

Species occurrence data from the aquatic eDNAtlas database

File Geodatabase with 3 Feature Classes

Tags

eDNA, environmental DNA, eDNAtlas

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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. This project began in 2015, but updates will include legacy data that were collected using the same protocol. Updated October 23, 2020.

Description

The eDNAtlas database consists of three feature classes.

The first component (**eDNAtlas_East_AGOL_SampleGridAndResults**) 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_EastWest_AGOL_ResultsOnly**) is a database of georeferenced species occurrence locations based on eDNA field sampling results, which are downloadable by species through dynamic ArcGIS Online (AGOL) mapping tools. New eDNA samples and results are added annually to the database which houses thousands of species occurrence records. This feature class includes results from both the western US and the eastern portion of the country.

The third component (**eDNAtlas_West_AGOL_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. In the feature class attribute tables, the unique ID for each grid sample point is eDNA_ID. The unique ID for each National Genomics Center for Wildlife and Fish Conservation (NGC) lab result is ID_Tag. There can be more than one ID_Tag per eDNA_ID grid sample point.

For more information, see the website - <https://www.fs.fed.us/rm/boise/AWAE/projects/eDNAtlas/the-edna-atlas-results.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.usda.gov/rmrs/ngc/edna>).

We would also like to credit Jennifer Hernandez for the significant amount of work she has put into developing this database.

Use limitations

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.

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 23 October 2020. <https://doi.org/10.2737/RDS-2018-0010>.

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Resource Maintenance ►

RESOURCE MAINTENANCE UPDATE FREQUENCY annually

Fields ►

ENTITY AND ATTRIBUTE OVERVIEW

Below is a description of what is included in the Aquatic eDNA Atlas ArcGIS GeoDatabase. Each of these entities includes a metadata document with more details.

The data available for download from the Complete GeoDatabase contain various species eDNA lab results from field samples contributed to National Genomics Center for Wildlife and Fish Conservation, as well as information about the date and agency that collected the genetic material. This attribute table also contains other useful information including slope, elevation, and other additional about the sample site location.

POINT FEATURE CLASSES

eDNAAtlas_East_AGOL_SampleGridAndResults: Sampling grid locations with stream point locations comprised of systematically-spaced points with unique IDs along eastern U.S. streams. Used to help users prepare for field work and where eDNA samples have already been taken and where they are still needed. Also used to determine if specific species are being processed or have lab results.

eDNAAtlas_EastWest_AGOL_ResultsOnly: The sampling grid stream points have attributes specifically for the ArcGIS Online maps and contain lab results for species occurrence as well as other point-specific information.

eDNAAtlas_West_AGOL_SampleGridAndResults: Sampling grid locations with stream point locations comprised of systematically-spaced points with unique IDs along western U.S. streams. Used to help users prepare for field work and where eDNA samples have already been taken and where they are still needed. Also used to determine if specific species are being processed or have lab results.

DETAILS FOR OBJECT [eDNAAtlas_West_AGOL_SampleGridAndResults](#) and [eDNAAtlas_East_AGOL_SampleGridAndResults](#) ►

FIELD OBJECTID ►

FIELD DESCRIPTION

Internal feature number.

DESCRIPTION OF VALUES

Sequential unique whole numbers that are automatically generated.

FIELD Shape ►

FIELD DESCRIPTION

Feature geometry.

DESCRIPTION OF VALUES

Coordinates defining the features.

FIELD eDNA_ID ►

FIELD DESCRIPTION

Primary key. A unique ID for each eDNA sample point. The ID takes the form AAAAAAAAA-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. **If you collect samples in the field, this is the number that needs to be associated with that sample site location.**

DESCRIPTION SOURCE USDA Forest Service, Rocky Mountain Research Station

FIELD HUC8 ►

FIELD DESCRIPTION

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

FIELD HUC8_Name ▶

FIELD DESCRIPTION

HUC name from the Watershed Boundary Dataset (WBD).

