

Record Number: 1

First Author: Sarma, K.S

Additional Authors: S.M.D. Rogers

Year: 2000

Title: Plant regeneration from seedling explants of Juncus effusus.

Journal/Book/Website: Aquatic botany

Citation Detail: 68: 239-247

Editors:

NCC Reviewer: Martin Christ

Review Date: 10-Mar-03

Medium: Paper

Summary: The authors found a successful method to clone soft rush

Utility to NCC- Y or N:  N

Utility to NCC -Comment: None

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

- Rivers and Streams:
- Lakes and Reservoirs:
- Wetlands:
- Nitrogen - Total:
- Nitrogen - Nitrate:
- Nitrogen - TKN:
- Nitrogen - Other:
- Phosphorus - Total:
- Phosphorus - PO4:
- Turbidity:
- Sediment:
- TSS:

- Loads:
- Concentration:
- Chlor-a:
- Periphyton - Community:
- Periphyton - Biomass:
- Macrophytes:
- Benthic Invertebrates:
- Fish:

Other Keywords:

- Land Use - Agriculture:
- Land Use - Urban:
- Land Use - Residential:
- Land Use - Forest:
- Land Use - Other:
- Point Source:
- Non Point Source:
- Downstream:

- Reference Condition:
- Impairment:
- Modelling:
- West Virginia:
- Appalachian Region:
- Out of Region:
- Chesapeake Bay:
- Ohio River:
- Watershed:
- HUC:
- Peer Reviewed:

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 2      First Author: Rogers, Dethier      Additional Authors: J. Beech, and K.S. Sarma

Year: 1998

Title: Shoot regeneration and plant acclimatization of the wetland monocot Cattail (*Typha latifolia*).

Journal/Book/Website: Plant Cell Reports

Citation Detail: 18:71-75

Editors:

NCC Reviewer: Martin Christ

Review Date: 10-Mar-03

Medium: paper

Summary: A tissue culture method for cattail

Utility to NCC- Y or N:  Y  N

Utility to NCC -Comment: None

Notes Paper provides no way to assess impairment in aquatic ecosystems, nor any way to link impairment to nutrient loads.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

- Rivers and Streams:
- Lakes and Reservoirs:
- Wetlands:
- Nitrogen - Total:
- Nitrogen - Nitrate:
- Nitrogen - TKN:
- Nitrogen - Other:
- Phosphorus - Total:
- Phosphorus - PO4:
- Turbidity:
- Sediment:
- TSS:

- Loads:
- Concentration:
- Chlor-a:
- Periphyton - Community:
- Periphyton - Biomass:
- Macrophytes:
- Benthic Invertebrates:
- Fish:

Other Keywords:

- Land Use - Agriculture:
- Land Use - Urban:
- Land Use - Residential:
- Land Use - Forest:
- Land Use - Other:
- Point Source:
- Non Point Source:
- Downstream:

- Reference Condition:
- Impairment:
- Modelling:
- West Virginia:
- Appalachian Region:
- Out of Region:
- Chesapeake Bay:
- Ohio River:
- Watershed:
- HUC:
- Peer Reviewed:

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 3

First Author: Sarma, K.S

Additional Authors: S.M.D. Rogers

Year: 1998

Title: Plant regeneration and multiplication of the emergent wetlands monocot *Juncus accuminatus*.

Journal/Book/Website: Plant Cell Reports

Citation Detail: 17:656-660

Editors:

NCC Reviewer: Martin Christ

Review Date: 10-Mar-03

Medium: paper

Summary: Another tissue culture system, this one for *Juncus accuminatus*

Utility to NCC- Y or N:  N

Utility to NCC -Comment: None

Notes This account of tissue culturing does not help us determine what aquatic communities might be impaired, nor how to link those impairments to nutrient loads.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/>	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords:		Watershed: <input type="checkbox"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="checkbox"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 4      First Author:      Additional Authors:

Year:

Title: Australian River Assessment System

Journal/Book/Website: <http://ausrivas.canberra.edu.au/>      Citation Detail:      Editors:

NCC Reviewer: Martin Christ      Review Date: 10-Mar-03      Medium: internet

Summary: Australian program to study and eliminate stresses to rivers.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: May serve as model for a WV Program. Raises idea that a predictive model about what WV aquatic communities would look like in the absence of stress is crucial.

Notes The website introduces the AUSRIVAS program (Australian River Assessment System) . It has four goals: build information base; assess health of inland waters; consolidate and apply remediation techniques; develop expertise and awareness in communities and industry. There are assessment programs listed for benthic macro invertebrates, diatoms, fish, macrophytes, riparian vegetation, physical chemical. Each section begins with a random pretty picture, which changes each new time you hit the page (lots of pretty invertebrates). Benthics: crucial is having a model of what would be there in absences of stress. Diatoms: not much info but some links. Fish: not much info but some links. macrophytes: not much info but some links. riparian vegetation:

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/>	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/> Y
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/> Y
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/> Y
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords:		Watershed:
Turbidity: <input type="checkbox"/>			HUC:
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 5      First Author: Rogers, S.M.D.      Additional Authors: J.Beech, and K.S. Sarma

Year: 2001

Title: Tissue Culture and Transient Gene Expression Studies in Freshwater Wetland Monocots.

Journal/Book/Website: Biotechnology in Agriculture and Forstry      Citation Detail: Vol. 48. Transgenic Crops III      Editors: ed. Y.P.S. Bajaj). Springer Verlag, Berlin

NCC Reviewer: Martin Christ      Review Date: 10-Mar-03      Medium: paper

Summary: Review of wetland species that may be candidates for genetic transformation and use in phytoremediation (removing toxics, especially metals, from soils with plants). review of culture and gene transformation methods. Also, results were reported on tissue culture of various plants, and on the success of inserting marker genes ( $\beta$ -glucuronidase activity—not an actual metal cleaning up gene)

Utility to NCC- Y or N:  N

Utility to NCC -Comment: none

Notes Paper provides no way to assess impairment in aquatic ecosystems, nor any way to link impairment to nutrient loads.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

- Rivers and Streams:
- Lakes and Reservoirs:
- Wetlands:
- Nitrogen - Total:
- Nitrogen - Nitrate:
- Nitrogen - TKN:
- Nitrogen - Other:
- Phosphorus - Total:
- Phosphorus - PO4:
- Turbidity:
- Sediment:
- TSS:

- Loads:
- Concentration:
- Chlor-a:
- Periphyton - Community:
- Periphyton - Biomass:
- Macrophytes:
- Benthic Invertebrates:
- Fish:

- Land Use - Agriculture:
- Land Use - Urban:
- Land Use - Residential:
- Land Use - Forest:
- Land Use - Other:
- Point Source:
- Non Point Source:
- Downstream:

- Reference Condition:
- Impairment:
- Modelling:
- West Virginia:
- Appalachian Region:
- Out of Region:
- Chesapeake Bay:
- Ohio River:
- Watershed:
- HUC:
- Peer Reviewed:

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 6      First Author: Rentch, J.S      Additional Authors: R.R. Hicks, Jr.

Year: 2001

Title: Nutrient fluxes for two small forested watersheds: sixteen-year results from the West Virginia University forest.

Journal/Book/Website: West Virginia Agricultural and Forestry Experiment Station.      Citation Detail: Bulletin 724      Editors:

NCC Reviewer: Martin Christ      Review Date: 11-Mar-03      Medium: Paper

Summary: The study compares nutrient fluxes in two forested watersheds. It ascribes differences between the watersheds primarily to aspect of the watersheds. It is mainly a data summary, with little discussion of causes.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: The document gives some concentrations of nitrate and phosphate in stream water. NO3-N values appear reasonable (0.18 & 0.14 mg/L). This value for PO4-P (0.16 mg/L) is very high. It corresponds to 160 µg/L P. The proposed EPA criterion for rivers and streams in Aggregate Ecoregion 11 was 10 µg/L P. I am very suspicious of this number, and am checking with the authors to see if they really used the correct units. (Gillies note: visited site with Martin and Evan on 3/15/03, during snowmelt, collected water samples, found PO4-P concentrations <0.02 mg/L and no algal growth. Discrepancy remains a mystery.)

Notes One committee member mentioned a study where cutting a forest caused a smaller amount of phoshate to come out. This paper notes that the average PO4 concentration after a partial harvest was lower than the average concentration before harvest. The paper itself, however, notes that there was a decline in PO4 concentrations in the water draining from the watershed where no cutting took place, and therefore, the change cannot be ascribed to cutting. In addition, because streamflow for the latter part of the study was estimated by regression, rather than by measurement, changes in flow due to the cutting of trees was not taken into account. Any increase in streamflow would increase the load, so that the absolute amount of PO4 from the watershed would have declined less than the concentration would have.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input checked="" type="checkbox"/> N	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input checked="" type="checkbox"/> Y	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input checked="" type="checkbox"/> Y	West Virginia: <input checked="" type="checkbox"/> Y
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords:		Watershed: <input type="checkbox"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="checkbox"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 7      First Author: Aizaki, Morihiro      Additional Authors: K. Sakamoto

Year: 1998

Title: Relationship between water quality and periphyton biomass in several streams in Japan.

