



ALASKA EXOTIC PLANTS

INFORMATION

CLEARINGHOUSE (AKEPIC)

USER'S MANUAL



Alaska Natural Heritage Program
Alaska Center for Conservation Science
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Introduction to the Alaska Exotic Plants Information Clearinghouse (AKEPIC)

The Alaska Exotic Plants Information Clearinghouse (AKEPIC) is a database and mapping application that provides geospatial information for non-native plant populations in Alaska and neighboring Canadian Territories. The non-native plant records are primarily intended to support the identification of problem species and infestations, thus promoting early detection and rapid response across Alaska and are additionally used in a variety of research and modeling activities.

The database, mapping application and associated webpages are the result of an ongoing cooperation between the United States Forest Service, National Park Service, Bureau of Land Management, Fish and Wildlife Service, Department of Natural Resources Plant Material Center and the Alaska Natural Heritage Program (AKNHP) in support of the Alaska Invasive Species Partnership (AKISP) and the Strategic Plan for Noxious and Invasive Plants Management in Alaska.

The AKEPIC project was initiated in 2002 as a shared idea among AKNHP, U.S. Forest Service, National Park Service, Bureau of Land Management, and U.S. Geological Survey. Because of its University affiliation and neutrality with respect land management, ACCS (formerly known as the Alaska Natural Heritage Program or AKNHP) was chosen to administer the project. Both data and funding are contributed by users of the database. As of 2016, approximately 33 different organizations have contributed over 155,000 non-native plant records. This makes AKEPIC one of the largest and most comprehensive non-native plant species databases in the United States. AKEPIC even surpasses some states with long histories of invasive species work, such as Florida (Bargeron pers. comm. 2008).

The main objectives of the AKEPIC project are to:

- Compile locations of non-native plant populations in Alaska and neighboring Canadian Territories
- Serve this data to the public through an intuitive, online interface
- Facilitate collaborative partnerships among federal, tribal, state, borough, municipal, and private land managers
- Encourage broad based participation

The AKEPIC mapping application (dataportal) allows users to explore the distributions and abundances of non-native plant species across Alaska and neighboring Canadian Territories. The locations and attributed data can be downloaded and used to gain and share information within an area or for a species of interest. Among other applications, it can be used to build maps, develop non-native plant management plans, conduct scientific research on the invasion ecology of non-native plants in Alaska, and develop priorities for Early Detection Rapid Response (EDRR) projects.

This manual describes the roles of the AKEPIC contributors and administrators, provides detailed instructions for collecting and submitting data, and summarizes the use of the dataportal and the data it serves. We recommend that users review this manual before initiating field projects that intend to contribute non-native plant records to the database.

The success of the AKEPIC database project depends on the participation of and interaction among its users. The Alaska Natural Heritage Program manages the project. We welcome your

feedback; please contact AKEPIC administrators Justin Fulkerson, at jrfulkerson@alaska.edu (907-786-6387) or Wen Cao, at wcao4@alaska.edu (907-786-6386) with suggestions.

How to Become an AKEPIC Data Contributor

The AKEPIC project is furthered by a network of data contributors who collect non-native plant species field data, compile the data in a spreadsheet format, and submit the data to the AKEPIC database administrator. Users may include state and federal agencies, tribal governments, universities, private consulting firms, individuals and other non-government organizations.

AKEPIC Database Administrator Role

The AKEPIC database administrator is responsible for receiving data from contributors, working with data contributors to resolve any questions about the submitted data, and uploading these data to the database. The administrator also provides general information about the project to its users.

Stabilization and Sharing of Funding

Project funding is granted by collaborators and contributions from users. Funds support taxonomic updates, quality control and upload of data, as well as correspondence, and website and data portal maintenance. In an effort to secure stable funding, the AKEPIC sub-committee suggests the following funding protocols:

1. Records are submitted to the AKEPIC administrator by approximately November 30th of each year; these records are uploaded to the database in January of the following calendar year.
2. AKNHP provides an annual estimate to collaborators of the costs associated administration of the project. Cost per record is calculated by dividing ACCS labor by the number of records uploaded over a span of at least three years. The current estimated cost is \$2.00 per record. Payment can be made with credit card, check, or through a working contract.
3. Collaborating agencies and organizations (including AKNHP) agree to contribute funds at the same rate of \$2.00 per record.
4. AKNHP uses the funds received to quality control and upload data on a periodic basis.
5. Surplus funds are used to update the resources available through the AKEPIC website such as the non-native plant species list, non-native plant species biographies, invasiveness ranking documents, and relevant publications.
6. In the case of insufficient funds, records are backlogged. Backlogged records are then prioritized for uploading when additional funds are received.

