Species occurrence data from the aquatic eDNAtlas database

File geodatabase with 3 feature classes

Tags

eDNA, environmental DNA, eDNAtlas

More Detailed Metadata

Western U.S. Field Descriptions *(including results)*

Eastern U.S. Field Descriptions *(grid only)*

Summary

The eDNA samples in the eDNAtlas database describe species occurrence locations and were collected by the U.S. Forest Service and numerous agencies that have partnered with the National Genomics Center for Wildlife and Fish Conservation (NGC) throughout the United States. The data were collected for a variety of project-specific purposes that included: species status assessments, trend monitoring at one or many sites, development of predictive species distribution models, detection and tracking of nonnative species invasions, and assessments of habitat restoration efforts.

Description

The eDNAtlas database consists of three feature classes. The first component (**eDNAtlas_East_SampleGridOnly**) is a systematically-spaced 1-kilometer grid of potential sample points in streams and rivers throughout the eastern United States. The points in the sampling grid are arrayed along the medium-resolution National Hydrography Dataset Version 2 (NHDPlusV2) and can be used to develop custom eDNA sampling strategies for many purposes. Each sample point has a unique identity code that enables efficient integration of processed eDNA sample results with the species occurrence database.

The second component (**eDNAtlas_West_AGOL_ResultsOnly**) is a database of georeferenced species occurrence locations based on eDNA field sampling results, which are downloadable by species through a dynamic ArcGIS Online (AGOL) mapping tool. The earliest eDNA samples in the database were collected in 2015 but new samples and results are added annually to the database, which houses thousands of species occurrence records. Currently, the results are only in the western U.S., but there are plans to update when eastern samples are contributed and processed.

The third component (**eDNAtlas_West_SampleGridAndResults**) is a systematically-spaced 1-kilometer grid of potential sample points in streams and rivers throughout the western United States. The points in the sampling grid are arrayed along the medium-resolution National Hydrography Dataset Version 2 (NHDPlusV2) and can be used to develop custom eDNA sampling strategies for many purposes. Each sample point has a unique identity code that enables efficient integration of processed eDNA sample results with the species occurrence database.

For more information, see the website - https://www.fs.fed.us/rm/boise/AWAE/projects/eDNAtlas/the-edna-atlas-results.html

Original metadata date was 08/07/2018. On 02/28/2019 the data were updated to include 1) the eDNAtlas_East_SampleGridOnly feature class and 2) additional lab results for the western U.S. in eDNAtlas_West_AGOL_ResultsOnly and the eDNAtlas_West_SampleGridAndResults feature classes. This update also included 3) changing the field coordinate field names in the results classes to indicate 'field' collection locations instead of the previous 'UTM' coordinate notations and 4) includes ten more species to the results table. Additional minor metadata updates were included on 03/26/2019.

Credits

Funding for this project was provided by the National Fish and Wildlife Foundation's Bring Back the Natives program (grants #54500 and #58636; http://www.nfwf.org); USDA Forest Service Rocky Mountain Research Station Air, Water, and Aquatic Environments Program (https://www.fs.fed.us/rm/boise/awae_home.shtml); and the USDA Forest Service, National Genomics Center for Wildlife and Fish Conservation (https://www.fs.fed.us/research/genomics-center/edna/).

Use limitations

The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

Extent

West -98.148600 **East** -66.039025
North 51.397264 **South** 29.168556

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:150,000,000

ArcGIS Metadata ▶

Topics and Keywords ▶

THEMES OR CATEGORIES OF THE RESOURCE inlandWaters, location, health, biota, environment, climatologyMeteorologyAtmosphere

PLACE KEYWORDS western United States, United States

THEME KEYWORDS Landscape management, Inventory, Monitoring, & Analysis, Hydrology, watersheds, sedimentation, Wildlife (or Fauna), Habitat management, Forest & Plant Health, Climate change, Ecology, Ecosystems, & Environment, Natural Resource Management & Use, Climate effects, Fish, Invasive species, Monitoring

THESAURUS ▶
TITLE National Research & Development Taxonomy

THEME KEYWORDS habitat, absence, population, presence, aquatic, environmental DNA, study, survey, location, assay, eDNA, status, fish, occurrence, sample

THEME KEYWORDS inlandWaters, biota, climatologyMeteorologyAtmosphere, environment