Journal/Book/Website: Applied Limnology      Citation Detail: 23: 1511-1517      Editors:

NCC Reviewer: Gillies      Review Date: 12-May-03      Medium: paper

Summary: Study finds positive correlations between chlor-a concentration in periphyton and nutrients in summer type periphyton, not winter type.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: relationship between nutrients and periphyton biomass, and seasonality of effect.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input checked="" type="checkbox"/> Y	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input checked="" type="checkbox"/> Y	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input checked="" type="checkbox"/> Y	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input checked="" type="checkbox"/> Y	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords: <input type="text" value="low concentration, seasonality"/>		Watershed: <input type="text"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="text" value="0"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input checked="" type="checkbox"/> Y
TSS: <input checked="" type="checkbox"/> Y			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 8 First Author: Alexander, Richard B. Additional Authors: Smith, Richard A., Schwarz, Gregory E.

Year: 2000

Title: Effects of stream channel size on the delivery of nitrogen to the Gulf of Mexico

Journal/Book/Website: Nature

Citation Detail: 403(17):758-761

Editors:

NCC Reviewer: Gillies

Review Date: 12-May-03

Medium: paper

Summary: This study by USGS team models nitrogen transport to the Gulf of Mexico using a mass-balance model known as SPARROW (Spatially Referenced Regression On Watershed attributes). The field-validated model suggests that proximity of nitrogen sources to large, deep rivers is an important determinant of downstream nitrogen transport

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: this is one of the more important recent papers dealing with the issue of nitrogen transport. Does not consider seasonality issues or high flow issues.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  Y  
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:  Y  
 Nitrogen - Nitrate:   
 Nitrogen - TKN:   
 Nitrogen - Other:   
 Phosphorus - Total:   
 Phosphorus - PO4:   
 Turbidity:   
 Sediment:   
 TSS:

Loads:  Y  
 Concentration:   
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:   
 Benthic Invertebrates:   
 Fish:

Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:   
 Point Source:   
 Non Point Source:   
 Downstream:  Y

Other Keywords:

Reference Condition:   
 Impairment:   
 Modelling:  Y  
 West Virginia:   
 Appalachian Region:   
 Out of Region:  Y  
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC:  
 Peer Reviewed:  Y

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Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 9      First Author: Biggs, B. J. F.      Additional Authors:

Year: 2000

Title: Eutrophication of streams and rivers: dissolved nutrient-chlorophyll relationships for benthic algae.

Journal/Book/Website: J. N. Am. Benthol. Soc      Citation Detail: 19(1): 17-31.      Editors:

NCC Reviewer: Gillies      Review Date: 12-May-03      Medium: paper

Summary: relationships between periphyton community and biomass and nutrients in a wide variety of streams. No effect on community was observed, and the author noted that this conflicted with previous studies by him and others. Predictive relationships between nutrients and algal biomass were observed. Paper provides analytical summary of published studies containing regression of algal biomass on nutrients.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: This paper specifically addresses developing nutrient criteria using models that consider hydrological regimes and regions. A Iso sopecifically states that "it may not be possible to attained dissolved nutrient levels low enough to prevent benthic algae from exceeding specific target values." However, author notes that reducing nutrient inputs can reduce the frequency of algal proliferations.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input checked="" type="checkbox"/> Y
Wetlands: <input type="checkbox"/>	Chlor-a: <input checked="" type="checkbox"/> Y	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input checked="" type="checkbox"/> Y	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input checked="" type="checkbox"/> Y	Land Use - Other: <input checked="" type="checkbox"/> Y	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input checked="" type="checkbox"/> Y	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords: <input type="text" value="New Zealand, eutrophication"/>	Watershed: <input type="text"/>	HUC: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input checked="" type="checkbox"/> Y	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 10      First Author: Brunet, R-C.      Additional Authors: K.B. Astin

Year: 1997

Title: Variation in phosphorus flux during a hydrological season: the river Adour

Journal/Book/Website: Wat. Rea      Citation Detail: vol. 32 No.3      Editors:

NCC Reviewer: Gillies      Review Date: 12-May-03      Medium: paper

Summary: 98.6% pf particulate P transported during two flood events. Seasonality of dissolved P - mobilization occurs autumn/winter, retention spring/summer.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: difficulty in measuring P, seasonality of P

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/>	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input checked="" type="checkbox"/> Y	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords: <input type="text" value="transport, France"/>	Watershed:	
Turbidity: <input type="checkbox"/>		HUC:	0
Sediment: <input type="checkbox"/>		Peer Reviewed: <input checked="" type="checkbox"/> Y	
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 11 First Author: Burns, Douglas A. Additional Authors: P.S. Murdoch, G.B. Lawrence.

Year: 1998

Title: Effect of groundwater springs on NO3 concentrations during summer in Catskill Mountain streams

Journal/Book/Website: Water Res. Res.

Citation Detail: 34(8):1987-1996

Editors:

NCC Reviewer: Gillies

Review Date: 12-May-03

Medium: paper

Summary: deals with the issue of atmospheric N deposition, N saturation in forested catchments and transport of this N through shallow and deep groundwater pathways. Discusses residence time, removal of N by wetlands.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: atmospheric deposition of N is a real issue that can't be dealt with by regulating local land use and human activities. This paper provides thoughts on how to measure N saturation in forest soils.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  Y  
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:   
 Nitrogen - Nitrate:  Y  
 Nitrogen - TKN:   
 Nitrogen - Other:   
 Phosphorus - Total:   
 Phosphorus - PO4:   
 Turbidity:   
 Sediment:   
 TSS:

Loads:   
 Concentration:  Y  
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:   
 Benthic Invertebrates:   
 Fish:   
 Other Keywords:

Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:   
 Point Source:   
 Non Point Source:   
 Downstream:

Reference Condition:   
 Impairment:   
 Modelling:   
 West Virginia:   
 Appalachian Region:   
 Out of Region:  Y  
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC:  
 Peer Reviewed:  Y

0

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 12 First Author: Carpenter, Stephen. Additional Authors: Sharpley, A.N. et al

Year: 1998

Title: Nonpoint pollution of surface waters with phosphorus and nitrogen.

Journal/Book/Website: Issues in Ecology No. 3., also in Ecological Applications Citation Detail: E.A. 8(3):559-568 Editors:

NCC Reviewer: Gillies Review Date: 12-May-03 Medium: paper

Summary: This is actually two papers of the same name, one written for a non-scientific audience, one in a journal. As the title states, this is about NPS P & N. Based on review of literature finds that eutrophication is a widespread problem in rivers, lakes, estuaries and coastal areas, with NPS P and N coming primarily from agriculture and urban areas. Nutrient flows directly related to animal stocking densities. P surpluses occur where excess manure is produced. Suggests that nutrient flux can be controlled through use of technology, land use changes and conservation measures. Notes that even after reduction of inputs that rates of recovery are quite variable and eutrophic conditions can be persistent.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: excellent review of the problem we are dealing with by some of the pre-imminent folks in the field. Good overview of nutrient sources.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input checked="" type="checkbox"/> Y	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input checked="" type="checkbox"/> Y	Concentration: <input type="checkbox"/>	Land Use - Urban: <input checked="" type="checkbox"/> Y	Impairment: <input checked="" type="checkbox"/> Y
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input checked="" type="checkbox"/> Y	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="source"/>		Watershed: <input type="text"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="text" value="0"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input checked="" type="checkbox"/> Y
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 13      First Author: Creed, I. F.      Additional Authors: L.E. Band

Year: 1998

Title: Export of nitrogen from catchments within a temperate forest: Evidence for a unifying mechanism regulated by variable source area dynamics

Journal/Book/Website: Water Research vol 34 no.11      Citation Detail: vol 34 no.11      Editors:

NCC Reviewer: Gillies      Review Date: 12-May-03      Medium: paper

Summary: proposes that export of nitrogen from catchments relates to flushing time, with short flushing time basins exporting less N than long flushing catchments.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: influence of topographic complexity on nutrient transport.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input checked="" type="checkbox"/> Y	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input checked="" type="checkbox"/> Y	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input checked="" type="checkbox"/> Y	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="transport, Canada"/>		Watershed: <input type="text"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="text" value="0"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input checked="" type="checkbox"/> Y
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 14      First Author: Delong, M.D.      Additional Authors: M.A. Brusven

Year: 1992

Title: Patterns of Periphyton Chlorophyll a in an agricultural nonpoint source impacted stream.

Journal/Book/Website: Water Resources Bulletin: American Water Resources Association      Citation Detail: 28: 731-737.      Editors:

NCC Reviewer: Gillies      Review Date: 12-May-03      Medium: paper

Summary: The authors suggested that agricultural alteration of the watershed - both physical changes and nutrient inputs - "profoundly influenced longitudinal patterns of periphyton chlorophyll a," while also noting that this was not a cause and effect study. Suggests that stream was autotrophic throughout its length. Nutrient levels in the study stream were uniformly high, and higher than those reported in many western streams. This paper also discusses seasonal patterns of periphyton growth and nutrient release.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: patterns of periphyton growth in a nutrient enriched stream. Also indications of impairment that "strongly influence ecosystem processes and community structure."

