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Exotic Invasive Plant Species: Controlling Noxious Weeds through Public Policy

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Abstract

Exotic invasive plant species are a threat to ecosystems throughout the world. In addition to reducing biodiversity, they also pose an economic threat to human societies. This research identifies some of the most successful noxious weed control policies in North America on federal, state/provincial, and local levels. Management techniques, penalties, funding, community outreach, and the successes and shortcomings of these programs are evaluated. Local weed control boards and community involvement are keys to successful programs. This paper offers legal recommendations for improving North Carolina's management of invasive weeds.

1. Background

1.1 Defining Exotic Invasive Species

A variety of terms are used to refer to exotic invasive plant species. An introduced species is a species that arrives somewhere, intentionally or unintentionally because of human influence. Other terms for introduced species include nonnative, exotic, alien, and non-indigenous. Even if an introduced species does not establish a population or spread, it is still considered an introduced species. If the introduced species does spread well beyond the point of introduction, it is then considered invasive[1]. Executive Order 13112 defines an invasive species as "a species that does not naturally occur in a specific area and whose introduction does or is likely to cause economic or environmental harm or harm to human health."[2] This legal definition is inconsistent with the scientific understanding of an invasive species, which does not require a species to be harmful in order to be considered invasive. The generally accepted biological definition of exotic invasive species is species that "arrive with human assistance, establish populations, and spread". Invasive species are sometimes called pests. This is also inaccurate, as not all pests are introduced[1].

The term "weeds" is sometimes used when referring to exotic invasive plant species. While this is not necessarily incorrect, it is important to point out that "weed" is a subjective term that is not always limited to invasive and/or exotic plants[3]. The term "noxious weed," while still not synonymous with "exotic invasive species," is more acceptable and clearly defined. The Federal Noxious Weed Act of 1974 defines a noxious weed as "any living stage (including but not limited to, seeds and reproductive parts) of any parasitic or other plant of a kind, or subdivision of a kind, which is of foreign origin, is new to or...widely prevalent in the United States, and can directly or indirectly injure crops, other useful plants, livestock, or poultry or other interests of agriculture, including irrigation, or navigation, or the fish or wildlife resources of the United States or the public health."[4] In short, a noxious weed is an exotic invasive species that is also harmful in some way to human society. Many federal, state, and local laws use the term "noxious weed" when establishing policy for dealing with exotic invasive plant

species. The noxious weeds are then classified into different categories, such as A, B, or C. Therefore it is not uncommon to see legislation refer to a noxious weed as a "Class A weed."

1.2 Characteristics of Invasive Species

Most invasive species share a number of characteristics. Many thrive in disturbed environments, such as along roadsides and in untended urban areas, which provide early succession-like environments. These plants are typically able to survive in a wide variety of habitats, and their growth and reproduction are rapid. Exotic invasive species are usually aggressive and out-compete natives for resources[5]. Some are allelopathic, meaning they release toxins that prevent the growth of surrounding plant species[6]. In addition, an invasive species will rarely have natural pests or enemies to suppress growth[5]. The most successful invasive species are typically trees and perennial herbaceous plants[7].

1.3 Causes of Introduction

The introduction of invasive species by humans can be either intentional or accidental[8]. Intentional introduction usually results from people using exotic plants as ornamentals or for economic reasons, such as timber production or packing material. Accidental introduction is typically caused by seeds or soil used for trade being contaminated with seeds of an exotic species[9]. In order to become an invasive species, the exotic species must be able to adapt, survive, and spread in its new environment[7]. Most introduced species have not become invasive[9]. However, many exotic species that are now considered invasive appeared to be non-invasive when their introduction was relatively recent[7].

In North America, the earliest verifiable introductions of exotic species began with European settlement. It is possible if not likely that earlier visitors and settlers of the Americas could have introduced new species. Colonists intentionally planted many species that originated in Europe. As well, seeds were accidentally carried in and on livestock, and in settler's belongings. At one time, United States government supported importing exotic plants for food, medicines, economic and beautification purposes. These policies continued. For example, in the early 20th century the government paid farmers to plant kudzu and the U.S. Soil Conservation Service encouraged the use of multi-flora rose to prevent soil erosion[8].

