

FINAL 7-1-2024
**Integrated Pest Management Plan for the Anchorage
 Coastal Wildlife Refuge
 in the Municipality of Anchorage, Alaska**

IPM Plan Effective Dates:	July 1 2024 to June 30 2026
Management Area Name/Location:	Anchorage Coastal Wildlife Refuge (ACWR; Alaska Department of Fish and Game (ADF&G) Division of Wildlife Conservation)
General Site Description:	Forests, meadows, wetlands, estuaries, intertidal areas, trails, trailheads, roads, parking areas, and utility ROWs
Land Uses:	Wildlife habitat, hunting, & viewing; outdoor recreation, transportation, and utility ROWs
Name of Person in Charge:	Sue Rodman, Refuge Manager
Certified Applicator Name(s):	Hannah Thompson, Tim Stallard, Paul Bennetts, Jake Egelhoff, additional Anchorage Soil and Water Conservation District (ASWCD) and Alien Species Control staff
Certification Numbers:	Thompson (10803-2406-4/9), Stallard (10551-2305-4/6/9); Bennetts (10670-2405-4/9); Egelhoff (10930-2506-9).

1. Action Thresholds

Check the types or categories of pests that might present a problem or need to be controlled at this management site:

<input type="checkbox"/> ?	Category
<input checked="" type="checkbox"/>	Vegetation
<input type="checkbox"/>	Insects
<input type="checkbox"/>	Fungus
<input type="checkbox"/>	Rodents
<input type="checkbox"/>	Other (describe below)

For each pest category listed above, describe the level at which the pest becomes a problem which requires control measures to be taken.

This IPM addresses the control of “moderately” (rank 60-61), “highly” (rank 70-79) and “extremely” (rank 80+) invasive plants species as defined by the Alaska Invasive Plant Ranking system (scale of 1-100). Invasiveness Ranking System for Non-native Plants of Alaska, 2008, Carlson et al., U.S . Department of Agriculture). Several current and potential future species are invading natural areas of the Anchorage Coastal Wildlife Refuge and if not controlled, will displace native plant communities that provide ecological functions (e.g. habitat, nutrient cycling) and public values (e.g. aesthetics, food production) in the Anchorage Coastal Wildlife Refuge.

The invasive plant species include: 1) orange hawkweed (*Hieracium aurantiacum*, rank 79), 2) reed canarygrass (*Phalaris arundinacea*, rank 83), 3) bird vetch (*vicia cracca*, rank 73), 4) spotted knapweed (*centaurea stoebe*, rank 86), 5) European bird cherry (*Prunus padus*, rank 83), common chokecherry (*Prunus virginiana*, rank 74), creeping (Canada) thistle (*Cirsium arvense*, rank 76), white sweetclover (*Melilotus alba*, rank 82), meadow hawkweed (*Hieracium caespitosum*, rank 79), yellow toadflax (*Linaria vulgaris*), and oxeye daisy (*Leucanthemum vulgare*, rank 61). Plus additional highly ranked invasive plants species if found.

Action threshold: the presence of one or more individual plants of these species in the Anchorage Coastal Wildlife Refuge is a problem due to their high levels of invasiveness and potential to spread.

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2. Monitor and Identify Pests

How often will the management area be inspected for the presence of pests?

The Anchorage Coastal Wildlife Refuge is 16 miles long and encompasses nearly 32,500 acres. However, most invasive species are known to be or will be found in areas with high public (or utility) use such as roads, trails, trail heads, boardwalk access points, parking lots, and utility ROWs or adjacent to developed areas, such as residential subdivisions, a rifle range, and commercial property.

High use areas will be inspected throughout the growing season for the presence of invasive plants on a regular (two or more times per growing season), but informal basis by ADF&G personnel, ANC-CISMA (Anchorage Cooperative Invasive Species Management Area) members or contractors, and interested members of the public (off-duty biologists, trained recreationalists, etc.).

Readily accessible and known invasive plant populations will be surveyed two or more times during the growing season to monitor their populations and response to management. Remote areas with known populations will be surveyed one or more times per year.

Which locations will be inspected?

All known locations of highly and extremely invasive plant species in ACWR will be inspected each year. New invasive plant reports from refuge staff and citizens will be surveyed to confirm species and extent of the infestation as soon as possible.

What methods will be used for identifying and quantifying the presence of pests?

Known and potential new areas of infestation will be inspected visually on foot within ACWR. Infestations are quantified through visual estimation of number of plants, infestation area, and/or by mapping the boundary of the infestations in a GIS.

How will pest species be identified?

All species are readily identifiable in the field based on various morphological characteristics viewed with the naked eye to people with adequate training or experience. Identifications will be confirmed by members or contractors from the ASWCD, ANC-CISMA or others trained in invasive plant identification using the “Identification of Non-Native Plants in Alaska” guide produced by the UAA Alaska Center for Conservation Science or other identification resources.

Describe record keeping procedures:

Herbicide application records will be recorded in a GIS smartphone or tablet application and/or written on paper forms using the DEC reporting template (record of each control applied, with date, location, and extent of invasive plants presence, etc.). Electronic records will be stored in the cloud (servers owned by ESRI or other providers) and periodically downloaded and saved on local computers (ASWCD, Alien Species Control, and/or ADF&G). Paper forms will be saved in files of the office of the applicators (ASWCD or Alien Species Control) and digitized to prevent loss of records and easier retrieval later.

Pre and post treatment inspection will include the date, location, and extent of invasive plants present. Post treatment inspections will evaluate the effectiveness of treatment with recommendations for follow up action.

