

Stream of Consciousness

(A newsletter of ALLARM)

Edited by Candie C. Wilderman

November, 1988

STREAM RANKINGS

By Sarah Williamson

The following is a list of updated stream rankings for all located streams for which we have at least four (4) data points up to November 1988. You may notice that there has been a considerable increase in the number of streams being monitored from our last report in the spring newsletter. We are happy to announce that this is indeed the case. ALLARM now has over 235 volunteers monitoring in 40 counties around the state.

Keep in mind while reading these rankings that the pH and alkalinity of a stream will vary from the headwaters to the mouth, and will change with the seasons. The following streams are based on one site only, and data may not always cover a full year. You may even see the same stream in several categories if several different sites are being monitored. Also, if your stream has changed categories since the spring newsletter, that may be because we have applied the correction factor for those streams which were being monitored with the faulty reagent lot.

This past summer a considerable amount of work was done by Resa Dimino to generate summary data for each of the stream sites located before July 1988. Those of you who received her graphs know how important her efforts were. Many thanks to Resa for her hard work and dedication. In February 1989, the ALLARM staff will begin compiling and graphing the 1988 data in the same manner. Sites that have been located between July and December will be included in this analysis. If your monitoring site is not on this list, it may be because we have not received a map of its location. Please contact us at once if this is the case.

ENDANGERED

Average Alkalinity = 0-5 ppm

<u>Stream</u>	<u>County</u>	<u>Collector</u>	<u>Stream</u>	<u>County</u>	<u>Collector</u>
Lehigh #1	Bucks	Broadbent	Indiantown Run	Lebanon	Diebert
Stony Creek	Carbon	Knappenberger	Fishing Creek	Luzerne	Lennox
Quakake Cr.	Carbon	Gerhart	Waltons Run	Luzerne	Lennox
Hayes Cr.	Carbon	Gerhart	Beech Mtn. Lake	Luzerne	Koch
Upper Sinking Cr.	Centre	Ford	Pleasant Stream	Lycoming	Huggins
Spring Creek #1	Centre	Aron	Grays Run	Lycoming	Huggins
Tom's Run	Cumberland	Herrold	Grays Run	Lycoming	Keil
Kings Gap #1	Cumberland	K.G. staff	Rogues Harbor Run	Mercer	Vrana
Kings Gap #2	Cumberland	K.G. staff	Lake Naomi	Monroe	Bero
Stony Creek	Dauphin	Mitzel	Laurel Run	Perry	Egolf
Bear Creek	Elk	Steffan	Buck Run	Somerset	Sarver
Trout Run	Franklin	Eschenmann	Kettle Creek	Sullivan	Weaver
Shippensburg Res.	Franklin	Fox	Wilson Creek	Tioga	Gyeki (White)
Little Aughwick	Fulton	Brumbaugh	Bowman's Creek	Wyoming	Sedeski

STREAM RANKINGS (Continued)

VULNERABLE

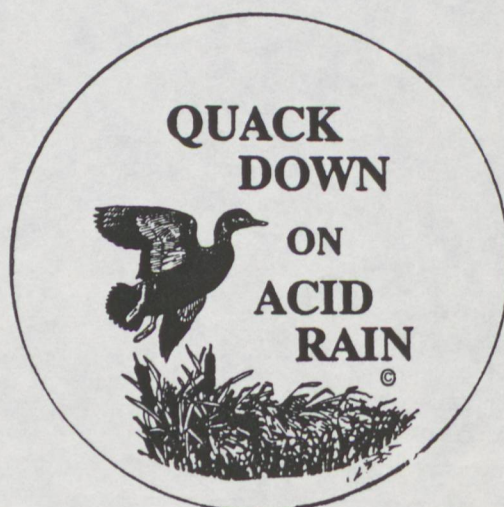
Average Alkalinity = 5-10 ppm

<u>Stream</u>	<u>County</u>	<u>Collector</u>
Little Marsh Cr.	Adams	Depew
Green Run	Clinton	Wroblewski
Clark's Creek	Dauphin	Corson
Big Mill Creek	Elk	Steffan
Carbaugh Run	Franklin	Dropp
Birch Run	Franklin	Dropp
Buck Run	Franklin	Rockwell
Tucquan Creek	Lancaster	Axelrod
Kelly's Run	Lancaster	Axelrod
Trout Run	Lancaster	Axelrod
Seglock Run	Lancaster	Trostle/Sellers
Oley Creek	Luzerne	Koch
Lycoming Creek	Lycoming	Huggins
Paradise Creek	Monroe	Helms
Commissioner Run	Potter	Knowles
Little Schuylkill	Schuylkill	Eckert
L. Little Swatara	Schuylkill	Turner

SLIGHTLY RESISTANT

Average Alkalinity = 10-20 ppm

<u>Stream</u>	<u>County</u>	<u>Collector</u>
Tom's Creek	Adams	Davis
North Creek	Cameron	Catalano
Driftwood Branch	Cameron	Catalano
Brandy Run	Cumberland	Bucher
Powells Creek	Dauphin	Frantz
Furnace Run	Franklin	Adams
Little Brush Creek	Fulton	Diffenderfer
Walnut Run	Lancaster	Kerchner
Minnich/Stepnes Cr.	Lancaster	Minnich/Stephens
Lehigh #2	Lehigh	D. Haring
Kinzua Creek	McKean	Lammie
Broadhead Creek	Monroe	Sweeney
Bushkill #1	Northampton	Keller
Plum Creek	Northumberland	Gonsar
Morris Rd. Creek	Perry	Sassaman
Pine Creek	Potter	Knowles
Nine Mile Run	Potter	Knowles
Cold Run	Schuylkill	Eckert
Mahantongo Headwaters	Schuylkill	Hepler
Laurel Hill Creek	Somerset	Sarver
Stony Creek	Somerset	Lichvar
Baab's Creek	Tioga	Gyeki (White)
Custard Run	Tioga	Gyeki (White)
Brians Creek	Tioga	Zimmerman(White)
Salt Spring	Tioga	Zimmerman(White)
Roaring Branch	Tioga	Fisher (White)
W.B. Lackawaxen	Wayne	Atherton
Leonard's Creek	Wyoming	Dymond