1.4 Effects

The lack of natural predators and competitive nature of invasive species allows them to crowd out natives and form areas of monoculture. Invasive species reduce biodiversity as they consume or destroy an ecosystem's resources[9]. Other indirect effects caused by exotic invasives include changes to soil or water characteristics, affecting availability of soil nutrients, changing light conditions, increasing sedimentation, and/or changing food availability for animals in an ecosystem[7,9]. Some exotic invasives also increase the risk of wildfire[10]. Aside from out-competing native species, an invasive species may be so closely related to a native species that hybridization between the two species occurs. This hybridization can reduce genetic diversity, cause extinction of the native species, change how a species functions in an ecosystem, and negatively affect other species. The losses caused by invasive species are not just environmental, but also economic[8]. For example, loss of agricultural crops and food sources for animals have cost the U.S. billions of dollars to date[6].

2. Policy and Law

2.1 U.S. Federal Law

2.1.1 overview

Some of the earliest laws focused on managing exotic invasive species in the U.S. were promulgated by the federal government. Over the years the laws have evolved as our understanding of exotic invasive species has improved. In the past, federal policies encouraged the introduction and spread of exotic invasive species, but now their focus is on

controlling and eradicating these species. Today, an important feature of federal policy regarding invasives is maintaining a regularly updated list of noxious weeds throughout the country. This list is known as the Federal Noxious Weeds List and is a useful resource to states that draft their own noxious weeds laws.

2.1.2 the lacey act

The Lacey Act of 1900 is one of the first acts used by the government to control exotic invasive plants. While its original purpose was to restrict trade in plants and animals that were obtained by illegal means, today, the act is largely used to help prevent the import of exotic invasive species and species protected by law. The Act is important because it provides broad authority for the federal government to regulate the import, export, transport, sale, and purchase of plants and animals. The act establishes civil and criminal penalties, including fines and prison time, for illegally transporting, selling, or buying animals and plants. It is enforced by the Department of Transportation and the Department of the Treasury[11].

2.1.3 noxious weed act

The Noxious Weed Act of 1975 (repealed in 2000) was important in creating a legal definition of "noxious weed", and giving the Secretary of Agriculture the power to designate certain species of plants as noxious weeds. These noxious weeds are then banned from trade or transport without a permit. The Act also gave the Secretary the authority to inspect products, seize and destroy those that contained noxious weeds, and quarantine areas infested with noxious weeds. The Secretary was also responsible for working with other federal, state, and local agencies, farmers' organizations, and private individuals in order to contain and eradicate noxious weeds and prevent them from spreading[4].

2.1.4 executive order 13112

In 1999, President Clinton authorized Executive Order 13112, which was intended to prevent the introduction of invasive plant and animal species, and control already existing invasive species. It created an Invasive Species Council comprised of the secretaries of State, Treasury, Defense, Interior, Agriculture, Commerce, and Transportation and the Administrator of the Environmental Protection Agency. The Council is responsible for releasing a national Invasive Species Management Plan, which is to be updated at least once every two years[2].

The Executive Order prevented any federal agency from authorizing acts that might encourage the introduction or facilitate the spread of exotic invasive species, unless the benefits of these actions clearly outweighed the costs. Any federal agency whose actions might affect exotic invasive species was given the responsibility to detect, monitor, and research exotic invasive species, if they can do so in accordance with their budget. Making action conditional upon budgetary considerations considerably weakens the policy. These agencies are also authorized to control exotic invasive species, restore native species to infested areas, and provide public education on invasive species and management techniques[2].

2.1.5 plant protection act

Some laws aimed at controlling exotic invasive species such as the Plant Quarantine Act of 1912, the Federal Plant Pest Act of 1957 and the Federal Noxious Weed Act of 1974, have been replaced by the Plant Protection Act of 2000. The Plant Protection Act consolidated the requirements set forth in previous acts. These laws cover the domestic trade, importation, and movement of noxious weeds, nursery stock, and other pests. Under this Act, implementation and enforcement authority was given to the Animal and Plant Health Inspection Service, which is a part of the United States Department of Agriculture[12].