Forms and Information Available on the AKEPIC Website

The following information is available and can be downloaded from the AKEPIC website (<http://accs.uaa.alaska.edu/invasive-species/non-native-plants>):

1. the AKEPIC dataset, which can be downloaded in tabular (CSV) or spatial (shapefile) format.
2. A form for collection of data in the field
3. An electronic form for submission of field data to the AKEPIC data manager
4. A data dictionary summarizing the content and format of the database fields
5. The AKEPIC user's manual (this document)
6. A list of the non-native plants that are known or suspected to occur in Alaska and neighboring Canadian Territories. This list is updated annually for taxonomic accuracy and with new species detected by AKEPIC data contributors (Non-Native Plant Species List).
7. Species biographies and invasiveness ranking documents for the higher-priority non-native plants known or suspected to occur in Alaska or neighboring Canadian Territories.

Changes to the AKEPIC Database and Data

As part of improving our data serving capacity and to provide a more intuitive user interface, the Alaska Natural Heritage Program redesigned the AKEPIC website (<http://accs.uaa.alaska.edu/invasive-species/non-native-plants>) and began serving AKEPIC data through an online data portal (<http://aknhp.uaa.alaska.edu/maps-js/integrated-map/akepic.php>) in 2010. These upgrades enabled users to download the full dataset in tabular or spatial format or query AKEPIC data by species or location. Coordinates are projected in Alaska Albers Equal Area Conic and reference the North American Datum of 1983.

Collecting AKEPIC Data in the Field

Sampling Design

Field data collection is generally designed to meet each user's objectives. AKEPIC has no specific recommendations for sampling design; however, certain information is required for upload to the database. Required fields are denoted on the field data form and data entry form and are discussed in the 'Entering AKEPIC Data in the Office' section of this manual. Because records for which required fields are not populated cannot be added to the database, we recommend that potential contributors review these requirements prior to beginning field work.

Data Collection Protocol

The data collected at each field site is the foundation of the AKEPIC database. A standard field data form has been developed for field data collection and is available online and as Appendix I. Contributors may tailor the structure of this field data form to meet their specific research needs. Following the collection of field data, these records must be transferred to the upload form, an Excel spreadsheet available online, and submitted electronically to AKNHP.

Which Species to Record

A continuously updated [list of non-native plant species that are known or suspected to occur in Alaska](#) or neighboring Canadian Territories is available the AKEPIC website. If you have collected data on a taxon for which a code is not on the AKEPIC list, it is possible that your record may represent a new species for Alaska or neighboring Canadian Territories. In this situation, please contact the database administrator to verify the taxonomic identity of your collection and to have the appropriate plant species code added to the database. The accurate identification of plant taxa is critical. Please note it is AKEPIC policy to confirm first records of taxa with a voucher specimen, or under certain conditions, diagnostic images. For help with plant identification, contact your local [Alaska Cooperative Extension Service](#) office or the [AKEPIC administrator](#).

Defining an Infestation

Determining the accurate geographic position of an infestation is critically important to the quality and subsequent utility of the database. Accurate georeferencing enables land managers to identify high-priority species and locations, track the expansion or contraction of a given species and/or relocate a population for control and monitoring. Sites can be georeferenced directly using a hand-held global positioning system (GPS)—the preferred method—or estimated from topographic maps or online mapping applications (e.g., Google Earth). When using GPS, AKEPIC data contributors should set the datum before going in the field to the North American Datum of 1983 (NAD83).

An infestation is considered to be any area that contains one or more non-native plant species. Generally, multiple species or infestations occurring within a 50 meter radius are considered to be one site, such that all species occurring within this zone are assigned the same unique site code. However, the minimum distance between infestations should match your research objective. For instance, if you find a few locations of a high-priority species within 50 meters of each other, you may want to assign each location a unique site code, to enable future changes to the population to be monitored at a finer scale.