STREAM RANKINGS (Continued)

RESISTANT

Average Alkalinity > 20 ppm

<u>Stream</u>	<u>County</u>	<u>Collector</u>
Plum Run	Adams	Platt
Alloway	Adams	Bream
Saucony	Berks	Keim
Mill Creek	Berks	Ward
Brock Creek	Bucks	Broadbent
Tohickon	Bucks	Broadbent
Neshaminy #2	Bucks	Baddeley
Neshaminy #5	Bucks	Vanderveer
Delaware River	Bucks	D. Jackson
Churchville Res.	Bucks	Vanderveer
Lake Luxembourg	Bucks	Vanderveer
Colyer Lake	Centre	Ford
Penns Creek	Centre	Michaels
Sinking Creek	Centre	Michaels
Elk Creek	Centre	Bowser
Pine Creek	Centre	Bowser
Spring Creek #2	Centre	Aron
Spring Creek #3	Centre	Aron
Rock Run	Chester	Nature Ctr.
Penns Creek	Clinton	Bowser
Fishing Creek	Clinton	Bowser
Yellow Breeches	Cumberland	Seville
Big Spring #1	Cumberland	Fox
Big Spring #2	Cumberland	Derr
Burd Run	Cumberland	Fox
Conodoguinet #1	Cumberland	Sheffer
Swatara #2	Dauphin	Mahey
Swatara #3	Dauphin	Horst
Beaver Creek	Dauphin	Mahey
Manada Creek	Dauphin	Schaffer
Furnace Run	Franklin	Dropp
Antietam E.B.	Franklin	Etchison
Falling Spring	Franklin	Fox
Conodoguinet #2	Franklin	Fox
Antietam W.B.	Franklin	Arthur
Conococheague W.B.	Franklin	Rockewell
Conococheague #1	Franklin	Gale
Conococheague #2	Franklin	Dropp
Conodoguinet #3	Franklin	Beltz
Farm Pond	Franklin	Beltz
Falling Spring Br.	Franklin	Kochenour
Tonoloway #1	Fulton	Layton
Tonoloway #2	Fulton	Diffenderfer
Barnetts Run	Fulton	Diffenderfer
Laurel Run	Huntingdon	Long
Shavers Creek	Huntingdon	Long
Hammer Creek #1	Lancaster	Kerchner
Hammer Creek #2	Lancaster	Etter

<u>Stream</u>	<u>County</u>	<u>Collector</u>
Hammer Creek #3	Lancaster	Axelrod
Richardson Run	Lancaster	Chunko
Conoy Creek	Lancaster	Longenecker
Pond	Lancaster	Longenecker
Freshwater Spring	Lancaster	Longenecker
Muddy Creek	Lancaster	Ream
Mill Creek	Lancaster	Bare
Landis Run	Lancaster	Axelrod
Middle Creek	Lancaster	Trostle/Sellers
Speedwell Forge Lk.	Lancaster	Trostle/Sellers
Indian Run	Lancaster	Trostle/Sellers
Bowery Creek	Lancaster	Gallimore
Stewarts Run	Lancaster	Gallimore
Big Neshannock	Lawrence	Nowacki
Slippery Rock Cr.	Lawrence	Shane
Swatara #1	Lebanon	Gahres
Spring Creek	Lehigh	Keim
Little Lehigh	Lehigh	Keim
Trout Creek	Lehigh	M. Haring
Jordan Creek	Lehigh	M. Haring
Coplay Creek	Lehigh	Ringer
Clarion W.B.	Lehigh	Lammie
McMichaels Creek	Monroe	Sweeney
Perkiomen Creek	Montgomery	Meier
Sandy Run Creek	Montgomery	Ashmead
Perkiomen E.B.	Montgomery	Landis
Monocacy Creek	Northampton	Bower
Bushkill #2	Northampton	Lilly
Jackson Run	Perry	Brown
Shermans Creek	Perry	Egolf
Montour Run	Perry	Egolf
Genesee River	Potter	Reilly
Mundy Brook	Potter	Reilly
Cotton Brook	Potter	Reilly
Mahantongo	Schuykill	Hepler
Zimmerman Creek	Tioga	Kyler (White)
Lower Blockhouse	Tioga	Black (White)
Pine Creek	Tioga	Broughton (White)
Stony Fork Run	Tioga	Broughton (White)
Harrison Creek	Tioga	Broughton (White)
Upper Blockhouse	Tioga	Gregory (White)
Ten Mile Creek	Washington	Werstler
Mammoth Lake	Westmoreland	Karfelt
Moore's Mtn. Creek	York	Skvarna
Conewago Creek	York	Bell Social Ser.
Big Conewago Creek	York	Shuman
Spring Valley Branch	York	Brenneman

ALLARM WELCOMES NEW STAFF, NEW HOURS AND NEW SUPPORT!

