

Data Dictionary for Element Occurrence Transcription Reports from the Colorado Natural Heritage Program

This Data Dictionary defines terms used in Element Occurrence (EO) Reports exported by the Colorado Natural Heritage Program (CNHP) from our Biodiversity Tracking and Conservation System (BIOTICS) database.

Introduction to Element Occurrence

The Element Occurrence (EO) file contains information on the occurrence of priority Elements in a Natural Heritage Program/Conservation Data Centre inventory. An Element is defined below. Each record in the Element Occurrence file represents a different EO, which is defined as a specific example of an Element at a geographic location characterized by a habitat capable of sustaining or contributing to the survival of the species, or by a landscape that supports the ecological integrity of the community.

Element

A biodiversity unit of conservation attention and action for which a Heritage Conservation Status Rank is assigned.

Elements may be recognized at any taxonomic level (although typically are only recognized at the species level and below for organisms, and the Ecological System, Alliance, and Association levels for communities).

Elements may also be recognized for biodiversity units for which there is no systematic hierarchy (e.g., animal assemblages, community Complexes).

Elements may be native or exotic at a particular location and collectively represent the full array of biological and ecological diversity for the geographic area covered. Elements may serve as the targets of Heritage inventory. Typically, these targets include native, regularly occurring vulnerable species (including infraspecific taxa and populations) and exemplary ecological communities.

REPORT HEADER

State Scientific Name

State scientific name for an Element.

EO ID

Unique identifier for an EO.

State Common Name

State common name for an Element.

EO Code

Unique identifier for an Element previously used in the Biological and Conservation Data system (BCD). The EO Code is a combination of the element code (ELCODE) and the EO number.

BASIC INFORMATION

Higher Taxonomy

Proper code for the organism at the specified level of the taxonomic hierarchy (i.e., kingdom, phylum, class, order, family, or genus). Codes are used for sorting, for quick assessment of hierarchical placement, and for shorthand communication.

Not every level of the taxonomic hierarchy will have a specific code assigned to it, either because it is not needed at this time (many invertebrates are only coded to the phylum level) or because it is included at a different level (e.g., the higher taxonomy code for vascular plants starts at the division or class level, but the class level code starts with P for vascular plant).

Shape ID

Features developed within BIOTICS Mapper are identified using a sequential system generated number that uniquely identifies each feature. The Feature ID is the Shape ID.

State Element ID

Unique state identifier for an Element.

Global Imperilment Rank

The global element rank that best characterizes the relative rarity or endangerment of the element worldwide. Factors other than the number of occurrences may be considered when assigning a global rank. Global ranks are derived primarily by staff at the Central Heritage Conservation Science Department, unless CNHP has lead responsibility for that element.

Domain values for Global Imperilment Rank are:

- G1 - Globally critically imperiled; typically 5 or fewer occurrences
- G2 - Globally imperiled; typically 6 to 20 occurrences
- G3 - Globally vulnerable; typically 21 to 100 occurrences
- G4 - Globally apparently secure; usually > 100 occurrences
- G5 - Globally demonstrably secure although it may be rare in parts of its range
- G#G# - A range between two of the numeric ranks; indicates uncertainty about the rarity of the element
- G? - Unranked; element is not yet ranked globally
- GU - Unrankable; not enough information is known
- GH - Historically known with hopes of rediscovery
- GX - Extinct; unlikely to be rediscovered
- T# - Rank applies to a subspecies or variety
- Q - Taxonomic status is questionable
- C - Element is extant only in captivity or cultivation
- GNR - Not ranked globally

State Imperilment Rank

The state element rank that best characterizes the relative rarity or endangerment of the element statewide. Factors other than the number of occurrences may be considered when assigning a state rank. State ranks are derived by CNHP staff.