Within the landscape, infestations occur as continuous and discontinuous patches of variable shape. However, each site in AKEPIC is recorded as a point location with an associated area surveyed and area of infestation. The point should lie as close to the center of the infestation as possible to facilitate relocation. Linear features greater than 100 meters in length may be represented in the database by multiple sites. Some contributors map the actual boundaries of each infestation and convert the polygon to a centroid for upload to the AKEPIC database.

Revisiting Sites

The AKEPIC database treats initial and subsequent visits to a site as separate records. Sites are often revisited to evaluate the status of infestations and/or to determine the effectiveness of control efforts. When documenting a revisit it is important that the geographic coordinates of the initial visit are used and that the record is qualified as a revisit by selecting “Yes” in the ‘Revisit’ field. Likewise, the site code designated on the initial visit should be entered into the ‘Original Site Code’ field.

To facilitate the relocation of a site, we recommend permanent demarcation (e.g., staking with rebar), providing a thorough description of the site in the ‘Location Notes’ field and using a GPS unit to navigate back to the original coordinates assigned to the site.

Entering AKEPIC Data to the Data Entry Form

These instructions should be reviewed by personnel before conducting field surveys for non-native plants and should be referred to when completing the field and data upload forms.

Note: some fields are required.

General Information

Survey Date: (required) the month, day and year the field data was collected in mm/dd/yyyy format. If the month is a single digit, it is not necessary to add a "0". For example, it is acceptable to enter either "7/10/2010" or "07/10/2010".

Project Name: (optional) a short yet informative description of the project in text format, limited to 255 characters. For example: "2010 Tongass National Forest garlic mustard survey".

Observers: (required) a list of the individuals collecting the field data. Names should be listed last name followed by first initial. The names of multiple observers should be separated with a semicolon. For example: "Hulten, E.; Cody, W.".

Affiliation: (optional) an acronym of the agency or group collecting the field data, entries are restricted to the options listed in the data entry form dropdown list. For example: "USFS". If an appropriate affiliation is not listed, please select "Other" and list your affiliation in the 'Project Discussions' field or contact the database administrator to have your affiliation added.

Second Affiliation: (optional) an acronym of a second agency or group collecting the field data; entries are restricted to the options listed in the data entry form dropdown list. For example: "AACD IPC". If an appropriate affiliation is not listed, please select "Other" and list your affiliation in the 'Project Discussions' field or contact the database administrator to have your affiliation added.

Affiliations and secondary affiliations currently available in the data entry form dropdown lists are:

- 3PPI: Three Parameters Plus, Inc.
- AACD IPC: Alaska Association of Conservation Districts Invasive Plant Coordinator
- ABR: Alaska Biological Research, Inc.
- ADF&G: Alaska Department of Fish and Game
- AKNHP: Alaska Natural Heritage Program
- APF: Anchorage Parks Foundation
- ARS: Agricultural Research Service Subarctic Agricultural Research Unit
- ASC: Alien Species Control
- BLM: Alaska Bureau of Land Management
- CAN: Canadian Museum of Nature, Gatineau, Quebec
- CES: Cooperative Extension Service
- CIAA: Cook Inlet Aquaculture Association
- CRWP: Copper River Watershed Project
- CWMA: Cooperative Weed Management Area
- DAO: Agriculture and Agri-Food Canada, Ottawa, Ontario
- DIAND: Department of Indian and Northern Affairs

DOD: U.S. Department of Defense
 DOWL: DOWL Engineering and Consulting
 EC: Environment Canada
 EY: Environment Yukon
 HDR: HDR Alaska
 ISU: Iowa State University
 KP-CISMA: Kenai Peninsula Cooperative Invasive Species Management Area
 KWF: Kenai Watershed Forum
 MobileApp: Alaska Weeds ID App.
 NPS: National Park Service
 Other: Affiliation is not listed, should be described under Project Description.
 PC: Parks Canada
 PMC: Department of Natural Resources Plant Material Center, Alaska
 RBCA: Resurrection Bay Conservation Alliance
 SWCD: Soil and Water Conservation District
 TECI: Turnstone Environmental Consultants Incorporated
 TTCD: Tyonek Tribal Conservation District
 UAF: University of Alaska Fairbanks
 UAM: University of Alaska Museum of the North
 UBC: University of British Columbia
 USFS: United States Forest Service
 USFWS: United States Fish and Wildlife Service
 USGS: United States Geological Survey
 YCDC: Yukon Conservation Data Centre

Site Information

Site Code: (highly suggested) a unique alphanumeric code assigned to each infestation site. For example: "TONF2010-001" where the first four letters of the site code are an abbreviation of the collaborating entity (Tongass National Forest), followed by a four-digit year prefix and a site number consisting of three numbers, which are assigned sequentially (e.g., TONF2010-001, TONF2010-002, TONF2010-003, etc.). Note: Infestations within a 50 m radius are assigned the same site code.

