



Department of
Agriculture and Food



Invasive Species Science Structure

Approved by: insert role

Approval date: insert Month, insert Year

Document name - IS Science Structure for applicants.doc

Review responsibility: Director – insert Directorate

Next review date: insert Month, insert Year

Contents

Contents	2
Invasive Species Science	3
Purpose of Invasive Species Program	3
Previous Structure	3
Invasive Species Structure (October 2011)	5
Research and Development	5
Invasive Species R&D is combined and integrated	5
Policy development	5
Research Partnerships and Collaborative Arrangements	5
Increased focus on Outcome based research rather than Input based research	5
Inclusion of social research capacity	5
Increasing capacity for monitoring and evaluation, and for benefit cost analyses	5
R&D has strategically targeted outcomes	5
Risk Assessment	6
Invasive Species Risk Assessment is combined and integrated	6
Risks that need to be assessed	6
Monitoring and Evaluation	6
Culture of risk management	6
Information and Knowledge Management	6
Information and Knowledge Management (I&KM) is combined and integrated	6
Understanding and implementation of knowledge transfer to and between clients by: ...	6
Applications and devices	7
Invasive Species Science Structure Workshop	8
Attendee's	8
Discussion Questions	8
Concluding Discussion	8
Discussion Overview	8

Invasive Species Science

Purpose of Invasive Species Program

To minimize the impact of invasive species on future production and marketing capacity for agricultural industries in Western Australia. In doing so, the program will be protecting and enhancing the integrity and reputation of agricultural industries and the sustainable capacity of the natural resources upon which they depend. By building capacity to prevent and manage invasive species in Western Australia, the Invasive Species Program (IS Program) will provide broader environmental, social and economic benefit.

Previous Structure

Research and Development (R&D) for invasive species within the Department of Agriculture and Food (DAFWA) has previously consisted of two distinct streams and the associated but separate risk assessment disciplines (Figure 1):

1. Vertebrate Pests (through the Vertebrate Pest Research Section – VPRS)
2. Weeds (through Weed Science).



Figure 1 Previous structure of Invasive Species.

A strategic *Invasive Species Plan* (IS Plan) has been prepared for the IS Program. This has clear Actions and Targets to achieve five-year Outcomes:

1. No new high risk invasive species have established
2. Incursions of high risk invasive species are being eradicated (where feasible and cost effective)
3. Significant infestations and major outbreaks of existing priority declared invasive species are contained and negative impacts are mitigated
4. Industries, communities and government are engaged in a coordinated approach to invasive species management
5. The capacity required for effective delivery of the Invasive Species Program is achieved.

R&D is required to support the IS Program to deliver these outcomes, including for:

1. Policy development
2. Surveillance
3. Risk assessment
4. Eradication, control and management programs
5. Targeted engagement and behaviour change
6. Monitoring and evaluation

Delivery of actions of the IS Program is through:

1. Regional Delivery (field-based Biosecurity Officers)
2. Strategic Projects (Development Officers and Biosecurity Officers)

DAFWA (with other agencies) has been an associate participant of the Invasive Animals Cooperative Research Centre (CRC). This concludes in 2012. The rebid for continuation of the CRC is in the final stage. If successful, DAFWA will become a full participant.

With the circumstances of change (development of the IS Plan, staff movements, CRC rebid), there are opportunities to optimise R&D effort for outcomes of the IS Program. An IS Science unit has been developed that includes:

1. IS R&D capacity (with vertebrate pest research and weeds research streams)
2. IS Risk Assessment with capacity for:
 - (a) Plants and animal risk assessment
 - (b) Spread and pathway modelling
 - Supply-chain risk (e.g. prohibited plants through the nursery industry)
 - (c) Efficacy of methods used
 - (d) Field practices
3. Information and knowledge management

The IS Science structure enables synergies from integration within the program and through the opportunities to add new dimensions to R&D effort through:

