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Management of Feral Swine

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ABSTRACT: Feral swine are an invasive species within the U.S. and cause millions of dollars in damage annually. The management of feral swine may contrast with traditional wildlife management objectives and provides an opportunity to review wildlife damage management in a new context. The authors examine feral swine damage management in the context of the North American Model for Wildlife Management and note where feral swine management departs from traditional management. While wildlife management agencies are actively engaged in feral swine management and control, the traditional approach will need to be modified to prevent populations from spreading. A model feral swine management program is presented for consideration.

KEY WORDS: feral swine, management, model, North American Model for Wildlife Management, *Sus scrofa*, wild pig, wild pig management program

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INTRODUCTION

Feral swine are an invasive species within the United States and cause millions of dollars in damage annually (Pimentel et al. 2000, Higginbotham et al. 2008, Campbell and Long 2009). In the past 20 years, feral swine have expanded their geographic range and increased in population to the point that the U.S. Congress funded a National Feral Swine Damage Management Program within USDA - Animal and Plant Health Inspection Service (APHIS) beginning in Federal FY 2014. The Wildlife Services program is coordinating the APHIS effort along with Veterinary Services, International Services, and support units within APHIS.

The objective of the Feral Swine Damage Management Program is to limit feral swine damage through eradication where possible, and through damage management projects where eradication is not possible. Eradication efforts are planned for states, and for portions of states where feral swine are newly established and numbers are relatively low. Damage management efforts are conducted to limit damage to crops, livestock, watersheds, native rangeland and grazing pastures, property, and human health and safety.

While USDA-APHIS leads the federal effort, many other entities are engaged in some aspect of feral swine management. State wildlife agencies often are tasked with feral swine management while state agriculture agencies, soil and water conservation districts, Land Grant University Extension Services, and private contractors are all engaged in management. The management of feral swine contrasts with traditional wildlife management objectives and provides an opportunity to review wildlife damage management in a new context.

THE NORTH AMERICAN WILDLIFE CONSERVATION MODEL

The North American Wildlife Conservation Model contains two basic principles: that wildlife belongs to all people, and that wildlife is managed so that populations are sustained forever. Behind the principles are seven guidelines, known as the Seven Pillars of Conservation (Geist et al. 2001, Mahoney 2004), which serve to guide decisions about management. These are:

Pillar #1 - Wildlife is held as a public trust
Pillar #2 - Prohibition on commerce of dead wildlife
Pillar #3 - Democratic rule of law
Pillar #4 - Hunting opportunity for all
Pillar #5 - Non-frivolous use
Pillar #6 - International resource
Pillar #7 - Scientific management

Examining feral swine management in the context of the North American Model gives us the opportunity to compare and contrast management needs and direction.

Pillar #1 - Wildlife as a public trust: Feral swine are not wildlife and should not be managed as a public trust. Because there is no taxonomic differences between feral swine and domestic swine, many states consider free-ranging swine to be livestock, property of the landowner on whose land they reside. The public trust doctrine does not apply to swine, both in a legal context and a practical sense. Rather than focus on "ownership" or trust relationships, agencies should focus on management authority, responsibility, and impacts to trust resources. Wildlife agencies are still the appropriate entity to effect management because of impacts to native wildlife.

Pillar #2 - Prohibition on commerce of dead wildlife: The prohibition of commerce in dead wildlife was designed to prevent the over-exploitation of wildlife and should not directly apply to an invasive species. However, in practice, allowing the sale of feral swine creates an incentive to perpetuate the species and works against effective eradication programs. Additionally, commerce in uninspected meat products puts people at risk for meat-borne pathogens that can be fatal. While this guideline was designed to prevent overharvest of wildlife, it should be retained in feral swine management to prevent the incentive to move feral swine. There may be an opportunity to introduce commercial harvest of wild swine if it

can be done in an economically feasible manner without creating incentives to perpetuate populations.

Pillar #3 - Democratic rule of law: The creation of hunting and fishing laws in a public process perhaps poses the greatest challenge to effective feral swine elimination. State and Federal wildlife managers are responsible to the public, and the sporting public pays the majority of the costs for conservation. However, the creation of a hunting culture prevents effective feral swine management actions. In places where feral swine are at minimal populations, prohibition on hunting prevents the spread of swine to meet the hunting demand. Fenced hunting operations inevitably lead to escaped swine, and in many instances escaped animals establish free-ranging populations. Where feral swine are already established, hunting may need to be regulated to prevent conflicts between user groups (i.e., hunters using dogs to pursue feral swine, and archery deer hunters) or conflicts between area uses (i.e., seasonal closures to prevent disturbance to nesting bird colonies). Agencies may need to engage private landowners and responsible hunters to add to effective control where feral swine already exist. Hunting regulations should not be based on maintaining populations.