FIELD Site_ID ▶

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 ▶

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 ▶

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 ▶

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 ▶

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 ▶

FIELD DESCRIPTION

Geographic coordinate X in decimal degrees

FIELD DD_Y ▶

FIELD DESCRIPTION

Geographic coordinate Y in decimal degrees

FIELD UTM_Zone ▶

FIELD DESCRIPTION

UTM Zone of the sample grid point

FIELD UTM_X ▶

FIELD DESCRIPTION

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

FIELD UTM_Y ▶

FIELD DESCRIPTION

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

FIELD FCODE ▶

FIELD DESCRIPTION

Numeric codes for various feature attributes in the NHD FCode lookup table.

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 ▶

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/>

FIELD MS_Hist ▶

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 ▶

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 ▶

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 Field_Zone ▶

FIELD DESCRIPTION

UTM Zone of the collected sample as noted by the contributor.

DESCRIPTION SOURCE

USDA Forest Service, Rocky Mountain Research Station

FIELD Field_Easting_UTM ▶

FIELD DESCRIPTION

Field easting UTM coordinate of the collected sample as noted by the contributor.

FIELD Field_Latitude_DD ▶

FIELD DESCRIPTION

Field latitude in decimal degrees of the collected sample as noted by the contributor.

FIELD Field_Longitude_DD ▶

FIELD DESCRIPTION

Field longitude in decimal degrees of the collected sample as noted by the contributor.

FIELD Date_Collected ▶

FIELD DESCRIPTION

The date a previously collected sample was collected in the field as noted by the contributor. Null indicates no previous sample taken and assigned to the unique eDNA_ID. Points taken prior to 2015 were sampled using effectively identical protocols and are added to the eDNAAtlas Database from previous databases as time allows.

FIELD Sample_Visit ▶

FIELD DESCRIPTION

A field identifier for a sample if more than one sample was taken at the same place and the same day. Null indicates only one unique sample was taken at the same location and day and no identifier is needed.

DESCRIPTION SOURCE

USDA Forest Service, Rocky Mountain Research Station

LIST OF VALUES

VALUE A

DESCRIPTION first sample taken that day

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

VALUE B

DESCRIPTION second sample taken that day

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

FIELD Agency ▶

FIELD DESCRIPTION

Name of agency or group that collected the field sample.

FIELD ID_Tag ▶

FIELD DESCRIPTION

Unique ID assigned to each eDNA sample stored/processed at the [National Genomics Center for Wildlife and Fish Conservation](#).

DESCRIPTION SOURCE

USDA Forest Service, Rocky Mountain Research Station

Field Name: AEEL

Attribute Definition:

Lab Sample results as tested for American eel (*Anguilla rostrata*)

Field Name: ANCA

Attribute Definition:

Lab Sample results as tested for California floater (*Anodonta californiensis/nuttalliana*)

Field Name: ANOR

Attribute Definition:

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

Field Name: ARGR

Attribute Definition:

Lab Sample results as tested for Arctic grayling (*Thymallus arcticus*)

Field Name: BRNT

Attribute Definition:

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

Field Name: BULL

Attribute Definition:

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

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 Name: CCAT

Attribute Definition:

Lab Sample results as tested for Channel catfish (*Ictalurus punctatus*)

Field Name: CHIN

Attribute Definition:

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

Field Name: CHUM

Attribute Definition:

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

Field Name: CMCP

Attribute Definition:

Lab Sample results as tested for Common Carp (*Cyprinus carpio*)

Field Name: COHO

Attribute Definition:

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

Field Name: COTF

Attribute Definition:

Lab Sample results as tested for Coastal Tailed Frog (*Ascaphus truei*)

Field Name: DOVN

Attribute Definition:

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

Field Name: DRES

Attribute Definition:

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

Field Name: GRIZ

Attribute Definition:

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

Field Name: GSUN

Attribute Definition:

Lab Sample results as tested for Green sunfish (*Lepomis cyanellus*)