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input checked="" type="checkbox"/> Y	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input checked="" type="checkbox"/> Y	Land Use - Urban: <input type="checkbox"/>	Impairment: <input checked="" type="checkbox"/> Y
Wetlands: <input type="checkbox"/>	Chlor-a: <input checked="" type="checkbox"/> Y	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input checked="" type="checkbox"/> Y	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input checked="" type="checkbox"/> Y	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input checked="" type="checkbox"/> Y	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords: <input type="text" value="Idaho"/>		Watershed: <input type="text"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="text" value="0"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input checked="" type="checkbox"/> Y
TSS: <input checked="" type="checkbox"/> Y			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 15      First Author: Holloway, J.M.      Additional Authors: Dahlgren, R.A., Hansen, B., Casey, W. H.

Year: 1998

Title: Contribution of bedrock nitrogen to high nitrate concentrations in stream water

Journal/Book/Website: Nature

Citation Detail: vol 395

Editors:

NCC Reviewer: Gillies

Review Date: 20-Oct-03

Medium: paper

Summary: Bedrock containing substantial concentrations of fixed nitrogen contribute "surprisingly large amount of nitrate to surface waters in certain California watersheds." Noted that regularly elevated nitrogen concentrations in certain streams (0.18-0.99 mg/L NO<sub>3</sub>-N median) were in regions with specific geological characteristics. Presents analysis of total nitrogen concentration in a variety of metasedimentary and metavolcanic bedrock. Highest TN levels in phyllite, slate, and biotite schist. In summary the authors note that since 75% of the exposed earth's rock is sedimentary and these rocks contain about 20% of the earth's nitrogen inventory, geological nitrogen may be a large and unappreciated source of nitrogen to surface waters.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: potential for background source of nitrogen in the rocks should be assessed.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input checked="" type="checkbox"/> Y	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO <sub>4</sub> : <input type="checkbox"/>	Other Keywords: <input type="text" value="geology"/>	Watershed: <input type="text"/>	HUC: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input checked="" type="checkbox"/> y	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 16      First Author: House, William A.      Additional Authors: Denison, Frank H.

Year: 1998

Title: Phosphorus dynamics in a lowland river

Journal/Book/Website: Wat. Res. Vol.32 No.6

Citation Detail: Vol.32 No.6

Editors:

NCC Reviewer: Gillies

Review Date: 21-Oct-03

Medium: paper

Summary: study of in-stream processes related to SRP in a lowland hard-water river with a major point-source input. P accumulated in surface sediments in spring and summer, and decreased in autumn and winter. Compare modeled processes to measured processes. The role of bed sediments in uptake of SRP may be estimated by comparing experimental conditions to observations of SRP profiles in-situ. Systematic change in P content not observed below point source as expected, but did note lower levels above point source.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: transport issues, nutrient cycling, protocols for measuring P in sediment.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  Y  
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:   
 Nitrogen - Nitrate:   
 Nitrogen - TKN:   
 Nitrogen - Other:   
 Phosphorus - Total:   
 Phosphorus - PO4:  Y  
 Turbidity:   
 Sediment:   
 TSS:

Loads:   
 Concentration:   
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:   
 Benthic Invertebrates:   
 Fish:   
 Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:   
 Point Source:  Y  
 Non Point Source:   
 Downstream:  Y

Other Keywords:

Reference Condition:   
 Impairment:   
 Modelling:  Y  
 West Virginia:   
 Appalachian Region:   
 Out of Region:  Y  
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC:  
 Peer Reviewed:  Y

0

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 17      First Author: Kjeldsen, K.      Additional Authors: et al

Year: 1998

Title: Benthic biomass in an unshaded first-order lowland stream: distribution and regulation.

Journal/Book/Website: Hydrobiologica

Citation Detail: 377:107-122

Editors:

NCC Reviewer: Gillies

Review Date: 21-Oct-03

Medium: paper

Summary: Looks at vertical distribution of algal biomass in bed sediment, seasonal development of benthic algae, differences between stony and fine grained sediment. Conducted field experiments in role of irradiation and P in regulating biomass. Found algal biomass to be high at sediment depth of 10 centimeters. Algal biomass development on stones was controlled by invertebrate grazing. No significant response of algal biomass to P enrichment in experimental settings was observed, probably due to grazing pressure. Response was noted in fine grained sediments - and heavy shading did NOT significantly affect algal biomass development.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: algal biomass issues, related to vertical location in bed sediment, substrate type and P enrichment. Habitat issues related to shading effects on biomass development and concept of irradiance being one of many possible the limiting factors.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input checked="" type="checkbox"/> Y	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input checked="" type="checkbox"/> Y	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="substrate"/>		Watershed: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="text" value=""/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input checked="" type="checkbox"/> Y
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 18      First Author: Lemly, Dennis L.      Additional Authors:

Year: 1997

Title: Bacterial growth on stream insects; potential for use in bioassessment

Journal/Book/Website: J.N. Am. Benthol. soc. 17(2)228-238      Citation Detail: 17(2)228-238      Editors:

NCC Reviewer: Gillies      Review Date: 21-Oct-03      Medium: paper

Summary: Author approached the nutrient assessment problem from a novel angle - using the growth of microflora and microfauna on benthic invertebrates. Elevated dissolved nutrient levels (0.13-0.35 mg/L PO4; 1.29-2.13 mg/L NO3) were associated with growth of filamentous bacteria which colonized gills and bodies on insects. Some indications of mortality caused by infestations - 100% mortality of heavily infested mayflies in 30d was observed in lab studies.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: alternative approach to nutrient assessment. Also indications of mortality due to bacterial growth fostered by elevated nutrients relates to impairment issues.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input checked="" type="checkbox"/> Y
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input checked="" type="checkbox"/> Y
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input checked="" type="checkbox"/> Y	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords: <input type="text" value="bacterial growth"/>		Watershed: <input type="text"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="text" value="0"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input checked="" type="checkbox"/> Y
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 19 First Author: McCormick, Paul V. Additional Authors: R. Jan Stevenson

Year: 1989

Title: Effects of snail grazing on benthic algal community structure in different nutrient environments.

Journal/Book/Website: J. N. Am. Benthol. Soc. 8 (2): 162-172. Citation Detail: 8 (2): 162-172. Editors:

NCC Reviewer: Gillies Review Date: 20-Oct-03 Medium: paper

Summary: Algal standing crop decreased with increased grazing pressure in control and nitrogen enriched environments, and increased at low grazing pressure in P enriched environments in an ephemeral stream. Diversity peaked at intermediate grazer densities in control and N enriched environments, no significant change in P enriched environments

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: patterns of periphyton response to nutrients and grazing.

Notes author now working at USGS-BRD facility in Leetown and may prove to be an important resource for the NCC.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input checked="" type="checkbox"/> Y	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input checked="" type="checkbox"/> Y	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords: <input type="text" value="snail grazing, periphyton response, controlled experiment"/>	Watershed: <input type="text"/>	HUC: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input checked="" type="checkbox"/> Y	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 20 First Author: Miltner, R.J. Additional Authors: Rankin, E.T.

Year: 1998

Title: Primary nutrients and the biotic integrity of rivers and streams.

Journal/Book/Website: Freshwater Biology 40:145-158 Citation Detail: 40:145-158 Editors:

NCC Reviewer: Gillies Review Date: 20-Oct-03 Medium: paper

Summary: Study collected substantial data at 1657 sites on headwater streams, wadeable streams, small rivers and large rivers. WQ data collected 3-6 times at each site. Noted negative correlation between primary nutrients, especially P, and biotic integrity, most evident on small order streams and detectable when nutrient concentrations exceeded background conditions (>0.61 mg/L TIN, and >0.06 mg/L P). Fish more sensitive than benthic inverts. Habitat explained 20-30% of variation in fish and invert indices, much more than nutrients (for example, TP explained 2-16% of variation in various indices).

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: nutrients relationship to biotic integrity of fish and invertebrates. Their summary stated that biotic integrity is negatively correlated with increasing nutrients, particularly in small streams. Specifically, IBI scores were lowered by five points when nutrient concentrations exceeded 75th percentile (3.61 mg/L TIN, 0.31 mg/L P).