The electronic records and paper files are located at the Contractor’s (ASWCD or Alien Species Control) office. Information from inspections and applications will be retained for future reference and to help guide control decisions. A short report on surveys, control efforts, and results will be provided to ACWR management and the ANC-CISMA each year.

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3. Prevent Pests

For each pest category listed under Section 1, describe preventative measures that will be taken:

Vegetation:

ACWR management will take several steps to help prevent the introduction of invasive plants. During trail or boardwalk maintenance and other park improvements only non-invasive species will be planted and certified weed-free topsoil and gravel should be specified if available (material sources will be inspected (for weed-free conditions) if certified weed-free products are not available). Prior to construction, routine maintenance, and patrolling activities, ACWR staff and contractors should clean vehicles, equipment, boots, etc. after working in an area known to be infested with invasive plants (such as the Seward highway corridor, Anchorage, etc.). These invasive plant prevention steps will be included in stipulations for contracts and permits.

Public education and outreach efforts will help prevent the introduction of invasive plants. The installation of boot brush stations is being considered to provide the recreating public with information about the harmful impacts of invasive plants while providing a boot brush to clean soil and possible seeds off their footwear.

The ANC-CISMA and its partners conduct regular educational / outreach activities in the Municipality of Anchorage including presentations, invasive weed smackdowns, social media posts, radio Public Service Announcements, etc. This outreach includes the message to the public of preventing the spread of invasive species by cleaning potential seeds prior to entering natural areas.

How often will preventative measures be applied?

Preventive measures will be ongoing.

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4. Control Measures

For each pest category listed under Section 1, list potential non-chemical control measures that may be used:

Cultural Controls:	Vegetation: Most invasive plant populations are in natural areas where cultural manipulation of the environment does not normally take place, would not be desirable, nor would be effective on aggressive invasive plants. In developed and landscaped areas, no invasive plants will be installed. All plants, topsoil, and other materials brought in should be inspected
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	<p>for invasive plants. Cleared or bare ground in landscaped areas should be seeded with fast spreading non-invasive species or tarped and covered with wood chips to prevent open soil that would be prime for invasion by invasive plants</p>
<p>Mechanical Controls:</p>	<p>Hand pulling:</p> <p>Can be somewhat effective on very small populations of certain invasive plants. Hand pulling typically will not eradicate the population but can slow down the spread and buy time until more effective control measures can occur. By species:</p> <ul style="list-style-type: none"> • white sweetclover – fairly effective for small populations • bird vetch – modestly effective for small populations • European bird cherry and common chokecherry – fairly effective for small trees, small populations • spotted knapweed – somewhat effective, very small populations • creeping thistle – not pleasant to pull, but somewhat effective on very small populations <p>Not effective for yellow toadflax and oxeye daisy. Not effective or even counterproductive for reed canarygrass and hawkweed</p> <p>Mechanical – tarping/cover</p> <p>This method has been tried (in at least five projects) at great expense but poor results in the Municipality of Anchorage for reed canarygrass, bird vetch, and creeping thistle. The invasive plants readily escape the tarps and spread beyond. The long seed viability means the tarps need to stay down for several years – and everything underneath dies – complete revegetation is required.</p> <p>Mechanical – mowing/cutting</p> <p>Ineffective or counterproductive for most of these species. Mowing can help slow and contain the spread of bird vetch, but it will not eradicate it and is not a desirable approach when vetch is growing on native plants or landscaping.</p>

For each pest category listed under Section 1, describe the characteristics needed in any chemical controls that may be used:

The chemical control product must be a systemic herbicide to ensure that the entire plant including the roots are controlled. These species are hard to control, and typically only certain herbicides applied at the correct time will work. Residual control is very helpful for species with long seed viabilities and a wide range of germination times.

For each pest category listed under Section 1, list potential chemical controls that may be used:

Target Pest	Product Name	EPA Registration Number
Reed canarygrass	Roundup Custom or Cornerstone 5 Plus (glyphosate); OR Ecomazapyr or Habitat (imazapyr)	524-343 (Roundup); 1381-241 (Cornerstone 5 Plus); 81927-24 (Ecomazapyr); 241-426 (Habitat)
bird cherry and chokecherry	Roundup Custom or Cornerstone 5 Plus (glyphosate); EZ-Ject Diamonback Herbicide Shells (glyphosate); OR Ecomazapyr or Habitat (imazapyr)	524-343 (Roundup); 1381-241 (Cornerstone 5 Plus); 83220-1 (EZ-Ject Diamondback). 81927-24 (Ecomazapyr); 426 (Habitat)
Orange or meadow hawkweed, spotted knapweed, creeping thistle, oxeye daisy, or other invasive plant in the sunflower family	Milestone or Transline	62719-519 (Milestone) or 62719-259 (Transline)
White sweetclover; bird vetch; or other invasive plant in the pea family	Milestone or Transline	62719-519 (Milestone) or 62719-259 (Transline)
Yellow toadflax	Roundup Custom or Cornerstone 5 Plus (glyphosate)	524-343 (Roundup); 1381-241 (Cornerstone 5 Plus)

Describe how treated areas will be re-inspected and evaluated for effectiveness of controls:

Following application of controls (cultural, mechanical, or chemical), ANC-CISMA contractors and/or members will re-inspect each treated area in the current season and the following growing seasons to determine if the applied controls achieved the target control level. Reapplication of control methods will likely be necessary to achieve full control.

ANC-CISMA contractors and/or members will evaluate the effectiveness of controls. If control actions did not achieve the target control level, the certified applicator will recommend modifications or additional controls.