ALLARM would like to thank Dickinson College for providing our office with a new computer and the salary for four new student workers! We would also like to introduce the new staff to you. All four students are senior women. **Sarah Williamson** is the Student Coordinator of ALLARM, and an English major with a Religion minor and an Environmental Studies Certificate. She also worked with ALLARM last year. **Jen Boyd, Maria Erwin, and Tracy Maxfield** are the other staff members. Jen is a Policy and Management Studies and a Political Science major with a Certificate in Environmental Studies, Tracy is an American Studies major, and Maria is an English major. They all share a common concern for and interest in environmental issues and are very enthusiastic about working with ALLARM.

We would also like to announce that the ALLARM office will now have weekly office hours on Wednesday, Thursday, and Friday, from 2-4 PM. Please feel free to call the office during these hours, when the phone will be staffed by one of our student workers. If you cannot call during this time, you may call anytime between 9 AM and 4 PM on weekdays, and leave a message with Mrs. Braught, the Geology Department secretary. We will get back to you. We'd love to hear from you!

REMEMBER: CALL 1-717-245-1573
on Wednesday, Thursday,
or Friday from 2-4 PM!

T-SHIRTS and SWEATSHIRTS with the ALLARM logo -- an
easy and fun way to spread the word!



Your choice of white T-shirt (\$8.00) and/or gray sweatshirt (\$15.00) with the ALLARM logo in durable forest green Fill out the order form below and send to: ALLARM, Dickinson College, Carlisle, PA 17013.

Please send me ____ SWEATSHIRTS and/or ____ T-SHIRTS.
Enclosed is a check payable to ALLARM.

Sweatshirt sizes ____S ____M ____L ____XL

T-shirt sizes ____S ____M ____L ____XL

QUALITY CONTROL FOR ALLARM

In our June, 1987 newsletter, we outlined the reasons for having chosen the Hawk Creek test kits as the most reliable and cost-efficient means to measure pH and alkalinity. We have been delighted with the results our volunteers have sent in, and are now ready to pursue a simple quality control program. The results will be used to enhance our credibility as a community monitoring network when we present data to local community and government officials. Our plan is to send a random selection of active volunteers one small plastic bottle, and a padded, self-addressed, stamped envelope in which to return the sample. More explicit instructions will be included with the materials. Anyone who is interested in participating in this quality control effort is invited to contact Tracy Maxfield at the ALLARM office.

ALLARM ON VIDEO

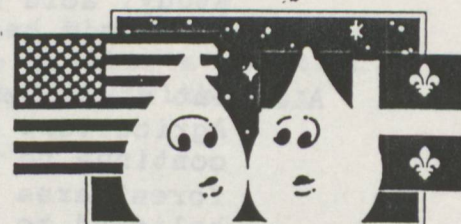
As part of an hour-long public TV presentation, called "Acid Rain: The Cost of Combustion", our own Candie Wilderman was among the featured informants on the subject. The program, produced by Scranton's WVIA, focuses on real economic solutions to pollution problems resulting from industrial, political and economic choices in Pennsylvania. The major point of the film is that, in the long run, the costs of controlling acid rain now are lower than the costs that will be created by postponing action towards solving the problem. ALLARM volunteers, Maurice Bream and Edith Brown, were shown monitoring in the field, and were asked to give their opinions concerning the seriousness of the acid rain problem. Copies of the video are available for viewing from the ALLARM office.

TEACHERS!

Are you interested in increasing your students' knowledge of acid deposition? ALLARM has available an educational "Acid Deposition Kit", published by the Federation of Ontario Naturalists with the financial support of the Canadian government, and suitable for teachers of biology, environmental science, chemistry and geography. Included are guide books for five units that explore the nature, consequences, and solutions to acid deposition. The kit includes large posters. If you would like to take a look at the materials, please contact the ALLARM office. We also have the mailing address if you wish to purchase one for use in your classroom.

AMERICA

Join us against acid rain



Let's have a neighbourly discussion about

ACID RAIN  Environnement
Québec

DID YOU KNOW?

by Maria Erwin

E.I. DuPont de Nemours & Co., the world's largest producer of chlorofluorocarbons (CFCs) with about 25% of the market, announced that it plans to phase out the ozone-depleting chemicals by the turn of the century (NY Times).

A common policy being implemented in Europe for controlling acidification impacts is a 30% reduction of sulfur dioxide (SO₂) emissions by 1993, relative to the 1980 level. (Environment, March, 1988)

European scientists have developed an integrated computer model which will synthesize the vast amount of unstructured information about acidification and deal with the many crucial uncertainties associated with pollution emissions and their environmental effects. A similar integrated modeling approach to the acid rain problem was started in the early days of the U.S. NAPAP study, but was later abandoned. (Environment, March, 1988)

In 1984, utility emissions accounted for 83% of Pennsylvania's total SO₂ emissions, and 47% of total NO_x emissions.

Many of the lakes close to the Sudbury, Ontario smelters show signs of significant improvement related to reduced SO₂ emissions. This is encouraging since it demonstrates that abatement of SO₂ will result in tangible improvements in water quality.

In Ontario, a comparison of Algonquin Park stream insects collected 50 years ago with data collected from 1984-86 showed that in areas with low pH (6.4 to 4.9), 11 out of 13 species of mayflies and stoneflies were absent. These insects are known to be intolerant to low pH.