Notes MDLs for parameters rather high: for example, nitrate-N 0.1, P 0.05 mg/L. Nitrogen reported as TIN. Values below MDL for ammonia and P were randomly assigned to discrete distribution from 0.04 to 0.005 mg/L over five intervals. This raised a big red flag for me. However, the 25th percentile for P ranged from 0.06 to 0.14 mg/L (headwater streams, to large rivers, respectively) so the impact of this statistical manipulation may not be important.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input checked="" type="checkbox"/> Y
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input checked="" type="checkbox"/> Y
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input checked="" type="checkbox"/> Y
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input checked="" type="checkbox"/> Y	Non Point Source: <input checked="" type="checkbox"/> Y	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input checked="" type="checkbox"/> Y	Downstream: <input type="checkbox"/>	Ohio River: <input checked="" type="checkbox"/> Y
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="biotic integrity, headwater stream, limiting nutrient"/>	Watershed: <input type="text"/>	HUC: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input checked="" type="checkbox"/> Y	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 21      First Author: Peterson, Bruce J.      Additional Authors: Wollheim, Wilfred M., Mulholland, Patrick J. et al

Year: 2001

Title: Control of nitrogen export from watersheds by headwater streams

Journal/Book/Website: Science 292(5514): 86-90      Citation Detail: 292(5514): 86-90      Editors:

NCC Reviewer: Gillies      Review Date: 20-Oct-03      Medium: paper

Summary: Tracks the fate of nitrogen species in headwater streams. Important points: most rapid uptake of inorganic nitrogen occurs in the smallest streams; ammonium removed in a few 10s to 100s of meters; nitrate also removed but travels 5-10 times further; nitrification rates high - indicating small streams may be important source of atmospheric nitrous oxide; during seasons of high biological activity, headwater streams may export less than half of dissolved inorganic oxygen input.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: nutrient cycling, biological sinks, nitrogen transport

Notes This is one of the most important papers in recent years on the issue of nitrogen export, represents a very broadly based effort to assess the transport question by researchers throughout the US.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  Y  
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:   
 Nitrogen - Nitrate:  Y  
 Nitrogen - TKN:  Y  
 Nitrogen - Other:   
 Phosphorus - Total:   
 Phosphorus - PO4:   
 Turbidity:   
 Sediment:   
 TSS:

Loads:   
 Concentration:  Y  
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:   
 Benthic Invertebrates:   
 Fish:   
 Other Keywords:

Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:   
 Point Source:   
 Non Point Source:   
 Downstream:  Y

Reference Condition:   
 Impairment:   
 Modelling:   
 West Virginia:   
 Appalachian Region:  Y  
 Out of Region:  Y  
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC: 0  
 Peer Reviewed:  Y

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 22

First Author: Pan, Y.

Additional Authors: R. J. Stevenson, B. H. Hill, A. T. Herlihy, and G. B. Collins

Year: 1996

Title: Using diatoms as indicators of ecological conditions in lotic systems: A regional assessment

Journal/Book/Website: J. N. Am. Benthol. Soc. 15:481-495

Citation Detail: 15:481-495

Editors:

NCC Reviewer: Gillies

Review Date:

Medium: paper

Summary:

Utility to NCC- Y or N:  Y

Utility to NCC -Comment:

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

- Rivers and Streams:
- Lakes and Reservoirs:
- Wetlands:
- Nitrogen - Total:
- Nitrogen - Nitrate:
- Nitrogen - TKN:
- Nitrogen - Other:
- Phosphorus - Total:
- Phosphorus - PO4:
- Turbidity:
- Sediment:
- TSS:

- Loads:
- Concentration:
- Chlor-a:
- Periphyton - Community:
- Periphyton - Biomass:
- Macrophytes:
- Benthic Invertebrates:
- Fish:

Other Keywords:

- Land Use - Agriculture:
- Land Use - Urban:
- Land Use - Residential:
- Land Use - Forest:
- Land Use - Other:
- Point Source:
- Non Point Source:
- Downstream:

- Reference Condition:
- Impairment:
- Modelling:
- West Virginia:
- Appalachian Region:
- Out of Region:
- Chesapeake Bay:
- Ohio River:
- Watershed:
- HUC:
- Peer Reviewed:

0

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 23 First Author: Pan, Y, R

Additional Authors: J.Stevenson, B.H. Hill, P.R. Kaufmann and A.T. Herlihy

Year: 1999

Title: Spatial patterns and ecological determinants of benthic algal assemblages in Mid-Atlantic streams, USA.

Journal/Book/Website: J. Phycol.

Citation Detail: 35:460-468.

Editors:

NCC Reviewer: Gillies

Review Date:

Medium: paper

Summary:

Utility to NCC- Y or N:  Y

Utility to NCC -Comment:

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

- Rivers and Streams:
- Lakes and Reservoirs:
- Wetlands:
- Nitrogen - Total:
- Nitrogen - Nitrate:
- Nitrogen - TKN:
- Nitrogen - Other:
- Phosphorus - Total:
- Phosphorus - PO4:
- Turbidity:
- Sediment:
- TSS:

- Loads:
- Concentration:
- Chlor-a:
- Periphyton - Community:
- Periphyton - Biomass:
- Macrophytes:
- Benthic Invertebrates:
- Fish:

Other Keywords:

- Land Use - Agriculture:
- Land Use - Urban:
- Land Use - Residential:
- Land Use - Forest:
- Land Use - Other:
- Point Source:
- Non Point Source:
- Downstream:

- Reference Condition:
- Impairment:
- Modelling:
- West Virginia:
- Appalachian Region:
- Out of Region:
- Chesapeake Bay:
- Ohio River:
- Watershed:
- HUC:
- Peer Reviewed:

0

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 24      First Author: Pan, Y      Additional Authors: R. J. Stevenson, B. H. Hill, and A. T. Herlihy

Year: 2000

Title: Ecoregions and benthic diatom assemblages in the Mid-Atlantic Highland streams, USA. J. N. Am. Benthol. Soc., 19(3):518-540.

Journal/Book/Website: J. N. Am. Benthol. Soc.

Citation Detail: 19(3):518-540.

Editors:

NCC Reviewer: Gillies

Review Date: 21-Oct-03

Medium: electronic

Summary: Assessed ecoregional differences in diatom communities. 196 randomly selected sites and 60 reference sites in seven Mid-Atlantic ecoregions. While water chemistry was distinctly different among ecoregions, ecoregional differences in diatom assemblages were only different at the random sites - not the reference sites. Diatom assemblages grouped by topography were different. Data suggests response to land use- particularly agricultural activitis, which can confound ecoregional analysis because land-use differs among ecoregions (mountain ve valley types).

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: Indicates stability of diatom assemblages in a variety of ecoregion settings at reference sites, further enhancing the possibility that periphyton can be used as a general tool to assess nutrient status, not one that has to be fined tuned for every ecoregion setting. Also has discussion of selection of refence sites by using water chemistry (TP > 0.0025 mg/L, Tn > 0.070 mg/L).

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:	<input checked="" type="checkbox"/> Y	Loads:	<input type="checkbox"/>	Land Use - Agriculture:	<input checked="" type="checkbox"/> Y	Reference Condition:	<input checked="" type="checkbox"/> Y
Lakes and Reservoirs:	<input type="checkbox"/>	Concentration:	<input type="checkbox"/>	Land Use - Urban:	<input type="checkbox"/>	Impairment:	<input type="checkbox"/>
Wetlands:	<input type="checkbox"/>	Chlor-a:	<input type="checkbox"/>	Land Use - Residential:	<input type="checkbox"/>	Modelling:	<input type="checkbox"/>
Nitrogen - Total:	<input checked="" type="checkbox"/> Y	Periphyton - Community:	<input checked="" type="checkbox"/> Y	Land Use - Forest:	<input checked="" type="checkbox"/> Y	West Virginia:	<input type="checkbox"/>
Nitrogen - Nitrate:	<input checked="" type="checkbox"/> Y	Periphyton - Biomass:	<input checked="" type="checkbox"/> Y	Land Use - Other:	<input type="checkbox"/>	Appalachian Region:	<input checked="" type="checkbox"/> Y
Nitrogen - TKN:	<input type="checkbox"/>	Macrophytes:	<input type="checkbox"/>	Point Source:	<input type="checkbox"/>	Out of Region:	<input type="checkbox"/>
Nitrogen - Other:	<input checked="" type="checkbox"/> Y	Benthic Invertebrates:	<input type="checkbox"/>	Non Point Source:	<input type="checkbox"/>	Chesapeake Bay:	<input type="checkbox"/>
Phosphorus - Total:	<input checked="" type="checkbox"/> Y	Fish:	<input type="checkbox"/>	Downstream:	<input type="checkbox"/>	Ohio River:	<input type="checkbox"/>
Phosphorus - PO4:	<input type="checkbox"/>	Other Keywords:				Watershed:	
Turbidity:	<input checked="" type="checkbox"/> Y					HUC:	0
Sediment:	<input type="checkbox"/>					Peer Reviewed:	<input checked="" type="checkbox"/> Y
TSS:	<input checked="" type="checkbox"/> Y						

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 25      First Author: Hill, B. H      Additional Authors: A. T. Herlihy, P. R. Kaufmann, R. J. Stevenson, F. H. McCormick, and C. B. Johnson

Year: 2000

Title: The use of periphyton assemblage data as an index of biotic integrity.