THESAURUS ▶
TITLE ISO 19115 Topic Category

THEME KEYWORDS Arctic Grayling, Thymallus, articus, Boreal Toad / Western Toad Complex, Anaxyrus, boreas, boreas, Brook Trout, Salvelinus, fontinalis, Brown Trout, Salmo, trutta, Bull Trout, Salvelinus, confluentus, Burbot, Lota, lota, California floater, Anodonta, californiensis/nuttaliana, Canada lynx, Lynx, canadensis, Chinook Salmon, Oncorhynchus, tshawytscha, Chum Salmon, Oncorhynchus, keta, Coho Salmon, Oncorhynchus, kisutch, Common Carp, Cyprinus, carpio, Dolly Varden, Salvelinus, malma, Dreissenid mussels (zebra/quagga), Dreissena, sp., Fisher, Martes, pennanti, Grizzly/Brown Bear, Ursus, arctos, Harlequin Duck, Histrionicus, histrionicus, Lake Trout, Salvelinus, namaycush, Loach Minnow, Rhinichthys , cobitis, Mountain sucker, Catostomus, jordani, New Zealand Mud Snail, Potamopyrgus , antipodarum, North American River Otter, Lontra, canadensis, Northern Leatherside, Lepidomeda, copei, NOPI, Northern Pike, Esox, lucius, Opposum Shrimp, Mysis, diluviana, Oregon floater, Anodonta, oregonensis/kennerlyi, Pacific Lamprey, Entosphenus , tridentatus, Plains topminnow, Fundulus, sciadicus, Rainbow Trout/Steelhead, Oncorhynchus, mykiss, Rio Grande Chub, Gila, pandora, Rio Grande sucker, Catostomus, plebeius, Rocky Mountain Sculpin, Cottus , sp. [bairdii], Rocky Mountain Tailed Frog, Ascaphus, montanus, Sacramento pikeminnow, Ptychocheilus, grandis, Sauger, Sander, canadensis, Slimy Sculpin (Rocky Mountain slimy), Cottus , cognatus, Smallmouth Bass, Micropterus, dolomieu, Snake River physa snail, Physa, natricina, Snapping Turtle, Chelydra, serpentina, Spikedace, Meda, fulgida, Sturgeon Chub, Macrhybopsis , gelida, Umpqua chub, Oregonichthys, kalawatseti, Walleye, Sander, vitreus, Western Pearshell, Margaritifera, falcata, WPTL, Western Pond Turtle, Actinemys, marmorata, Western spadefoot toad, Spea, hammondii, Westslope Cutthroat Trout, Oncorhynchus, clarkii, lewisi, WVRN, Wolverine, Gulo, gulo, Wood frog, Rana, sylvatica, Yaqui Catfish, Ictalurus, pricei, Yellowstone Cutthroat Trout, Oncorhynchus, clarkii, bouvieri

Hide Topics and Keywords ▲

Citation ►

TITLE Species occurrence data from the aquatic eDNAtlas database
PUBLICATION DATE 2018-01-01 00:00:00

EDITION DATE 2019-03-29

PRESENTATION FORMATS digital map
FGDC GEOSPATIAL PRESENTATION FORMAT vector digital data

OTHER CITATION DETAILS
Updated 28 February 2019. https://doi.org/10.2737/RDS-2018-0010.

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Resource Details ►

DATASET LANGUAGES English
DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format

STATUS under development
SPATIAL REPRESENTATION TYPE vector

SUPPLEMENTAL INFORMATION
Original metadata date was 08/07/2018. On 02/28/2019 the data were updated to include 1) the eDNAtlas_East_SampleGridOnly feature class and 2) additional lab results for the western U.S. in eDNAtlas_West_AGOL_ResultsOnly and the eDNAtlas_West_SampleGridAndResults feature classes. This

update also included 3) changing the field coordinate field names in the results classes to indicate 'field' collection locations instead of the previous 'UTM' coordinate notations and 4) includes ten more species to the results table. Additional minor metadata updates were included on 03/26/2019.

For more information on The Aquatic eDNAtlas Project see: https://www.fs.fed.us/rm/boise/AWAE/projects/the-aquatic-eDNAtlas-project.html.

CREDITS

Funding for this project was provided by the National Fish and Wildlife Foundation's Bring Back the Natives program (grants #54500 and #58636; http://www.nfwf.org); USDA Forest Service Rocky Mountain Research Station Air, Water, and Aquatic Environments Program (https://www.fs.fed.us/rm/boise/awae_home.shtml); and the USDA Forest Service, National Genomics Center for Wildlife and Fish Conservation (https://www.fs.fed.us/research/genomics-center/edna/).

Resource Points of Contact ►

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CONTACT'S POSITION GIS Specialist
CONTACT'S ROLE point of contact

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Hide Resource Points of Contact ▲

Resource Maintenance ►

RESOURCE MAINTENANCE
UPDATE FREQUENCY annually

DATA QUALITY REPORT - COMPLETENESS OMISSION ►
MEASURE DESCRIPTION

The only data missing are the site locations that have samples, but haven't been run yet OR samples that are being re-run due to ambiguous results. Protocol used: NGCWFC protocol (Carim et al. 2016)

Quality Checks: Field data collection follows the protocol. Standard laboratory protocols are followed. Data are reviewed for consistency by inspection. Data Processing & Scientific Workflows: Field data are accompanied by a spreadsheet. Spreadsheet data are examined for consistency and completeness. Laboratory data are directly uploaded to spreadsheets and matched with field data. Data are again reviewed for consistency of results. Suspect results are re-analyzed. Backup & Storage: eDNA samples are stored in -20 degrees Celsius freezers at the NGC in Missoula. Electronic data are stored on multiple computers at the NGC in Missoula and a USDA Forest Service NAS server in Boise. Link: https://www.fs.fed.us/rm/boise/AWAE/projects/the-aquatic-eDNAtlas-project.html

Carim, Kellie J.; McKelvey, Kevin S.; Young, Michael K.; Wilcox, Taylor M.; Schwartz, Michael K. 2016. A protocol for collecting environmental DNA samples from streams. Gen. Tech. Rep. RMRS-GTR-355. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 18 p. https://www.fs.usda.gov/treesearch/pubs/52466

