

Early Detection Rapid Response Framework and Implementation Plan

Noxious Weed Program

June 2016

Early Detection and Rapid Response (EDRR) is a critical component of an Integrated Noxious Weed Management Program. EDRR is the most economically- and environmentally-sound approach to weed management and is often referred to as the “second line of defense” after prevention. The EDRR approach addresses populations of noxious weeds when they are small and still inexpensive to control, and before they cause lasting degradation to the natural environment. Some of the concepts in this framework were derived from the 2003 conceptual design by the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW), along with from the recently-published National Framework for EDRR.

Colorado’s EDRR strategy incorporates a key prevention component for species that have not yet arrived in our state. Prevention and EDRR go hand-in-hand when it comes to protecting our natural resources and economy from noxious weed invasions. Knowing what might be headed our way will make it easier to detect and respond to new invasions, so Colorado works closely with neighboring states to prevent the arrival of high-risk species. The Noxious Weed Program staff oversees the development of the Prevention and EDRR noxious weed lists, and implements the goals and objectives of the state EDRR Plan.

Preparation

The first step in Colorado’s overall EDRR plan is preparation. By taking effective initial steps, we will be able to identify which species are at highest risk to threaten agriculture and/or natural resources of the state. In order to know what species to look out for, we need to know what species have caused problems in other areas of the country with similar climates and what species may be actively invading nearby areas. We need to network with other states and noxious weed programs, as well as actively researching potential new threats, on an annual basis and as new reports come in. Once we know what species may possibly threaten our state, we need to figure out the most

likely way that they would arrive. Natural modes of plant transport include wind, water, and animal movement; however, the most likely way that a plant will travel a far distance is by human transport.

Goals: Build an active, regional communication network that can be used to help detect new noxious weed species which may pose a threat to Colorado and to circulate information regarding these risks. This regional “network” may be a set of integrated networks, all with well-defined roles and responsibilities based on both geographic distribution and habitat type.

CDA will provide leadership and coordination by designating program staff to administer the various components of the network.

CDA program staff will conduct workshops and trainings around the state to inform network members of roles, tasks and responsibilities, and to demonstrate how the network will operate.

Prevention

Once we are prepared with what species pose a risk to the state, we can work within the network to keep these species from entering the state, or from spreading within the state, if they are already present in isolated locations.

Goals: Organize the current listed species, including Watch List species, to reflect the distinction between species already in the state vs. those not yet known to exist in the state in order to craft specific, desired action plans.

Using the newly organized noxious weed lists, develop an EDRR Plan for each individual species, based on known distribution and behavior. Plans should include current spatial distribution, habitat and climate specifications, critical control points where invasion is most likely, and modes of dispersal.

Early Detection and Rapid Response

Early Detection and Rapid Response (EDRR) is a strategy that will function better with greater involvement from all affected stakeholders. Since noxious weeds have the potential to affect all parts of our landscapes and many sectors of our economy, we hope to attract a diverse group of

stakeholders to participate in our state's EDRR network. We also hope to educate and enable enthusiastic citizens to participate, specifically when it comes to identifying and reporting noxious weeds. The EDRR approach can be used for any species invading a new area. These species may be new to the state, or they may exist in some parts of the state, but not the current area at risk. Therefore, there are many ways citizen scientists can take part in an active EDRR Network, along with the professionals who are already highly involved with noxious weed management.

Goal: Identify high-priority landscapes that are at medium- to high-risk of noxious weed invasion, and conduct a demonstration or pilot project to show how the EDRR Framework will be implemented on the ground.

Early Detection

Once we are prepared with the species to look out for, and we have done everything we can to prevent their introduction, early detection of new or previously-unknown infestations is the next step. Early detection includes identification of new noxious weeds entering the state, previously-unknown populations of high-priority EDRR species, and populations of lower-priority species that exist in the state but are new to that area. Ideally, species identified through this process will have been acknowledged in the "preparation" process, but there is a chance that a new species could show up that we had not yet identified as a potential threat. After a new infestation is identified, we will use the tools developed in the Plant Assessment section to help determine our next steps.

Goals: Conduct education and outreach activities to familiarize a broader audience on the topic and concept of EDRR, and how they can participate.

Establish a process that enables accurate identification and reporting by network members and citizen scientists, and provide training on this process.

Advance technological capabilities to allow for more accurate detection, reporting, and identification in the field.

Plant Assessment

The plant assessment component of Colorado's EDRR framework consists of two forms. First, a plant assessment is conducted in a systematic, deliberate, and proactive (when possible) manner to gauge threats using academic and other information compiled by experts. With this knowledge,

CDA can determine the need for listing or other monitoring strategies. Second, a plant assessment is conducted rapidly in the field when a new invasion is found, and the response is immediate. New invasions can be of a known, listed or high-risk species, or of a previously-unknown species. These two types of assessment are used to determine whether a new invader is an immediate risk to the area, and what type of response is warranted.