Original Site Code: (required if the record documents a revisit to the site) if the record documents a revisit to a site, please enter the site code and geographic coordinates that were initially assigned to the site. Inclusion of the original site code will facilitate linking the revisit with the initial observation and allow tracking of activity at the site.

Visit Type: (optional) the type of visit conducted. Visits may be categorized as one of the following:

Control: indicating that the infestation was treated by some control method

Monitoring: indicating a subsequent visit to the site

Reconnaissance: indicating an initial visit to the site

Research: indicating that the visit was part of a quantitative study

Revisit: (optional) indicates whether the record documents an initial or subsequent visit. For example: "Yes" or "No".

Area Surveyed: (optional) an estimate of the area surveyed in acres. For example: "0.01". If an observer surveys 4 acres of which 0.5 acre was estimated to be infested by non-native plant species, then the area surveyed is recorded as "4" whereas the infested area is recorded as "0.5". The following conversions are provided for guidance in the field. Maximum 3 decimal places.

Area surveyed (ac)	Approximate radius of area surveyed (ft)	Approximate radius of area surveyed (m)
0.01	37	11
0.5	83	25
1	118	36

Study Type: (required) the type of survey conducted. Surveys may be catalogued as one of the following:

Exhaustive species inventory: indicating that the presence or absence of all non-native species were documented at a site.

Highest priority species: indicating that the presence or absence of a suite of targeted non-native species were documented.

Single species study: indicating that the presence or absence of a single species was documented at a site.

Note: For records collected as part of highest priority study it is important to document the species that the study was targeting, especially where no non-native species were detected at a site (i.e., 'NONE' records). In these situations text should be added to the 'Project Discussions' field listing the suite of species that were included in the survey. For example: "This survey recorded the presence or absence of all non-native plant species assigned a rank of 50 or higher by the Alaska Invasiveness Ranking System".

Site Vegetation Community Type: (optional) a description of the vegetation community at the site adapted from the Alaska Vegetation Classification (Vioreck et al. 1992). Accepted values are restricted to those listed in the data entry form dropdown menu. To determine placement of your site please review the classification system; an online copy of the report is available from: http://www.fs.fed.us/pnw/publications/pnw_gtr286/pnw_gtr286a.pdf. In addition to the vegetation classes defined by Vioreck et al. (1992), additional classes (listed below) have been added to describe the range of anthropogenic vegetation classes that may be encountered during non-native plant surveys:

III.E - Agricultural Field

III.E.1 - Graminoid Field

III.E.2 - Forb Field

III.E.3 - Pasture

III.F - Landscape

- III.F.1 - Lawn
- III.F.2 - Park
- III.F.3 - Golf Course

III.G - Roadside/Pipeline/Railroad Habitats (includes all habitats on roadbed materials and adjacent habitats formerly disturbed by heavy equipment)

- III.G.1 - Early Seral-Herbaceous, Roadside/Lot
- III.G.2 - Graminoid Roadside/Lot
- III.G.3 - Forb Roadside/Lot
- III.G.4 - Forb-Graminoid Roadside/Lot
- III.G.5 - Alder and/or Willow Roadside/Lot
- III.G.6 - Mixed Herbaceous-Shrub Roadside/Lot
- III.G.7 - Open Forest Roadside/Lot
- III.G.8 - Closed Forest Roadside/Lot
- III.G.9 - Wet Forb-Aquatic Roadside/Drainage Ditch

III.H - Trailside Habitats (ATV, Horse, Foot: these are habitats that are influenced by trampling and compaction, but heavy equipment and imported substrates use are uncommon)

