



Victorian Communities Managing Deer

**A Framework for Developing a Community-based Deer
Management Program**

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1. Introduction

This Framework, which is based on the experience and knowledge gained through the Harrietville Living with Deer project, is for use by land managers and communities wanting to develop a community response to deer impacts in a Victorian community.

A significant expansion of deer populations has been observed in eastern Victoria over the past decade. Increased impacts of deer on productivity, infrastructure, the environment, the safety of road users, and incidences of illegal hunting have also proliferated. Many communities are becoming increasingly concerned and frustrated, including the town of Harrietville in northeast Victoria.

Harrietville is a small town located in a narrow valley and surrounded by public land. Community members have identified the management of deer and their impacts as a priority issue. Town residents are a mix of retirees and families, mainly engaged in the tourism industry or employed in the nearby town of Bright. There are a handful of small-scale agricultural producers adjacent to the town boundary and a high number of absentee landowners. A number of properties in Harrietville are landscaped or bush life-style blocks and most residents would say that the quiet rural and natural amenity of the town is a key reason as to why they live there.

The Living with Deer project was developed in 2017 and aimed to enable the Harrietville community to identify a set of actions to reduce impacts of deer on the community. The project was delivered by the Harrietville Community Forum, in partnership with public land managers Parks Victoria and the Department of Environment Land Water and Planning, and the North East Catchment Management Authority. Project outputs are contained in two other key documents – *Final Report: Living with Deer in Harrietville*, and in a Community Action Statement – *Living with deer: Community and Agencies Working Together*.

The first year of the project was a journey that changed the thinking of those involved from ‘we (or you!) must do something about the deer in town’ to ‘how can we live with the deer in town’. It became clear that the project was not bound by a discrete timeframe, but would be ongoing, changing through time as perceptions of deer in the community change.

We need to learn to live with deer. Since the beginning of the *Living with Deer* project in Harrietville the population and associated impacts of deer have, again, notably increased. There are steps that communities can take to identify impacts and possible solutions in order to adapt to and mitigate impacts. The Framework identifies a simple process to help communities work through identifying what can be done to adapt to and mitigate impacts of deer. Throughout the Framework examples from Living with Deer are referred to and used to illustrate the process to undertake to develop a community-based approach to managing the impacts of deer.

2. Background to Deer in Victoria

Eighteen species of deer were introduced to Australia in the eighteenth and nineteenth centuries. Six of these species – Red Deer, Sambar Deer, Rusa Deer, Fallow Deer, Chital Deer, and Hog Deer – survive today in Victoria. Deer populations have significantly increased in Victoria since 1930 (Forsyth 2015). Figure 1, below, indicates the increased distributions of three deer species in Victoria, with Sambar Deer representing 99% of sightings used in the study. Red Deer and Fallow Deer also have established wild populations in Victoria (GMA 2017).