2.2 State and Province Laws

2.2.1 overview

State laws relating to noxious weeds are present in virtually every state; however, some are far more extensive than others. While some states do little more than simply listing and classifying noxious weeds present in their states, others have thorough laws that create noxious weed-specific organizations and call for statewide management plans. These laws are not unique to the United States, as territories in other countries have also created a regulatory system for controlling exotic invasive species. Even states with extremely different political orientations, ecological systems, and cultures, such as Nebraska, California, Alaska, and Maryland, have laws that regulate and attempt to eradicate exotic invasive species in each respective state. Washington, Oregon, and British Columbia have some of the most extensive policies pertaining to exotic invasive plant species. Noxious weed laws in these areas will be discussed in the following sections in order to outline their similarities and differences.

2.2.2 Washington state

In Washington, the organization with the highest ranking authority for dealing with exotic invasive plants is the Washington State Noxious Weed Control Board[13]. Allison Halpern, the Executive Secretary of the Washington State Noxious Weed Control Board, says that Washington has "strong noxious weed laws," which put the duty of weed control in the hands of landowners[14]. The state differentiates among various types of noxious weeds by categorizing them into one of three classes. Class A noxious weeds are "not native to the state [and] of limited distribution or are unrecorded in the state and...pose a serious threat to the state." Class B noxious weeds are defined as "not native to the state [and] of limited distribution or are unrecorded in a region of the state and...pose a serious threat to that region." Class C consists of any other noxious weeds[15].

In addition to the State Board, local weed control boards have been formed[13]. Halpern claims that there is only one county in the state that has not created a county noxious weed control board. These county boards work with the State Board in order to coordinate control efforts. Halpern says this sometimes becomes a problem because "it [is] really difficult to have a consistent, statewide noxious weed control system in place when each county runs and prioritizes its program differently."[14]

The State Board is responsible for creating a noxious weed list every year. There is an annual comment period during which anyone can request the addition, deletion, or reclassification of a plant species[15]. The county boards are then responsible for creating their own noxious weed list. This list consists of all Class A noxious weeds from the state list, and the Class B and C noxious weeds that the county board deems necessary to control in their respective area[13].

Funding for the State Noxious Weed Control Board is provided by the state[15]. Halpern says that this funding is insufficient for the State Board to help those working to control noxious weeds on their land[14]. Funding for the county boards is provided by either imposing assessments against landowners (similar to fines) or by taking from the county's general fund[13]. According to Halpern, this creates a "Disparity of funding between county noxious weed control boards." Halpern explains that while "some programs are very well funded...through a special benefit assessment on properties," others are funded "through [the county's] general fund and it is often insufficient to run an effective program."[14]

Both public and private landowners are responsible for eradicating all Class A noxious weeds from their land. They are also required to prevent the spread of Class B and C weeds that are specific to their region on their land. If the county weed control board finds that an owner is not properly dealing with noxious weeds, the board may post a notice on the owner's land ordering the landowner to take action on the noxious weeds. If the owner does not adhere to this notice, then the board can themselves arrange for the eradication of the noxious weeds, and issue a civil infraction to the owner. The owner must then pay the amount that it cost the board to deal with the noxious weeds. Until the owner pays these costs, the board has lien upon his/her property and equipment. The owner will also be issued a fine for the civil infraction[13]. The fine will be per parcel, per noxious weed species, per day after expiration of the notice. The fine depends on the classification of noxious weed and if it is a subsequent or first offense. Fines range from $250-$1000[15]. In addition, anyone who sells or transports noxious weeds or their seeds in an amount greater than what is specified by the Director of Agriculture is guilty of a misdemeanor[13].

2.2.3 Oregon state

Oregon is another state that has made steps towards eradicating and preventing the spread of exotic invasive plants. There are both statewide and local bodies that deal with controlling noxious weeds. At a state level, the Oregon Department of Agriculture heads noxious weed control[16].