Domain values for State Imperilment Rank are:

- S1 - State critically imperiled; typically 5 or fewer occurrences
- S2 - State imperiled; typically 6 to 20 occurrences
- S3 - State vulnerable; typically 21 to 100 occurrences
- S4 - State apparently secure; usually > 100 occurrences
- S5 - State demonstrably secure
- S#S# - A range between two of the numeric ranks; indicates uncertainty about the rarity of the element
- S? - Unranked; element is not yet ranked in the state
- SU - Unrankable; not enough information is known
- SH - Historically known with hopes of rediscovery
- SX - Extinct; unlikely to be rediscovered
- SE - An exotic established in the state; native to a nearby region
- SA - Accidental; includes species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or thousands of miles outside their usual range
- B - Rank refers to the breeding population of the element
- N - Rank refers to the nonbreeding population of the element
- C - Element is extant only in captivation or cultivation
- SNR - Not ranked in the state

Basic EO Rank

Value that indicates the relative value of the EO with respect to other occurrences of the Element, based on an assessment of estimated viability (species) or ecological integrity (communities), i.e., the probability of persistence (based on condition, size, and landscape context) of occurrences of a given Element. In other words, EO ranks provide an assessment of the likelihood that if current conditions prevail the occurrence will persist for a defined period of time, typically 20-100 years.

EO ranks may be used effectively in conjunction with Heritage Conservation Status Ranks for the Element to guide which occurrences should be recorded and mapped, and to help prioritize EOs for purposes of conservation planning or action, both locally and rangewide.

Domain values for Basic EO Rank are:

- A - Excellent estimated viability/ecological integrity
- A? - Possibly excellent estimated viability/ecological integrity
- AB - Excellent or good estimated viability/ecological integrity
- AC - Excellent, good, or fair estimated viability/ecological integrity
- B - Good estimated viability/ecological integrity
- B? - Possibly good estimated viability/ecological integrity
- BC - Good or fair estimated viability/ecological integrity
- BD - Good, fair, or poor estimated viability/ecological integrity
- C - Fair estimated viability/ecological integrity
- C? - Possibly fair estimated viability/ecological integrity
- CD - Fair or poor estimated viability/ecological integrity
- D - Poor estimated viability/ecological integrity

D? - Possibly poor estimated viability/ecological integrity
E - Verified extant (viability/ecological integrity not assessed)
F - Failed to find
F? - Possibly failed to find
H - Historical
H? - Possibly historical
X - Extirpated
X? - Possibly extirpated
U - Unrankable
NR - Not ranked

Occurrence Type

Defines whether the EO is a principal or sub- EO.

Principal EO

For species Elements, a principal EO represents the full occupied habitat (or previously occupied habitat) that contributes, or potentially contributes, to the persistence of the species at that location. Generally, a species principal EO corresponds to a population or metapopulation. Principal EOs are typically separated from each other by barriers to movement or dispersal, or by specific distances defined for each Element across either unsuitable habitat, or suitable but apparently unoccupied habitat.

For community Elements, a principal EO represents a defined area that contains (or contained) a characteristic species composition and structure. Principal EOs are separated from each other by barriers to species interactions, or by specific distances defined for each Element across adjacent areas occupied by other natural or semi-natural community types, or by cultural vegetation.

A principal EO may not necessarily provide knowledge of the full extent of the Element at that location. In such cases, only the portion of the occupied habitat or area that is known should be recorded from the evidence available (without extrapolation to include unsurveyed proximate habitat or area). The EO record should indicate whether the full extent of habitat or area occupied by the Element is known to be included in the principal EO using the Confidence Extent field.

Sub-EO

A smaller geographically distinct area contained within a principal EO of the same Element can be a sub-EO. A sub-EO is an EO created to track information that could be useful for conservation planning, monitoring, or management at local levels. A sub-EO will not be developed for a component patch of a multi-part (complex) EO representation unless significant information is to be tracked for the patch that would warrant the creation and maintenance of an EO record.

Sub-EOs are most typically developed to track areas utilized by species for discrete behaviors or life history functions (e.g., feeding areas, dens, nest sites). Areas of differing composition, or higher density, quality, or conservation concern (e.g., demes or subpopulations, different age stands or successional phases, old growth patches, concentrated breeding areas) are also frequently tracked as sub-EOs.