A study by the Environmental Defense Fund has shown that a major source of nitrates that are causing over-fertilization of the Chesapeake Bay are the nitrates in acid rain. Prior to this study, acid deposition was not considered a major threat to the Bay's health.

A recent study issued by the West Germany Ministry of Food, Agriculture and Forestry has shown that West German forests continue to sustain significant damage, with 52.3% of overall forest area showing decline in 1987. Air pollutants are believed to play a leading role in the surveyed diebacks.

SENATOR HEINZ HEDGES ON ACID RAIN

by Jen Boyd

The views of Pennsylvania Senator Heinz concerning the role of the federal government in acid deposition control were brought to the attention of the ALLARM staff by Arnold Mahey, an ALLARM volunteer. Senator Heinz responded to a letter written by Mr. Mahey concerning acid rain.

Senator Heinz began by acknowledging that "acid rain may be one of the most serious environmental problems of the decade." Despite his alleged concern, he has not supported any specific measures to mitigate the problem. He claims to be concerned with the loss of jobs in the Pennsylvania coal industry that might result from a switch from high sulfur coal (found in PA) to low sulfur coal (mostly found in the West). However, he does not acknowledge that such a switch may not have to occur, and may actually be more costly than installing scrubbers on existing high sulfur coal-burning facilities. Such scrubbers would allow the coal-burning plants to continue to use Pennsylvania coal, and would not cause a loss of jobs.

As a result of these concerns, Heinz supports measures to continue researching acid rain. He has recently supported the Clean Coal Technology Program, which awards \$100 million in grants to industries that are researching control technologies. It seems that Heinz would rather continue to study the problem than to enact control measures.

In addition, he has reservations about S. 1894, the reauthorization of the Clean Air Act, which includes provisions to deal with acid rain. Heinz believes that the enactment of a bill which mandates specific technologies would "discourage clean coal technology development and deployment because the emission control decisions established in the bill would have to be made before the technologies are available." Not only does the technology exist now, but experience has shown that the best way to motivate new pollution control technology is to require industries to meet higher emission standards.

We thank Mr. Mahey for bringing Senator Heinz' position to our attention, and for his insights on the Senator's position. Please contact Senator Heinz and Senator Spector with your opinions on acid rain.

CLEAN AIR: FEDERAL LEGISLATIVE UPDATE
by Jen Boyd

For all practical purposes the 100th session of Congress has ended without reauthorizing the Clean Air Act. However, the proposed acid rain legislation that was part of that reauthorization process got farther than any other federal acid rain legislation to date! In the Senate, the legislation was voted out by the Environment and Public Works Committee and reached the Senate floor -- a landmark achievement! However, what happens in the 101st session will depend on continued pressure by environmentalists.

Ozone pollution in many major cities is another issue that was to be addressed in the Clean Air Act reauthorization. The 1977 Clean Air Act gave cities until December 31, 1987 to comply with specific standards of acceptable air pollution levels. If the standards were not met by that date, the Environmental Protection Agency had the authority to penalize the cities through sanctions, such as limiting highway funds and restricting new development. The deadline was extended to August 31, 1988. Many cities, such as Los Angeles and New York, are still far from meeting the air quality standards. However, because of the lax attitude of the present administration to the environment, the EPA has imposed only very limited sanctions and continues to give credit to cities that have demonstrated a "good faith effort" to reduce pollution.

But what can we do, since we're removed from the Washington scene? Nancy Parks, a Washington lobbyist for the Sierra Club, suggests that Pennsylvanians concentrate on contacting Senator Heinz and Senator Spector. Senator Heinz, in particular, has been traditionally opposed to acid deposition control bills. Heinz has claimed that his office has received little personal input concerning the acid rain issue. Parks suggests personal communication with the senators, such as a letter, a visit or a town meeting. Be sure to mention your association with ALLARM, and what you have learned from your own data collecting. It's essential that the senators know how serious the acid rain issue is to the public.

DOONESBURY



BY GARRY TRUDEAU



H.B. 2226 -- STATE LEGISLATIVE UPDATE

As reported in our last newsletter, Representative John Broujos from the 199th legislative district introduced an Acid Deposition Control Bill in the state legislature in February, 1988. In June, 1988 the Chairman of the House Conservation Committee appointed a special subcommittee to hold hearings on the bill and to report back to the committee by October 1, 1988. The subcommittee consisted of Rep. John Broujos, Rep. Thomas Michlovic, Rep. Richard Hayden, Rep. Roy Reinart, and Rep. Kenneth Jadloweic.

Public hearings were held in five locations, including Philadelphia, Pittsburgh, Bradford, York and Harrisburg, from July 25 to September 26. Over 50 individuals, groups and companies testified. Testifying in support of the bill were: various environmental groups, including ALLARM, GASP, Clean Air Action, Pennsylvania Federation of Sportsmen's Clubs, National Wildlife Federation, Isaak Walton League, Chesapeake Bay Foundation and the Sierra Club. Also testifying in support of the bill were the American Lung Association, several Medical Associations, several religious groups, including the United Methodist Churches, several professors and scientists (including William Sharpe and David DeWalle from Penn State, and David Schindler from Environment Canada), the Fish Commission, the League of Women Voters, the United Steelworkers Union, the United Mine Workers union, and PennARC, the state coalition of groups fighting for acid rain controls. Testifying in opposition to the bill were several power companies, the Pennsylvania Electric Association, the Pennsylvania Coal Association, P.H. Gladfelter, the Pennsylvania Chamber of Commerce and the Pennsylvania Utility Caucus.