The classification of noxious weeds in Oregon is slightly different than that of Washington. Class A is comprised of weeds that the state finds occur in small enough numbers that eradication is feasible, or weeds that are not yet present in the state but pose a threat of invading. It is recommended that Class A weeds be completely eradicated or contained. Class B weeds are those that are "regionally abundant, but which may have limited distribution in some counties." Control methods for these weeds are determined on a case-by-case basis. If a statewide management plan for a class B weed is not possible, chemical or biological control methods are recommended. Finally there are Class T noxious weeds. These are priority noxious weeds for which the Oregon Department of Agriculture will develop a management plan. Class T weeds are selected from the list of Class A and B weeds. In order for a weed to be classified in any category, it must be of economic importance to the state[17].

Oregon noxious weeds law takes a relatively localized approach. Counties are able to create weed control districts in order to eradicate and contain noxious weeds. Citizens can also petition for the creation of a weed control district in their area. When a weed control district is created, the county court is then responsible for creating a list of noxious weeds to be controlled, posting this list in local newspaper(s) multiple times, and appointing the weed control officer(s)[16].

Aspects of the Oregon law dealing with transportation and landowner responsibility are very similar to Washington's noxious weed laws. Machinery or products that are infested with noxious weeds may not be transported to new land until they have been thoroughly cleaned. Landowners are responsible for controlling noxious weeds on their own land. A weed control officer may enter land in his/her district and inspect for noxious weeds. If noxious weeds are found the officer will post a notice to inform the landowner that the noxious weeds must be controlled by a given date. If the landowner does not comply with this notice, then the weed control officer may eradicate, or arrange for the eradication of, the weeds himself/herself. The weed control officer will then draft a document detailing the costs of the weed control methods used and the landowner is responsible for paying these costs[16].

Funding for weed control districts comes largely from a county tax that is collected by the county courts. The Oregon State Department of Agriculture may also provide funds for local weed control districts in order for them to carry out noxious weed management programs. Landowners who control weeds on their own land may apply for a grant from the local weed control district which will reimburse the landowner(s) for half of their expenses. The Oregon State Department of Agriculture provides grants for local weed control districts in half of the amount that the district paid out to landowners for noxious weed control expenses[16].

Failure to comply with this law is a simple legal violation. Most are Class A violations which are punishable by a fine ranging from $220-$2000. Those who violate this law are also subject to civil penalties imposed by the Oregon State Department of Agriculture; fines for these penalties may not exceed $10,000[16].

2.2.4 British Columbia, Canada

Other nations have also taken initiative to control invasive plants. In Canada, the government of British Columbia has set provisions related to noxious weeds. The noxious weed laws in British Columbia are similar to the laws previously discussed.

The Weed Control Act of 1985 establishes most of the guidelines for dealing with exotic invasive plants. The Act has since been amended, most recently in 2011. The Act requires landowners to control noxious weeds located on their property. The Minister of Forests, Lands, and Natural Resource Operations is designated to appoint inspectors to enforce the Act[18].

Inspectors have the authority to enter and examine land or premises for noxious weeds. If weeds are found, the inspector will give the landowner(s) a notice that he or she is required to control all noxious weeds found on the land[18]. The notice lets the inspector specify which weeds are present and whether the landowner(s) must eradicate the weeds or prevent them from spreading. The form also tells the landowner(s) how many days they have to control the weeds and when the land will be inspected again[19].

If the land owner does not comply with the notice in time or if the inspector determines that the area needs immediate attention then s/he may take any necessary action to control the noxious weeds. If this is done, the inspector must draft a statement of costs and the land owner(s) is responsible for paying for the costs of control[18].

Municipalities also have the authority to create their own weed control committees, but are not required to do so. Such a committee may appoint a Weed Control Officer to enforce the Weed Control Act. Multiple councils can be created in a municipality and multiple Weed Control Officers may be appointed[18].

British Columbia also prohibits the purchase, sale, and transportation of noxious weeds and their seeds, including machinery or motor vehicles that may be contaminated with noxious weeds or their seeds[19].