*Records for principal EOs and sub-EOs have a parent-child relationship. A principal EO record may be linked to one or more sub-EO records. However, a sub-EO record cannot stand alone; there must be a link between the sub-EO record and its parent record.

Mapping Precision

Precision refers to the accuracy of the location of the EO. CNHP compiles data from a variety of sources including published and unpublished literature, herbaria and museum labels, personal communication, and documentation of actual field surveys conducted by CNHP staff and other knowledgeable individuals. The level of spatial uncertainty, therefore, varies from EO to EO.

A single-letter code for the precision used to map the EO on a U.S. Geological Survey (USGS) 7.5' (or 15') topographic quadrangle map.

Domain Values for Mapping Precision are:

S – Seconds: essentially an "X" marks the spot"; mappable to within approximately 3 arc seconds of latitude and longitude

M – Minutes: mappable within approximately 1 mile in any direction

G – General: any occurrence whose locational uncertainty exceeds approximately 1 mile

Principal EO ID

In cases when this EO is a sub-EO, the unique identifier (i.e., Element Occurrence ID) for the parent principal EO that contains it.

Principal EO Number

In cases when this EO is a sub-EO, the EO number assigned to the parent principal EO that contains it.

CNHP POTENTIAL CONSERVATION AREA

Potential Conservation Area

In order to successfully protect populations or occurrences, it is necessary to delineate conservation areas. These potential conservation areas focus on capturing the ecological processes that are necessary to support the continued existence of a particular element of natural heritage significance. Potential conservation areas may include a single occurrence of a rare element or a suite of rare elements or significant features.

The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element or suite of elements depends for their continued existence. The best available knowledge of each species' life history is used in conjunction with information about topographic, geomorphic, and hydrologic features, vegetative cover, as well as current and potential land uses. The proposed boundary does not automatically exclude all activity. It is hypothesized that some activities will cause degradation to the element or the process on which they depend, while others will not. Consideration of specific activities or land use changes proposed within or adjacent to the preliminary conservation planning boundary should be carefully considered and evaluated for their consequences to the element on which the conservation unit is based.

Site ID

Unique identifier for the PCA that supports this EO.

Site Code

Unique identifier previously used in the BCD for a site record.

Potential Conservation Area Name

Name of PCA associated with this EO.

EO Driving Biodiversity Rank

Yes or No, indicates whether this EO is the EO which is driving the biodiversity rank of this PCA. A combination of Global Imperilment Rank, State Imperilment Rank, and EO Rank factors determine if a given EO drives the biodiversity rank of a PCA that supports it.

LOCATORS

EO Directions [provided with Level 1 Data only]

Specific directions to the EO as provided by the data source.

Latitude [provided with Level 1 Data only]

Degrees, Minutes, Seconds Datum is NAD 27. Calculated in GIS.

Longitude [provided with Level 1 Data only]

Degrees, Minutes, Seconds Datum is NAD 27. Calculated in GIS.

County Name

Calculated in GIS.

Watershed

U.S.G.S. 8-digit hydrologic unit code and name. Calculated in GIS.

Township/Range/Section (TRS) - Public Land Survey System

Calculated in GIS.

Township/Range

Section

Meridian

TRS Note

USGS 7.5 Minute Quadrangle

Calculated in GIS.

Quad Code

Quad Name

MAPPING INFORMATION

Estimated Representation Accuracy

Value that indicates the approximate percentage of the Element Occurrence Representation (EO Rep) that was observed to be occupied by the Element (versus area added for locational uncertainty). Use of estimated representation accuracy provides a common index for the consistent comparison of EO reps, thus helping to ensure that aggregated data are correctly analyzed and interpreted.