DATA QUALITY REPORT - QUANTITATIVE ATTRIBUTE ACCURACY ▶
MEASURE DESCRIPTION

The laboratory controls are checked for proper amplification (negative = no wells of amplification, positive = 3 wells of amplification). Samples are again checked for inhibition (> 1 cycle threshold [CT] delay in the internal positive control compared to the interal positive control [IPC] of the negative control). Further, the number of positive wells and the corresponding CT well values are checked for accuracy. If a sample showed positive amplification, the shape of the amplification curve is checked to assure a true detection was present. Species are indicated as present in the shapefile if Positive Wells is > 0. The lab results species field is populated as follows: Positive Wells = 0; absent = 2 Positive Wells > 0; present = 3 Otherwise fields were populated with: Value = 1 (not sampled) Value = 4 (sampled, being processed). Additional details about quality assurance and quality control checks can be found in the Process Steps below.

Eastern sample grid for the aquatic eDNAtlas database

File Geodatabase Feature Class

Tags

eDNA, environmental DNA, eDNAtlas

Summary

The Aquatic eDNAtlas East Sampling Grid is a point feature class with locations at a1 km interval along 1:100,000 scale NHDPlus stream lines, for the eastern U.S. The point attribute table contains an field called eDNA_ID which is a unique identifier for each point. The point locations are intended as sample locations for collecting aquatic environmental DNA to be stored in a central database.

Description

The eDNAtlas database eDNAtlas_East_AGOL_SampleGridOnly feature class is a systematically-spaced 1-kilometer grid of potential sample points in streams and rivers throughout the easternUnited States. The points in the sampling grid are arrayed along the medium-resolution National Hydrography Dataset Version 2 (NHDPlusV2) and can be used to develop custom eDNA sampling strategies for many purposes. Each sample point has a unique identity code that enables efficient integration of processed eDNA sample results with the species occurrence database.
Note that this grid is provided to facilitate field work and planning studies. Currently, there are no eDNAtlas sampled locations or results available the eastern U.S. sampling grid. If you would like to provide samples, please visit the Aquatic eDNAtlas Project Field Protocol page. Future versions will include those sample results as availble.
If downloaded from the ArcGIS Online map, these data may have been filtered or extracted by the user and may not be complete.

For more information, see the website - https://www.fs.fed.us/rm/boise/AWAE/projects/eDNAtlas/the-edna-atlas-results.html

Geodatabase Description

This ArcGIS File GeoDatabase contains field sample locations and associated Environmental DNA (eDNA) lab results of aquatic species occurrence. The point locations represent a systematically-spaced sampling grid with unique IDs throughout the western US. Water samples are obtained at the point locations and processed at the National Genomics Center (NGC) to determine species occurrence. More than one water sample may be taken per field sample location on different dates and/or for various species. The tables and relationship classes in the Geodatabase store the lab results data and allow users to query the database.
This database is used to guide eDNA sample site selection for work to be included in the NGC eDNAtlas database. Sample results included in the database are made freely available to the public and may be downloaded or viewed from a web based mapping application.
For more information about the Aquatic eDNAtlas project and about eDNA, visit the website - https://www.fs.fed.us/rm/boise/AWAE/projects/aquatic-eDNAtlas.html

Sample Points Process Description
eDNAtlas sample points were generated along National Hydrography Dataset (NHDPlusV2) 1:100,000 scale stream lines. Points are positioned to balance sampling efficiency and maximize detection rates and are spaced at approximately 1 km along the stream network. Points upstream from stream junctions are located 100 m above the confluence and subsequent points are spaced at the 1 km interval. Stream segments shorter than 1 km have sample points positioned at the midpoint of the reach. A unique ID is assigned to each sample point with the form AAAAAAAA-BBB-CC, where A is the 8-digit Watershed Boundary Dataset (WBD) hydrologic unit code (HUC), B is a unique number assigned to each stream reach in the HUC, and C is a unique point on the stream reach. Attributes are associated with each point to assist users in selecting appropriate sample locations for the target species. These attributes include map coordinates for locating points, land ownership, summer flow rate, reach slope, and elevation. See the metadata for the eDNAtlas_West feature class for a full description of the attributes.

Credits

Funding for this project was provided by the National Fish and Wildlife Foundation's Bring Back the Natives program (grants #54500 and #58636; http://www.nfwf.org); USDA Forest Service Rocky Mountain Research Station Air, Water, and Aquatic Environments Program (https://www.fs.fed.us/rm/boise/awae_home.shtml); and the USDA Forest Service, National Genomics Center for Wildlife and Fish Conservation (https://www.fs.fed.us/research/genomics-center/edna/).

Use limitations

Extent

West -98.148600 **East** -66.039025
North 50.138385 **South** 23.726801

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:150,000,000

ArcGIS Metadata ►

Fields ►

DETAILS FOR OBJECT eDNAtlas_East_SampleGridOnly ►
* TYPE Feature Class
* ROW COUNT 2171431

FIELD OBJECTID ►
* ALIAS OBJECTID
* DATA TYPE OID
* WIDTH 4
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Internal feature number.

DESCRIPTION SOURCE
Esri

DESCRIPTION OF VALUES
Sequential unique whole numbers that are automatically generated.

FIELD Shape ►
* ALIAS Shape
* DATA TYPE Geometry
* WIDTH 0
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Feature geometry.