1. Adopting a focus on research outcomes applied at the landscape/ecosystem scale where relevant (for example: with monitoring and evaluation).
2. Increased consideration of ecosystem processes and impacts
3. Inclusion of social research capacity
4. Increasing capacity for monitoring and evaluation, and for benefit cost analyses
5. Sharing and cross-fertilisation of ideas and techniques

Invasive Species Structure (October 2011)

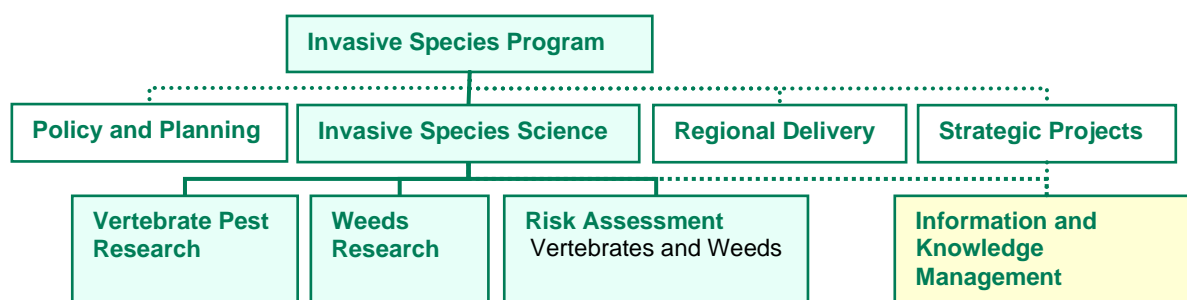


Figure 2 Structure of the Invasive Species Program (October 2011).

Research and Development

Invasive Species R&D is combined and integrated

Weed and Vertebrate R&D are combined under IS Science with both a Weeds Research and Vertebrate Pest Research stream.

R&D is integrated with Risk Assessment, and Information and Knowledge Management.

Policy development

Policy development is underpinned by R&D.

Research Partnerships and Collaborative Arrangements

Clear partnerships and collaborative arrangement built on trust, ownership and joint commitment to vision and impacts.

Increased focus on Outcome based research rather than Input based research

An increased focus on outcome based research with monitoring and evaluation done (where applicable) on an ecosystem/landscape scale

Inclusion of social research capacity

R&D is client/stakeholder focussed:

1. Priority is given to R&D that the client/stakeholder needs; however, this is not the same as R & D that is demanded by the client/stakeholder Social science capacity enhanced
2. Client/stakeholder behaviour changes are observed and measured

Increasing capacity for monitoring and evaluation, and for benefit cost analyses

Research done has formal and quantifiable monitoring and evaluation strategies put in place to ensure that R&D is able to be developed into practical achievements for clients and/or stakeholders.

Economics taken into consideration/understood when developing and delivering R&D.

R&D has strategically targeted outcomes

Priority given to strategically focused R&D on targeted outcomes. R&D prioritised with a documented targeted research strategy done over opportunistic research.

Table 1 Principles of R&D for in Invasive Species Science.

Planned approach
Invasive Species R&D is combined and includes Weeds and Vertebrate Pests
R&D is connected to and integrated with Risk Assessment and Information and Knowledge Management
Policy is underpinned by R&D
Strategic partnerships developed
An Outcome based approach to research where the outcomes are measured at an ecosystem/landscape scale where appropriate.
R&D has a triple bottom line approach (social, economic, and environmental)
Delivery of R&D is Information and Knowledge focussed, with behavioural changes observed and measured in clients
Monitoring and Evaluation capacity is enhanced with formal and quantifiable benefits measured and documented
Client focussed R&D. Research meets the needs of clients
Strategically focused R&D on targeted outcomes, R&D Prioritised with a documented research strategy
All research done can be linked to core business as determined in the core business statement

Risk Assessment

Invasive Species Risk Assessment is combined and integrated

Weed and Vertebrate Risk Assessments combined into a single group, but retains both a Weed and Vertebrate discipline stream.

