation needs under the Framework are lacking in many States, so a formal request may be made from those State Governments for Australian Government support
- 11. On-going support from the Australian Government may be needed to support data collection, collation and reporting. Long-term funding issues will have to be resolved between Governments

The States /Territories are currently addressing immediate and long-term commitments to collection, collation and reporting of vertebrate pests information. Several States have commenced data collation to address immediate reporting requirements under the National Indicators for Vertebrate Pests. Where information are lacking to address the Distribution and Abundance Indicator, several States and Territories have recommended that the Queensland's APDS methodology could allow them to address current reporting commitments, and many are currently gathering datasets to apply the APDS method. Several State-organised regional meetings have also been scheduled for data collation.

It has been tentatively proposed that completion of data collation to address the Distribution and Abundance Indicator could be October 2006 for Queensland, October/November for South Australia, Victoria, Tasmania, New South Wales, November 2006 for Western Australia, and November/December 2006 for the Northern Territory, pending data transformations, access arrangements and licensing issues are addressed.

Information to address the Impacts Indicator will take longer to compile, and requires clarity on what information is available, required, recommended by the VPC.

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Appendix 1

The methodology applied for collating information on invasive species populations by Queensland's Department of Natural resources and Mines involves qualitative assessment of species occurrence, distribution and density as indicated below.

1. Species occurrence — present/absent/unknown

It is essential to know if a pest is present or absent in each 0.5 degree cell. If the survey participants cannot say with a very high degree of accuracy whether the pest is present or absent, the cell is flagged as unknown. This criterion has the highest level of accuracy.

2. Distribution — localised/widespread

Once it has been established that a pest is present within a cell, it is necessary to indicate how much of the cell contains infestations of the species.

Infestations that occur across more than half the cell in any density are considered widespread, while those that cover less than half the cell are considered localised.

While distribution gives a useful indication of the size of pest infestations within grid cells, its accuracy should not be relied on too heavily. Reasons for this include:

- Survey participants may have differing perceptions of distribution measures.
- Survey participants may lack knowledge of particular species.
- It is difficult to accurately assess large areas of remote and impenetrable land.

This criterion has a lower level of accuracy than 'occurrence', and should only be used as a guide when making state-wide comparisons.

3. Density — occasional/common/abundant

Density refers to how thick or sparse pest infestations are. The following three descriptors are used:

- Occasional: single plants/animals spaced apart at wide intervals
- Common: a middle measure between occasional and abundant
- Abundant: infestations that have reached their full potential and provide little opportunity for additional plants/animals to survive in that area.

Density is a particularly difficult criterion to apply due to factors such as:

- Different species have different density measures, e.g. grasses spaced at 1 m apart may be considered occasional, whereas trees spaced at 1 m apart may be considered abundant.
- The size of the species will directly influence the perception of density, e.g. many small seedlings may receive the same density rating as a few mature trees.
- Some areas may be able to support higher densities of a species than other areas, due to environmental conditions.

This criterion has a lower level of accuracy than 'Distribution'. Density can be considered more accurate at the shire or local government level than at the state level and should only be used as a guide when making state-wide comparisons.