DESCRIPTION SOURCE
Esri

DESCRIPTION OF VALUES
Coordinates defining the features.

FIELD eDNA_ID ►
* ALIAS eDNA_ID
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Primary key. A unique ID for each eDNA sample point. The ID takes the form AAAAAAAA-BBB-CC, where A is the 8-digit Watershed Boundary Dataset (WBD) hydrologic unit code (HUC), B is a unique number assigned to each stream reach in the HUC, and C is a unique point on the stream reach.

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD HUC8 ►
* ALIAS HUC8
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
8 digit unique code for each HUC from the Watershed Boundary Dataset (WBD).

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD HUC8_Name ►
* ALIAS HUC8_Name
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
HUC name from the WBD

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD Site_ID ►
* ALIAS Site_ID
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION
The unique site within each 8-digit HUC. The site ID takes the form BBB-CC, where B is a unique number assigned to each stream reach in the HUC, and C is a unique point on the stream reach.

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD COMID ▶
* ALIAS COMID
* DATA TYPE Integer
* WIDTH 4
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Common identifier of an NHDFlowline feature (COMID code from the NHDPlus V2 dataset)

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD GNIS_NAME ▶
* ALIAS GNIS_NAME
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Feature name from Geographic Names Information System (stream name from the NHDPlus V2 dataset)

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD REACHCODE ▶
* ALIAS REACHCODE
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Reach code assigned to feature (REACHCODE from the NHDPlus V2 dataset)

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD TotDASqKM ▶
* ALIAS TotDASqKM
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Total upstream cumulative drainage area, in square kilometers, at the downstream end of the NHDFlowline feature.

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD DD_X ▶
* ALIAS DD_X
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Geographic coordinate X in decimal degrees

DESCRIPTION SOURCE

USDA Forest Service, Rocky Mountain Research Station

FIELD DD_Y ►
* ALIAS DD_Y
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Geographic coordinate Y in decimal degrees

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD UTM_Zone ►
* ALIAS UTM_Zone
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
UTM Zone of the sample grid point

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD UTM_X ►
* ALIAS UTM_X
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
UTM X coordinate of the sample grid point, unique by eDNA_ID

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD UTM_Y ►
* ALIAS UTM_Y
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
UTM Y coordinate of the sample grid point, unique by eDNA_ID

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD FCODE ►
* ALIAS FCODE
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Numeric codes for various feature attributes in the NHD FCode lookup table.
33400: CONNECTOR - feature type only: no attributes
33600: CANAL/DITCH - feature type only: no attributes
33601: CANAL/DITCH - Canal/Ditch Type|aqueduct
33603: CANAL/DITCH - Canal/Ditch Type|stormwater
42000: UNDERGROUND CONDUIT - feature type only: no attributes
42001: UNDERGROUND CONDUIT - Positional Accuracy|definite
42002: UNDERGROUND CONDUIT - Positional Accuracy|indefinite
42003: UNDERGROUND CONDUIT - Positional Accuracy|appoximate

42800: PIPELINE - feature type only: no attributes
42801: PIPELINE - Product|water; Pipeline Type|aqueduct; Relationship to Surface|at or near
42802: PIPELINE - Product|water; Pipeline Type|aqueduct; Relationship to Surface|elevated
42803: PIPELINE - Product|water; Pipeline Type|aqueduct; Relationship to Surface|underground
42804: PIPELINE - Product|water; Pipeline Type|aqueduct; Relationship to Surface|underwater
42805: PIPELINE - Product|water; Pipeline Type|general case; Relationship to Surface|at or near
42806: PIPELINE - Product|water; Pipeline Type|general case; Relationship to Surface|elevated
42807: PIPELINE - Product|water; Pipeline Type|general case; Relationship to Surface|underground
42808: PIPELINE - Product|water; Pipeline Type|general case; Relationship to Surface|underwater
42809: PIPELINE - Product|water; Pipeline Type|penstock; Relationship to Surface|at or near
42810: PIPELINE - Product|water; Pipeline Type|penstock; Relationship to Surface|elevated
42811: PIPELINE - Product|water; Pipeline Type|penstock; Relationship to Surface|underground
42812: PIPELINE - Product|water; Pipeline Type|penstock; Relationship to Surface|underwater
42813: PIPELINE - Product|water; Pipeline Type|siphon; Relationship to Surface|unspecified
42814: PIPELINE - Product|water; Pipeline Type|general case
42815: PIPELINE - Product|water; Pipeline Type|penstock
42816: PIPELINE - Product|water; Pipeline Type|aqueduct
46000: STREAM/RIVER - feature type only: no attributes
46003: STREAM/RIVER - Hydrographic Category|intermittent
46006: STREAM/RIVER - Hydrographic Category|perennial
46007: STREAM/RIVER - Hydrographic Category|ephemeral
55800: ARTIFICIAL PATH - feature type only: no attributes
56600: COASTLINE - feature type only: no attributes

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

ACCURACY INFORMATION
ACCURACY
https://nhd.usgs.gov/userGuide/Robohelpfiles/NHD_User_Guide/Feature_Catalog/Hydrography_Dataset/Complete_FCode_List.htm

FIELD PublicLand ►
* ALIAS PublicLand
* DATA TYPE String
* WIDTH 50
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
These data are from PAD-US, Protected Areas Database of the US. https://gapanalysis.usgs.gov/padus/

Own_Name - Land owner or holding agency (e.g. USFS, State Fish and Game, City Land, TNC) standardized for the US. See PAD-US Data Standard or geodatabase look up table for "Agency Name" for full domain descriptions. Use "Manager Name" for the best depiction of federal lands as many overlapping designations (i.e. "Designation") and ownership related data gaps (i.e. "Unknown") occur in the federal theme.