In 2007 the state noxious weed advisory board approved a Plant Assessment Form for use with “Criteria for Categorizing Invasive Non-Native Plants that Threaten Colorado’s Wildlands, Economy, and Ecology.” This assessment form is completed by graduate students in one of the local university weed science departments and helps us determine whether we should list a species as “noxious” and then regulate it accordingly. The tool includes four categories of assessment: ecological impact, invasive potential, geographic distribution, and agricultural impacts.

What still needs development is the ability for network members and CDA staff to make a rapid assessment of a new infestation in the field. Once a new potential noxious weed infestation has been identified, we need to quickly identify this plant to the species level, determine the risk factor, and decide if the population should be treated immediately or if the risk is not great enough to warrant immediate action. If a plant cannot be identified accurately in the field, a process needs to be in place to determine how the plant will be identified before the infestation is allowed to expand in size and impact.

Goals: For “systematic” or proactive, assessment of invasive plants, CDA will work with CSU to evaluate the current process of developing plant assessment forms and look for opportunities to enhance its effectiveness so as to ensure that the highest priority species are evaluated in a timely, authoritative manner.

For “on the ground” rapid assessment, CDA will develop and maintain the capacity for network members to correctly identify, gather evidence, and plan an effective response, including the development of an eradication plan, mapping and long-term monitoring of sites. This capacity should be applicable for species that are known but invading a new location, as well as for unknown species that have bypassed our predictive risk analysis process.

Rapid Response

The rapid response component of the Colorado framework is perhaps the most simple in concept, yet complex in implementation. After it has been determined that an infestation should be

immediately treated, or that a plant should be listed, the next step is to proceed with planning an appropriate response. If the weed has made it to the A List, then it is essential for all entities to be on the lookout for this species and to eliminate it when found, with help from the state Noxious Weed Field Crew, if available. If a plant poses a potential risk but not enough is known yet about its distribution or behavior in Colorado, which includes over-wintering ability, it is placed on the Watch List until more information can be gathered. Watch List species are reassessed on an annual basis to determine if their status has changed and should warrant higher regulatory authority or release from the list completely. In addition, species on both List B and C have the potential to solicit an EDRR response in areas of the state where they have not yet invaded. These species are widespread for the most part, but in areas where they have not yet invaded they are treated like List A species, where elimination is required, and eradication is the ultimate goal.

Goals: Develop the capacity for network members to respond rapidly to an identified invasion or eruption of high-priority species, so that these plants do not reproduce. This capacity should include financial resources, manpower, and treatment equipment.

Develop an “emergency response plan” for special circumstances where invasive species may pose a particularly serious threat. Develop a list of circumstances that would invoke this emergency response.

Evaluation of Success

Evaluation of the structure and functions of the EDRR framework will need to be undertaken with regularity to ensure that the framework is doing what it is intended to do. CDA will evaluate the framework after it has been developed and operating for a year or two so that we can make adjustments in order to meet our expectations and goals accordingly. In order for CDA to evaluate the effectiveness of the framework, we have developed timelines and measurable objectives. We will solicit feedback from all stakeholders in the network and other interested parties.

The goals described above, along with measurable objectives for each, are found in the following Strategic Implementation Plan and will help inform our direction and guide our evaluation measures. We consider this to be an adaptive management plan and anticipate that changes will be made to it as we develop and implement the framework.

Goal: Measure the effectiveness of the regional network by evaluating responses from the network to invasive occurrences, and provide additional training as necessary.

Strategic Implementation Plan

Preparation

Goal 1. Build an active, regional communication network that can be used to help detect new noxious weed species which may pose a threat to Colorado and to circulate information regarding these risks. This regional “network” may be a set of integrated networks, all with well-defined roles and responsibilities based on both geographic distribution and habitat type.

Objective: Program staff will identify key network components along with individuals and entities within each scale, and invite them to become a part of the network, with the network assembled by October 2016.

Goal 2. CDA will provide leadership and coordination by designating program staff to administer the various components of the network.

Objective: Define roles within the Program staff unit, assigning leadership and coordination responsibilities such that there is a consistent message being delivered by CDA. Make sure each individual unit of the network has a CDA representative working directly with them, and define the communication structure.

Goal 3. CDA program staff will conduct outreach events to inform network members of roles, tasks and responsibilities, and to demonstrate how the network will operate.

Objective: Program staff will hold at least one outreach event, including out-of-state network members, to explain the framework and plan, and to make sure all network members understand their roles, chain of reporting, and authoritative ability by Spring, 2017.

Prevention

Goal 1: Organize the current listed species, including Watch List species, to reflect the distinction between species already in the state vs. those not yet known to exist in the state in order to craft specific, desired action plans.

Objective: Program staff will divide current List A species between those already present in the state and those not believed to exist in the state, by December 2016. Information should be added to the website and mobile app to indicate this distinction.