The classification of noxious weeds in British Columbia differs from classification systems in the U.S.; there are only two types of noxious weeds. Schedule A: Part 1 consists of noxious weeds that are found throughout all of British Columbia and Schedule A: Part 2 is comprised of noxious weeds that are only found in specific areas of British Columbia[19].

2.3 Local Laws

2.3.1 King County, Washington

The system in place for controlling invasive weeds in King County, Washington derives itself from Washington State law. Washington allows for counties to establish their own weed control boards. The King County Weed Control Board was founded in August of 1992 as a result of a petition by King County citizens[20].

The Board is comprised of six members, five voting, volunteer members, and one nonvoting member from the county extension office. The voting members represent the five weed districts into which King County is split (Figure 1). Members are appointed by the County Executive and confirmed by the County Council. The duties of the Board are to draft a county noxious weed list, prioritize this list, and administer the county-wide noxious weed control program. The Board is also responsible for educating the public on noxious weeds found in King County, the necessity of controlling these weeds, and how to control the noxious weeds. The Board encourages public input and comments on what weeds need attention[20].

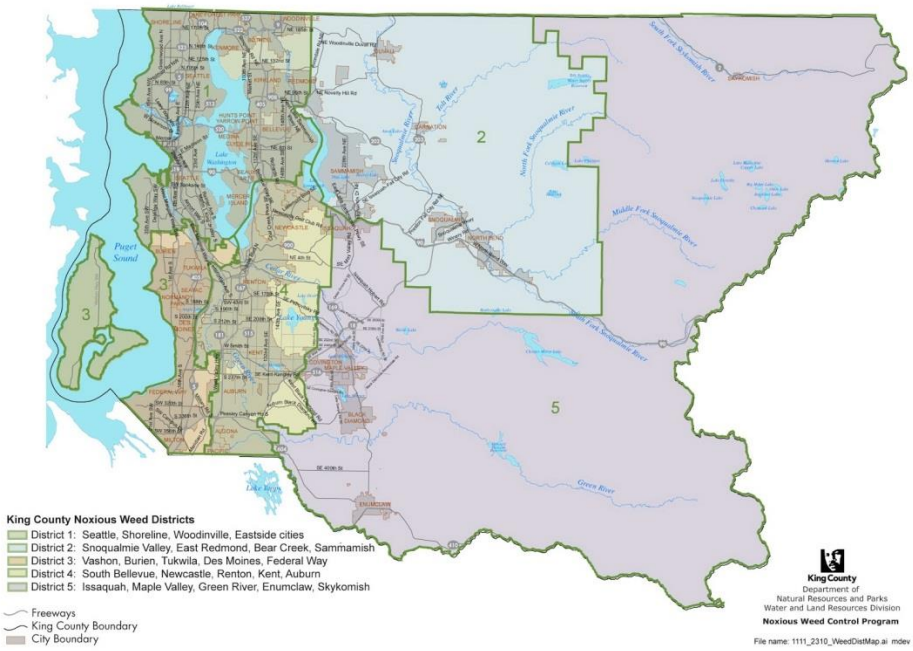

Figure 1 - King County Noxious Weed Districts[20]

The King County Weed Control Board carries out its objectives through the King County Noxious Weed Control Program[20]. According to Steve Burke, Manager of the King County Noxious Weed Control Program, the Program has secure and stable funding in order to meet the Board's objectives. The Program focuses on adhering to the state law focused on noxious weeds. Burke says that the Program takes a "long term strategic approach."[21] This is largely done through using noxious weed management techniques, reaching out and cooperating with local

landowners, surveying for early detection, and providing public education. Control methods involving pesticides, such as spray application and stem-injection, are commonly used by the Program, but they also try to use biological control methods whenever possible.

The King County Noxious Weed Control Program has proven to be effective in eradicating and controlling noxious weeds. By 2013, 99% of Class A weed infestations were controlled. Eradication is more challenging, but since its inception, the Program has been able to eradicate Class A weeds from 66% of the area that was originally infested. The Program has also been successful in managing Class B noxious weeds as ten Class B weeds have been at least 90% controlled, and 6 of these are over a quarter of the way eradicated. Class B and C weeds have been controlled on 97% of surveyed sites. Overall, 11,103 infestations were controlled in 2013[22].