DESCRIPTION SOURCE
See PAD-US Standards Manual Document, https://gapanalysis.usgs.gov/padus/data/standards/.

CODED VALUES
NAME OF CODELIST Own_Name
SOURCE See PAD-US Standards Manual Document, https://gapanalysis.usgs.gov/padus/data/standards/.

FIELD MS_Hist ►
* ALIAS MS_Hist
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Mean summer historical flow [Mean summer flow is the average of daily flow between June 1 and September 30; Units: cubic feet per second] from Variable Infiltration Capacity (VIC) flow model.

DESCRIPTION SOURCE
Western U.S. Stream Flow Metrics dataset - https://www.fs.fed.us/rm/boise/AWAE/projects/modeled_stream_flow_metrics.shtml

FIELD eDNA_Slope ►
* ALIAS eDNA_Slope
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Stream gradient of the reach above the sample point up to the next sample point, stream confluence, or headwater initiation point. Units: percent. Generated internally using NHDPlusV2 National Elevation Dataset data.

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

ACCURACY INFORMATION
ACCURACY The underlying elevation data used is from the National Elevation Dataset (NED) at 30 meter (m) resolution.

FIELD Elev_m ►
* ALIAS Elev_m
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
The underlying elevation data used is from the National Elevation Dataset (NED) at 30 m resolution.

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD Sampled ►
* ALIAS Sampled
* DATA TYPE String
* WIDTH 10
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Indication of whether the unique eDNA_ID site has been sampled. Includes samples for any species as well as those not yet processed.

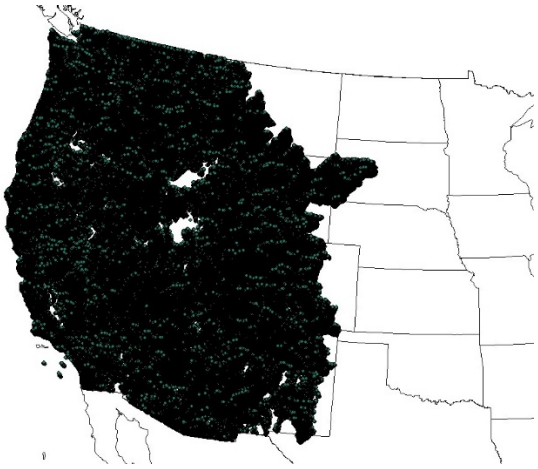
DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

LIST OF VALUES
VALUE N
DESCRIPTION not sampled
ENUMERATED DOMAIN VALUE DEFINITION SOURCE USDA Forest Service, Rocky Mountain Research Station

VALUE Y
DESCRIPTION sampled
ENUMERATED DOMAIN VALUE DEFINITION SOURCE USDA Forest Service, Rocky Mountain Research Station

Western sample grid and lab results for the aquatic eDNAtlas database

File Geodatabase Feature Class



Tags

eDNA, environmental DNA, eDNAtlas

Summary

The eDNA samples in the eDNAtlas database describe species occurrence locations and were collected by the U.S. Forest Service and numerous agencies that have partnered with the National Genomics Center for Wildlife and Fish Conservation (NGC) throughout the United States. The data were collected for a variety of project-specific purposes that included: species status assessments, trend monitoring at one or many sites, development of predictive species distribution models, detection and tracking of nonnative species invasions, and assessments of habitat restoration efforts.

Description

The eDNAtlas database eDNAtlas_West_SampleGridAndResults feature class is a systematically-spaced 1-kilometer grid of potential sample points in streams and rivers throughout the western United States. The points in the sampling grid are arrayed along the medium-resolution National Hydrography Dataset Version 2 (NHDPlusV2) and can be used to develop custom eDNA sampling strategies for many purposes. Each sample point has a unique identity code that enables efficient integration of processed eDNA sample results with the species occurrence database.
If downloaded from the ArcGIS Online map, these data may have been filtered or extracted by the user and may not be complete.

For more information, see the website - https://www.fs.fed.us/rm/boise/AWAE/projects/eDNAtlas/the-edna-atlas-results.html

This feature class was updated 02/28/2019 to include additional lab results and to include changing the field coordinate field names in all feature classes to indicate 'field' collection locations instead of the previous 'UTM' coordinates. It also includes ten more species in the results table than the previous 08/17/2018 version. Additional minor metadata updates were included on 03/26/2019.

Credits

Funding for this project was provided by the National Fish and Wildlife Foundation's Bring Back the Natives program (grants #54500 and #58636; http://www.nfwf.org); USDA Forest Service Rocky Mountain Research Station Air, Water, and Aquatic Environments Program (https://www.fs.fed.us/rm/boise/awae_home.shtml); and the USDA Forest Service, National Genomics Center for Wildlife and Fish Conservation (https://www.fs.fed.us/research/genomics-center/edna/).

