

NARS N/P Values for Lakes

(Also referred to in the Nitrogen and Phosphorus Pollution Data Access Tool (NPDAT) as “National Aquatic Resource Surveys (NARS) N/P Values for Lakes – National Lake Assessment”)

Metadata:

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Identification_Information:

Citation:

Citation_Information:

Originator: US Environmental Protection Agency

Publication_Date: 2003

Title:

NARS N/P Values for Lakes

Geospatial_Data_Presentation_Form: vector digital data

Other_Citation_Details:

Revision of Omernik 1987

Online_Linkage:

http://water.epa.gov/type/lakes/lakessurvey_index.cfm

Description:

Abstract:

The National Aquatic Resource Survey (NARS) findings for nutrients in streams and lakes highlight that nutrient pollution is widespread across the United States and impacts biological communities. The NARS analysis examined the range of values for nutrients in least-disturbed sites in a NLA region [NLA regions are modified Level III ecoregions from Omernik (1987)] and used this distribution for nitrogen and phosphorus to separate sites into those having high, medium, or low concentrations of nutrients. Sites identified as "high" were worse (i.e., had higher nutrient concentrations) than 95% of the sites used to define least-disturbed condition. Similarly, the 75th percentile of the least-disturbed distribution was used to distinguish between sites in medium and low condition. This means that sites reported as being "low" were as good as or better than 75% of the sites used to define least-disturbed condition. A relative risk analysis of the data from this

survey found that nationally streams and lakes have more than two times greater risk of having degraded biological communities when nutrient concentrations are high than when they are low.

For more information, please consult the National Lakes Assessment (NLA): Technical Appendix Report available online at: http://water.epa.gov/type/lakes/lakessurvey_index.cfm.

Purpose:

Resource managers may wish to use the NARS N/P values as one line of evidence to gauge the risk to biological integrity in their waters by comparing them to the ambient water quality data for streams and lakes. This evaluation may help prioritize areas for restoration and protection. However, the high values (95th percentile of least disturbed site) only provide information regarding a concentration above which the biological community is twice as more likely to be degraded. These values may not necessarily represent a protective concentration and do not provide information to help gauge the risk of nutrient pollution to the biological integrity of downstream waters. Where a state has adopted numeric nutrient criteria for a waterbody or class of waterbodies, those values would provide a more authoritative comparison value to prioritize areas for restoration and protection.

Supplemental_Information:

The Nitrogen and Phosphorus Pollution Data Access Tool (NPDAT) provides data for use in both spreadsheets and geospatial tools, such Geographic Information Systems (GIS). For this reason, the attribute and geospatial data are served as separate downloadable files. This single metadata document describes both the attribute and geospatial data provided for this data layer.

Level III ecoregions have been derived from Omernik (1987) and from refinements of Omernik's framework that have been made for other projects. These ongoing or recently completed projects, conducted in collaboration with the U.S. EPA regional offices and with state resource management agencies, involve refining ecoregions, defining subregions, and locating sets of reference sites. Designed to serve as a spatial framework for environmental resource management, ecoregions denote areas within which ecosystems (and the type, quality, and quantity of environmental resources) are generally similar. The most immediate needs are to develop regional biological criteria and water quality standards and to set management goals for nonpoint source pollution.

The approach used to compile Level III ecoregions is based on the premise that ecological regions can be identified through the analysis of the patterns and the composition of biotic and abiotic phenomena that affect or reflect differences in ecosystem quality and integrity (Wiken 1986; Omernik 1987, 1995). These phenomena include geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. The relative importance

of each characteristic varies from one ecological region to another regardless of the hierarchical level. Because of possible confusion with other meanings of terms for different levels of ecologic regions, a Roman numeral classification scheme has been adopted for this effort. Level I is the coarsest level, dividing North America into 15 ecological regions whereas at Level II the continent is subdivided into 52 classes. Level III is the hierarchical level shown on this map. For portions of the United States the ecoregions have been further subdivided to level IV. The applications of the ecoregions are explained in Gallant et al. (1989) and in reports and publications from the state and regional projects. For additional information, contact James M. Omernik, U.S. EPA National Health and Environmental Effects Laboratory (NHEERL), 200 SW 35th St., Corvallis, OR 97333 (phone: 541-754-4458).

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 20110608

Status:

Progress: 2003

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -124.762834

East_Bounding_Coordinate: -66.957107

North_Bounding_Coordinate: 49.371733

South_Bounding_Coordinate: 24.545216

Keywords:

Theme:

Theme_Keyword_Thesaurus: None

Theme_Keyword: Level III ecoregions

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: Ecoregions of Continental US

Stratum:

Stratum_Keyword_Thesaurus: None

Stratum_Keyword: None

Temporal:

Temporal_Keyword_Thesaurus: None

Temporal_Keyword: None

Access_Constraints: None

Use_Constraints:

For use at 1:250,000 or smaller scales

Security_Information:

Security_Classification_System: None

Security_Classification: Unclassified

Security_Handling_Description: None

Native_Data_Set_Environment:

Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 3; ESRI
ArcCatalog 9.3.1.4000

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Data_Quality_Information:

Logical_Consistency_Report:

Polygon and chain-node topology present.