Journal/Book/Website: J. N. Amer. Benthol. Soc.      Citation Detail: 19:50-67.      Editors:

NCC Reviewer: Gillies      Review Date: 21-Oct-03      Medium: paper/electronic

Summary: Periphyton assemblage data collected from 233 stream site visits to develop a periphyton index of biotic integrity (PIBI). This was one of the first attempts to build a composite metric to rival those used from benthic invertebrates and fish. Overall, the resulting PIBI and its component metrics were correlated with 27 chemical (including nutrients), 12 physical habitat and 3 landscape variables. Canonical correlation found PIBI metrics correlated with 4 significant environmental variables: stream acidity, stream substrate, stream and riparian habitat. See utility to NCC section for more.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: Highlights problems of correlating stream biology to one-time water quality sampling, authors noted that this may have caused in poor correlation between PIBI responses and environmental variables.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  Y  
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:  Y  
 Nitrogen - Nitrate:   
 Nitrogen - TKN:   
 Nitrogen - Other:   
 Phosphorus - Total:  Y  
 Phosphorus - PO4:   
 Turbidity:   
 Sediment:   
 TSS:  Y

Loads:   
 Concentration:  Y  
 Chlor-a:  Y  
 Periphyton - Community:  Y  
 Periphyton - Biomass:  Y  
 Macrophytes:   
 Benthic Invertebrates:   
 Fish:   
 Other Keywords:

Land Use - Agriculture:  Y  
 Land Use - Urban:  Y  
 Land Use - Residential:  Y  
 Land Use - Forest:  Y  
 Land Use - Other:   
 Point Source:   
 Non Point Source:   
 Downstream:

Reference Condition:   
 Impairment:   
 Modelling:   
 West Virginia:   
 Appalachian Region:  Y  
 Out of Region:   
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC:   
 Peer Reviewed:  Y

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 26      First Author: Hill, B.H      Additional Authors: R.J. Stevenson, Y. Pan, A.T. Herlihy, P.R. Kaufmann, and C.B. Johnson

Year: 2001

Title: Comparison of correlations between environmental characteristics and stream diatom assemblages characterized at genus and species levels. 20(2):299-310.

Journal/Book/Website: J. N. Amer. Benthol. Soc.,      Citation Detail: 20(2):299-310.      Editors:

NCC Reviewer: Gillies      Review Date: 21-Oct-03      Medium: paper/electronic

Summary: Data from 199 streams during 233 site visits. Variables: 19 stream chemistry, 13 stream habitat, 15 land-use. Strong correlations between TP and %pollution-tolerant and % dominance at both genus and species level. Correlations between TN and taxa richness and % eutraphenic strongest at species level. Conclusions. Richness attributes not predictably related to gradients of human disturbance. Diatom assemblage based on either genus or species tolerances are reliably related to gradients of human disturbance. Genus level diatom assemblages for certain environmental gradients are predictable and relatively precise compared to species level attributes, and those gradients are related to evolved genus-level characteristics (motility and pH tolerance).

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: confirms correlations between diatoms and nutrient concentrations. Suggestions for level of identification necessary for best results.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input checked="" type="checkbox"/> Y	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input checked="" type="checkbox"/> Y	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input checked="" type="checkbox"/> Y	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input checked="" type="checkbox"/> Y	Periphyton - Community: <input checked="" type="checkbox"/> Y	Land Use - Forest: <input checked="" type="checkbox"/> Y	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input checked="" type="checkbox"/> Y	Appalachian Region: <input checked="" type="checkbox"/> Y
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords:		Watershed:
Turbidity: <input type="checkbox"/>			HUC: <input type="checkbox"/> 0
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input checked="" type="checkbox"/> Y			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 27      First Author: Gillies, W.N      Additional Authors:

Year: 1998

Title: Water quality studies in a watershed dominated by integrated poultry agriculture.

Journal/Book/Website: Proceedings - Nonpoint Source      Citation Detail: West Virginia NPS      Editors:  
 "The Hidden Challenge".      Conference.  
 October 1,2,3,  
 1998. pp 64-81.

NCC Reviewer: Gillies      Review Date: 12-May-03      Medium: paper/electronic

Summary: Presents nutrient concentration patterns at a number of stream sites with widely varying land use characteristics (heavy agriculture to heavy forest). Nitrate concentrations varied widely between sites (0.3 mg/L to 2.6 mg/L as N), and elevated levels were clearly associated with floodplain land in row crops. Phosphorus concentrations were low and varied little between sites, despite wide range of land uses. Unfortunately, this paper preceded quantification of land use, so land use estimates were educated guesses. Substantial information on patterns of nutrient flux related to storms. Also discusses geologic source of phosphorus found in basin.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: Nutrient patterns related to land use in Ridge and Valley province.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input checked="" type="checkbox"/> Y	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input checked="" type="checkbox"/> Y	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input checked="" type="checkbox"/> Y	West Virginia: <input checked="" type="checkbox"/> Y
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input checked="" type="checkbox"/> Y
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input checked="" type="checkbox"/> Y	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords:		Watershed: Cacapon/Lost River
Turbidity: <input type="checkbox"/>			HUC: 0
Sediment: <input type="checkbox"/>			Peer Reviewed: <input checked="" type="checkbox"/> N
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 28      First Author: Gillies, W.N.      Additional Authors:

Year: 2002

Title: Final Report to the U.S. Fish and Wildlife Service on Water Quality Studies in the Cacapon River's Lost and North River Watersheds in West Virginia.

Journal/Book/Website: Gov't Report

Citation Detail: available at  
www.cacaponinstitu  
te.org and FWS  
website

Editors:

NCC Reviewer: Gillies

Review Date: 12-May-03

Medium: paper/electr.

Summary: Summary analysis of nutrient data in relation to land use in two WV watersheds, with sites chosen for differences in land use. Finds row crop agriculture to have strongest influence on nitrate levels, but also notes the extreme variance caused by different rainfall regimes at all sites. Has a number of heavily forested and non-intensive agricultural sites that have potential as reference sites.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: Nutrient data in relation to land use in two WV watersheds.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  Y  
Lakes and Reservoirs:   
Wetlands:   
Nitrogen - Total:   
Nitrogen - Nitrate:  Y  
Nitrogen - TKN:   
Nitrogen - Other:   
Phosphorus - Total:  Y  
Phosphorus - PO4:  Y  
Turbidity:   
Sediment:   
TSS:

Loads:   
Concentration:  Y  
Chlor-a:   
Periphyton - Community:   
Periphyton - Biomass:   
Macrophytes:   
Benthic Invertebrates:   
Fish:

Other Keywords:

Land Use - Agriculture:  Y  
Land Use - Urban:   
Land Use - Residential:   
Land Use - Forest:  Y  
Land Use - Other:   
Point Source:   
Non Point Source:  Y  
Downstream:

Reference Condition:   
Impairment:   
Modelling:   
West Virginia:  Y  
Appalachian Region:  Y  
Out of Region:   
Chesapeake Bay:   
Ohio River:   
Watershed: Cacapon

HUC: 0  
Peer Reviewed:  N

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 29      First Author: Dodds, W. K.,      Additional Authors: V. H. Smith, and B. Zander

Year: 1997

Title: Developing nutrient targets to control benthic chlorophyll levels in streams: A case study of the Clark Fork River

Journal/Book/Website: Water Res.      Citation Detail: 31(7):1738-1750.      Editors:

NCC Reviewer: Gillies      Review Date: 17-May-03      Medium: paper

Summary: Uses existing data from multiple studies to model two approaches to assess "target" nutrient concentrations in streams in relation to mean and maximum benthic algae chlorophyll a. Finds Total P and Total N more closely related to benthic algal biomass than dissolved forms of N and P, and TN explains more of the variance of chlor a than TP.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: presents three approaches (regression, probabilistic and reference reaches) to help "establish nutrient control criteria in rivers and streams where eutrophication has been deemed excessive." analysis indicates 0.275 mg/L TN would yield acceptable benthic chlorophyll a levels (mean 100 mg/m2 and max 150 mg/m2). Suggest 350 mg/L TN as target level to allow some anthropogenic inouts of N while avoiding frequent excessive aglal growth. Stress their results might not apply to all regions.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input checked="" type="checkbox"/> Y
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input checked="" type="checkbox"/> Y	Land Use - Urban: <input type="checkbox"/>	Impairment: <input checked="" type="checkbox"/> Y
Wetlands: <input type="checkbox"/>	Chlor-a: <input checked="" type="checkbox"/> Y	Land Use - Residential: <input type="checkbox"/>	Modelling: <input checked="" type="checkbox"/> Y
Nitrogen - Total: <input checked="" type="checkbox"/> Y	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input checked="" type="checkbox"/> Y	Land Use - Other: <input checked="" type="checkbox"/> Y	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input checked="" type="checkbox"/> Y	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords: <input type="text" value="Cladophora, nutrient limitation"/>		Watershed: Clark Fork River, Montana
Turbidity: <input type="checkbox"/>			HUC: 0
Sediment: <input type="checkbox"/>			Peer Reviewed: <input checked="" type="checkbox"/> Y
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 30      First Author: Whittall, David      Additional Authors: B. Hendrickson, ,H. Paerl

Year: 2003

Title: Importance of atmospherically deposited nitrogen to the annual nitrogen budget of the Neuse River estuary, North Carolina

Journal/Book/Website: Environmental International      Citation Detail: 29 (2003): 393-399      Editors:

NCC Reviewer: Gillies      Review Date: 21-Oct-03      Medium: paper

Summary: Authors determine that wet deposition of nitrogen as NH<sub>4</sub>, NO<sub>3</sub> and organic N contributes 50% of the total externally supplied N flux to the Neuse River estuary. Deposition fairly evenly distributed among the three N species. Authors noted that Nox usually most common form in rainfall but that areas with intensive agriculture may have ammonium as a major component of DIN as well. Seasonally highest weekly deposition occurred in August - this was not related to amount of precipitation. Estimates 20% of total "new" N flux to estuary in AD-N, with 6% direct deposition. Study did not assess dry deposition of N (due to large uncertainties in measuring this), which authors suggest might double the total contribution. Suggest AD-N be included in nutrient mitigation and management efforts.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: atmospheric contributions of N, significant amounts of which are locally derived as NH<sub>4</sub> in intensive ag watersheds.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input checked="" type="checkbox"/> Y	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input checked="" type="checkbox"/> Y	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO <sub>4</sub> : <input type="checkbox"/>	Other Keywords: <input type="text" value="Neuse Estuary, atmospheric deposition"/>	Watershed: <input type="checkbox"/>	HUC: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input type="checkbox"/>	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 31      First Author: House, William A.      Additional Authors: M.S. Warwick

Year: 1998

Title: A mass-balance approach to quantifying the importance of in-stream processes during nutrient transport in a large river catchment.