Despite the success of the Program, some infestations continue to spread, and many new infested sites are identified every year[22]. Burke says that this is partly due to a lack of regulation on interstate commerce that spreads noxious weeds. Burke also states that statewide, comprehensive program implementation would help prevent the spread of noxious weeds[21]. While there is still much work to be done in dealing with noxious weeds, it can be claimed that the King County Noxious Weed Control Program has made significant progress in controlling noxious weeds, especially since the beginning of the 21st century (Figure 2).

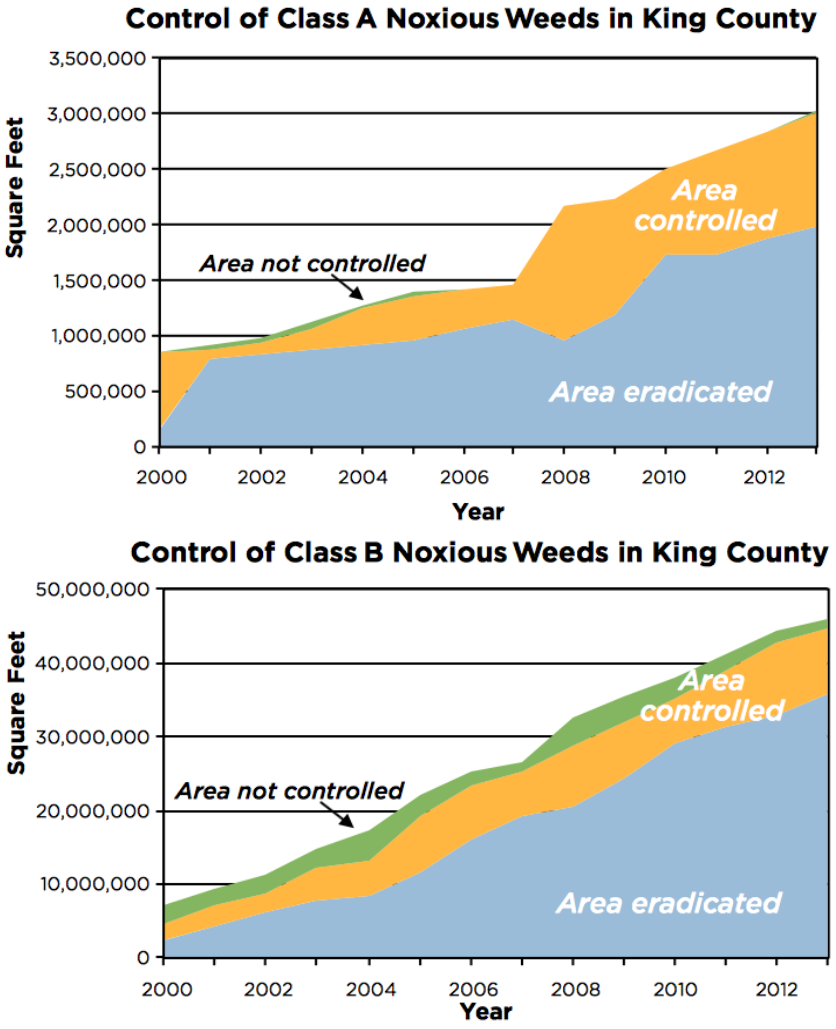

Figure 2 - Class A and B Noxious Weed Control in King County)[22]

The effectiveness of the Program has been largely attributed to cooperation from the local community. Of the controlled infestations in 2013, 97% were able to be controlled without the Board having to enforce penalties on landowners for refusing to control noxious weeds on their land. Only 27% of the 2013 controlled infestations

required help from staff of the Program in order to be controlled. The rest were dealt with solely by private landowners[22].