Distributions of Sambar Deer, Rusa Deer and Sika Deer in Victoria

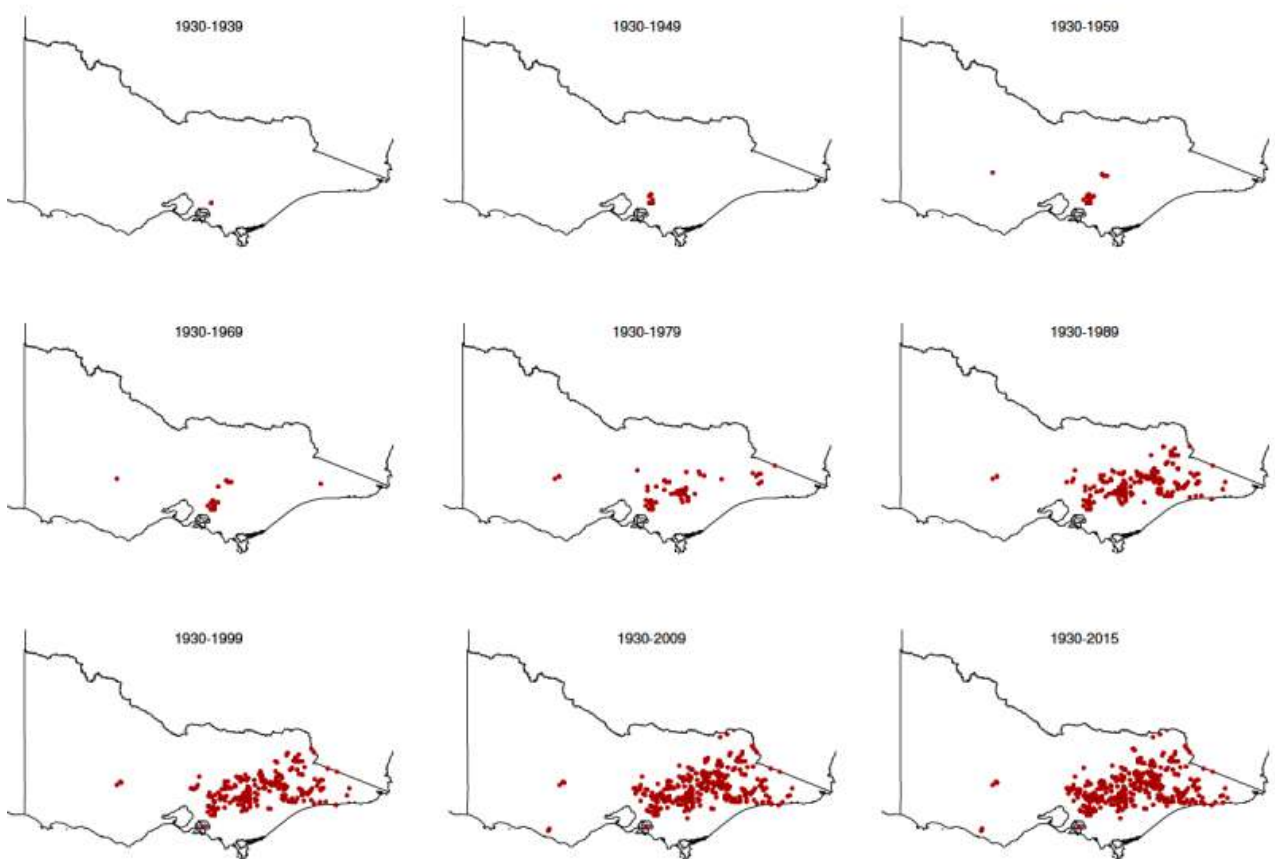


Figure 1: Sambar, Rusa and Sika distribution growth from 1930-2015 (Forsyth et. al. 2015)

The invasion curve, developed by Victoria's Department of Primary Industries (DPI (2010) Invasive Plants and Animals Policy Framework) provides a tool for understanding the spread of non-native species and the management options available. The invasion curve is illustrated in Figure 2 and shows how invasive species grow in population – slowly at first then increasing exponentially as populations become large enough to sustain high birth numbers, before slowing as they reach the limits of the ecosystem they live in.

In eastern Victoria today, deer are so widespread and abundant that eradication and containment are no longer feasible management options. Deer impact on road safety, primary industries, properties, gardens and infrastructure, native forests and trees, and water quality. In addition deer bring hunters and many communities are grappling with the impact of irresponsible and illegal shooting in their communities.

Long term management must aim to reduce populations to the lowest feasible levels and to protect highly valued resources and community assets.