Domain values for Estimated Representation Accuracy are:

Very high (>95%)

High (>80%, <= 95%)

Medium (>20%, <= 80%)

Low (>0%, <= 20%)

Unknown

(null) - Not assessed

Calculated Representation Accuracy

A calculated percentage for the area of the EO rep that was observed to be occupied by the Element (versus area added for locational uncertainty).

Confidence Extent

Value that indicates whether the full extent of the Element is known (i.e., has been determined through field survey) at that location and, therefore, is represented by the EO.

Domain values for Confidence Extent are:

- Y - Confident full extent of EO is known
- N - Confident full extent of EO is NOT known
- ? - Uncertain whether full extent of EO is known
- (null) - Not assessed

Old Mapping Methodology

Specifies whether or not the EO boundaries were designed using new methodology or old methodology (see below for explanations).

Old Method:

Data were compiled onto 7.5 minute U.S.G.S. topographic maps. Point coordinates, representing the centrum of the occurrence, were measured manually in degrees, minutes, and seconds of longitude and latitude. Coordinates were converted to decimal degrees and used to generate a GIS point coverage with single precision.

During the data conversion process, all point data had to be converted to polygons. Points were buffered by mapping precision, the spatial uncertainty of the element occurrence, in order to capture the maximum extent of the occurrence (ex. EO with seconds mapping precision) OR to represent the entire area in which an EO could fall (ex. EOs with minutes or general mapping precision). Natural community polygons were created differently. Least rectangles, the bounding box of an occurrence, were generated using the northernmost, southernmost, westernmost and easternmost coordinates of the community. Any natural community without least rectangle coordinates was entered into the system as a point and buffered by mapping precision.

New Method:

For EOs with seconds mapping precision:

- 1) Any EO larger than 12.5 meters (CNHP's minimum mapping unit) in length and width is digitized as a polygon,
- 2) Any EO greater than 12.5 meters in length but less than 12.5 meters in width is digitized as a line and buffered 6.25 meters for a total width of 12.5 meters, and
- 3) Any EO less than 12.5 meters in length and width is entered as a point and buffered by 6.25 meters (for a diameter of 12.5 meters) if the coordinates were captured via GPS and differentially corrected. Points not captured via GPS are given larger buffer distances.

These distances are based on the information provided by the data source or the best estimate of CNHP's information managers.

EOs with minutes or general mapping precision cannot be accurately mapped since the data source did not provide specific directions. CNHP might know an EO is within a county, PLSS Township or a State Wildlife Area. In these examples, CNHP would use GIS layers of counties, Townships and managed areas to represent the possible location of the occurrence. Hence, polygons of minutes and general EOs represent the area in which the EO could occur.

Boundaries

Value that indicates whether a map sketch or other information on the boundaries of the EO is available.

Domain values for Boundaries are:

- ? - Questionable; Information on the boundaries of the EO is available, but is questionable or disputed
- N - No; information on the boundaries of the EO is not available
- Y - Yes; information on the boundaries of the EO is available
- (null) - Unknown whether boundary information is available, or not assessed

Mapping Precision

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SURVEY INFORMATION

Survey Site Name

Name of the survey site where the EO is located, usually corresponding to a geographic feature or local place name.

Survey Date

Date EO was last searched for at the site.

First Observation

Date that the EO was first reported at the site.

Last Observation

Date that the EO was last observed to be extant at the site.

EO Data

For species Elements, data collected on the biology of this EO including the number of individuals, vigor, habitat, soils, associated species, peculiar characteristics, etc.

For community Elements, summary text (i.e., capsule) description of the vegetation of the EO, including structure (strata) and composition (dominant/characteristic species), heterogeneity, successional stage/dynamics, any unique aspects of the community or additional noteworthy species (including animals).

Monitoring Needs

Comments related to any monitoring needed on the EO.

Research Needs

Comments related to any research needed on the EO.