Use limitations

If you use these data in a publication, presentation, or other research product please use the following citation: Young, Michael K.; Isaak, Daniel J.; Schwartz, Michael K.; McKelvey, Kevin S.; Nagel, David E.; Franklin, Thomas W.; Greaves, Samuel E.; Dysthe, J. Caleb; Pilgrim, Kristine L.; Chandler, Gwynne L.; Wollrab, Sherry P.; Carim, Kellie J.; Wilcox, Taylor M.; Parkes-Payne, Sharon L.; Horan, Dona L. 2018. Species occurrence data from the aquatic eDNAtlas database. Fort Collins, CO: Forest Service Research Data Archive. Updated 28 February 2019. https://doi.org/10.2737/RDS-2018-0010.

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Extent

West -127.822636 **East** -100.423577
North 51.397264 **South** 29.168556

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:150,000,000

ArcGIS Metadata ►

SUPPLEMENTAL INFORMATION

Original metadata date was 08/07/2018. On 02/28/2019 the data were updated to include additional lab results for the western U.S. This update also included changing the field coordinate field names in the results classes to indicate 'field' collection locations instead of the previous 'UTM' coordinate notations and includes ten more species to the results table. Additional minor metadata updates were included on 03/26/2019.

* PROCESSING ENVIRONMENT Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.3.1.4959

CREDITS

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Resource Constraints ►

CONSTRAINTS

LIMITATIONS OF USE

These species occurrence data and accompanying geospatial datasets were created using funding from the U.S. Government and can be used without additional permissions or fees.

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ARCGIS FEATURE CLASS PROPERTIES ►

FEATURE CLASS NAME eDNAtlas_West_AGOL_SampleGridAndResults

* Feature type Simple
* Geometry type Point
* Has topology FALSE
* Feature count 1817629
* Spatial index TRUE
* Linear referencing FALSE

Fields ►

Details for object eDNAtlas_West_AGOL_SampleGridAndResults ►
* Type Feature Class
* Row count 1817629

Field OBJECTID ►
* Alias OBJECTID
* Data type OID
* Width 4
* Precision 0
* Scale 0

Field description
Internal feature number.

Description source
Esri

Description of values
Sequential unique whole numbers that are automatically generated.

Field Shape ►
* Alias Shape
* Data type Geometry
* Width 0
* Precision 0
* Scale 0

Field description
Feature geometry.

Description source
Esri

Description of values
Coordinates defining the features.

Field eDNA_ID ►
* Alias eDNA_ID
* Data type String
* Width 254
* Precision 0
* Scale 0

Field description
Primary key. A unique ID for each eDNA sample point. The ID takes the form AAAAAAAA-BBB-CC, where A is the 8-digit Watershed Boundary Dataset (WBD) hydrologic unit code (HUC), B is a unique number assigned to each stream reach in the HUC, and C is a unique point on the stream reach.

Description source
USDA Forest Service, Rocky Mountain Research Station

Field HUC8 ►
* Alias HUC8
* Data type String
* Width 254
* Precision 0
* Scale 0

Field description
8 digit unique code for each HUC from the Watershed Boundary Dataset (WBD).

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD HUC8_Name ►
* ALIAS HUC8_Name
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
HUC name from the WBD

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD Site_ID ►
* ALIAS Site_ID
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
The unique site within each 8-digit HUC. The site ID takes the form BBB-CC, where B is a unique number assigned to each stream reach in the HUC, and C is a unique point on the stream reach.

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD COMID ►
* ALIAS COMID
* DATA TYPE Integer
* WIDTH 4
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Common identifier of an NHDFlowline feature (COMID code from the NHDPlus V2 dataset)

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD GNIS_NAME ►
* ALIAS GNIS_NAME
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Feature name from Geographic Names Information System (stream name from the NHDPlus V2 dataset)

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD REACHCODE ►
* ALIAS REACHCODE
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Reach code assigned to feature (REACHCODE from the NHDPlus V2 dataset)

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD TotDASqKM ►
* ALIAS TotDASqKM
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Total upstream cumulative drainage area, in square kilometers, at the downstream end of the NHDFlowline feature.

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD DD_X ►
* ALIAS DD_X
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Geographic coordinate X in decimal degrees

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD DD_Y ►
* ALIAS DD_Y
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Geographic coordinate Y in decimal degrees

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD UTM_Zone ►
* ALIAS UTM_Zone
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
UTM Zone of the sample grid point

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD UTM_X ►
* ALIAS UTM_X
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
UTM X coordinate of the sample grid point, unique by eDNA_ID

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD UTM_Y ►
* ALIAS UTM_Y
* DATA TYPE String
* WIDTH 254

* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

UTM Y coordinate of the sample grid point, unique by eDNA_ID

DESCRIPTION SOURCE

USDA Forest Service, Rocky Mountain Research Station

FIELD FCODE ▶

* ALIAS FCODE
* DATA TYPE String
* WIDTH 254
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Numeric codes for various feature attributes in the NHD FCode lookup table.
33400: CONNECTOR - feature type only: no attributes
33600: CANAL/DITCH - feature type only: no attributes
33601: CANAL/DITCH - Canal/Ditch Type|aqueduct
33603: CANAL/DITCH - Canal/Ditch Type|stormwater
42000: UNDERGROUND CONDUIT - feature type only: no attributes
42001: UNDERGROUND CONDUIT - Positional Accuracy|definite
42002: UNDERGROUND CONDUIT - Positional Accuracy|indefinite
42003: UNDERGROUND CONDUIT - Positional Accuracy|appoximate
42800: PIPELINE - feature type only: no attributes
42801: PIPELINE - Product|water; Pipeline Type|aqueduct; Relationship to Surface|at or near
42802: PIPELINE - Product|water; Pipeline Type|aqueduct; Relationship to Surface|elevated
42803: PIPELINE - Product|water; Pipeline Type|aqueduct; Relationship to Surface|underground
42804: PIPELINE - Product|water; Pipeline Type|aqueduct; Relationship to Surface|underwater
42805: PIPELINE - Product|water; Pipeline Type|general case; Relationship to Surface|at or near
42806: PIPELINE - Product|water; Pipeline Type|general case; Relationship to Surface|elevated
42807: PIPELINE - Product|water; Pipeline Type|general case; Relationship to Surface|underground
42808: PIPELINE - Product|water; Pipeline Type|general case; Relationship to Surface|underwater
42809: PIPELINE - Product|water; Pipeline Type|penstock; Relationship to Surface|at or near
42810: PIPELINE - Product|water; Pipeline Type|penstock; Relationship to Surface|elevated
42811: PIPELINE - Product|water; Pipeline Type|penstock; Relationship to Surface|underground
42812: PIPELINE - Product|water; Pipeline Type|penstock; Relationship to Surface|underwater
42813: PIPELINE - Product|water; Pipeline Type|siphon; Relationship to Surface|unspecified
42814: PIPELINE - Product|water; Pipeline Type|general case
42815: PIPELINE - Product|water; Pipeline Type|penstock
42816: PIPELINE - Product|water; Pipeline Type|aqueduct
46000: STREAM/RIVER - feature type only: no attributes
46003: STREAM/RIVER - Hydrographic Category|intermittent
46006: STREAM/RIVER - Hydrographic Category|perennial
46007: STREAM/RIVER - Hydrographic Category|ephemeral
55800: ARTIFICIAL PATH - feature type only: no attributes
56600: COASTLINE - feature type only: no attributes

DESCRIPTION SOURCE

ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

ACCURACY INFORMATION

ACCURACY

https://nhd.usgs.gov/userGuide/Robohelpfiles/NHD_User_Guide/Feature_Catalog/Hydrography_Dataset/Complete_FCode_List.htm

FIELD PublicLand ▶

* ALIAS PublicLand
* DATA TYPE String
* WIDTH 50
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

These data are from PAD-US, Protected Areas Database of the US. https://gapanalysis.usgs.gov/padus/

Own_Name - Land owner or holding agency (e.g. USFS, State Fish and Game, City Land, TNC) standardized for the US. See PAD-US Data Standard or geodatabase look up table for "Agency Name" for full domain descriptions. Use "Manager Name" for the best depiction of federal lands as many overlapping designations (i.e. "Designation") and ownership related data gaps (i.e. "Unknown") occur in the federal theme.

DESCRIPTION SOURCE
See PAD-US Standards Manual Document, https://gapanalysis.usgs.gov/padus/data/standards/.

CODED VALUES
NAME OF CODELIST Own_Name
SOURCE See PAD-US Standards Manual Document, https://gapanalysis.usgs.gov/padus/data/standards/.

FIELD MS_Hist ►
* ALIAS MS_Hist
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Mean summer historical flow [Mean summer flow is the average of daily flow between June 1 and September 30; Units: cubic feet per second] from Variable Infiltration Capacity (VIC) flow model.

DESCRIPTION SOURCE
Western U.S. Stream Flow Metrics dataset - https://www.fs.fed.us/rm/boise/AWAE/projects/modeled_stream_flow_metrics.shtml

FIELD eDNA_Slope ►
* ALIAS eDNA_Slope
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Stream gradient of the reach above the sample point up to the next sample point, stream confluence, or headwater initiation point. Units: percent. Generated internally using NHDPlusV2 National Elevation Dataset data.

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

ACCURACY INFORMATION
ACCURACY The underlying elevation data used is from the National Elevation Dataset (NED) at 30 meter (m) resolution.

FIELD Elev_m ►
* ALIAS Elev_m
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
The underlying elevation data used is from the National Elevation Dataset (NED) at 30 m resolution.

DESCRIPTION SOURCE
ftp://ftp.horizon-systems.com/NHDplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf

FIELD Date_Collected ►
* ALIAS Date_Collected
* DATA TYPE Date
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD Field_UTM_Zone ►
* ALIAS Field_UTM_Zone
* DATA TYPE Integer
* WIDTH 4
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION
UTM Zone of the collected sample as noted by the contributor. Null indicates no previous sample taken and assigned to the unique eDNA_ID.

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

FIELD Field_X_Coord ►
* ALIAS Field_X_Coord
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD Field_Y_Coord ►
* ALIAS Field_Y_Coord
* DATA TYPE Double
* WIDTH 8
* PRECISION 0
* SCALE 0

FIELD Agency ►
* ALIAS Agency
* DATA TYPE String
* WIDTH 8000
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION
Name of agency or group that collected the field sample.