Pillar #4 - Hunting opportunity for all: Feral swine control is not hunting. Allowing hunting as a recreational component creates demand for more feral swine and creates incentives which diminish the ability to eliminate populations. While agencies may control regulations, landowners control access, and a landowner education program may be needed for landowners to understand the tradeoff in consequences for maintaining huntable populations.

Pillar #5 - Non-frivolous use: The non-frivolous use concept, in which wildlife is protected from overharvest, does not apply to feral swine. While swine should be protected from inhumane methods or exhibitions of cruelty, the risk of ecological damage from feral swine is sufficient justification to support removal. Justifying "take," requiring salvage of meat, applying shooting hour restrictions, and other regulations designed to reinforce fair chase are not appropriate and should be reexamined in a control context.

Pillar #6 - Wildlife is an international resource: Unfortunately, feral swine in North America have become an international problem, with swine from the U.S. becoming established in Mexico and, in one instance, swine from Canada moving into the U.S. The "international" component of "international resources" applies, and international coordination is necessary to accomplish management. Where swine are well established, international coordination can limit damage by coordinating control efforts along shared borders. Where swine populations are limited, international coordination is necessary to effectively detect or eradicate wild swine populations. Beyond actual control, agencies need to establish an international dialog to exchange information on surveillance, share research, and to facilitate training.

Pillar #7 - Scientific management: The principle of scientific management is the single guideline that applies to feral swine management. Eradication efforts need to include proven techniques for removal as well as surveillance for survivors and reintroductions. Management techniques need to be based on research and not simply marketing rhetoric. For maximum benefit, damage management efforts need to be scheduled to maximize protection of specific crops or other resources, such as conducting control immediately prior to planting to protect crops, or during seasonal rains to maximize watershed protection. Landowners need to be engaged during damage management efforts and need to take responsibility for management after agency control ceases in order to prevent populations from rebounding. Research should be prioritized and coordinated between entities to maximize opportunities and funding.

With this analysis as a basis, a Model Feral Swine Management Program may be outlined. The Model program, in the opinion of the authors, should include as many of the following principles as possible:

1. Eradication should be the highest priority where possible. Swine managers should examine current roles and responsibilities regarding eradication. Where eradication is possible, reduction campaigns need to be conducted systematically, and emphasis should be placed on prevention of large, interconnected populations. Legal restrictions on access to land should be addressed locally and at the state level to preclude a single landowner from thwarting significant success.
2. Management of feral swine damage needs to be conducted in those states with established populations. Management efforts should be sustained to 1) reduce damage for a vulnerable crop or resource, and 2) to reduce populations to low growth potential. Landowners/managers should be engaged to keep swine at low populations levels.
3. Resources need to be available to conduct surveillance and initiate removal of feral swine in new areas. Prevention is ultimately the most cost-effective solution; reliance on an emergency response is poor planning.
4. Education of landowners is necessary at all levels of swine populations. At low population levels, landowners need to be able to recognize swine sign and damage and have avenues to report swine sightings. At high levels, landowners need to be engaged to facilitate access to property as well as to conduct removal actions once populations are reduced to manageable levels.
5. Education of hunters needs to be developed and evaluated to change the paradigm from hunting as a sustained recreational activity to hunting as a measure to protect natural landscapes and other wildlife. Recreational hunting has no role in feral swine management. Where feral swine are well established, private citizens can play a role as "control agents" in preventing the expansion of population numbers as well as serve to police the ranks of hunters to prevent the spread of feral swine.

6. Fenced shooting operations need to be restricted to prevent establishment of escaped swine.
7. Bounties, live animal meat markets, and hunting contests should be discouraged. All "market incentive" programs create an incentive to perpetuate swine.
8. In areas where swine are not well established, the elimination of recreational hunting for swine is necessary to remove the incentive for humans to move swine for hunting purposes. States may consider statewide closures or county closures to prevent the spread of swine.
9. In areas where swine are well established, allowing private control operators the ability to remove swine on sight is necessary to encourage the removal of swine. This is especially important to elicit landowner support for removal of swine following population reduction campaigns. Extensive education campaigns for control operators need to be implemented to differentiate between recreational hunting objectives and hunting as a way to manage populations. As populations decline, managers can expect lower private citizen participation and will need to increase agency efforts.
10. Research needs to be prioritized and coordinated to maximize the dollars available. Research priorities include enhanced detection methodology; basic ecological information on newly establishing populations; ecology of populations under management; and development of humane, selective removal tools, including toxicants, for use in a fragmented landscape.

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