Risk Assessment is integrated with R&D and Information and Knowledge Management.

Risks that need to be assessed

1. Risks associated with individual organisms
2. Spread/Geographic Spread Modelling, determining possible extent of spread under specified scenarios.
3. Pathway Analysis: Determining and addressing the probable risks in a pathway through complex pathway analysis.
4. Asset Protection: enable clients/stakeholders to appropriately manage declared pest within defined areas / assets.

Monitoring and Evaluation

Evaluate and monitor if operational process are effective or are remaining effective

Culture of risk management

Develop a culture of risk management and ensure staff are assessing each situation according to risk and documenting possible risks

Information and Knowledge Management

Information and Knowledge Management (I&KM) is combined and integrated

I&KM is formed as a distinct entity and integrated with R&D and Risk Assessment.

I&KM is integrated with R&D, Risk Assessment and also interacts with whole of IS Program.

Information and knowledge delivered to clients is to be underpinned by R&D.

Understanding and implementation of knowledge transfer to and between clients by:

1. Proactive knowledge transfers to clients/stakeholders
2. Experiential knowledge development (e.g. farmer to farmer stories)
3. Targeted information and knowledge

4. Information processing/analysis linked to a defined outcome.

Applications and devices

Appropriate applications or devices used to facilitate knowledge transfer to and between stakeholders that:

1. meets stakeholders needs
2. is accessible to targeted stakeholders
3. includes:
 - (a) Devices to collect/collate data in the field
 - (b) Applications/devices to capture processes – operational or otherwise
 - (c) Web based pages
 - (d) Databases
 - (e) Emergency response systems
 - (f) Mapping systems

INVASIVE SPECIES SCIENCE STRUCTURE WORKSHOP

Wednesday 12th October 2011

Attendee's

Michael Calver (Murdoch University); Sarita Bennett (Curtin University); Margaret Byrne (DEC); Nicky Marlow (CALM/DEC); Ashley Millar (DEC); Greg Keighery (DEC); Viv Read (DAFWA); Jon Dodd (DAFWA); Malcolm Kennedy (DAFWA) and Tamrika Lanoiselet (DAFWA).

Discussion Questions

Group to consider the following discussion questions:

1. What is the best model to determine and address current and future needs for invasive species research?
2. What are the elements of an effective research model for delivery of targeted management outcomes?
3. To what extent is a landscape/ecosystem approach more (or less) effective compared with single species (population) focused research?

Concluding Discussion

What options are best for the DAFWA IS Program?

What partner opportunities (mutual benefit) could be developed?

Discussion Overview

All participants had a positive view of the proposed Invasive Species Science (IS Science) structure. The proposed structure was seen as being able to address current and future needs for IS Science research. To make the most of scarce resources the integration of the research structure was seen as necessary by some participants.

Recommended changes to the structure included:

1. Splitting Research and Development (R&D) into VPRS and Weeds Research in order to retain the excellent reputation and name of the Vertebrate Pest Research Section (VPRS).
2. Using an Outcome based approach or Outcome/Client Focus. A landscape/ecosystem approach was seen as being integrated with a species approach. It was recommended that rather than thinking in terms of a landscape/ecosystem or species approach that an Outcome based approach be maintained and developed as opposed to using an Input based approach. However, monitoring and evaluation was usually seen as being done on a landscape/ecosystem scale.
3. Information and Knowledge Management (I&KM) was seen as a floating position, needed by IS Science but perhaps belonging somewhere else. Recommended locations included, keeping it is IS Science, making it a Strategic Project or putting it in Policy and Planning. I&KM is currently depicted as floating between IS Science and a Strategic Project.

Participants were keen to continue and to develop future partnerships and collaboration with Invasive Species Science. Collaborations were seen as being important to apply for Linkage Grants and Industry Grants.