- III.H.1 - Early Seral-Herbaceous, Trailside
- III.H.2 - Graminoid Trailside
- III.H.3 - Forb Trailside
- III.H.4 - Forb-Graminoid Trailside
- III.H.5 - Alder and/or Willow Trailside
- III.H.6 - Mixed Herbaceous-Shrub Trailside
- III.H.7 - Open Forest Trailside
- III.H.8 - Closed Forest Trailside
- III.H.9 - Wet Forb-Aquatic Trailside/Drainage Ditch

III.I - Mined/Rock Quarry/Gravel Pit Habitats

- III.I.1 - Early Seral-Herbaceous, Mined
- III.I.2 - Graminoid, Mined
- III.I.3 - Forb, Mined
- III.I.4 - Forb-Graminoid, Mined
- III.I.5 - Alder and/or Willow, Mined
- III.I.6 - Mixed Herbaceous-Shrub, Mined
- III.I.7 - Open Forest, Mined
- III.I.8 - Closed Forest, Mined

III.J - Logged Habitats

- III.J.1 - Early Seral-Herbaceous, Logged
- III.J.2 - Graminoid, Logged
- III.J.3 - Forb, Logged
- III.J.4 - Forb-Graminoid, Logged
- III.J.5 - Alder and/or Willow, Logged
- III.J.6 - Mixed Herbaceous-Shrub, Logged
- III.J.7 - Shrubland, Logged
- III.J.8 - Open Forest, Logged
- III.J.9 - Closed Forest, Logged

Disturbance Type: (optional) a description of disturbance the site has experienced, which can be anthropogenic or natural. Accepted values are restricted to the options listed in the data entry form dropdown menu and are listed below:

- | | |
|---|-------------------------|
| Abandoned Homesite | Trampling |
| Caribou/Moose/Animal Related Disturbed Site | Volcanic Action |
| Coastal/Beach | Wind Erosion/Deposition |
| Fill Importation (e.g., Road or Railroad Grade) | Windthrow |

Forest Fire
 Glaciation
 Grazing
 Handtool Substrate Alteration or Removal
 Herbicide Application
 Land Slide/Avalanche
 Logging
 Material Extraction (e.g., Rock Quarry or Gravel Pit)
 Mechanical Brush/Tree Cutting
 Mining
 Mowing
 None
 ORV Disturbance
 Other Mechanical Substrate Alteration or Removal
 Pipeline
 Plowing
 River Action (i.e., Flooding/Erosion-Ice Scour/Deposition of New Substrates)
 Stream Action
 Thermal Disturbance (Solifluction, Thermokarst, Permafrost Melt, etc.)

Location Information

Latitude: (required) the latitudinal geographic coordinate of the site approximating the center of the infestation and referencing the North American Datum of 1983 (NAD83). The coordinate should be in decimal degrees and is limited to nine decimal places. For example: "58.123456789".

Longitude: (required) the longitudinal geographic coordinate of the site approximating the center of the infestation and referencing the North American Datum of 1983 (NAD83). The coordinate should be in decimal degrees and is limited to nine decimal places. Note: all longitudinal coordinates collected in Alaska (excluding the westernmost Aleutian Islands) and Canada should be preceded by a negative sign, for example: "-135.123456789".

Elevation: (optional) the elevation of the approximate center of the infestation in feet above mean sea level. Values should be greater than zero, for example: "300".

Quad Name: (optional) the name of the USGS topographic 1:250,000 quadrangle map in which the site is located. Accepted values are limited to the options in the data entry form dropdown menu. For example: "Juneau". When working with the data in tabular format, this field can help narrow the spatial extent of the data.

Quad Number: (optional) the alphanumeric code of the USGS topographic 1:63,360 (15 minute, inch to mile) quadrangle map in which the site is located. Accepted values are limited to the options in the data entry form dropdown list. For example: "C-2". When working with the data in tabular format, this field can help narrow the spatial extent of the data.

Collection Method: (required) how the geographic coordinates of the site were acquired or estimated. For example: "GPS". Accepted values are limited to the options in the data entry form dropdown list and include:

15 minute Quad Map (1:63,360 scale USGS topographic map)
 Aerial Photo

DGPS (differential global positioning system; a method of improving the accuracy of the geographic coordinates collected using real-time or post-processing differential correction)
 GPS (global positioning system)
 Other (please describe the collection method used in the 'Project Discussions' field)
 Roadmap
 Historical Data (used for generalized locations such as 'Fairbanks')

Accuracy: (required) an estimated range of the accuracy of the geographic coordinates in feet. For example: "0-30". Accepted values are restricted to the options listed in the data entry form dropdown list and include:

0-5
 0-30
 0-100
 0-1000
 1000+
 Historical Data (used for generalized locations such as 'Fairbanks')

For many GPS units the accuracy of the point is not automatically saved and must be manually recorded in the field. For records where the geographic coordinates are estimated, please use a range that reflects your confidence in the location of the point. The "Historical Data" value may be used for older records for which geographic coordinates are estimated from a written description of the location.