Journal/Book/Website: Science of the Total Environment      Citation Detail: 210/211 (1998)      Editors: 139-152

NCC Reviewer: Gillies      Review Date: 21-Oct-03      Medium: paper

Summary: like the title says. Results: large decreases in SRP may be associated with uptake by bed-sediments and flora, suspended sediment also important in storm events; Nitrate has smaller upstream-to-downstream changes than SRP, with losses in the autumn, gains in the spring & little evidence of riverine processes during winter storm; ammonium lost from water during all campaigns, but not in large enough amounts to account for increases in nitrate during same periods. Export of TOP compared to values predicted by models for different land-uses - results consistent. Export of nitrate large during storm event compared to literature estimates of annual exports.

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: nutrient sequestration and transport, fate of different nutrient species. Seasonality issues related to transport. Calibration of P export model.

Notes

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> Y	Loads: <input checked="" type="checkbox"/> Y	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input checked="" type="checkbox"/> Y	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input checked="" type="checkbox"/> Y
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> Y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> Y
Nitrogen - Other: <input checked="" type="checkbox"/> Y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> Y	Fish: <input type="checkbox"/>	Downstream: <input checked="" type="checkbox"/> Y	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> Y	Other Keywords: <input type="text" value="England, mass-balance"/>	Watershed: <input type="text"/>	HUC: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input type="checkbox"/>	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 49      First Author: Boyer, E.W.      Additional Authors: C.L. Goodale, N.A. Jaworski, and R.W. Howarth

Year: 20020

Title: Anthropogenic nitrogen sources and relationships to riverine nitrogen export in the northeastern U.S.A.

Journal/Book/Website: Biogeochemistry      Citation Detail: 57/58:137-169      Editors:

NCC Reviewer: Martin Christ      Review Date: 09-Jun-03      Medium: Journal

Summary: Compares N inputs in atmospheric deposition, fertilizer, food and feed and N fixation to outputs for big-river watersheds on the US NE coast. Atmospheric deposition is the single largest source, but proportions vary. 25% of N is exported by rivers, on average

Utility to NCC- Y or N:  N

Utility to NCC -Comment: Not useful because the charge is to determine what levels of nutrients impair surface waters. Interesting to note that Potomac is low, presumably because it exports a lot of N as volatilized from poultry and livestock waste, or as poultry and livestock.

Notes Atmospheric deposition is the major source for the region covered by all the watersheds.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> y	Loads: <input checked="" type="checkbox"/> y	Land Use - Agriculture: <input checked="" type="checkbox"/> y	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input checked="" type="checkbox"/> y	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input checked="" type="checkbox"/> y	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input checked="" type="checkbox"/> y	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input checked="" type="checkbox"/> y
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input checked="" type="checkbox"/> y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input checked="" type="checkbox"/> y	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="East Coast"/>	Watershed: <input type="text"/>	HUC: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input type="checkbox"/>	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 50      First Author: Cahoon, L. B.      Additional Authors: J.A. Mikucki, M.A. Mallin

Year: 1999

Title: Nitrogen and phosphorus imports to the Cape Fear and Neuse River basins to support intensive livestock production.

Journal/Book/Website: Environ. Sci. Technol.      Citation Detail: 33:410-415      Editors:

NCC Reviewer: Martin Christ      Review Date: 10-May-03      Medium: Journal

Summary: Compares N and P fluxes in feed and in manure to fluxes in rivers, and finds that the first two fluxes are huge

Utility to NCC- Y or N:  y

Utility to NCC -Comment: Numbers to estimate likely fluxes of nutrients from such industries. Also, numbers to say how big concentrated livestock operations can get. WV probably not nearly so dense yet. Comparison of fluxes makes need for good manure management clear

Notes: Should crunch numbers in here

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/> y	Loads: <input type="checkbox"/> y	Land Use - Agriculture: <input type="checkbox"/> y	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/> y	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/> y
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/> y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/> y	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="Coastal ecosystem"/>		Watershed: <input type="checkbox"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="checkbox"/> 0
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 51      First Author: Correll, D.L.      Additional Authors:

Year: 1998

Title: The role of phosphorus in the eutrophication of receiving waters: a review.

Journal/Book/Website: J. Environ. Qual.

Citation Detail: 27:261-266

Editors:

NCC Reviewer: Martin Christ

Review Date: 29-Jun-03

Medium: Journal

Summary: Reviews literature on the effects of phosphorus, including additional experiments in both lakes and streams. Results emphasize rapid algal response to P, and the importance of using total P, rather than phosphate concentrations.

Utility to NCC- Y or N:  y

Utility to NCC -Comment: Serves as lead in to eutrophication literature, and to the use of N:P ratios for understanding P enrichment. Suggest a range of P standards from 20 to 100 ug/L. Impairment is not discussed based on relationships to designated uses, but to comparing P concentrations in ecosystems with rates that were once used as "enriched" in experiments.

Notes P causes the greatest jump in productivity when it is added to waters starting with low concentrations. At higher concentrations, P uptake rates may be saturated, or secondary limitations in other nutrients may be appearing.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  y

Loads:  y

Land Use - Agriculture:

Reference Condition:

Lakes and Reservoirs:  y

Concentration:

Land Use - Urban:

Impairment:

Wetlands:

Chlor-a:  y

Land Use - Residential:

Modelling:

Nitrogen - Total:  y

Periphyton - Community:

Land Use - Forest:

West Virginia:

Nitrogen - Nitrate:

Periphyton - Biomass:  y

Land Use - Other:

Appalachian Region:

Nitrogen - TKN:

Macrophytes:

Point Source:

Out of Region:

Nitrogen - Other:

Benthic Invertebrates:

Non Point Source:

Chesapeake Bay:

Phosphorus - Total:  y

Fish:

Downstream:  y

Ohio River:

Phosphorus - PO4:  y

Other Keywords:

Watershed:

HUC: 0

Turbidity:

Peer Reviewed:

Sediment:

TSS:

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 52      First Author: Frost, P.C.      Additional Authors: R.S. Stelzer, G.A. Lamberti, and J.J. Elser

Year: 2002

Title: Ecological stoichiometry of trophic interactions in the benthos: understanding the role of C:N:P ratios in lentic and lotic habitats.

Journal/Book/Website: J. N. Am. Benthol. Soc.

Citation Detail: 21:515-528

Editors:

NCC Reviewer: Martin Christ

Review Date: 09-Jun-03

Medium: Journal

Summary: Discusses what controls ratios of C to N to P in benthic ecosystems

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: Utility is small. Although changes in nutrient concentrations could affect the benthic food web, most of the paper addresses the variation due to things other than N and P concentrations in water.

Notes This paper provides a framework for relationships among the various elements in benthic ecosystems. Mostly it lists topics addressed in other papers, and provides little quantitative response to changes in water concentration.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input checked="" type="checkbox"/> y	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input checked="" type="checkbox"/> y	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input checked="" type="checkbox"/> y	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input checked="" type="checkbox"/> y	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords:	Watershed:	HUC: 0
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input type="checkbox"/>	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 53      First Author: Griffith, J.A.      Additional Authors: Martinko, E.A., J.L. Whistler, and K.P. Price

Year: 2002

Title: Preliminary comparison of landscape pattern--Normalized Difference Vegetation Index (NDVI) relationships to central plains stream conditions

Journal/Book/Website: Journal of Environmental Quality      Citation Detail: 31:846-859      Editors:

NCC Reviewer: Martin Christ      Review Date: 09-Jun-03      Medium: Journal

Summary: Explores correlations between water quality and various remote sensing indices

Utility to NCC- Y or N:  N

Utility to NCC -Comment: None

Notes At some point, papers along this line might serve as the basis for monitoring water quality through remote sensing, or in choosing areas to examine waters for impairment. At the moment, however, this paper indicates that the science is not advanced enough for use in decision making.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:   
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:   
 Nitrogen - Nitrate:   
 Nitrogen - TKN:   
 Nitrogen - Other:   
 Phosphorus - Total:   
 Phosphorus - PO4:   
 Turbidity:  y   
 Sediment:   
 TSS:

Loads:   
 Concentration:   
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:   
 Benthic Invertebrates:   
 Fish:   
 Other Keywords:

Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:  y   
 Point Source:   
 Non Point Source:   
 Downstream:

Reference Condition:   
 Impairment:   
 Modelling:   
 West Virginia:   
 Appalachian Region:   
 Out of Region:   
 Chesapeake Bay:   
 Ohio River:   
 Watershed:   
 HUC:  0  
 Peer Reviewed:

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 54      First Author: Nicholls, K.H.      Additional Authors: G. J. Hopkins.

