

WATERSHED

A Newsletter of the Wood-Pawcatuck Watershed Association

Volume 20 No. 3

SUMMER 2003

Developing Models To Predict Groundwater Availability

Saul Saila, Lori Urso

In building our capacity as watershed council to address development issues in the Pawcatuck Watershed, WPWA is beginning to develop models that can be used in ground water computations. Our original interest in the surface and groundwater quality of the Wood-Pawcatuck Watershed has been expanding to concerns about surface water quality as well as the quantity of surface water available for the various uses, such as agriculture, recreation and industry. This focus coincides not surprisingly with the development of an optimization model for the Pawcatuck by USDA Natural Resource Conservation Service that integrates ground and surface water models to demonstrate the impact of ground water withdrawals on surface waters. Also in progress is the Rhode Island Water Resources Board's development of a water allocation program for the state, in which WPWA has a role, and for which USGS is conducting various hydrologic studies.

Some of our recent work has involved an analysis of groundwater levels from well records obtained from the US Geological Survey for their Kingston RI well. This well has a long record of 48 annual values. Preliminary analysis suggests there is some evidence that our water table has become lower during a period of about five decades. These initial observations represent a starting point in our preparations to ad-

dress issues related to our groundwater. Dr. Saul Saila is working with WPWA on a model that uses the annual values to predict drought in coming years. Since much of what goes on in the realm of ground water is beneath the surface of the earth where it cannot be seen or directly observed, mathematical models have come to be an important tool for groundwater investigators to use.

Why should you be interested in groundwater? If you start digging a hole almost anywhere in our watershed area - in your back yard, in the woods or even in the middle of a village or town, you will eventually hit water. It could be only a few inches or feet below the surface or it may require a hundred or more feet of digging or drilling. Indeed, you might even have to break through some rock ledge in order to reach water. Nevertheless, you will eventually hit the so-called saturated zone, where all the spaces between the soil particles or all cracks in rocks are full of water. The water in this zone is termed groundwater, and the water's upper surface is the water table. It is this groundwater supply that provides drinking water to people in the Pawcatuck Watershed. This differs from areas such as Providence, where drinking water comes from surface water reservoirs, such as the Scituate Reservoir.

From a global perspective, if you think of all the fresh water in the world in the form of liquid water that can be seen in streams, rivers, lakes and ponds then you might be surprised to (Cont'd on page 6)

Poetry of the Wild

A sampler of musings left in our Poetry Boxes throughout the watershed.

The river of tea
Is stingy with the fishes
Empty brown water
-- Greg Merkel

Sunlight on the water's surface
was actually the flash of cameras
underwater. I did not believe him
so I went and bought a snorkel
and mask. It turns out there was a
fishy fashion show going on.
Dolce & Gabanna if I
remember correctly.
-- Chris Bossi

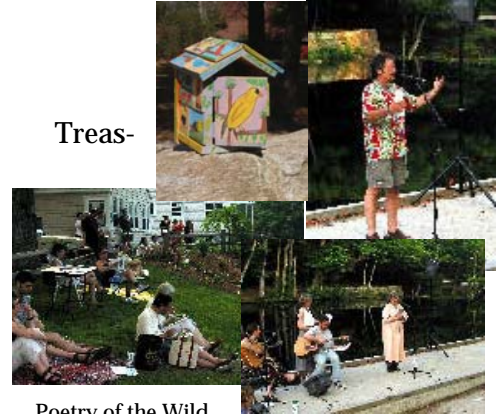
Beautiful things

The stream sings.
My Labrador plays
I sit, I listen, I pray.
It's raining
What a perfect day!
-- Don

I am no muse
We didn't see any moose
We did see 2 deer
Now it's time for a beer
-- Me and Paddler
(the wonder corgi)

If it weren't for
This beautiful
WATERSHED
I probably would've
Stayed in bed.
-- Anon.

Treas-



Poetry of the Wild closed with a reading of works collected in poetry boxes deployed throughout the watershed. Top right—poet laureate Tom Chandler recites his work. Bottom right—box designer Patricia Arrow reads selected works.

ure box of words
At oceans edge and tides reach
Holds tales of the sea.
-- John and Ann

WHIP Planting Program restores WPWA river bank

With funding through the USDA's Wildlife Habitat Incentives Program (WHIP), WPWA has finally been able to restore the riverbank on its property, once eroded due to the collapse several years ago of an old retaining wall.



Restoring the bank of the Wood River at the WPWA campus.

The WHIP program is administered through the Natural Resource Conservation Service (NRCS). The purpose is to fund (up to 75%) and implement improvements to natural areas that support wildlife habitat.

Through this project, WPWA had hoped to accomplish three objectives: to plant native plants that would restore a natural look, as well as provide food for birds and insects; to provide vegetation

that would help control runoff from the parking area; and finally, to provide an educational exhibit of native riverbank plants.

The project was a group effort that involved boy scouts, volunteers, staff, and designers. Last summer, Nate Potter, an Eagle Scout candidate from Troop One in Hope Valley, and a crew 10 scouts, planted bushes and spread compost and mulch over the steep bank. A load of organic compost was donated by Earth Care Farm for the project.

This spring, Bruce Clark took on the remainder of the project, creating a planting scheme that incorporates several erosion control features, including a coconut net applied at the waterline, into which aquatic plants such as pickerel weed and arrow arum will be planted to create a small

wetland. The remainder is various shrubs and flowering plants common to this region. Two small butterfly gardens were incorporated at the top of the bank. The plantings were acquired from the New England Wild Plant Society, which also donated a few plants for the project.

WPWA founder and RI Wild Plant Society member Betty Salmon advised Bruce's team on native plant selection and placement. Bruce and his staff, with the help of WPWA interns Mel Cheeseman and Eban Lewis, spent three days preparing and planting more than 350 plants on site. The final step, interpretive signage throughout the gardens, will be completed soon.



Interns Melany and Eben planting along the river's edge.

**Thank you WPWA members
2003—2004**

Benefactor

Gail Bonner
Mariette Dionne
Rogean Makowski
Carolyn Meece
Chuck and Jan Thompson
Harold Ward

Sponsors

Kenyon Industries
Thomas Moore
Wescon Corporation of CT

Supporters

Grania and John Ackley
Eric Bibler
Michael Bontecou
Philip Brencher
John Colozzi
Pamela Crandall
David and Ellen Dodge
Paul Greene
Robert Hertling, Jr.
Dante and Angela Ionata
Elwood and Cynthia Johnson
Peter and Marnie Lacouture
Christopher Little
Henry and Susan Muller
Ocean Pharmacy
Eric Orava
Robert and Gail Ornstein
Palmer Farm
Wayne and Mary Pescatello
Martin and Barbara Pierce
Doug and Eugenia Rayner
Bruce and Nancy Rollins
Albert and Kathy Romanella
Betty and Mitch Salomon
Robert and Betty Schiedler
Jeffrey and Mary Shepherd
Howard and Michelle Walker
Westerly Savings Bank
H.C. Woodmansee and Son, Inc.
Ken Young

Contributors

Manfred and Dan Armbruster
Cathy Cressy and Michael Russo

Paul Dauk
Caleb and Barbara Davis
Ernest and Jean Dion
Bruce Gillard and
Cheryl Hollingworth
Neil Gouvin
Robert Hauschild and
Margaret Palmer
Deborah and Richard Latham
Agatha Littlefield
Mike Miozza
John Palumbo
Jan Pechenik
James Tackach
Joseph and Evelyn Ungaro
Jake and Linda Wise

Family

Richard and Marie Albro
Brian and Sally Allen
Priscilla and Edgar Bailey
Noel and Abigail Barber
Bill Bishop and Ann Crawford
Katherine and Thomas Bishop
Michael and Rebecca Blatt
Thomas Bryson
Robert and Charlene Butler
Lawson and Gloria Cary
Joseph and Joan Ceo
James and Bernice Clancy
Joyce and William Clark, III
Mary Anne and Maury Connors
Linda Cooper and Richard Yeaw
David and Cassandra Crandall
Alan and Charlene Desbonnet
J. Michael Divney and Family
John and Constance Donahue
Tim and Brenda Drury
Larry and Karen Fine
Paul Follett
Bernie and Carol Gallant
Walt and Hollie Galloway
Philip Gauvin and Family
Donald and Jane Gest
Dr. R. Bruce Gillie and Family
John and Kelly Glista
Linda and Howland Green
Roger and Linda Greenall
Bruce and Susan Guarino
Gail Shea and Thomas Haggerty

Thomas Hodgkinson
Richard and Ardis Holliday
Kerv and Irene Hyland
Bill and Carol Kaszubski
Harmon and Nancy Kelley
Meg Kerr and Bob Vanderslice
James Lauro and Family
William and Charlotte MacLean
Doug and Joan MacPherson
Tom and Lynne Malone
Dave and Elizabeth McNab
Robert McRoberts
Carol and Stephen McTaggart
Dr. Ralph and Jane O'Connell
Candace Oviatt
Gus Paget
John Payne Jr. and Family
Bill Phelps and Family
Douglas and Barbara Piehler
Jan and Anna Prager
David and Anita Pugh
Douglas Randall and Family
Dr. Richard Recchia and Family
Charles Rees
Andrew and Joyce Reid
Saul and Jennifer Sails
Jan Salsich and Family
Dr. and Mrs. Thomas Sculco
Carolyn and David Shilling
Janice and John Sieburth
Leslie and Margaret Stone
Charles and Bette Toscano
Ray Turgeon and Family
Arthur Viens
Harry and Donna Walsh
Ann and Walter Wojciechowski

Individual

Gabe Altieri
William Arnold
Glenn Ashworth
David Asquith
Clare Bailey
Al Ball
Alan Banister
Richard Bergeron
Eileen Blum
John Bouchard

(Continued Page 6)

From the Executive Director

This summer we bid a fond farewell to Charlie Hickox, and his wife Jean, who have decided to go west to Colorado to be nearer to family.

Charlie Hickox has given so much to WPWA. His numerous roles evolved through the years out of his love of the rivers and outdoors of the Pawcatuck Watershed.



Charlie is perhaps best known for the river and hiking guides he created for us. Not only that, but the reason they continue to crop up on the shelves of so many stores is because Charlie brings them there—he's our top salesman!

Did you also know that Charlie has gone out onto the rivers well before you each season to mark and clear blow-downs that would have otherwise obstructed your enjoyable spring and summer rides?

Many of you have benefited by the expertise of Professor Hickox as our famed paddle and hike leader—teaching us about geography and nature as we rambled along. He has done so much.

In his last month here so many groups lauded Charlie for his efforts, and gave him bon voyage parties. We tried twice, but each time were out-competed by another event in his honor.

There will never be another to take his place in the heart and history of WPWA (or Denise).

Thank you Charlie, for everything you have done for us.

Lou Ursso

Summertime Fun

Fly Tying Workshop

Monday, July 14, 2003

5-7 pm; WPWA Campus.

For Youths and Adults. Learn to tie your own flies, then try them out in the Wood River. \$5 per person.

Fly Fishing Workshop

Monday, July 21, 2003

5-7 pm; WPWA Campus.

For Youths and Adults. Learn the fine art of fly casting on the Wood River. \$5 per person.

Family Fun Fishing

Monday, July 28, 2003

10am-1pm; Carolina Trout Hatchery, Richmond.

For kids 15 and under. \$5 per person covers worms and a hot-dog picnic.

Summer Splendor on the River

Wed., August 27, 2003

5-7:30pm; WPWA Campus

Gentle exploration of the upper Wood River on a relaxed evening paddle. \$5 per person.

Volunteer Appreciation Picnic

Thursday, September 11, 2003

5:30-7:30pm; WPWA Campus

Volunteers the barbeque's on us tonight. Enjoy the river's edge at dusk and a kayak ride if you desire.

Celebrate the Watershed!

Sunday, September 21, 2003

4-7pm; WPWA Campus

(see information below)

Please note: pre-registration is required for all programs. Call 401-539-9017.

Celebrate the Watershed!

A riverside celebration of the 20th anniversary of WPWA.



This years annual fund raiser celebrates 20 years of WPWA and its work to preserve the Pawcatuck Watershed.

Enjoy an elegant picnic and entertainment on the banks of the lovely Wood River. Place a bid on a fantasy bird box during our silent and live auctions. The auction will also feature the famed "poetry boxes" that collected works from the public at various watershed locations this spring. These public art pieces have become highly coveted and will, along with the other bird boxes,

contain many nice surprises. You may get the box that will be depicted in the August edition of RI Monthly!

The riverside setting could not be any more romantic, with the fall foliage nearing its peak, and the relaxing sound of the Barberville Falls in the backdrop.

This is a major fundraiser for the WPWA. Each year our event has reached maximum capacity, so pre-registration is a must. Tickets are \$50 per person, including a boxed supper and two drink tickets. Those who pay at the door will pay an additional \$15 for a boxed supper, while supplies last.

Tickets are limited, and are available by calling WPWA at 401-539-9017. Or you can email us at info@wpwa.org. Visa, MasterCard, and AMEX are accepted.

News and Notes

Bonner Family donates Pawcatuck River Property

Gail Bonner of Avondale has graciously donated to WPWA the Ashaway property of her late parents, Donald and Elizabeth Bonner. The property is located on the Pawcatuck River just north of the Meetinghouse Bridge on Route 3. The association hopes to create a public river access on the roadside, and a canoe rest on the riverside of the property.

Sen. Kevin Breene sponsors legislative grant for WPWA

This year presents a unique opportunity for WPWA to collect nutrient data on river tributaries. This is because USGS is involved in a study requiring them to gauge streamflow at these locations. The combined data can inform us about nutrient loading into the Pawcatuck estuary. But doing so is costly. Thanks to the sponsorship of Sen. Kevin Breen, WPWA will receive \$5000 to support this initiative. The results will provide the state and other interests direct information and data regarding nutrient loading from the rivers upstream.

Three paddlers complete Pawcatuck River Source to Sea

The 4th annual Pawcatuck River Source to Sea was attended in part by many, but only four paddlers completed each of the five river segments. Those are Susan Sewell, Geoff Sewell, and Manny Costa.

Special thanks go to river leaders Jim Cole, Al Stebbacher, Bev Thomas, Bill Rush, Charlie Hickox and Elly Heyder. Also to the **Willets Family** for hosting the final day celebration, and to the



Denise talks about the river route with Source to Sea paddlers

zaz for the event.

Fish Assemblage Study Underway

The QAPP has been approved, and our team of habitat investigators is deployed.

Dr. Saul Saila has returned to the arena of low order streams in the watershed, this time with interns Melany Cheeseman and Eben Lewis, to collect and count native brooktrout and other species to assess habitat conditions.

Thanks to a grant last year from the Partnership for Narragansett Bay, WPWA has been able to purchase a state-of-the-art Smith Root electrofisher for the study.



Intern Eben Lewis with the new Smith Root electrofisher.

Bradford Fishway Rehabilitation Project gets EPA funding

With the Partnership for Narragansett Bay, WPWA applied for, and was awarded, federal funds through the EPA Watershed Initiative grant for the purpose of rehabilitating the Bradford Fishladder at Bradford Dam. WPWA will receive \$21,900, and will provide, along with community partners, a cash and in-kind match of \$17,250 for the project.

Ritacco Family at Ritacco's Market in Westerly for providing delicious pizzas for the event.

Goals and vision revisited at May Board Retreat

WPWA's Board of Trustees recently met for a five-hour strategic planning session. Trustees reviewed the language of the associations statement of purpose in its by-laws, a change that will require the approval of members at the annual meeting next year. Trustees also reviewed and updated the goals and objectives of the association from its most recent strategic plan.

Prager elected Trustee, Saila and others lauded at Annual Meeting

On May 15, 2003, WPWA's 20th annual membership meeting was held at Wood River Inn in Wyoming. Anna Prager was elected to a seat on the Board of Trustees. Several volunteers were lauded for their work on behalf of the association. These included Dr. Saul Saila, Bruce Clark, and Lawrence Jennino for their efforts, as well as to, Linda Green, Lorraine Joubert, George Loomis, Mitch Salomon, and Jim Latimer for 15 years of volunteer water quality monitoring.

Other news...

The **Richmond Town Council** has appropriated \$500 for FY04 in support of WPWA.

.....

If you haven't already done so, please remember to send in your **membership dues** today!

.....

Look for a piece about our Poetry Boxes in **RI Monthly** magazine in August.

.....

Visit www.wpwa.org to see what's new and what we're up to.

Saila / Urso (Cont'd from page 1)

learn that about 60 times more than this lies out of sight below the ground. This should not be interpreted as a signal that there is an abundance of groundwater. The fact of the matter is that many parts of the world are already suffering from serious ground water deficits. All the water below the water table is called groundwater, but it is not all of the same kind. The most abundant form of groundwater is called meteoric water. This is the water that circulates in the hydrological cycle. A small part of the groundwater does not circulate, and the two kinds which do not circulate are fossil water which is bound in sedimentary rocks, and juvenile water which is formed from molten rock (m a g m a) c o o l i n g .

An important point about most ground water is that it does not just sit in place, but instead it is constantly moving. Compared to surface streams and rivers ground water movement is not fast. Actually, it moves at a rate of about a few inches to a few feet per day. Whether our ground water is moving relatively fast or slowly, it is moving. Any pollutant that enters it will move along with it. The result could be large zones of contaminated ground water unfit for human consumption or other uses, as illustrated in the Canob Park, W y o m i n g c a s e .

Several years ago the residents of Canob Park in Wyoming found that the drinking water derived from their wells had a very unpleasant taste and odor. This condition was eventually traced to a leaking gasoline storage tank

buried in the ground at a local service station. Since the gasoline was leaking very slowly from the underground tank the leak was not quickly detected by the station operators. The gasoline from the service station's leaking tank moved vertically down through the soil until it reached the ground water table and moved with the ground water for a period of time. Imagine that the ground water was moving relatively slowly at a rate of about 10 feet per day. In the course of one year the gasoline contamination would have moved about 3,650 feet, which is about to three-quarters of a mile. This is more than enough to contaminate the entire Canob Park development water supply from this single service station source, forcing the development of a municipal system to supply the homes.

WPWA is beginning to develop and test models that can be used to make deductions about which direction the ground water is flowing in the Pawcatuck Watershed, the rate at which it is moving, and if contaminants are detected, the possible locations at which they may have entered the ground. Our knowledge about ground water in our watershed is slowly improving, and we believe this knowledge will assist the people in our watershed area in making informed decisions about the possible consequences of various forms of development or sources of con-



tamination.

2003-04 Membership

(cont'd from page 3)

Philip Bourque
Erika Boyd
David Brown
Phyllis Brown
Peter Brownell
Philip Budlong
John Butler
Claire Card
Eugene Charrette
Yvonne Colozzi
Dr. Robert Conrad
Gloria Courtois
Katherine Cowles
Joseph Czerwinski
Joseph DeAngelis
Eleanor Delamater
Nathaniel Dodge
Dawn Dove
Vicky Drew
Robert Ellis
Adele Erisman
Winsor Esten
Thomas Farrell
Jordan Galetti, Jr.
Genevieve Gardner
Thomas Ginty Jr.
Thomas Godbout
Lisa Gould
Earl Grant
Art Guarino
Dick Harbach
Larry Hayden
Elly Heyder
Charlie Hickox
Larry Hirsch
Dr. Arthur Hotchkiss
Raymond Hoxsie
James Jager
Howard Johnson

WPWA CANOE AND HIKING GUIDES

Order Form

Wood-Pawcatuck River Guide

By Charlie Hickox and Elly Heyder

\$4.50 per copy (\$3.50 members)

Navigate the Wood and Pawcatuck Rivers from source to sea with this colorful folded map.

Walks in the Watershed

By Charlie Hickox and Elly Heyder

\$4.50 per copy (\$3.50 members)

Sixteen of the watershed's best loop hikes contained in a handy pocket-sized guide



Quantity:

_____ *Wood-Pawcatuck River Routes Map*

_____ *Walks in the Watershed*

_____ *Pawcatuck Watershed Report (free)*

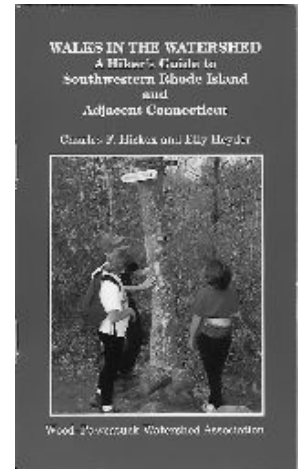
Add \$1.50 postage and handling per item.

Name _____

Address _____

Mail form and payment to:

WPWA
203 Arcadia Road
Hope Valley, RI 02832



(Cont'd from Previous Page)

- Dennis Loudon
- John Lowe III
- Michelle Madden
- Marilyn Malina
- Joanne Malise
- Paola Mangiacapra
- Patrick Manzi
- Donald McGovern
- Joan McGrath
- William Metz
- Peter Meyer
- David Miles
- Scott Millar
- Steven Miller
- Susan Moffett
- Michael Monteforte
- Peter and Alicia Moore
- Dr. Biddle Morris
- Edward Murphy
- Anne Nalwalk
- Noel Nutini
- James O'Brien

- John O'Brien
- Brian O'Connor
- Donald Packer
- Robert Palme
- Robert Palmer
- Michael Palumbo
- Sara Panciera
- John Parker
- Robert Pietrusza
- Gary Point
- Sandra Poirier
- Mary Popiolek
- Nancy Potter
- Bryan Rabbett
- Sylvia Rice
- Dick Richer
- Robert Rohm
- Stanley Rybka
- Jack Samek
- Helen Schell
- George Sedue
- Cathy Sharkey
- Edward Shults

- Skip Simmons
- Elizabeth Smith
- Dr. Richard Slimak
- Henry Snow
- Karin Soderberg
- Roger St. Germain
- St. Leo's Boy Scout Troop 18
- Mary Swerz
- Jim Turek
- Elizabeth Walsh
- John Wardle
- Nancy Weissmuller
- Gary Whitney
- Peter Winne
- Charles Winter
- Helen Wood
- Robert and Karen Woods

If your name has been missed, we apologize. Please call us 401-539-9017.

Application for Membership

Name _____

Street _____

City _____ State _____ Zip _____

Phone _____ Email _____

- _____ Individual \$25
- _____ Family \$40
- _____ Contributor \$50
- _____ Corporate \$100
- _____ Supporter \$100
- _____ Sponsor \$250
- _____ Patron \$500
- _____ Benefactor \$1000

In addition to my dues, I am enclosing an extra contribution of \$_____

All but \$5.00 of your dues is tax deductible within the limits of the law.

Board of Trustees

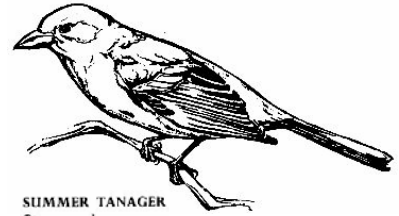
Harold Ward (Woodville), President
 Dante Ionata (No. Prov.), V. President
 Kenneth F. Payne (Prov.) Secretary
 Robert Scheidler (Chas.), Treasurer
 Gaytha Langlois (Wakefield)
 Saul Saila (Hope Valley)
 Richard C. Holliday (Westerly)
 Nancy Hess (Richmond)
 Dawn Dove (Charlestown)
 Michael McAndrew (Stonington)
 Anna Prager (Kingston)

WPWA Staff

Lori Urso, Executive Director
 Denise Poyer, Program Director
 Ana Flores, Artist in Residence
 Melany Cheeseman, Intern
 Eben Lewis, Intern

WPWA Campus

203 Arcadia Road, Hope Valley
 at Barberville Dam
 401-539-9017
 info@wpwa.org
 www.wpwa.org



SUMMER TANAGER
Piranga rubra

Opinions expressed in *Watershed* are not necessarily those of WPWA, its Board of Trustees, or staff.



Photograph of Tefft Mill by
 Salvatore Mancini

Bulk Rate
 US Postage
 PAID
 Non Profit
 Permit No. 9
 Hope Valley
 RI

Wood-Pawcatuck Watershed Association
 203 Arcadia Road
 Hope Valley, RI 02832