Map source: (optional) the type of map or image that the geographic coordinates were estimated from. For example: "USGS topo" or "Google Earth".

Map scale: (optional) the scale of the map or image that the geographic coordinates were estimated from. For example: "1:63,360".

Map date: (optional) the date of the map or image that the geographic coordinates were estimated from. For example: "1970".

Location Notes: (optional) a description of the site to facilitate relocation, in text format, limited to 255 characters. For example: "on the north side of logging road 123 at milepost 4".

Plant Information

Plant Species Code: (required) an alphanumeric code corresponding to the scientific name of the non-native plant taxon. For example: "ALPE4" corresponds to the non-native plant species *Alliaria petiolata* commonly known as garlic mustard. Plant Species Codes are searchable through the USDA Plants Database website (<http://plants.usda.gov>); Alaska- and Canada-specific codes are available for download from the AKEPIC website (<http://accs.uaa.alaska.edu/invasive-species/non-native-plant-species-list/>). Accepted values for Plant Species Code are restricted to the options listed in the dropdown list. The scientific and common name will auto-populate in the data upload spreadsheet. Other information such as plant family and, where applicable, the invasiveness rank and synonyms for the taxon will be automatically populated on upload to the database.

If your species code does not appear in the dropdown list, it is possible the species has not been previously recorded in Alaska or neighboring Canadian territories. In this case, please contact the database administrator to have the code added. Please note it is AKEPIC policy to confirm first records of taxa with a voucher specimen, or under certain conditions, diagnostic images. If you

suspect that a record might represent a new species for the database, please collect and submit a voucher specimen.

A special note about ABSENCE records: (NEW IN 2016)

Submitting records for sites at which no non-native plants were present provides valuable records of survey effort and absence data. The 'NONE' species code indicates that non-native plant species or the targeted non-native species were not detected at the site **only when the study type is 'Exhaustive species inventory' or 'Highest priority species'**. 'Single study species' negative data is captured differently; for single species surveys, please enter the code for the target species in the 'Plant Species Code' field followed by a "0" in the 'Presence' field (see discussion of 'Presence Field' below).

As requested previously, please describe or list the suite of species that were included in highest priority surveys in the 'Project Discussions' field. For example: "This survey recorded the presence or absence of all non-native plant species assigned a rank of 50 or higher by the Alaska Invasiveness Ranking System". This information is especially important for 'NONE' records as it allows us to qualify the absence data (i.e., the absence of non-native species ranked at or above 50 points at a site does not indicate that the site is free of non-native species ranked below 50 points).

Presence: (required) indicates if the species was present or absent. This field allows the data portal to capture absence or 'negative' records more accurately. A '1' indicates presence of the species, '0' indicates absence of the species.

Negative records collected for a 'Single study species' need to indicate the species code in the 'Plant Species Code' field and a '0' in presence field. For example: a single-species targeting *Elodea* was completed on the Chena River. *Elodea* was found at Sites #1, 2, and 4 but not at site #3. All four records would be qualified as 'Single species studies' for 'ELODE'. Presence at Sites #1, 2, and 4 would be qualified as '1' however Site 3 would be qualified as '0'.

Infested Area: (required) an estimate of the foliar area the population occupies in acres. Maximum 3 decimal places. For example: "0.001". Foliar area is estimated from the exposed leaf area of the plants. Suggested values are:

0

0.001

0.01

0.1

0.5

1

Historical Data (to be used when infested area was not recorded and cannot be accurately estimated)

The following conversions are provided for guidance in the field:

Infestation area (ac)	Approximate radius of infestation (ft)	Approximate radius of infestation (m)
0.001	3.7	1
0.01	12	4

0.1	37	11
0.5	83	25
1	118	36

Percent Cover: (required) an estimate of the percent foliar cover of the species at the site. Maximum 3 decimal places. Where site dimensions are defined by the observer and foliar cover is defined as exposed leaf area. Percent cover is a number from 0 to 100 where the % sign is not included, for example: "10". Suggested breaks are: 0.1 (for trace covers), 1, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 95, or 100. If the target or a previously-documented species was not documented, enter "0" for Percent Cover.