Year: 1993

Title: Recent changes in Lake Erie (North Shore) phytoplankton: cumulative impacts of phosphorus loading reductions and the zebra mussle introduction.

Journal/Book/Website: J. Great lakes Res.      Citation Detail: 19:637-647      Editors:

NCC Reviewer: Martin Christ      Review Date: 22-Jun-03      Medium: Journal

Summary: Phytoplankton declined as a result first of phosphorus reductions, especially the loads from sewage from detroit. Then there was a second decline when zebra mussels came along.

Utility to NCC- Y or N:  N

Utility to NCC -Comment: The level of phytoplankton seemed to drop much more than the phosphorus loading did.

Notes: Authors test idea that changes in zooplankton affected phytoplankton. They reject the possibility because feeding by zebra mussels accounts for the declines in all sorts of plankton found better than does Daphnia feeding.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/>	Loads: <input type="checkbox"/> y	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/> y
Lakes and Reservoirs: <input type="checkbox"/> y	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/> y	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/> y	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/> y
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/> y	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/> y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="Lake Erie, Zebra mussel"/>	Watershed:	HUC: 0
Turbidity: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 55      First Author: Norton, S.B.      Additional Authors: S.M. Cormier, M.Smith, and R.C. Jones

Year: 2000

Title: Can biological assessments discriminate among types of stress? A case study from the eastern corn belt plains ecoregion

Journal/Book/Website: Environmental Toxicology and Chemistry      Citation Detail: 19:1113-1119      Editors:

NCC Reviewer: Martin Christ      Review Date: 09-Jun-03      Medium: Journal

Summary: Developed metrics discriminating among different stresses to aquatic ecosystems based on fish and invertebrate data

Utility to NCC- Y or N:  y

Utility to NCC -Comment: Suggests basis for indices that might indicate nutrient impacts

Notes Used Ohio data on fish, invertebrates and water chemistry and came up with discriminant functions from the fish and bugs to predict what quartile the water quality should be. Shredders distinguished nutrients from TSS, BOD and FE. Intolerant fish, darters, sculpin and darter species and cyprinids distinguished nutrients from siltation. No good indicators to distinguish nutrients from stress in the form of stream corridor structure, COD and BOD, or Zn and Pb.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  y  
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:   
 Nitrogen - Nitrate:   
 Nitrogen - TKN:   
 Nitrogen - Other:   
 Phosphorus - Total:   
 Phosphorus - PO4:   
 Turbidity:   
 Sediment:   
 TSS:

Loads:   
 Concentration:   
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:   
 Benthic Invertebrates:  y  
 Fish:  y  
 Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:   
 Point Source:   
 Non Point Source:   
 Downstream:   
 Other Keywords:

Reference Condition:   
 Impairment:   
 Modelling:   
 West Virginia:   
 Appalachian Region:   
 Out of Region:  y  
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC:  
 Peer Reviewed:

0

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 56      First Author: Norton, S.B.      Additional Authors: S.M. Cormier, M.Smith, R.C. Jones and M. Schubauer-Berigan

Year: 2002

Title: Predicting levels of stress from biological assessment data: empirical models from the eastern corn belt plains, Ohio, USA

Journal/Book/Website: Environmental Toxicology and Chemistry      Citation Detail: 21:1168-1175      Editors:

NCC Reviewer: Martin Christ      Review Date: 10-Jun-03      Medium: Journal

Summary: Tried to develop multiple regression models for different sorts of impairment. Results promising but limited to study area.

Utility to NCC- Y or N:  y

Utility to NCC -Comment: Shows type of biological assessment model that might be useful for assessing nutrient impacts.

Notes: Quite a bit of this paper dealt with the problem of how to get independent information from two sites on the same stream. The problem is not completely solved. Round bodied suckers and shredders were useful for assessing nutrients.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input checked="" type="checkbox"/> y
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> y
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input checked="" type="checkbox"/> y	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input checked="" type="checkbox"/> y	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="Ohio cornbelt, indices"/>		Watershed: <input type="text"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="text"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 57      First Author: Pan, Y      Additional Authors: R. L. Lowe

Year: 1995

Title: The effects of hydropsychid colonization on algal response to nutrient enrichment in a small Michigan stream, U.S.A.

Journal/Book/Website: Freshwater Biology      Citation Detail: 33:393-400      Editors:

NCC Reviewer: Martin Christ      Review Date: 22-Jun-03      Medium: Journal

Summary: Experiment on whether presence of hydropsychids affected response of algal biomass to nutrients

Utility to NCC- Y or N:  N

Utility to NCC -Comment: Introduces more complexities about how algae respond to nutrient loads.

Notes Somewhat strange results: if you measure algal biomass using chlorophyll concentrations, you see that the hydropsychids kept the algae down even though the nutrients increased. There was no interaction, though. The effect was not seen when the response variable was biovolume or C fixation rate.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/> y <input type="checkbox"/>	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/> y <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/> y <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/> y <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/> y <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/> y <input type="checkbox"/>	Other Keywords: <input type="text" value="hydropsychid, indirect effects"/>	Watershed: <input type="text"/>	HUC: <input type="text" value="0"/>
Turbidity: <input type="checkbox"/>		Peer Reviewed: <input type="checkbox"/>	
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 58

First Author: Pan, Y.

Additional Authors: R.J. Stevenson

Year: 1996

Title: Gradient analysis of diatom assemblages in western Kentucky wetlands

Journal/Book/Website: J. Phycol

Citation Detail: 32:222-232

Editors:

NCC Reviewer: Martin Christ

Review Date: 08-May-03

Medium: Journal

Summary: compared environmental conditions with assemblages of both planktonic and epiphytic diatoms

Utility to NCC- Y or N:  y

Utility to NCC -Comment: Supports the idea that diatom assemblages are useful for estimating nutrient concentrations. Cautions that relationship is not perfect

Notes Results indicate that correspondence is somewhat better when using phytoplankton assemblages to predict conductivity (a result of AMD) than using periphyton assemblages. However, for phosphorus, epiphyton works better than periphyton. Also, wetlands are spatially diverse, so characterizing wetlands with single samples is somewhat simplistic. Paper does not support back-calculating damaging phosphorus concentrations from the regressions.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/>	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/> y <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/> y <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/> y <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/> y <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/> y <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/> y <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords:		Watershed:
Turbidity: <input type="checkbox"/>			HUC: <input type="checkbox"/> 0
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 59 First Author: Rosemond, Amy D. Additional Authors:

Year: 1994

Title: Multiple factors limit seasonal variation in periphyton in a forest stream.

Journal/Book/Website: J. N. Am. Benthol. Soc.

Citation Detail: 13:333-344

Editors:

NCC Reviewer: Martin Christ

Review Date: 09-May-03

Medium: Journal

Summary: Compared changes in the periphyton community with changes in environmental variables. Environmental variables had less influence than expected, possibly because of large number of grazing snails

Utility to NCC- Y or N:  y

Utility to NCC -Comment: Periphyton communities reflect grazer communities as well as nutrient conditions.

Notes This is more of a data paper than cause and effect paper because of the difficulty in picking really independent sampling units. Always the same stream, same places.. What is auto correlation effect?

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> y	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input checked="" type="checkbox"/> y
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/>
Nitrogen - Other: <input checked="" type="checkbox"/> y	Benthic Invertebrates: <input checked="" type="checkbox"/> y	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input checked="" type="checkbox"/> y	Other Keywords:		Watershed:
Turbidity: <input type="checkbox"/>			HUC: 0
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 60      First Author: Rubin, A.J.      Additional Authors: G.A. Elmaraghy

Year: 1977

Title: Studies on the toxicity of ammonia, nitrate and their mixtures to guppy fry

Journal/Book/Website: Water Research      Citation Detail: 11:927-935      Editors:

NCC Reviewer: Martin Christ      Review Date: 10-Mar-03      Medium: Journal

Summary: Tested direct toxicity of ammonia and nitrate on guppy fry

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: Gives numbers fo direct toxicity of two N speices to one fish species. These numbers may be compared to concentrations related to other kinds of impairment that may be higher or lower.