Completeness_Report:

Features represented have not been tested for completeness

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

Data were collected using methods that have unknown accuracy (EPA National Geospatial Data Policy [NGDP] Accuracy Tier 10). For more information, please see EPA's NGDP at <http://epa.gov/geospatial/policies.html>

Lineage:

Process_Step:

Process_Description:

The ecoregion boundaries of Omernik (1987) were originally compiled at a scale of 1:3,168,000 using a variety of scale source maps, and the ecoregion map was published at a display scale of 1:7,500,000. All level IV ecoregion delineations and most all level III revisions are digitized from the U.S.G.S. 1:250,000 base maps. For this coverage, USECO (U.S. ECOregions), the revised level III

boundaries have been smoothed and generalized appropriately for
a 1:7,500,000 display scale.
Process_Date: 1987

Process_Step:

Process_Description:
Level III Ecoregions were dissolved into NLA Ecoregions.
Process_Date: 20110530

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Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 9

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: Label point
Point_and_Vector_Object_Count: 1213

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: GT-polygon composed of chains
Point_and_Vector_Object_Count: 1213

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: Point
Point_and_Vector_Object_Count: 1700

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: Label point
Point_and_Vector_Object_Count: 436

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Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Geographic:

Latitude_Resolution: 0.000000
Longitude_Resolution: 0.000000

Geographic_Coordinate_Units: Decimal degrees

Geodetic_Model:

Horizontal_Datum_Name: D_WGS_1984

Ellipsoid_Name: WGS_1984

Semi-major_Axis: 6378137.000000

Denominator_of_Flattening_Ratio: 298.257224

Vertical_Coordinate_System_Definition:

Altitude_System_Definition:

Altitude_Resolution: 1.000000

Altitude_Encoding_Method:

Explicit elevation coordinate included with horizontal coordinates

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Entity_and_Attribute_Information:

Detailed_Description:

Entity_Type:

Entity_Type_Label: NARS N/P Values for Lakes

Attribute:

Attribute_Label: FID

Attribute_Definition:

Internal feature number.

Attribute_Definition_Source:

ESRI

Attribute_Domain_Values:

Unrepresentable_Domain:

Sequential unique whole numbers that are automatically generated.

Attribute:

Attribute_Label: Shape

Attribute_Definition:

Feature geometry.

Attribute_Definition_Source:

ESRI

Attribute_Domain_Values:

Unrepresentable_Domain:

Coordinates defining the features.

Attribute:

Attribute_Label: nla_code

Attribute_Definition:

Abbreviation for modified ecoregion used in NLA.

Attribute:

Attribute_Label: nla_name

Attribute_Definition:

Long name for modified ecoregions used in NLA.

Attribute:

Attribute_Label: total_n_low_medium

Attribute_Definition:

This value shows the cutoff between total nitrogen (TN) levels in lakes that the National Aquatic Resource Surveys categorized as having low concentrations of total nitrogen in micrograms per liter (ug/l) from those with medium concentrations. The NARS approach examined the range of values for nutrients in all of the reference sites in a region and used the 75th percentile of the reference distribution for nitrogen to distinguish between sites with low and medium concentrations. This means that sites reported as having low values were as good as or better than 75% of the sites used to define least-disturbed reference condition.

Attribute:

Attribute_Label: total_n_medium_high

Attribute_Definition:

This value shows the cutoff between total nitrogen (TN) levels in lakes that the National Aquatic Resource Surveys categorized as having medium concentrations of total nitrogen in micrograms per liter (ug/l) from those with high concentrations. The NARS approach examined the range of values for nutrients in all of the reference sites in a region and used the 95th percentile of the reference distribution for nitrogen to separate sites with medium and high concentrations. Using the 95th percentile means that sites with high values were worse than 95% of the sites used to define least-disturbed reference condition.

Attribute:

Attribute_Label: total_p_low_medium

Attribute_Definition:

This value shows the cutoff between total phosphorus (TP) levels in lakes that the National Aquatic Resource Surveys categorized as having low concentrations of total phosphorus in micrograms per liter (ug/l) from those with medium concentrations. The NARS approach examined the range of values for nutrients in all of the reference sites in a region and used the 75th percentile of the

reference distribution for phosphorus to distinguish between sites with low and medium concentrations. This means that sites reported as having low values were as good as or better than 75% of the sites used to define least-disturbed reference condition.