Stem Count: (optional) an estimated range for the number of individual non-native plants in a population. For example: "1–5". If the target or a previously-documented species was not documented, enter "N/A" for Stem Count.

1-5	151-500
6-25	500+
26-50	N/A
51-150	

Disturbance Age: (optional) an estimate of the number of years since the site was last disturbed. For example: "5". Fractional years may be entered for recent disturbances.

Herbarium: (required) indicates the status of any collected material; either 'not collected', 'not curated', or if curated, the appropriate herbarium acronym. Accepted values are restricted to the options listed in the data entry form dropdown list and include:

ALA: University of Alaska Museum of the North
 BABY: Yukon Government
 CAN: Canadian Museum of Nature
 DAO: Agriculture and Agri-Food Canada
 None: None
 Not Collected: The plant was not collected
 Not Curated: The plant was collected but not curated.
 Other: The plant was curated at a herbarium not listed; should be described in 'Project Discussion'
 TNFS: USDA Forest Service, Alaska Region
 UAAH: University of Alaska Anchorage
 UBC: University of British Columbia

If your herbarium acronym is not listed, please contact the database administrator to have the appropriate acronym added or select 'Other' and specify the location of curation in the 'Project Discussions' field. See the following website for plant collection and herbarium preparation protocols: <http://www.uaf.edu/museum/collections/herb/projects/reports/instructions-for-plant-co/>

Control Action: (optional) an indication of whether or not the infestation was treated and if so, what control method(s) were used. Accepted values are restricted to the options listed in the data entry form dropdown list and include:

Aerial Herbicide: large area applications often made by helicopter or plane from 60–100

feet above the target area
 Broadcast Herbicide: the application of herbicide over all plants in a treatment area
 Spot Herbicide: application of herbicide to single plants or small groups of plants; generally used either where discrete plants are targeted or where broadcast application is not possible; typically involves foliar spray on individual plants.
 Herbicide Injection: physical injection of herbicide into soil or directly into individual plants
 Covering: blocking air or light to plants using plastic, mulch, or similar materials
 Manual (Pull/Dig)
 Mechanical (Mowing/Weedwacking)
 Multiple Actions - any combination of control methods; please describe in the 'Project Methods' field
 None: no control action was performed
 Other: the control action performed is not listed; please describe in the 'Project Methods' field

Aggressiveness: (optional) an approximation of invasiveness of the species as observed at the site. Levels of aggressiveness may be catalogued as:

Low: the population is not expected to persist
 Medium: the population is contained within a disturbed area
 High: the infestation is spreading beyond a disturbed area

Notes: (optional) general notes on the target or associated taxa, text limited to 255 characters.

For example: "vigor of the *Alliaria petiolata* population appears to be reduced where exposed to salt spray".

Project Descriptions: (optional) a brief description of the project, text limited to 255 characters. For example: "a survey for *Alliaria petiolata* along logging roads in Tongass National Forest".

Project Methods: (optional) a brief description of the project methods; text limited to 255 characters. For example: "10 by 10 meter plots were read at 1 km intervals along selected roads".

Project Discussions: (optional) a brief discussion of the project; for highest-priority species surveys, please list the target taxa or taxon. This field can also include comments from the AKEPIC data manager recorded during quality control procedures. This text field is limited to 255 characters. For example: "the presence or absence of *Alliaria petiolata* was recorded; the distribution information derived from this survey has been used to model the potential spread of *Alliaria petiolata* in southeast Alaska"

Submitting AKEPIC Data to AKNHP

After field data collection is complete, we request you enter the data into the 'Data Entry Form' available on the [AKEPIC website](#). This is an Excel spreadsheet that has been programmed according to the requirements of the database. As we make frequent changes to the dropdown lists embedded in this form, it is important to download the most recent version before entering data. Collaborators may tailor the structure of the form by including additional items to meet their specific needs. However, the spreadsheet submitted to the AKEPIC database administrator must not be altered from its original format and all required fields must be populated to allow upload to the database.