Objective: Program staff will assess Watch List and other species of concern that have been reported to be problematic in neighboring and/or states with similar climates to Colorado, differentiating between species present in the state and those not believed to be in the state and organized geographically, by December 2016. Information should be added to the website and mobile app to indicate this distinction.

Goal 2: Using the newly organized noxious weed lists, develop an EDRR Plan for each individual species, based on known distribution and behavior. Plans should include current spatial distribution, habitat and climate specifications, critical control points where invasion is most likely, and modes of disbursement.

Objective: Program staff will begin development of EDRR Plans for each List A species, by October 2016. Plans will include current spatial distribution (both within and outside of state boundaries), habitat and climate specifications, critical control points where invasion is most likely, and modes of dispersal.

Objective: Program staff will begin development of EDRR plans for high-priority List B species with the goal of keeping those species from spreading into new territory, by October 2016. Plans will include similar information as those created for List A species.

Early Detection and Rapid Response

Goal 1. Identify areas of high-priority landscape that are at medium- to high-risk of noxious weed invasion, and conduct a demonstration or pilot project to show how the EDRR Framework will be implemented on the ground.

Objective: In partnership with key stakeholders, program staff will identify areas of high value and select one or two for pilot projects by May 2017.

Objective: Program staff will conduct EDRR field demonstrations at these sites, focusing on surveying and reporting, by August 2017.

Early Detection

Goal 1. Conduct education and outreach activities to familiarize a broader audience on the topic and concept of EDRR, and how they can participate.

Objective: Program staff will create EDRR outreach brochures and individualized species-plan materials and distribute them to network members, weed specialists around the state and region, and interested citizens. These materials will include information on reporting protocols.

Objective: Program staff will lead workshops and give presentations on the new Colorado EDRR Framework and Strategic Plan, with an emphasis on statewide participation.

Goal 2. Establish a process that enables accurate identification and reporting by network members and citizen scientists, and provide training on this process.

Objective: Program staff will provide training for network members regarding species of concern, likely vectors of spread, and potential regions subject to invasion by (date) and ongoing, as desirable.

Goal 3. Advance technological capabilities to allow for more accurate detection, reporting, and identification in the field, and that will incorporate a citizen scientist component.

Objective: Program staff will continue to advance the capabilities of the state Online Mapping System, and will work to make sure the inventory of known sites remains accurate.

Objective: Program staff will contribute presence data to regional inventory tracking partners, such as EDDMapS West, in order to form a more accurate regional inventory of noxious weed presence. An accurate regional inventory has the ability to inform the network of species movement and risks.

Objective: Program staff will work with partners in the Office of Information Technology to advance the capabilities of the Noxious Weed Mobile App to incorporate an in-the-field reporting aspect. Once developed, trainings and workshops will be held to educate network members, interested citizen scientists, and other members of the noxious weed community to utilize the expanded capacity of the mobile app.

Plant Assessment

Goal 1. For “systematic” or proactive, assessment of invasive plants, CDA will work with CSU and other universities to evaluate the current process of developing plant assessment forms and look for opportunities to enhance its effectiveness so as to ensure that the highest priority species are evaluated in a timely, authoritative manner.

Objective: Program staff will meet with CSU weed scientists and graduate students to discuss the current process of plant assessment, and suggest improvements that will target key species systematically and provide for a more timely process, by October 2016.

Objective: Program staff will continue to develop and maintain the listing decision matrix in order to provide an objective, systematic summary of CDA’s invasive plant listing decisions (ongoing).

Goal 2. For “on the ground” rapid assessment, develop and maintain the capacity for network members to correctly identify, gather evidence, and plan an effective response, including the development of an eradication plan, mapping and long-term monitoring of sites. This capacity should be applicable for species that are known but invading a new location, and for unknown species that have bypassed our predictive risk analysis process.

Objective: Program staff will ensure that network members are prepared for the tasks of identifying, reporting and treating new populations of targeted species, as evaluated by program staff by May 2018.

Rapid Response

Goal 1. Develop the capacity for network members to respond rapidly to an identified invasion or eruption of high-priority species, so that these plants do not reproduce. This capacity should include financial resources, manpower, and treatment equipment.

Objective: Program staff will investigate and decide on designating funds for EDRR-specific grants in the 2017 grant cycle; and will facilitate collaboration between adjacent network and community partners so that entities can come together if needed to respond to an EDRR species report.

Goal 2. Develop an “emergency response plan” for special circumstances where invasive species may pose a particularly serious threat. Develop a list of circumstances that would invoke this emergency response.

Objective: Program staff will devise a plan that includes timing, resources and strategy/ies for addressing immanent special threats to the state from invasive plants, to be completed by July 2017.

Evaluation of Success

Goal 1: Measure the effectiveness of the regional network by evaluating responses from the network to invasive occurrences, and provide additional training as necessary.

Objective: Within six months of establishment, program staff will survey network members to assess the logistics of how the network functioned. Some evaluation criteria may include: number and type of species identified, actions taken, record-keeping and follow-up procedures.