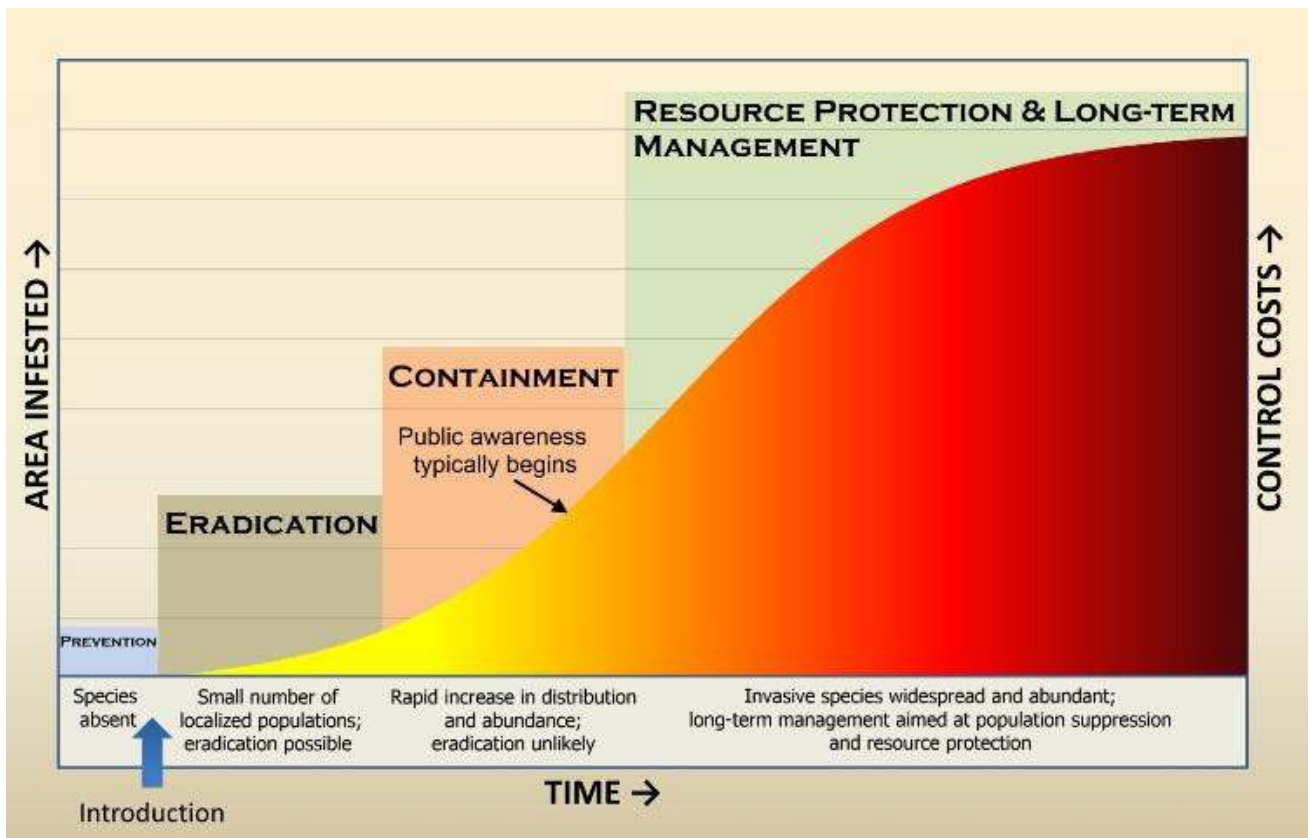


Figure 2: Invasion Curve (Adapted from DPI 2010 Invasive Plants and Animals Policy Framework by University of Florida)

The legal framework for managing deer in Australia is complex, and varies across the states. In Victoria, all deer are declared to be ‘wildlife’ under the *Wildlife Act 1975*. On public land they are classed as ‘protected wildlife’ and may not be destroyed without authorisation. On private land they are classed as unprotected wildlife and so can be controlled by the landowner, including at night using a spotlight. Deer are also listed as a game species to allow for recreational hunting of deer in designated areas. Impacts of deer are listed as a threatening process under the *Flora and Fauna Guarantee Act 1988*, which is an important angle to consider when thinking through protecting environmental assets from the impacts of deer. New laws in Victoria (in 2018) around food handling will mean deer carcasses shot by professional shooters will be able to be used in the pet food and human food industries under certain conditions.

3. Background to Community-based Deer Management Planning

Wildlife management requires sustained effort. Managing deer in developed areas is no different. There is no quick fix, one-time solution to reducing deer-human conflicts. Once deer have established they are impossible to remove and a long-term plan to manage their population or their impacts will be needed.

The process outlined in this Framework is based on that contained in the Cornell University Human Dimensions Research Unit (2017) “How to create a community-based deer management plan” (<https://hdru.dnr.cornell.edu>). Managing deer to protect community resources, assets and values is relatively new to Australia, and to Victoria. In other locations around the world, including the United States, community based deer management has been an ongoing practice for many years resulting in the development of guidelines for community deer management. Land managers are advised to refer to Cornell University ‘Community Deer Management – A Guide for Practitioners’ (Decker 2004) for an in-depth approach to facilitating community responses to deer in the United States.

Phase 1 Problem definition

During this phase, the scope of the problem the community is facing is determined, including the kinds of impacts that are occurring, who is experiencing those impacts and to what degree.