DESCRIPTION SOURCE
USDA Forest Service, Rocky Mountain Research Station

Species samples on the next page

Species samples

FIELD ANCA ▶
Lab Sample results as tested for California floater (*Anodonta californiensis/ nuttaliana*)

FIELD ANOR ▶
Lab Sample results as tested for Oregon floater (*Anodonta oregonensis/ kennerlyi*)

FIELD ARGR ▶
Lab Sample results as tested for Arctic grayling (*Thymallus articus*)

FIELD BOTO ▶
Lab Sample results as tested for Boreal Toad (*Anaxyrus boreas boreas*)

FIELD BRKT ▶
Lab Sample results as tested for Brook Trout (*Salvelinus fontinalis*)

FIELD BRNT ▶
Lab Sample results as tested for Brown Trout (*Salmo trutta*)

FIELD BULL ▶
Lab Sample results as tested for Bull Trout (*Salvelinus confluentus*)

FIELD BURB ▶
Lab Sample results as tested for Burbot (Lota lota)

FIELD CHIN ▶
Lab Sample results as tested for Chinook Salmon (*Oncorhynchus tshawytscha*)

FIELD CHUM ▶
Lab Sample results as tested for Chum Salmon (*Oncorhynchus keta*)

FIELD CMCP ▶
Lab Sample results as tested for Common Carp (Cyprinus carpio)

FIELD COHO ▶
Lab Sample results as tested for Coho Salmon (*Oncorhynchus kisutch*)

FIELD DOVN ▶
Lab Sample results as tested for Dolly Varden (*Salvelinus malma*)

FIELD DRES ▶
Lab Sample results as tested for Dreissenid mussels (zebra/quagga) (Dreissena sp.)

FIELD GRIZ ▶
Lab Sample results as tested for Grizzly/Brown bear (*Ursus arctos*)

FIELD HADU ▶
Lab Sample results as tested for Harlequin duck (*Histrionicus histrionicus*)

FIELD LAKT ▶
Lab Sample results as tested for Lake Trout (*Salvelinus namaycush*)

FIELD LOMW ▶
Lab Sample results as tested for Loach Minnow (*Rhinichthys cobitis*)

FIELD MYSS ▶
Lab Sample results as tested for Opossum Shrimp (*Mysis diluviana*)

FIELD NOLS ▶
Lab Sample results as tested for Northern leatherside chub (*Lepidomeda copei*)

FIELD NOPI ▶
Lab Sample results as tested for Northern Pike (*Esox lucius*)

FIELD PALA ▶
Lab Sample results as tested for Pacific Lamprey (*Entosphenus tridentatus*)

FIELD RGCH ▶
Lab Sample results as tested for Rio Grande Chub (*Gila pandora*)

FIELD 4-character species abbreviations ▸

LIST OF VALUES

VALUE 1
DESCRIPTION not sampled

VALUE 2
DESCRIPTION sampled, absent

VALUE 3
DESCRIPTION sampled, present

VALUE 4
DESCRIPTION sampled, being processed

FIELD RGSU ▶
Lab Sample results as tested for Rio Grande sucker (*Catostomus plebeius*)

FIELD PYNA ▶
Lab Sample results as tested for Snake River physa (*Physa natricina*)

FIELD RMSC ▶
Lab Sample results as tested for Rocky Mountain Sculpin (*Cottus sp.*)

FIELD RMTF ▶
Lab Sample results as tested for Rocky Mountain Tailed Frog (*Ascaphus montanus*)

FIELD RNBT ▶
Lab Sample results as tested for Rainbow Trout/Steelhead/Redband Trout (*Oncorhynchus mykiss*)

FIELD RVOT ▶
Lab Sample results as tested for North American River Otter (*Lontra canadensis*)

FIELD SAPI ▶
Lab Sample results as tested for Sacramento Pikeminnow (*Ptychocheilus grandis*)

FIELD SCUL ▶
Lab Sample results as tested for a Cottidae marker (Any Sculpin). This refers to specific assays for detection of sculpin and does not indicate the results of multiple assays.

FIELD STGC ▶
Lab Sample results as tested for Sturgeon Chub (*Macrhybopsis gelida*)

FIELD SLMD ▶
Lab Sample results as tested for a Salmonidae marker (Any Salmonid). This refers to specific assays for detection of salmonid and does not indicate the results of multiple assays.

FIELD SLSC ▶
Lab Sample results as tested for Slimy Sculpin (*Cottus cognatus*)

FIELD SMBA ▶
Lab Sample results as tested for Smallmouth Bass (*Micropterus dolomieu*)

FIELD SPKD ▶
Lab Sample results as tested for Spikedace (*Meda fulgida*)

FIELD WEPS ▶
Lab Sample results as tested for Western Pearshell (*Margaritifera falcata*)

FIELD WPTL ▶
Lab Sample results as tested for Western Pond Turtle (*Actinemys marmorata*)

FIELD WSCT ▶
Lab Sample results as tested for Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)

FIELD YSCT ▶
Lab Sample results as tested for Yellowstone Cutthroat Trout (*Oncorhynchus clarkii bouvieri*)

FIELD 4-character species abbreviations ▸

LIST OF VALUES

VALUE 1
DESCRIPTION not sampled

VALUE 2
DESCRIPTION sampled, absent

VALUE 3
DESCRIPTION sampled, present

VALUE 4
DESCRIPTION sampled, being processed