The public hearings represented the coming together of massive amounts of information on acid rain in Pennsylvania, and the legislators were extremely well-informed by the end of the hearings. For details on the ALLARM testimony see the article below. Rep. Broujos' office is preparing a summary of the hearings, which may be available in the near future. Contact either his office, or the ALLARM office for an update on the progress of the bill. And contact your state representative and urge him/her to support this state effort!



WILDERMAN TESTIFIES FOR ALLARM AT LEGISLATIVE HEARINGS

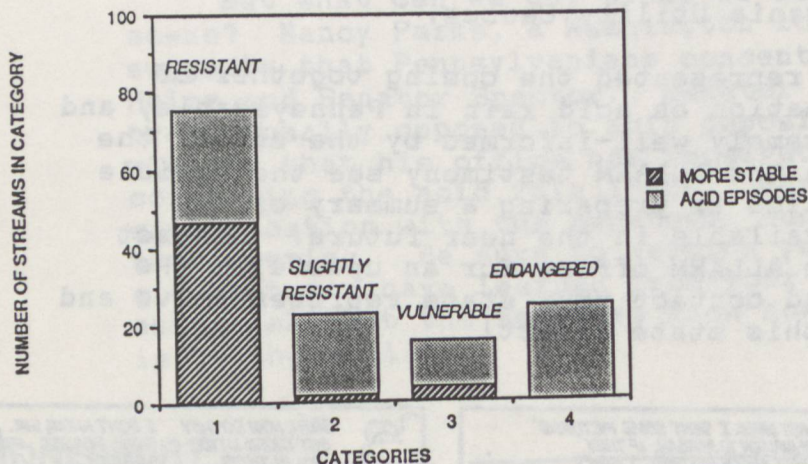
by Sarah Williamson

On September 23, 1988, Dr. Candie Wilderman testified at state legislative hearings in support of the proposed Acid Deposition Control Act, introduced by Rep. John Broujos (see above). Her statement included findings from analysis of data collected by ALLARM volunteers, as well as results of her own research on acid rain and drinking water.

Dr. Wilderman began with an explanation of ALLARM and then went on to present some of her observations as its coordinator. To begin with, the rapid expansion of the organization clearly demonstrates that there is a large and very diverse group of people who are deeply concerned about the issue of acid rain.

Furthermore, analysis of volunteer data has yielded some important results. By sampling weekly, volunteers have shown that there is a great deal of variability in any stream over the period of a year. In fact, over 50% of streams that are considered to be "resistant", based on mean annual alkalinity, actually have significant decreases in alkalinity during certain times of the year. These so called "acidic" episodes may put the stream into a higher risk category during these periods. The figure below shows that a very high percentage of streams monitored by ALLARM are subject to such low alkalinity episodes. Because of this, categorizing a stream by average alkalinity may overlook the occurrence of critical acidic episodes and therefore underestimate the extent of the problem.

ALLARM STREAM CATEGORIES BASED ON
ALKALINITY PROFILES OF 138 TESTED STREAMS



RAW DATA

Stream category	Resistant > 20 ppm	Slightly resistant 10-20 ppm	Vulnerable 5-10 ppm	Endangered < 5 ppm	Total
No. of streams	75	23	16	25	138
Percentage of total	54.3	16.7	11.6	18.1	100
Percentage having acidic episodes that place them in higher risk categories	37.3	91.3	75.0	Not relevant. This is the highest risk category.	53.1

Figure 2. Summary of ALLARM stream classifications based on mean alkalinity of 138 streams tested.

Using the year-long 1987 data of three volunteers, Mrs. Edith Brown, Mr. Maurice Bream and Dr. John Dropp, and by comparing that data to rainfall data from the closest Penn State rain monitoring site, Dr. Wilderman was able to show that there is a close correlation between heavy rainfall events and these acidic episodes. The two graphs for Mrs. Brown's stream are shown below, and the acidic episodes are indicated by the arrows. Note how each rainfall leads to a depression in alkalinity and pH in the stream, indicating that the rain is "polluting" the creek.