Phase 2 Decision making

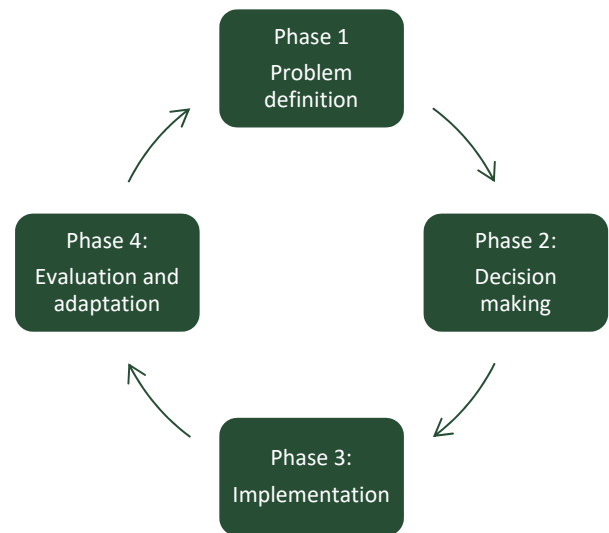
During this phase, deer management goals and objectives are determined, and actions to address these goals and objectives are considered.

Phase 3 Implementation

During this phase, the actions identified in phase 2 are implemented.

Phase 4 Evaluation and adaptation

During this phase, communities assess progress towards their deer management goals and objectives and make changes when certain actions are not meeting their objectives.



While this process is presented as a cycle, with clear phases, it is important to recognise that progression through this process may not always be linear, and communities may move back and forth through phases as they deal with issues such as controversy over their recommended course of action, changes in personnel, changing legal constraints, and more.

4. Framework for Developing a Community Deer Action Plan

If you're thinking of developing a community-based approach to managing deer and deer impacts then it is important to first establish a working group or steering group to guide the project. Think about the organisations, agencies and community groups that have an interest in managing deer and deer impacts and invite them to participate. It is important that the group includes community leaders in some capacity. Without community leaders involved in the governance of the project it's unlikely the project will be successful.

A working group was formed as part of the Harrietville *Living with Deer* project to explore a community-based approach to respond to impacts of deer on residents and on the community. The Working Group is made up of representatives from Parks Victoria, Harrietville Community Forum, Department of Environment, Land, Water and Planning, and North East Catchment Management Authority and is led by Parks Victoria. The Harrietville Community Forum is a community group in Harrietville that approached land management agencies in 2016 with concerns about the growing deer population around the town and increasing impacts from deer.

The Working Group first developed a Project Plan, which included a Stakeholder Engagement component. The Project Plan defined the project, outlined the expectations and commitments of involved parties, detailed what can and what cannot be discussed and changed as a part of the project, and detailed the methods and outputs that would be included in the project. It also had sections on risk management and evaluation, and on stakeholder engagement.

4.1 Phase 1 - Define the Problem

Step 1 is there really a problem? Define the problem

Deer in urban and suburban environments can cause substantial controversy and can divide communities. Before embarking on a community deer management project, it is important to ask if there really is a problem. It may feel like the problem is obvious, but human perceptions define wildlife conflicts. An

interaction is only negative if someone perceives it as such. When it comes to deer, there are a wide variety of views. This is where the difficulty with regard to deer management stems. What is intolerable to one community member may barely be an inconvenience for another.

Here are some questions to consider:

- Is this a community-wide problem or is it restricted to certain areas within the community?
- How bad is it? Is there a consensus or just a few individuals with issues?
- What are the impacts that are occurring, who is experiencing these impacts, and to what degree? For example, can residents plant shrubs and flowers, and expect them not to be destroyed?
- Have problems, e.g. deer vehicle collisions, resident complaints, shot up recently or has there been a gradual increase over time?

A community survey is one way to collect information from the community to define the problem. This could be online, through a tool such as Survey Monkey, or on paper delivered to people's mail boxes. Other ways to define the problem could include running a community workshop, or canvassing community groups to seek input from their members, interviewing local residents or formal monitoring. The method of defining the problem will depend on community communication needs and pathways.