Education and community outreach played a large role in this cooperation between the Program and landowners. Over 4,000 property owners of land containing noxious weeds were contacted or assisted by the Program in 2013. In the same year, 1,673 people subscribed to the Program's newsletter, and over 12,000 brochures and bulletins were given to the public. In 2013, the Program also reached 1,889 people through 68 different workshops and presentations and provided information to many more by setting up information booths at 31 public events. The information provided through these various mediums include listing classified noxious weeds, discussing management techniques, presenting research and findings, and teaching plant identification[22].

The case of King County, Washington is an example of a highly involved, local approach. King County, which includes the Seattle metropolitan area, was able to have such an involved and effective program because of the funding made possible by its large and dense population. However, smaller counties can also take effective action against exotic invasive weeds. Deschutes County in Oregon is an example of how this can be done.

2.3.2 Deschutes County, Oregon

In spring of 2014, an ordinance was approved in Deschutes County, Oregon that dealt with noxious weeds. The ordinance is very similar to the Oregon state laws regarding exotic invasive species. It calls for the appointment of a county weed inspector with the power to post notices to landowners who have noxious weeds on their land, and specifies that landowners should use integrated vegetation management practices in order to treat noxious weeds. The ordinance also demands that machinery used in noxious weed sites be cleaned before being moved to a different location, and establishes sanctions for failure to comply with the ordinance as a Class A violation[23]. While this county ordinance is relatively recent, noxious weed control has been going on for over a decade in Deschutes County. Ed Keith of the Deschutes County Weed Control Board said that the Board has been in operation since 2002[24].

According to Keith, a big part of controlling noxious weeds is informing the public about them. He said that landowners are generally cooperative with the board in achieving its goals of noxious weed containment and eradication, and that the biggest challenge is a growing population. As new citizens of the county are unaware of the noxious weeds on their land. Once people are educated, they are willing to work with the Board; thus making education and community outreach a significant responsibility of the Board[24].

Keith said that the Board educates the community on noxious weeds by giving presentations to community groups and homeowner associations. The Board also has a "weed wagon" which is a trailer full of brochures and posters that provide information about noxious weeds (Figure 3). The Board sets up the weed wagon at various community events, such as the county fair. In addition to these efforts, the Board also works with surrounding counties and communities in order to host hands-on events that bring people together for noxious weed eradication[24].

Figure 3 - Deschutes County, Oregon "Weed Wagon". Interior view[24]

In regards to how effective the program has been and how much work needs to be done, Keith stated that "most of [the] B rated weeds can be effectively controlled on a property-by-property basis but I don't see them going away anytime soon, there are too many areas where they are growing unchecked. C rated weeds are pretty much naturalized and they are definitely here to stay. [For] some or most of [the] A rated weeds I think it is still realistic to contain them or eradicate them, as they are very low in number and funding is available to help with them." Keith said that some weeds are almost completely contained and/or eradicated, while others pose more of a challenge that he hopes can be overcome in the next decade[24].

The board has achieved these results mainly through using herbicides, which Keith says are most effective in killing the plants. He said they use an integrated approach of chemical application, fertilizing, and growing new vegetation on the treated land. Keith said that biological control techniques are able to be used for a few species[24].

3. Exotic Invasive Plants in North Carolina

3.1 Existing Laws

In North Carolina few laws are dedicated solely to managing exotic invasive species. In 1991 the Aquatic Weed Control Act was passed[25]. However, most authority for managing non-aquatic noxious weeds comes from the state Plant Pest Law. While the Plant Pest law deals with more than just exotic invasive plant species, they do fall under its scope. This law has led to the adoption of specific noxious weed regulations[24]. The law is implemented by the North Carolina Department of Agriculture and Consumer Services. The Plant Industry Division of the agency deals with plant pests, including noxious weeds[26].

Under the Plant Pest Law, people are prohibited from having "any insect, mite, nematode, other invertebrate animal, disease, noxious weed, plant or animal parasite in any stage of development which is injurious to plants and plant products" on their land. If the Plant Industry Division discovers plant pests on someone's land, they must inform the owner that s/he is to eradicate the pests. If the owner does not cooperate Plant Industry Division staff are permitted to enter the property and eradicate the pests and then bill the landowner for the costs. If an individual prevents Plant Industry Division staff from inspecting his/her land or eradicating plants on his/her land, it is considered a Class Three Misdemeanor[26].