Field Name: HADU

Attribute Definition:

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

Field Name: LAKT

Attribute Definition:

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

Field Name: LAMP

Attribute Definition:

Lab Sample results as tested for Lampetra spp. (*Lampetra*)

Field Name: LHCT

Attribute Definition:

Lab Sample results as tested for Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*)

Field Name: LISY

Attribute Definition:

Lab Sample results as tested for Wood Frog (*Lithobates [Rana] sylvaticus*)

Field Name: LOMW

Attribute Definition:

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

Field Name: MTSU

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

Attribute Definition:

Lab Sample results as tested for Mountain Sucker (*Catostomus jordani*)

Field Name: MYSS

Attribute Definition:

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

Field Name: NOLS

Attribute Definition:

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

Field Name: NOPI

Attribute Definition:

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

Field Name: NZMS

Attribute Definition:

Lab Sample results as tested for New Zealand Mud Snail (*Potamopyrgus antipodarum*)

Field Name: OMMW

Attribute Definition:

Lab Sample results as tested for Olympic mudminnow (*Novumbra hubbsi*)

Field Name: PALA

Attribute Definition:

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

Field Name: PYNA

Attribute Definition:

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

Field Name: RGCH

Attribute Definition:

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

Field Name: RHVA

Attribute Definition:

Lab Sample results as tested for Southern torrent salamander (*Rhyacotriton variegatus*)

Field Name: RMSC

Attribute Definition:

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

Field Name: RMTF

Attribute Definition:

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

Field Name: RNBT

Attribute Definition:

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

Field Name: RTCH

Attribute Definition:

Lab Sample results as tested for Roundtail chub (*Gila robusta*)

Field Name: RVOT

Attribute Definition:

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

Field Name: RGSU

Attribute Definition:

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

Field Name: SAGR

Attribute Definition:

Lab Sample results as tested for Sauger (*Sander canadensis*)

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 Name: SAPI

Attribute Definition:

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

Field Name: SCUL

Attribute Definition:

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 Name: SLMD

Attribute Definition:

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 Name: SLSC

Attribute Definition:

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

Field Name: SMBA

Attribute Definition:

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

Field Name: SNAP

Attribute Definition:

Lab Sample results as tested for Snapping turtle (*Chelydra serpentina*)

Field Name: SPKD

Attribute Definition:

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

Field Name: STGC

Attribute Definition:

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

Field Name: UMQC

Attribute Definition:

Lab Sample results as tested for Umpqua chub (*Oregonichthys kalawaseti*)

Field Name: WALL

Attribute Definition:

Lab Sample results as tested for Walleye (*Sander vitreus*)

Field Name: WEPS

Attribute Definition:

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

Field Name: WPTL

Attribute Definition:

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

Field Name: WRMS

Attribute Definition:

Lab Sample results as tested for Western ridged mussel (*Gonidea angulate*)

Field Name: WSCT

Attribute Definition:

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

Field Name: WSFT

Attribute Definition:

Lab Sample results as tested for Western Spadefoot Toad (*Spea hammondi*)

Field Name: YSCT

Attribute Definition:

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 Sampled ▶

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. This field is not in the ResultsOnly point feature class and only appears in the SampleGridAndResults point feature classes.

OVERVIEW DESCRIPTION ▶

ENTITY AND ATTRIBUTE DETAIL CITATION

See the website for more specifics: <https://www.fs.fed.us/rm/boise/AWAE/projects/eDNAAtlas/the-edna-atlas-results.html> and <https://www.fs.fed.us/rm/boise/AWAE/projects/eDNAAtlas/supporting-science.html>

Metadata Contacts ▶

METADATA CONTACT

INDIVIDUAL'S NAME Sharon (Parkes) Payne

ORGANIZATION'S NAME USDA Forest Service, Rocky Mountain Research Station, Boise Aquatic Sciences Lab

CONTACT'S ROLE custodian

CONTACT INFORMATION ▶

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