In Harrietville the Living with Deer Project Working Group conducted a survey of the community in May 2017 to identify exactly what the impacts of deer are on the Harrietville community and the relative importance of each impact. We also used the survey as a way to find out if residents were already managing deer, or if they had ideas as to how deer impacts could be managed. The survey allowed us to understand that in Harrietville people were most concerned about damage to gardens and damage to the local environment in the adjacent Alpine National Park and State Forest, and about road safety.

Harrietville had conducted a values and assets identification exercise as part of another project and so we were able to draw on that information to help structure our survey questions. Harrietville residents tend to place high value on the natural landscape in which they are situated and on the homes they create. They also value their strong social networks and these have been leveraged during the project to disseminate information in the community. The Great Alpine Road is seen as a community asset. It runs through Harrietville and is a vital part of the town's economy as it brings tourists to the town travelling through to the high country and to East Gippsland. The sometimes windy and narrow road is also seen as a risk with increased numbers of cyclists and deer a source of concern.

It is also important the community are informed about the project and why it might be necessary. Information needs to travel in both directions. Developers of any community-based deer project need to understand the issue from the community's perspective, and they must also help the community to understand where there might be negative impacts on assets and resources that they have an interest in.

It is important to realise that community deer management can only go as fast as the community allows ...

There are people who love seeing deer in Harrietville, there are people who enjoy hunting, there are people who hate the damage deer cause, and there are others who do not see and have little knowledge of any damage from deer. It was important at the start of the Living with Deer in Harrietville project that we brought the community together to introduce the project and to hear a bit about the intricacies and realities of deer, deer impacts, and deer management in Victoria so that people had a bit more information to draw on.

We planned a community evening of guest speakers to talk on topics such as deer behaviour and ecology, the Victorian legal and policy framework affecting deer management, other deer management programs in the vicinity, managing deer on private land, and deer and road safety. After the event we identified the key messages from the evening and made these available to the rest of the community.

The community evening brought people together in the community around deer impacts and meant that people left with much more information and understanding than they had arrived with. People are unable to properly engage with deer management discussions without sound understanding of the issues and the community evening helped build the bank of information available to the community.

Common Issues and Opportunities

Common impacts

Deer impacts will be felt by different communities in different ways. Agricultural communities may feel the loss in production and damage to fences most significantly while suburban communities may feel the presence of deer on the roads is where there is the highest level of impact. The following impacts identified in the Living with Deer Project may be common to many communities but their relative importance is likely to differ.

- Damage to gardens
- Vehicle accidents
- Competition with primary production interests
- Destruction of infrastructure such as fences
- Environmental damage
- Dangerous behaviour associated with illegal shooting and irresponsible hunting practices

Being better informed

Almost all communities are likely to benefit from being better informed on a range of issues related to deer and deer management, including

- deer ecology
- the legal framework governing deer management
- deer fencing
- population management options on private property

Some important common key messages:

- In Victoria over the past decade, the number of Sambar Deer has increased significantly and this trend shows no sign of levelling off.
- It is impossible to completely remove deer from the landscape. Any deer management action that is taken must be long-term.
- Deer management does not necessarily mean culling or shooting. There are other ways to address impacts from deer, for example choosing less palatable plants for gardens, slower speed limits, or erecting fences. Not every community will want to explore shooting options.

It is important to think about how your community receives information and leverage those information pathways to help inform the community.

4.2 Phase 2 – Decision Making and Planning

Once you have taken the pulse of your community with regard to deer, it is important not to jump straight to solutions. A well-thought out, thoroughly researched, community supported management plan will benefit all involved. Once developed it will set direction, list management options, provide recommendations and direct implementation.

Step 2 What does the community want to achieve? Identifying objectives for deer management

Once you have more information out in the community and have a good appreciation for what the problem is, you can start talking about what the objectives might be for deer management. This can be via formal

community meetings or via less formal discussion sessions. You may choose to leverage other events such as markets or field days to conduct a 'drop-in' session where people can discuss specific topics. Sometimes it may be appropriate to set up small working groups or sub-committees to work on specific issues.

An important element of discussion sessions is that all opinions are welcomed – the solution is only as strong as the people supporting it and if communities are divided on an approach it won't work! A structured process is needed in discussion sessions with many people, particularly where there is a wide range of opinions. This might include myth-busting, setting out the facts, and examining pros and cons of all the options on the table. If part of the community disagrees with an approach it should be discarded or tabled to come back to at a later date.