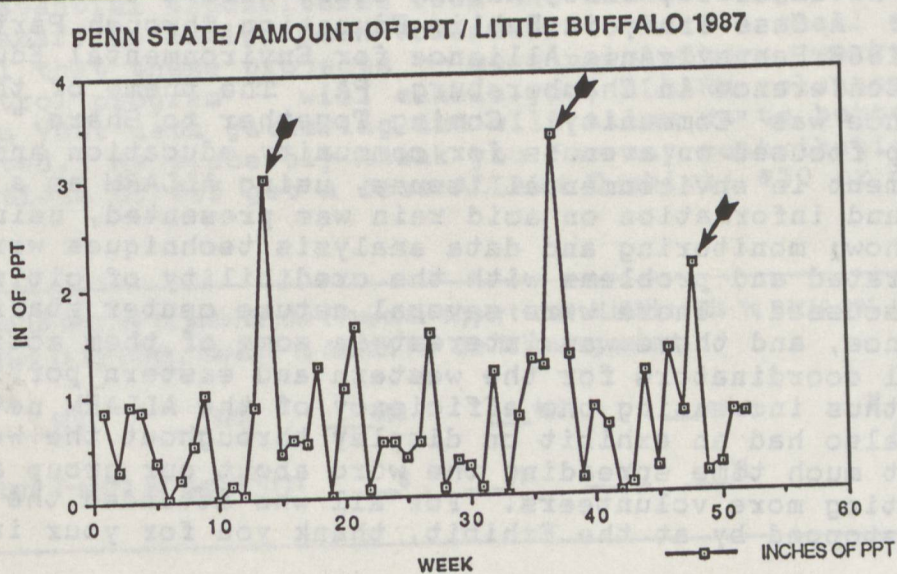
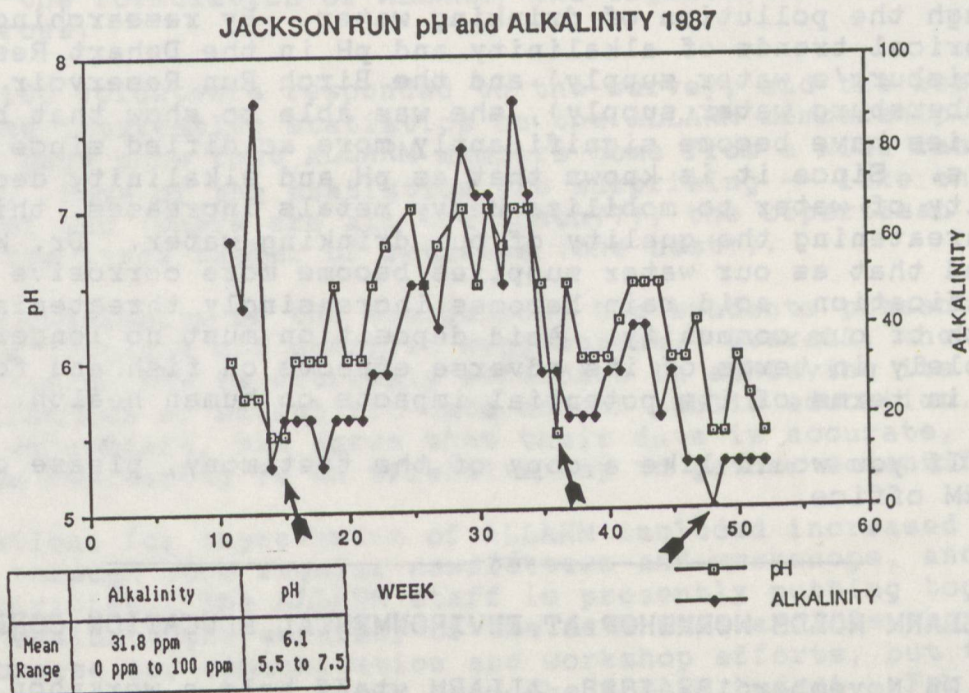


Figure 3. Data collected by Mrs. Edith Brown during 1987 from Jackson Run in Perry County, compared to data collected from the closest Penn State monitoring station on the amount of rainfall. Arrows indicate acidic events in the stream (top graph) and heavy rainfall events (bottom graph).

Dr. Wilderman concluded that in order to assess the full nature of the effect of acid deposition on streams, data must be collected frequently and consistently. Unfortunately, the state agencies do not have the resources to do this kind of testing; citizen volunteers do. When this is done, we find that there are many more streams than originally expected that are being impacted by acid deposition.

After presenting her findings from ALLARM, Dr. Wilderman testified from her own research, that acid deposition was not only affecting wildlife and its habitats, but human health as well, through the pollution of drinking water. By researching historical trends of alkalinity and pH in the Dehart Reservoir, (Harrisburg's water supply) and the Birch Run Reservoir (Chambersburg water supply), she was able to show that both water supplies have become significantly more acidified since the 1940's. Since it is known that as pH and alkalinity decrease, the ability of water to mobilize heavy metals increases, this process is threatening the quality of our drinking water. Dr. Wilderman warned that as our water supplies become more corrosive due to acidification, acid rain becomes increasingly threatening to the health of our community. Acid deposition must no longer be looked at solely in terms of its adverse effects on fish and forests, but also in terms of its potential impacts on human health.

If you would like a copy of the testimony, please contact the ALLARM office.

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ALLARM HOLDS WORKSHOP AT ENVIRONMENTAL EDUCATION CONFERENCE

On November 13, 1988, ALLARM staff held a workshop entitled "ALLARM: A Case Study in Public Education through Participation", at the 1988 Pennsylvania Alliance for Environmental Education (PAEE) Conference in Chambersburg, PA. The theme of the weekend conference was "Community: Coming Together to Share." Our workshop focused on avenues for community education and involvement in environmental issues, using ALLARM as a case study. Background information on acid rain was presented, using our own slide show; monitoring and data analysis techniques were demonstrated and problems with the credibility of citizen data were discussed. There were several nature center staff in attendance, and there was interest in some of them acting as regional coordinators for the western and eastern portions of the state, thus increasing the efficiency of the ALLARM network. ALLARM also had an exhibit on display throughout the weekend and we spent much time spreading the word about our group and interesting more volunteers. For all who attended the workshop, or who stopped by at the Exhibit, thank you for your interest!

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DICKINSON COLLEGE CLASS STUDIES ALLARM

Did you receive a questionnaire about ALLARM last spring? The Dickinson College Policy and Management Studies class wants to thank all the ALLARM members who completed the survey, and to report to you the results.

The survey was part of an overall evaluation of the effectiveness of ALLARM that was conducted by Professor Rosemary Nichols and several Dickinson students as part of their course work requirement. In addition to the survey, students interviewed the ALLARM staff and several volunteers, and studied the formulation of ALLARM, the organization of the staff and the funding sources.