State-wide noxious weed regulations that are derived from the N.C. Plant Pest Law focus on limiting the spread of noxious weeds. Under these regulations the NCDA&CS categorizes noxious weeds into three classes. Class A is any species "on the Federal Noxious Weed List or any noxious weed that is not native to the state, not currently

known to occur in the state, and poses a threat to the state." Class B consists of "any noxious weed that is not native to the state, is present in fewer than 20 counties statewide, and poses a threat to the state." Class C plants are noxious weeds that don't fall under A or B and eradication has been determined to be infeasible[27].

Sale and distribution of all classes of noxious weeds are prohibited (class C only in specified areas). It is also illegal for anyone to transport any class of noxious weed into North Carolina. Movement of any class A noxious weed within North Carolina is prohibited. Movement of Class B and C noxious weeds to anywhere outside of their designated areas is unlawful as well. These restrictions on transportation apply not only to noxious weeds themselves, but also articles containing noxious weeds or noxious weed seeds such as farming equipment, nursery stock, hay, or soil. With reasonable cause, any Plant Industry Division specialist can inspect property that is being transported for noxious weeds, and, if found, destroy them. Permits may be issued that allow for the transportation of noxious weeds[27].

3.2 Recommendations

Based on my understanding of exotic invasive plant population dynamics and environmental policy, I believe the laws concerned with the management of exotic invasive plants in North Carolina to be insufficient for successfully controlling and eradicating noxious weeds present in the state. While the Plant Pest Law does create regulations aimed at limiting the transportation and distribution of noxious weeds, it lacks some key components that make the noxious weed laws in Washington, Oregon, and British Columbia extremely effective. A striking difference between these state/provincial laws and North Carolina noxious weed law is that North Carolina does not call for the creation of a statewide noxious weed control board. The existence of these boards has been shown to be necessary for the the efficacy of those programs because the boards can focus all of their efforts on noxious weed control. Staff in the Department of Agriculture have many urgent tasks competing for their time.

North Carolina also lacks the presence of county noxious weed control boards. Noxious weeds can vary significantly from region to region. Local boards have been shown to be vital to the effective management elsewhere.. For example, they are able to identify the most efficient management plans to be used in each region. They are also comprised of people who are local to a place, people who are not only connected to the community, but also invested in the protection of the place where they live. As well, they have credibility as members of the community that agents of the state government may lack. As seen in King County, Washington, and Deschutes County, Oregon, these local boards are not only responsible for directly controlling noxious weeds, but also for public outreach and community involvement.

Given the success of the noxious weed laws and programs of Washington, Oregon, British Columbia, King County, and Deschutes County, and recommendations for improvement from officials of these programs, I recommend that the North Carolina government pass legislation to:

- Create the North Carolina Noxious Weed Control Board
    - Duties Include:
        - Update North Carolina's noxious weed list annually
        - Develop statewide management plans for Class A, B, and C noxious weeds
        - Allow for public comment on the Noxious Weed list and management plans
        - Develop educational materials for all grade levels that can be used as part of school curricula
    - Provide sufficient and sustained funding to the Board through the State's budget
- Establish a statewide structure for the creation of county weed control boards
    - Duties Include:
        - Update a county noxious weed list annually
        - Appoint weed control officers to inspect land for noxious weeds, post notices, and, if necessary, eradicate weeds and bill the landowner
        - Identify areas in the county infested with noxious weeds
        - Co-operate with noxious weed control boards in surrounding counties
        - Develop county-specific management plans for Class A, B, and C noxious weeds
        - Provide outreach to schools, including speaking at schools at least once every year
        - Maintain a trailer containing posters and pamphlets that provide information on noxious weeds and control methods. This trailer should be present at large county events. Counties can work together to share trailors

        - Allowing public comment on the county noxious weed list and the priorities of the board
    - Allow citizens to petition for the creation of a weed control board in their county
    - Provide sufficient and sustained funding for county boards by allowing counties to implement a special tax and retain any fines for failure to comply which would be used for the noxious weed program

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