It is important to realise that community deer management can only go as fast as the community allows. Sometimes it takes time to bring people along on a journey. Providing information is a good beginning, but allowing time for information to settle, to be discussed, and to be acted upon is a vital part of any community deer management initiative.

The first step undertaken in the Harrietteville community identified the major impact areas based on feedback from the survey. These were impacts on the environment, road safety, and impacts on residential gardens. In addition to these impact areas, some residents also wanted to discuss how the community could influence Government policy, and whether hunting or contract shooting could form a part of the solution in Harrietteville.

We then advertised for residents with an interest in these topics and held discussion sessions on what people can do to address the impacts that concern them. We discussed options and roles and responsibilities of different parties. Some options were relatively benign and easy to get agreement on. For example it was determined that a resident with landscaping skills would assemble a list of plants that are not palatable for deer to distribute in the community to enable residents to select species for gardens that are less likely to be destroyed. Some households in Harrietteville are now changing their gardening behaviour, using design features and planting species that discourage deer from destroying their gardens. Similarly, information sheets on fencing options and costs and potential repellents were also easy to get agreement on.

Other topics were more difficult and complex. What community can do about environmental damage was difficult. Some people do not recognise that the environment may be changing and research on impacts is in its infancy so there is disagreement over the level of environmental impact. It is also difficult to identify actions residents can take that will help protect the local natural environment from deer. In Harrietteville action around this topic will largely be via community advocating for further control of deer at the State level.

Step 3 Identify what can be done – develop and assess alternatives

Once the problem has been defined, and the community have determined what their objectives are, you can start talking about what action can be taken. For impacts that appear to be relatively straightforward, discussion on potential actions can often take place using the same forums established in Step 2. Setting objectives, defining potential actions that can be taken to meet the objective, and choosing what to do, can all occur at the same time!

Sometimes, however, an issue might be too complex for a group of people to set an objective and define potential actions at the same time. Sometimes it can take a long time to even reach an agreed objective because there may be a wide range of opinions within the community.

It is important that time be allocated to topics that are contentious or difficult. Key stakeholders in the community will need to be identified for each major impact area that is being discussed, and sometimes targeted engagement will be necessary to ensure that the community consents to a certain action being taken. Sometimes capacity in the community to properly understand an issue and course of action will need to be built.

An example is if a community decides the speed limit should be dropped in a certain location. Clearly this will require engagement with VicRoads but it will also require engagement with people in the community that could feel negatively impacted by such an action in order to explain to people why the action might be necessary and to address concerns.

Sometimes it may not be clear what potential courses of action exist, or even what the extent of the issue actually is. In these cases approaches that emphasise monitoring and research will be appropriate in order to facilitate a better community understanding of the impact.

The topic of organising a community wide perimeter shooting program to alleviate pressure on the town was challenging in Harrietville. The topic was discussed but will not be developed further at this stage of the project because some people are wary of such an approach. This management option has been tabled for further discussion at a later date. In the meantime, it was decided that information on what a controlled shooting program entails would be distributed to the community so people might better understand what such a program might look like.

In Harrietville one of the significant impacts related to deer are from illegal shooting activities. Illegal shooting by people who identify as deer hunters is deplored by residents and contributes to an underlying feeling of mistrust of non-resident hunters in the community. Hunting, and allowing hunters onto farmland in a controlled manner, could be a part of an individual farmers' deer management response. Many farmers will not consider this due to mistrust, or due to other social barriers including allegiance to known hunters. In many communities mechanisms to control illegal shooting will need to be discussed with local Police and the Game Management Authority.

Step 4 Choose what to do

Once management options have been fully discussed with all relevant stakeholders a decision can be made about what the course of action will be – or at least what the first steps might be as some courses of action will require evaluation of the first step before subsequent action can be defined.

It is important that actions chosen have the following attributes:

- Actions must define something that will be done. They should relate to an output – something that occurs or is created as the result of the action.
- The person or group responsible for doing the action should be clear and timeframes should be established.
- The reason for the action should be clearly stated. This will have been identified in the 'define the problem' phase of the project. When actions are articulated they should be clearly linked to the problem they are designed to address.