Attribute:

Attribute_Label: total_p_medium_high

Attribute_Definition:

This value shows the cutoff between total phosphorus (TP) levels in lakes that the National Aquatic Resource Surveys categorized as having medium concentrations of total phosphorus in micrograms per liter (ug/l) from those with high concentrations. The NARS approach examined the range of values for nutrients in all of the reference sites in a region and used the 95th percentile of the reference distribution for phosphorus to separate sites with medium and high concentrations. Using the 95th percentile means that sites with high values were worse than 95% of the sites used to define least-disturbed reference condition.

Overview_Description:

Entity_and_Attribute_Overview:

Attributes: Polygon

Attributes: Polygon

Regions:

ECO Ecoregion name

1 Coast Range

2 Puget Lowland

3 Willamette Valley

4 Cascades

5 Sierra Nevada

6 Southern and Central California Chaparral and Oak Woodlands

7 Central California Valley

8 Southern California Mountains

9 Eastern Cascades Slopes and Foothills

10 Columbia Plateau

11 Blue Mountains

12 Snake River Plain

13 Central Basin and Range

14 Mojave Basin and Range

15 Northern Rockies

16 Idaho Batholith

17 Middle Rockies

18 Wyoming Basin

19 Wasatch and Uinta Mountains

20 Colorado Plateaus

21 Southern Rockies

- 22 Arizona/New Mexico Plateau
- 23 Arizona/New Mexico Mountains
- 24 Chihuahuan Deserts
- 25 High Plains
- 26 Southwestern Tablelands
- 27 Central Great Plains
- 28 Flint Hills
- 29 Cross Timbers
- 30 Edwards Plateau
- 31 Southern Texas Plains
- 32 Texas Blackland Prairies
- 33 East Central Texas Plains
- 34 Western Gulf Coastal Plain
- 35 South Central Plains
- 36 Ouachita Mountains
- 37 Arkansas Valley
- 38 Boston Mountains
- 39 Ozark Highlands
- 40 Central Irregular Plains
- 41 Canadian Rockies
- 42 Northwestern Glaciated Plains
- 43 Northwestern Great Plains
- 44 Nebraska Sand Hills
- 45 Piedmont
- 46 Northern Glaciated Plains
- 47 Western Corn Belt Plains
- 48 Lake Agassiz Plain
- 49 Northern Minnesota Wetlands
- 50 Northern Lakes and Forests
- 51 North Central Hardwood Forests
- 52 Driftless Area
- 53 Southeastern Wisconsin Till Plains
- 54 Central Corn Belt Plains
- 55 Eastern Corn Belt Plains
- 56 S. Michigan/N. Indiana Drift Plains
- 57 Huron/Erie Lake Plains
- 58 Northeastern Highlands
- 59 Northeastern Coastal Zone
- 60 Northern Appalachian Plateau and Uplands
- 61 Erie Drift Plains
- 62 North Central Appalachians
- 63 Middle Atlantic Coastal Plain
- 64 Northern Piedmont
- 65 Southeastern Plains
- 66 Blue Ridge
- 67 Ridge and Valley
- 68 Southwestern Appalachians
- 69 Central Appalachians
- 70 Western Allegheny Plateau
- 71 Interior Plateau
- 72 Interior River Valleys and Hills
- 73 Mississippi Alluvial Plain

- 74 Mississippi Valley Loess Plains
- 75 Southern Coastal Plain
- 76 Southern Florida Coastal Plain
- 77 North Cascades
- 78 Klamath Mountains
- 79 Madrean Archipelago
- 80 Northern Basin and Range
- 81 Sonoran Basin and Range
- 82 Laurentian Plains and Hills
- 83 Eastern Great Lakes and Hudson Lowlands
- 84 Atlantic Coastal Pine Barrens

Entity_and_Attribute_Detail_Citation:
Not Available

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Distribution_Information:

Resource_Description: Downloadable Data

Distribution_Liability:

Although these data have been processed successfully on a computer system at the U.S. Environmental Protection Agency, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. It is also strongly recommended that careful attention be paid to the contents of the metadata file associated with these data to evaluate data set limitations, restrictions or intended use. The U.S. Environmental Protection Agency shall not be held liable for improper or incorrect use of the data described and/or contained herein.

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Metadata_Reference_Information:

Metadata_Date: 20110630

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: US EPA Headquarters

Contact_Person: Sarah Lehmann

Address_Type: mailing address

Contact_Address:

1200 Pennsylvania Ave, NW (4503T)

City: Washington

State_or_Province: DC

Postal_Code: 20460

Contact_Voice_Telephone: 202-566-1173

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Time_Convention: local time

Metadata_Security_Information:

Metadata_Security_Classification_System: None

Metadata_Security_Classification: Unclassified

Metadata_Security_Handling_Description: None

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