About 100 volunteers responded to the survey, and the results have revealed some interesting statistics on the ALLARM membership. The graphs on the next page show that ALLARM members come from a wide range of backgrounds. Some of the statistics are surprising -- like the high percentage of men (where are all the women??), the bipartisan nature of the group, and the large number of retirees (the best!).

At the conclusion of the evaluation, the students presented the ALLARM staff with a critique and specific suggestions. Overall, the study concluded that ALLARM is extremely effective in achieving its goals of citizen collection of scientific data and of public education. Of the responding volunteers, 91% agree that their data is accurate, and 94% feel that citizen monitoring is an effective way to gather scientific data.

Suggestions for improvement of ALLARM included increased contact with volunteers through more regular newsletters and workshops, and more quality control activities. The ALLARM staff is presently putting together a program to evaluate the accuracy of the data (see article above). We would like to increase our communication and workshop efforts, but this will require substantial expenditures from the ALLARM budget. For these reasons, the ALLARM staff is asking each volunteer to make a small contribution to us. We feel that these projects -- more newsletters, workshops and a better quality control program -- will enable you, ALLARM volunteers, to be more effective in your data gathering and will allow us to better utilize the data collected. We sincerely thank you for any contribution you are able to make! Donations of \$25 get a free ALLARM T-shirt; \$50 or more get an ALLARM sweatshirt.

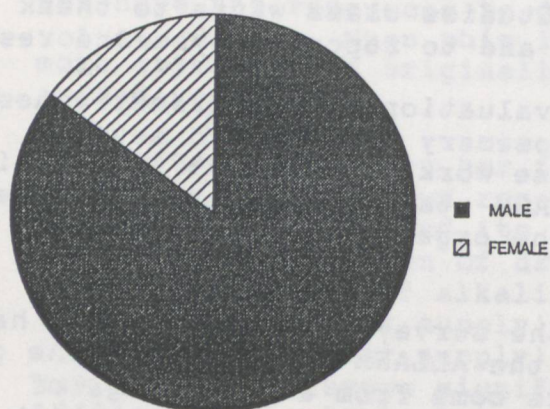
Yes, I am interested in helping to provide the financial support that ALLARM needs to carry out its work more effectively. Enclosed is my check, payable to ALLARM for the following amount:

___\$5 ___\$10 ___\$25 ___\$50 ___\$100 ___other

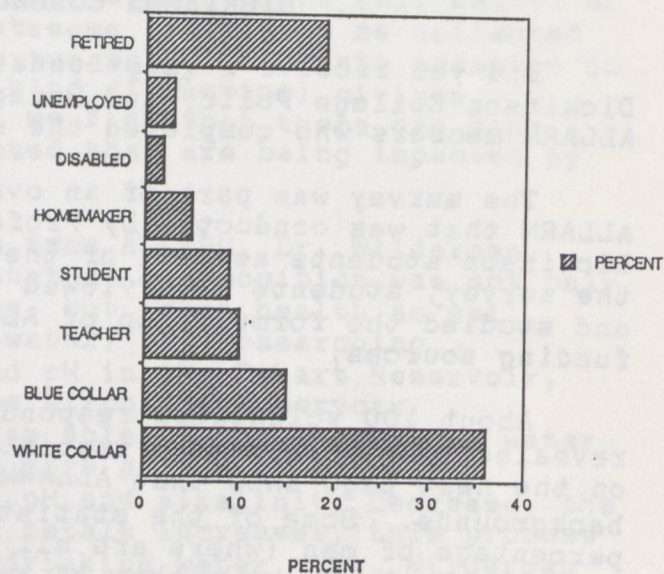
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Size of complimentary T-shirt or sweatshirt: ___S ___M ___L ___XL