Actions should also be organised in some way. They could be grouped by themes, or by desired outcomes. Grouping actions makes it easier for the community to understand why an action might be important as it makes the reason for the action easier to see.

Step 5 Prepare a plan

As communities and deer populations are dynamic, a plan that doesn't consider changing community needs or new management tools would not be the most useful. Ideally a Community Action Plan will be short and to the point and will factor in a process that allows for learning and change. Residents do not want to wade through pages of text. A diagram or a short statement depicting what will be done in the short term will often suffice. Alternatively, consider producing both an Action Plan and a summary for people to choose how much they want to read!

In Harrietville we found that it is important that some small, immediate actions were identified to make the community feel that there is something that can be done. At the beginning of the program in Harrietville it seemed as though many people were resigned to the presence of deer and their impacts and felt like it was something they just had to endure. Small ways that people were able to lessen impacts,

such as changing garden layouts to make it less easy for deer to destroy gardens, were important for the Harrietville project.

The Action Plan created for Harrietville was limited to a one-page diagram that grouped actions according to key impact themes, spoke about the reasons behind the project, and presented the way forward.

4.3 Phase 3 – Implementation

It is important that some tangible action happens after the initial planning phases. Planning what to do can take a large amount of time and energy from the community. Following up with on-ground action ensures that community support and enthusiasm is retained and means people involved in the project feel some degree of satisfaction – like they are getting somewhere!

Involving community in monitoring the distribution and abundance of deer in the community is one way to involve people in solutions. Monitoring could be as simple as a Facebook page to record sightings, or as elaborate as a controlled scientific study where findings are given back to the community. Monitoring allows the community to be empowered with information so that future discussions with land managers and agencies can draw on data rather than anecdotes. Currently Feral Scan (<https://www.feralscan.org.au/>) are working on an internet platform for people and communities to record deer sightings. When Deer Scan is completed it will be an important mechanism for communities to record their local deer population and measure how its distribution grows and changes over time.

The first actions for the Harrietville project largely tackled getting accurate information out in the community in a way that is easy for people to access. Short Fact Sheets were created to better inform the community on topics including the types of plants that are better to plant in gardens, legislation and implications for deer management, repellents, and effective fencing options.

4.4 Phase 4 – Evaluation and Adaptation

Identifying a process for review and evaluation is critical for any community-based deer management project. The longevity of deer management projects and the ever changing population dynamics of deer, coupled with changing communities means impacts will change over time. It is important that projects allow space to factor in change.

Figure 3: Hahn (1990) issue evolution model (in Decker et. al. 2002 p20) Figure 3 illustrates the different stages residents and community groups commonly experience when confronted with an issue (Decker et. al. 2002). The model largely follows the process undertaken in Harrietville, but it is important to recognise that there is no defined finish point. Evaluation of action and of the ongoing understanding and perception of the impacts of deer will inform and support future action in a continuing cycle of action and learning. It is important that projects include the means to assess actions and learn from successes and challenges.