[ADDITIONAL REPORT SECTIONS/DATA FIELDS HERE FOR COMMUNITY EOs ONLY]

EO RANK**Basic EO Rank**

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- BD - Good, fair, or poor estimated viability/ecological integrity
- C - Fair estimated viability/ecological integrity

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CD - Fair or poor estimated viability/ecological integrity
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D? - Possibly poor estimated viability/ecological integrity
E - Verified extant (viability/ecological integrity not assessed)
F - Failed to find
F? - Possibly failed to find
H - Historical
H? - Possibly historical
X - Extirpated
X? - Possibly extirpated
U - Unrankable
NR - Not ranked

Origin Subrank

Value that indicates whether the EO is not (or is possibly not) native to that location or natural in origin, if appropriate.

Domain values for Origin Subrank are:

i - Introduced
i? - Possibly introduced
r - Reintroduced/restored
r? - Possibly reintroduced/restored

EO Rank Date

Date EO Rank was assigned.

EO Rank Comment

Comments justifying assigned rank.

Rank Considerations

Condition of EO
Condition Comment
Size of EO
Size Rating
Landscape Context
Landscape Context Rating

DESCRIPTION

EO Type

According to previous Heritage methodology, the type name used in the Biological and Conservation Data system (BCD), that describes this EO for species (typically migratory animals) that manifest different types of occurrences (e.g., breeding site, nursery colony, roosting area).

General Description

General description or word picture of the area where the EO is located (i.e., the physical setting/context surrounding the EO), including a list of adjacent communities. Also, when available, information on surrounding land use.

Environment Comments

[ADDITIONAL REPORT SECTIONS/DATA FIELDS HERE FOR COMMUNITY EOs ONLY]

PROTECTION/MANAGEMENT

U.S. Endangered Species Act Status

The federal legal status of the species as assigned by the U.S. Fish and Wildlife Service (USFWS). Blank values indicate no state legal status per USFWS.

Domain values for U.S. Endangered Species Act Status:

C - ESA Candidate

LE - Listed Endangered

LE, LT - Listed as Endangered in a portion of the species' range and listed as Threatened in the rest of the species' range

LT - Listed Threatened

PT - Proposed Threatened

LE-PDL - Listed Endangered, proposed delisting

LE, XN - All of the species' infraspecific taxa worldwide are listed as Endangered or as a nonessential experimental population

State Protection Status (CDOW)

The state legal status of vertebrate or invertebrate species as assigned by the Colorado Division of Wildlife (CDOW). Blank values indicate no state legal status per CDOW.

Domain Values for State Protection Status are:

E - State endangered; elements of native wildlife whose prospects for survival or recruitment within this state are in jeopardy

T - State threatened; elements that are not in immediate jeopardy of extinction, but are vulnerable due to small numbers, restricted throughout its range, or experiencing low recruitment or survival

SC- Special concern

Protection Comments *[provided with Level 1 Data only]*

Summary of the general level of protection currently afforded the Site that indicates the current protection status of component Tracts.

Management Comments *[provided with Level 1 Data only]*

Comments on any management needed to ensure continued existence of the EO as well as the chances and means of fulfilling those needs.

ADDITIONAL TOPICS

General Comments

General comments concerning the EO that have not been addressed in other fields in this record.

DOCUMENTATION/VERSION

Reference Code

The identifier for a reference available for this EO.

Citation

Formal citation for a reference associated with the EO.

Primary

Indicates that the reference entered in the associated Reference Code column is the primary source for information on this EO.

Specimen

Any specimen information associated with the EO including museum/herbarium, collector, year and collection number if available.

OTHER ATTRIBUTES

Min. Elevation

Minimum elevation provided by the data source.

Max. Elevation

Maximum elevation provided by the data source.

EO Observation Area

Estimated size of the EO provided by the data source.

Calculated Attributes

Acreage

Ecoregion – TNC's ecoregions, modified version of Bailey's

Hectares

Latitude_DD

Longitude_DD

Land_Status – 1998 Gap Analysis Land Cover Map produced by Colorado Division of Wildlife (CDOW)

UTM_Easting

UTM_Northing

UTM_Zone