The completed Data Entry Form can be emailed to:

Wen Cao

AKEPIC Data Manager
Email: ayanhp@uaa.alaska.edu
Phone: (907)786-6386

Data Quality Controls

We expect contributors to verify the quality of their data prior to submission. The accuracy of the location and taxonomic identity of the population rests entirely on the field observer and/or the representative submitting the data. Please ensure that all required data fields are populated and, when possible, that a unique site code is assigned to each infestation. Before submitted data are uploaded to the AKEPIC database, the database administrator performs a series of checks for completeness, logical consistency, and general quality of the data. If problems are discovered that cannot be rectified by the database administrator, the problem records will be returned to the contributor for correction.

How to Cite AKEPIC Data

The suggested citation for the AKEPIC database is:

AKEPIC (Year). Alaska Exotic Plant Information Clearinghouse database (<http://aknhp.uaa.alaska.edu/maps-js/integrated-map/akepic.php>). Alaska Center for Conservation Science, University of Alaska, Anchorage. Accessed (Month, Date, Year).

References

- Barger, C.T. 2008. Personal communication. Center for Invasive Species and Ecosystem Health. University of Georgia, US.
- Viereck, L.A., Dyrness, C.T., Batten, A.R., and Wenzlick, K.J. 1992. The Alaska Vegetation Classification. Gen. Tech. Rep. PNW-GTR-286. Portland, OR: US Department of Ag., Forest Service, Pacific Northwest Research Station. 278p.

Appendix I - AKEPIC Field Data Sheet

****Required Field**

****SurveyDate:** ____/____/____
mm / dd / yyyy

****Observers:** _____
Last Name, First Name Initial. (e.g.: Smith, J.; Williams, R.)

Observers Affiliation (*circle one*): 3PPI AACD IPC ADF&G AKNHP APF ARS ASC BLM CAN CES CIAA
CRWP CWMA DAO DIAND DOD DOWL EC EY HDR ISU KWF MobileApp NPS Other PC PMC
RBCA SCS SWCD TECI UAF UAM UBC USFS USFWS USGS YCDC

A. Site Information

**** Site Code:** _____

Visit Type (*circle one*): Reconnaissance Monitoring Research Control

Is this a Revisit (*circle one*): Yes No

**** Study Type (*circle one*):** Exhaustive species Inventory Highest priority species Single species study

**** Area Surveyed:** _____ (acres)

B. Location Information

**** Latitude:** _____ (Decimal Degrees, NAD83)

**** Longitude:** _____ (Decimal Degrees, NAD83)

Elevation: _____ (ft)

**** Collection Method (*circle one*):** GPS Topographic Map Aerial Photo

**** GPS precision** _____ (ft; 0-5, 0-30, 0-100, 0-1000, 1000+)

Notes (location): _____

C. Survey Information

** Plant Species Code	**Infested Area (acres)	**Canopy Cover (% cover)	Disturbance Age (yrs.)	Stem Count	**Herbarium	Control Action	Aggressiveness

D.

Notes

(species):

Disturbance Type:

- Fill Importation (e.g., Road or Railroad Grade)
- Material Extraction (e.g., Rock Quarry or Gravel Pit)
- ORV Disturbance
- Mowing
- Trampling
- Logging
- Mining
- Grazing
- Plowing
- Mechanical Brush/Tree Cutting
- Herbicide Application
- Other Mechanical Substrate Alteration or Removal
- Abandoned Homesite
- River Action (i.e., Flooding,/Erosion-Ice Scour/Deposition)
- Stream Action
- Forest Fire
- Land Slide/Avalanche
- Caribou/Moose/Animal Related Disturbed Site
- Windthrow
- Wind Erosion/Deposition
- Thermal Disturbance (Solifluction, Thermokarst, Permafrost Melt, etc.)
- Glaciation
- Volcanic Action
- Coastal/Beach

Plant Species Code: use the USDA alphanumeric (<http://plants.usda.gov/>), or find it at <http://akweeds.uaa.alaska.edu>)

Infested Area:

- 0.001 acre (3.7 ft or ~1 m radius)
- 0.01 acre (12 ft or ~4 m radius)
- 0.1 acre (37 ft or ~11 m radius)
- 0.5 acre (83 ft or ~25 m radius)
- 1 acre (118 ft or ~36 m radius)