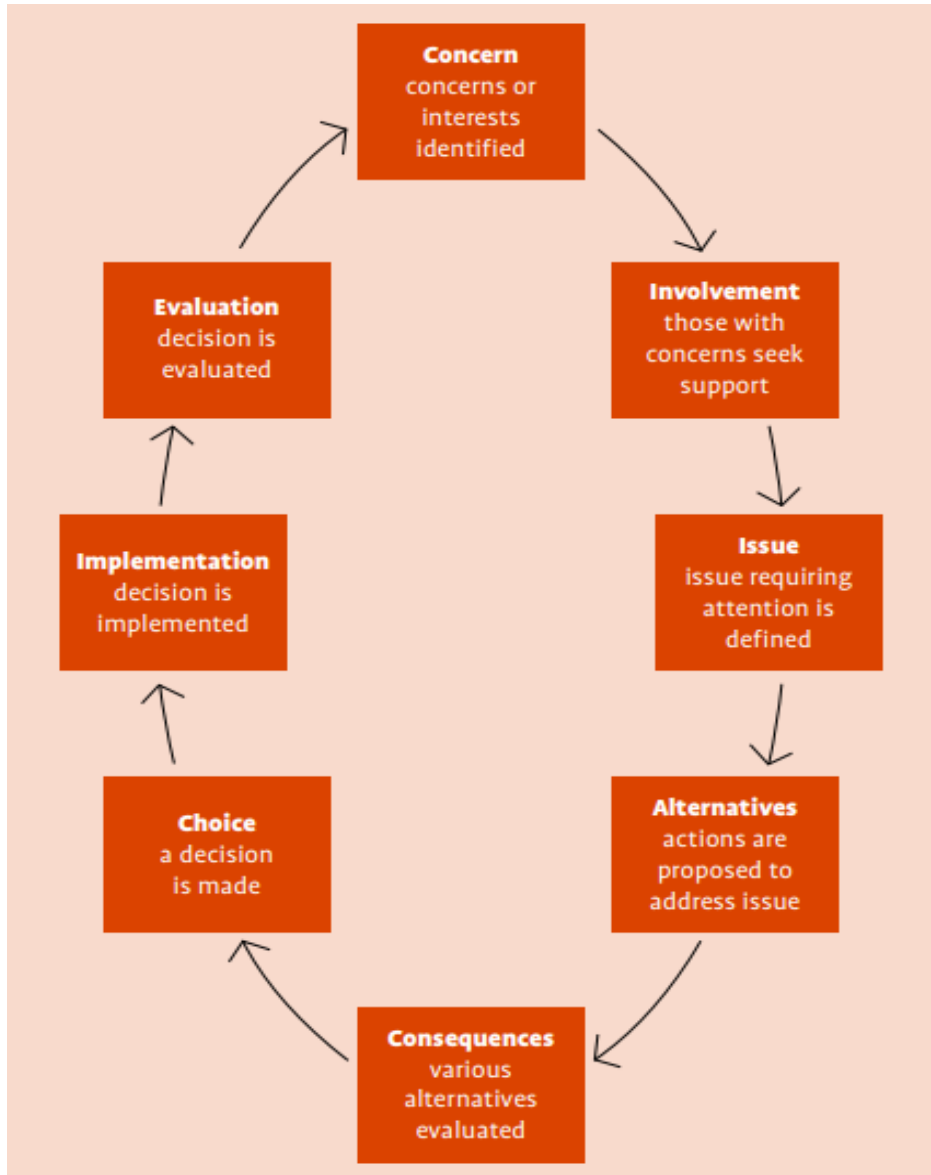


Figure 3: Hahn (1990) issue evolution model (in Decker et. al. 2002 p20)

At the time of writing the Harrietville Living with Deer project is one year in. Members of the Working Group are now aware and committed to the fact that the Working Group will remain an entity for the foreseeable future, meeting quarterly to discuss progress. Each year actions will be evaluated, as will the impact of deer on the community and the cycle of establishing action going forward will continue.

In Harrietville we expect that future action will evolve as funding becomes available and as the community increasingly feels impacts from the growing deer population in the surrounding Alpine National Park and State Forest. For future development are deer population monitoring processes and, possibly, a shooting program if it is feasible and if the community decides that it is necessary. As deer numbers increase in the landscape it is possible that more residents will look to controlled shooting as a population management option.

5. The Future – Issues and Opportunities

Deer in Australia are increasing and it is a certainty that more communities will weather greater impacts from deer into the future. In Australia we know very little about the carrying capacity of the environment and what this means for the numbers of deer we can expect to see in the landscape in the future.

Deer numbers, particularly Sambar deer are now increasing rapidly with no signs that we are approaching the top of the population curve. With increasing populations over the next five years we can expect more impacts, more issues, and more people coming into the belief that deer numbers need active management.

Recent changes in legislation will soon mean that deer meat can be processed in the pet food and human food industries. This change could be an enabler that provides an incentive for industry to be developed to exploit wild deer resources. It could also make it easier for farmers to have deer culled on private land as avenues will exist to remove and process carcasses.

To support management of deer into the future significant investment in research is needed. We need to learn more about how deer behave in Australian landscapes, where they are likely to establish, effective control techniques, fencing techniques and repellents. Land managers need to be empowered to make effective management decisions and to be able to dedicate resources to deer management.

6. Resources

Community-based deer management

Community-based deer management has a long history in several countries around the world, including the United States. The Community Deer Advisor website (<http://deeradvisor.org>) is a collaboration between Cornell University and The Nature Conservancy aimed at helping communities successfully manage deer at a local level. This website offers resources to help communities plan to manage impacts of deer in their community

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