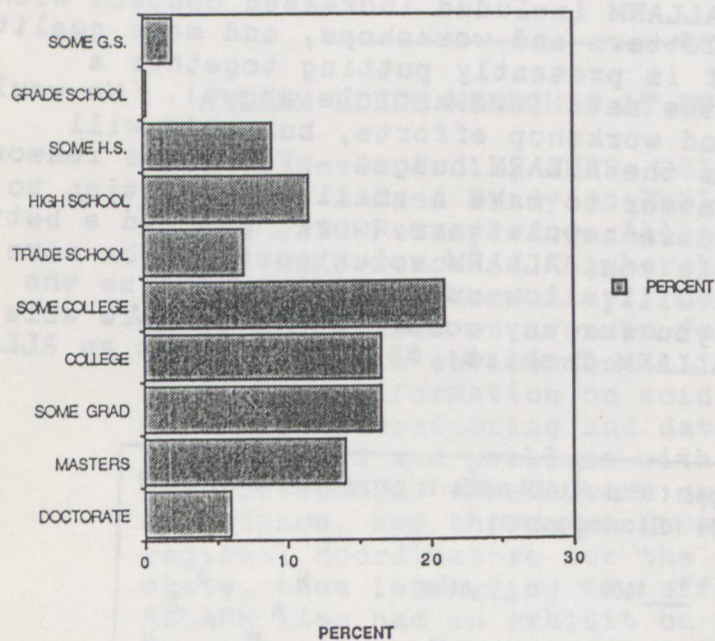
GENDER OF ALLARM RESPONDENTS



EMPLOYMENT OF ALLARM RESPONDENTS



HIGHEST EDUCATION LEVEL OF ALLARM RESPONDENTS



POLITICAL PARTY OF ALLARM RESPONDENTS

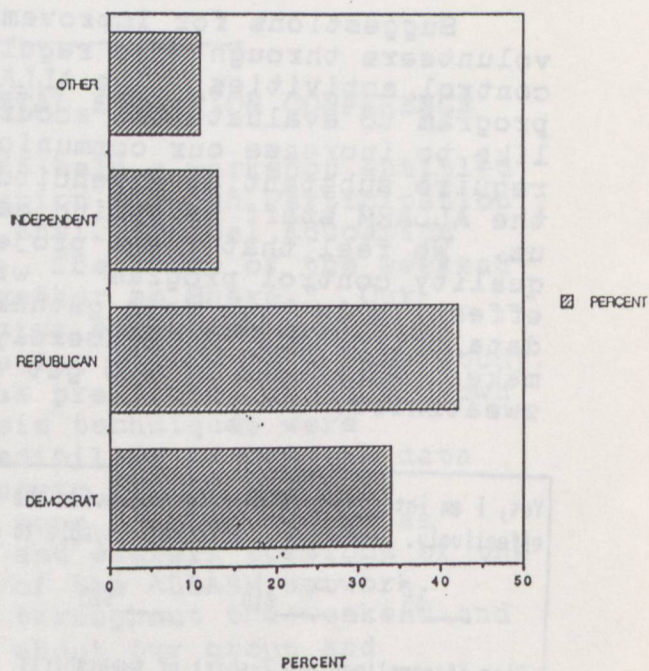


Figure 1. Profiles of ALLARM volunteers. Data were collected from a survey of volunteers, designed and conducted by Dickinson College students, under the supervision of Dr. Rosemary Nichols.

EDUCATION CORNER

by Tracy Maxfield

In February of this year, ALLARM received a letter from Liberty High School in Liberty, PA. The letter was from teacher Jere White's ninth grade students who were "very concerned about the effects acid rain will have on the environment." They enclosed money for two water monitoring kits, explaining that "most of the class is willing to monitor a stream and a fair-sized area will be involved."

Many of the students followed through with their goal of monitoring streams in their area, and we received data from a total of 18 streams in two watersheds. By calculating mean alkalinities, and plotting them on the map, the class was able to show that the small headwaters have the least buffering capacity, and that alkalinity generally increases as the stream gets larger and flows through the valleys. However, their data also shows that the streams alkalinity is highly dependent on geology, and that no patterns in nature are simple.

Mr. White and his class need to be commended on this excellent project. Besides learning stream monitoring and data collection techniques, the Liberty High students apparently found other ways to express their concerns about acid rain. Along with a pile of data sheets and maps, ALLARM received copies of letters the class had sent to John Heinz, Arlen Spector, and Edgar Carlson, which were but a few examples of "many letters" they had written and sent to people in north central Pennsylvania.

We at ALLARM really enjoyed participating in the project initiated by Jere White's students, and encourage other students and teachers to follow through on project ideas they may have. Inevitably, the projects are a lot more manageable than initially envisioned, and everyone benefits from the effort. Please feel free to send us your ideas, and we will attempt to supply you with information that will facilitate your efforts!

WE ARE NOT ALONE!!!

Citizen monitoring is finally receiving the nationwide support that it deserves! A national workshop on "The Role of Citizen Volunteers in Environmental Monitoring" was held May 23-25, 1988 at the Narragansett Bay Campus of the University of Rhode Island. It was jointly sponsored by the US Environmental Protection Agency Office of Water and the Rhode Island Sea Grant Program.

There is a growing awareness of the value of using volunteers to gather useful environmental data. The workshop was designed to explore the potential uses for and the successful ingredients of citizen monitoring programs. More than 100 people, representing 80 monitoring programs from around the US attended the conference. The workshop discussions concluded that citizen volunteers can be a valuable resource for providing base line data, providing for more frequent and time variable sampling, acting as "watch dogs" to ensure full implementation and enforcement of environmental regulations, acting as a valuable link to the local community to raise public awareness, and conducting special projects such as shoreline cleanups and resource inventories. They also concluded that although volunteer monitoring is cost-effective, it is not free, and requires dedicated professional staff support to ensure quality control and strong coordination. So --look out -- we predict that the success of initial efforts, such as those of ALLARM and the Alliance for the Chesapeake Bay, will eventually lead to a burst of support for citizen monitoring from state and federal agencies! If you would like more information on the findings of the workshop, please contact the ALLARM office.

EXHIBITION COUNTER

In February of 1954, ALARA received a letter from Liberty High School in Liberty, PA. The letter was from a student, John White, who was very concerned about the effects of atomic waste on the environment. They enclosed money for two water sampling kits, explaining that they were willing to monitor a stream in a lake which was well known.

Many of the students had read through with their parents and their class, and as a result, they had a great deal of information. Calculated with a calculator, and plotting them in the area, show that the waste had the least effect on the water. However, their data was not accurate, and the stream was not a good one. The students were very interested in the project.

Mr. White and his class went to be concerned on this scientific project. Learning about nuclear and other scientific techniques, the Liberty High students apparently found ways to express their concerns about atomic waste. Along with a pile of data sheets and maps, ALARA received copies of letters the class had sent to John Heinz, Allen Specter, and Robert Lattin, which were but a few examples of "many letters" they had written and sent to people in North Central Pennsylvania.

At ALARA really enjoyed participating in the project initiated by John White's students, and encourage other students and teachers to follow through on projects like this. Inevitably, the project was not without its problems. Initially envisioned, and everyone benefits from the effort. Please feel free to send us your ideas, and we will attempt to supply you with information that will facilitate your efforts.

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