Notes The main issue of the paper was whether the chemicalse cause "potentiation" or "antagonism" between the two chemicals. At low ammonia concentrations, its effect is less than additive.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/>	Loads: <input type="checkbox"/>	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input checked="" type="checkbox"/> y
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/>	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input checked="" type="checkbox"/> y	Periphyton - Biomass: <input type="checkbox"/>	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> y
Nitrogen - Other: <input checked="" type="checkbox"/> y	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/>	Fish: <input checked="" type="checkbox"/> y	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="Lab experiment, LD50, direct toxicity"/>		Watershed: <input type="text"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="text"/> 0
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 61 First Author: Steinman, Alan D. Additional Authors:

Year: 1996

Title: Effects of grazers on freshwater benthic algae

Journal/Book/Website: Algal Ecology

Citation Detail: Academic Press

Editors:

NCC Reviewer: Martin Christ

Review Date: 08-May-03

Medium: Book chapter

Summary: What happens to benthic algal communities when they are grazed

Utility to NCC- Y or N:

Utility to NCC -Comment: Opportunity to learn about benthic algae, but little about how they are affected by nutrients, or how they record a nutrient condition

Notes Review of literature about whether grazing affects biomass, productivity, physignomy, nutrient cycling, species richness, and a few other characteristics of benthic algal communities. Relationships between grazing and N and P levels is suggested as a future direction.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:   
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:   
 Nitrogen - Nitrate:   
 Nitrogen - TKN:   
 Nitrogen - Other:   
 Phosphorus - Total:   
 Phosphorus - PO4:   
 Turbidity:   
 Sediment:   
 TSS:

Loads:   
 Concentration:   
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:   
 Benthic Invertebrates:   
 Fish:   
 Other Keywords:

Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:   
 Point Source:   
 Non Point Source:   
 Downstream:

Reference Condition:   
 Impairment:   
 Modelling:   
 West Virginia:   
 Appalachian Region:   
 Out of Region:   
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC:  0  
 Peer Reviewed:

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 62      First Author: Stevenson, R.J.      Additional Authors: Y. Pan, P. Vaithyanathan and C.J. richardson

Year: 2002

Title: Ecological assessment and indicator development in wetlands: the case of algae in the Everglades, USA

Journal/Book/Website: Verh. Internat. Vewrein. Limnol.      Citation Detail: 28:1-5      Editors:

NCC Reviewer: Martin Christ      Review Date: 09-May-03      Medium: Journal

Summary: Compared changes in periphyton community to distance from phosphorus source and found that periphyton is a good correlate of P levels

Utility to NCC- Y or N:  y

Utility to NCC -Comment: Demonstration of using periphyton as surrogate for P levels

Notes Utility probably not that great, but looks like a solid blow for periphyton as indicators

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input checked="" type="checkbox"/> y	Loads: <input checked="" type="checkbox"/> y	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input checked="" type="checkbox"/> y	Chlor-a: <input checked="" type="checkbox"/> y	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/>	Periphyton - Community: <input checked="" type="checkbox"/> y	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input checked="" type="checkbox"/> y	Land Use - Other: <input checked="" type="checkbox"/> y	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input checked="" type="checkbox"/> y
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/>	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input checked="" type="checkbox"/> y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/>	Other Keywords: <input type="text" value="Everglades"/>	Watershed:	HUC: 0
Turbidity: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
Sediment: <input type="checkbox"/>			
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 63      First Author: Walsh, S.E.      Additional Authors: P.A. Soranno, and D.T. Rutledge

Year: 2003

Title: Lakes, wetlands and streams as predictors of land use/cover distribution

Journal/Book/Website: Environmental Management

Citation Detail: 31:198-214

Editors:

NCC Reviewer: Martin Christ

Review Date: 09-Jun-03

Medium: Journal

Summary: Examines effect of waterbodies on neighboring land use

Utility to NCC- Y or N:  N

Utility to NCC -Comment: None

Notes I think we already know that nearby water affects land use. This does not help us set criteria for nutrients

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  y   
 Lakes and Reservoirs:  y   
 Wetlands:   
 Nitrogen - Total:   
 Nitrogen - Nitrate:   
 Nitrogen - TKN:   
 Nitrogen - Other:   
 Phosphorus - Total:   
 Phosphorus - PO4:   
 Turbidity:   
 Sediment:   
 TSS:

Loads:   
 Concentration:   
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:   
 Benthic Invertebrates:   
 Fish:

Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:  y   
 Point Source:   
 Non Point Source:   
 Downstream:

Reference Condition:   
 Impairment:   
 Modelling:   
 West Virginia:   
 Appalachian Region:   
 Out of Region:   
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC:  
 Peer Reviewed:

0

Additional Reviewer 1:

Additional Reviewer 2:

Record Number: 64      First Author: Wilcock, R.J.      Additional Authors: M.R. Scarsbrook, K.J. Costley, and J.W. Nagels

Year: 2002

Title: Controlled release experiments to determine the effects of shade and plants on nutrient retention in a lowland stream

Journal/Book/Website: Hydrobiologia

Citation Detail: 485:153-162

Editors:

NCC Reviewer: Martin Christ

Review Date: 09-Jun-03

Medium: Journal

Summary: Report on experiment of nutrient additions to shaded and unshaded reaches

Utility to NCC- Y or N:  Y

Utility to NCC -Comment: The ability of a stream to retain nutrients, and to prevent them from running rapidly to downstream ecosystems, may be controlled by sun or shade in unexpected ways.

Notes This paper discusses an experiment where nutrients were added to shaded and unshaded streams, and it was determined which stream retained nutrients better. Unexpectedly, the shaded stream retained more nutrients. The mechanism for this was that the sunlight supported a dense growth of macrophytes that had the effect of making the stream narrower, so that it moved water along faster. Although this provides a good counterpoint to the assumption that high light will cause high productivity and rapid nutrient immobilization, it should not be assumed that all conditions will give the same results.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams:  y  
 Lakes and Reservoirs:   
 Wetlands:   
 Nitrogen - Total:   
 Nitrogen - Nitrate:  y  
 Nitrogen - TKN:   
 Nitrogen - Other:  y  
 Phosphorus - Total:   
 Phosphorus - PO4:  y  
 Turbidity:   
 Sediment:   
 TSS:

Loads:  y  
 Concentration:   
 Chlor-a:   
 Periphyton - Community:   
 Periphyton - Biomass:   
 Macrophytes:  y  
 Benthic Invertebrates:   
 Fish:

Land Use - Agriculture:   
 Land Use - Urban:   
 Land Use - Residential:   
 Land Use - Forest:   
 Land Use - Other:  y  
 Point Source:   
 Non Point Source:   
 Downstream:  y

Other Keywords:

Reference Condition:   
 Impairment:   
 Modelling:   
 West Virginia:   
 Appalachian Region:   
 Out of Region:  y  
 Chesapeake Bay:   
 Ohio River:   
 Watershed:  
 HUC:   
 Peer Reviewed:

Additional Reviewer 1:  
 Additional Reviewer 2:

Record Number: 65      First Author: Bourassa, N      Additional Authors: A. Cattaneo

Year: 1998

Title: Control of periphyton biomass in Laurentian streams (Québec)

Journal/Book/Website: J. N. Am. Benthol. Soc.      Citation Detail: 17:420-429      Editors:

NCC Reviewer: Martin Christ      Review Date: 10-Jun-03      Medium: Journal

Summary: Cross-system comparison of effects that may control periphyton biomass

Utility to NCC- Y or N:  y

Utility to NCC -Comment: Indicates that periphyton biomass is not correlated with nutrient loading.

Notes The picture that comes out is that where there is more phosphorus, there are more grazers. Periphyton biomass seems to be regulated mainly from the top down.

**KEYWORDS: ENTER Y or N (or blank) unless other wise noted.**

Rivers and Streams: <input type="checkbox"/> y	Loads: <input type="checkbox"/> y	Land Use - Agriculture: <input type="checkbox"/>	Reference Condition: <input type="checkbox"/>
Lakes and Reservoirs: <input type="checkbox"/>	Concentration: <input type="checkbox"/>	Land Use - Urban: <input type="checkbox"/>	Impairment: <input type="checkbox"/>
Wetlands: <input type="checkbox"/>	Chlor-a: <input type="checkbox"/> y	Land Use - Residential: <input type="checkbox"/>	Modelling: <input type="checkbox"/>
Nitrogen - Total: <input type="checkbox"/> Y	Periphyton - Community: <input type="checkbox"/>	Land Use - Forest: <input type="checkbox"/>	West Virginia: <input type="checkbox"/>
Nitrogen - Nitrate: <input type="checkbox"/>	Periphyton - Biomass: <input type="checkbox"/> y	Land Use - Other: <input type="checkbox"/>	Appalachian Region: <input type="checkbox"/>
Nitrogen - TKN: <input type="checkbox"/>	Macrophytes: <input type="checkbox"/>	Point Source: <input type="checkbox"/>	Out of Region: <input type="checkbox"/> y
Nitrogen - Other: <input type="checkbox"/>	Benthic Invertebrates: <input type="checkbox"/> y	Non Point Source: <input type="checkbox"/>	Chesapeake Bay: <input type="checkbox"/>
Phosphorus - Total: <input type="checkbox"/> y	Fish: <input type="checkbox"/>	Downstream: <input type="checkbox"/>	Ohio River: <input type="checkbox"/>
Phosphorus - PO4: <input type="checkbox"/> y	Other Keywords: <input type="text" value="Laurentians, grazing"/>		Watershed: <input type="checkbox"/>
Turbidity: <input type="checkbox"/>			HUC: <input type="checkbox"/>
Sediment: <input type="checkbox"/>			Peer Reviewed: <input type="checkbox"/>
TSS: <input type="checkbox"/>			

Additional Reviewer 1:

Additional Reviewer 2: