



Crystal Whitecaps

The Newsletter of the Crystal Lake & Watershed Association
Vol. 6, No. 1, FALL/WINTER 2009

PRESIDENT'S LETTER

As I write, in the first week of January, a rim of ice is growing almost imperceptibly out from the shores of Crystal Lake, and a cold night of lake-effect snow has transformed my pine woods into a winter postcard.

But, even in the glory of Northern Michigan winter, our thoughts turn often to the coming spring and the joyful work we have before us.


I'm not talking about my garden – though there are plans for extending the deer fence and planting some of the new Saskatoon berries recommended by the Benzie County extension agent.

No, the task that will challenge us this spring and summer (and for many seasons to come) is the work of preserving the quality of Crystal Lake.

The Board of Directors of your Crystal Lake & Watershed Association has set a "key priority" of taking action to understand and control Swimmer's Itch, which returned with a vengeance last year to a number of Northern Michigan lakes (See Swimmer's Itch, page 3). We expect to have much more information in our spring newsletter. *(Continued on Page 2)*

PLANNING & ZONING - WHETHER COUNTY OR TOWNSHIPS?

Quick and cooperative action has averted a potential crisis that could have ended planning and zoning protection for much of Benzie County. Faced with a budget shortfall, the County Board of Commissioners voted to rescind all funding for Planning & Zoning effective December 31, 2009. That would have eliminated zoning in seven townships that use the county service, and would have threatened the Crystal Lake Watershed Overlay District (CLWOD) that has protected the water quality, natural resources, economy, and quality of life in the watershed since 1994 (http://www.clwa.us/zoning_landuse.htm#CLWOD).

Six community organizations - the Benzie County and Frankfort-Elberta Chambers of Commerce, the Michigan Land Use Institute, the League of Women Voters-Benzie Unit, the Benzie Conservation District, and the **CLWA**, came together to support a continuation of zoning, whether through the county or the affected townships. Township leaders persuaded County Commissioners to extend the service at least through March 31, 2010, allowing time for townships to take over the program with no lapse of enforcement. (Lake Township already has independent planning and zoning, while Crystal Lake and Benzonia townships have been part of the county programs.) Though all sides now agree zoning should be continued without interruption, much work remains to be done before the issue is resolved. The Zoning and Land Use Committee of the **CLWA** will continue to monitor the situation and provide input. Our township officials, and county commissioners, Mary Pitcher and Anne Damm, deserve our thanks for standing firm. 

IN MEMORIAM

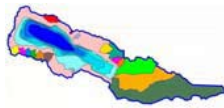


R. WILLIAM ("BILL") DECKER
1934 - 2009

It was with deep regret that the Crystal Lake & Watershed Association (**CLWA**) announced the passing of our dear friend Bill Decker on December 1, 2009. We extend our most sincere condolences to his wife, Char, and the Decker family. Bill served as a guiding light and forward thinker to many of us on matters concerning Crystal Lake. Bill was a native of Michigan, with homes in Grand Rapids and Crystal Lake, West Shore. Beginning in 1951, Bill and his extended family became intimately associated with Crystal Lake. Bill's professional experience in engineering and contracting prompted him to initiate and chair the Ad Hoc Committee of the Benzie County Public Works Department in 1987. This Committee identified water quality and development issues facing the Crystal Lake Watershed. It later became the Crystal Lake Clean Water Committee (CLCWC), which, with the Friends of Crystal Lake (FCL), became the Crystal Lake Watershed Fund (CLWF) in 1994, since leading to many innovative lake management programs.

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"Protecting the integrity of Crystal Lake, Benzie County, now and for the future."



PRESIDENT'S LETTER

(Continued from Front Page)

We are also committed this year to redesigning our ongoing research programs; redoubling our battle to keep new aquatic invasive species out of the lake; restarting a cooperative effort to improve the Cold Creek watershed at the east end of Crystal; and restoring support for strong, protective zoning in the watershed. That's quite an agenda. And it all has to be done on top of such on-going projects as communication outreach at county art fairs; updating the website (www.CLWA.us); attacking garlic mustard and other invasive plants; supporting traffic enforcement on lakefront roads; maintaining student internship programs; coordinating the Crystal Lake Walkabout; and not incidentally, paying our bills.

You might ask, "What's the chance of getting all that accomplished?"

My answer is: "Pretty good, if you help."

I've enclosed a contribution-response envelope with this winter newsletter. If you've not yet renewed your 2010 membership, I'd encourage you to do so now. If you've already renewed, you still have the option of contributing to the 2020 Vision Fund for special projects.

And, I'd also ask you to consider becoming a volunteer. **CLWA** is actively seeking volunteers to serve on committees, staff our booth at art fairs, provide boat transportation for research projects, assist with publications, and help with other tasks. The response envelope has a check box for volunteers, or you can leave a message at the **CLWA** office at 882-4001

I am pleased to report that we are close to one major accomplishment. We believe the long controversy over the proposed DNR Boat Launch at Mollineaux Road will be settled this year. (See "Public Access," below) The results won't be precisely what any of us wanted, but with all sides acting in good faith, we expect to see a launch site with considerably less environmental disruption than the state initially proposed. 📄

- Ed Hoogterp, *President*

In Memorium, R. William ("Bill") Decker

(Continued from Front Page)

Bill was the first President of both groups. [The CLWF, in turn, merged with the Crystal Lake Association (CLA) to become the Crystal Lake & Watershed Association (**CLWA**) in 2004, of which Bill was a Board member, ex officio.] Bill is well known as the author of the prototypical Lake Owners' Manual, "Crystal Lake: Life or Death?" published in 1987 <http://www.clwa.us/PDF/CLWFCLLDTextPicsPDF.pdf>. He also edited seventeen "Updates", which became the CLWF newsletter, "Crystal Shorelines" from 1994-2004.

In 1989, Bill was a leader in promoting the adoption of a precedent-setting ordinance in Benzie County to require inspection and upgrading of all onsite septic systems prior to sale. This ordinance, one of the first in the U.S., is enforced by the Benzie-Leelanau District Health Department, leading to the review of several hundred systems. For more than 25 years, Bill's passion for Crystal Lake was evidenced by his willingness to write and speak out on issues, volunteer his time and boat for water sampling, promoting Crystal Lake at art fairs and public functions, and erecting the "Now Entering/Leaving the Crystal Lake Watershed" signage. Bill was committed to two issues: (1) identification of present and future challenges to water quality, and (2) creation of an equitable and effective watershed management plan. Bill truly raised the awareness of his family, their friends, and everyone he touched with his desire "to protect the integrity of Crystal Lake, Benzie County, now and for the future". 📄


PUBLIC ACCESS

Negotiations are continuing toward resolution of the long-running controversy over state plans for a new Crystal Lake boat launch at Mollineaux Road and M-115. **CLWA** has proposed design changes that would reduce wetland loss and lake-bottom dredging, limit the size of paved parking lots, and add a boat-washing station to deal with invasive species such as quagga mussels. We believe an agreement is likely in the coming months. Those involved in the negotiations are: **CLWA**; the Michigan Departments of Natural Resources and Environmental Quality; Benzie County; and the Crystal Lake Property Rights Association, which represents riparian property owners along the Betsie Valley Trail. Details of any agreement will be featured in next spring's edition of Crystal Whitecaps. Meanwhile, We owe a vote of thanks to the generous donors who helped pay for this long battle, and to Bob Appleford, Ron Renner, Stacy Daniels, Cliff Graves and the others who led this very important effort to preserve the quality of Crystal Lake. 📄




CRYSTAL LAKE ROADSIDE SURVEY

The **CLWA** initiated a Roadside Survey of Crystal Lake during the weeks of August 10 and 17, 2009. This survey encompassed most of the individual parcels along the entire roadside perimeter of Crystal Lake. The project was intended to determine environmental conditions existing along the shoreline as viewed from the road. It was done in cooperation with Northwest Michigan Works!, the workforce development arm of the Northwest Michigan Council of Governments (NWMCOG). Work crews of young adults walked roadside segments while completing standard questionnaires for each parcel. Information was collected for such parameters as: A. Location, B. Buildings & Surfaces, C. Roadside Conditions, and D. Shoreline Conditions. The questionnaires will be compiled and analyzed to show existing environmental conditions, and to recommend future best management practices. A final report will be prepared and posted at www.CLWA.us. This survey is not associated with the assessment of property values. Individual properties will not be identified publicly, but individual property owners may request information on their properties.

The roadside survey may be followed by a lakeside survey to further assess and map vegetation and other shoreline features. Areas of concern will be documented by digital cameras and data entered into a computer database for assessment. Thanks to NW MI Works!: Don Harrison, Project Manager; Jeff Morse Team Supervisor; and the Work Crew members; to Tom Longanbach, Director, Equalization Department, Benzie Co. for providing parcel maps, and to Jim Laarman, Hugh Walton and Stacy L. Daniels for project coordination. 

INVASIVE SPECIES - SWIMMERS ITCH

Mapping of invasive species in the Crystal Lake Watershed focuses on Garlic Mustard (GM), but other nuisances have also received preliminary assessment. Federally funded crews from Northwest Michigan Works! removed several areas of severe GM infestation. GM is a nuisance plant that proliferates rapidly, degrades wildlife habitat, displaces rare plants, and causes long-term degradation of forests by shading out other species. GM is a biennial plant that produces many seeds that survive from year-to-year in the ground. There is some hope that this invasive and destructive plant can be managed with repeated pulling of second-year plants that bloom and form seed pods. The **CLWA** recommends that property owners remove GM wherever possible. The **CLWA** also supports efforts by other local organizations to pull plants with roots intact in spring and early summer and place them in black bags for land disposal at approved collection sites.


The incidence of Swimmer's Itch (SI) was unusually widespread around the Lake in Summer 2009. View the lifecycle of SI at <http://www.dpd.cdc.gov/DPDX/HTML/CercarialDermatitis.htm>. **CLWA** will work with other community and governmental organizations to coordinate a strategy of signage and other activities aimed at monitoring and controlling this serious problem. **CLWA** continues to seek a preventative (vis-à-vis a curative) for Swimmer's Itch. Several possibilities have been identified, but each has its limitations. The **CLWA** is considering a limited voluntary testing panel in 2010. Call the **CLWA** hotline (231/352-5328) to report infestations of GM or incidences of SI. 

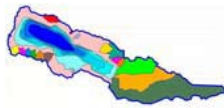
WATER QUALITY

The **CLWA** subscribes to the Cooperative Lake Monitoring Program (CLMP), a long-running partnership between the Michigan Lake & Streams Associations (ML&SA) and the Inland Lakes and Streams Program of the Michigan Department of Environmental Quality (MDEQ). **CLWA** Volunteers monitor water clarity and collect samples for total phosphorus and chlorophyll a for analyses by MDEQ. Data are reported in an annual report for all participating MI lakes by MICorps. Any changes that occur over time are noted to assist lake, river, and watershed organizations in the management of waterfront property. The CLMP is also a cost-effective way for the MDEQ to compile baseline data on lake water quality, determine trends, and compare lakes. The 2009 tests showed Crystal continues in the "oligotrophic" category, which includes only the lakes with the clearest water.

CLWA contracted with Rob Karner, biologist for the Glen Lake Association, to assist our volunteers in conducting deepwater profiles of temperature, dissolved oxygen, pH, conductivity, redox potential, and turbidity, using our own Hydrolab® H20 multiprobe and data logger. One survey

was done in early summer. Another survey was done in late summer with the assistance of Paul Murphy, now with the NPS, who previously was responsible for water quality monitoring for both the former CLWF and then the **CLWA**. Since 1994 the profiles continue to be representative of the good water quality in the deep basin of Crystal Lake. Thanks to Jim Hooker and Terry Herban, for transporting SI/IS & WQ Committee members around the Lake.


The level of Crystal Lake (measured weekly during the summer by the Benzie County Drain Commission) varied only about ± 2 inches of the summer level of 600.25 feet during 2009. The summer (May 1 - Oct 31) level of 600.25 feet, and the winter level (Nov 1 - Apr 30) of 599.75 feet, were set by court order on December 1, 1980 to allow for recreational use in the summer and to reduce shoreline erosion in the winter. Thanks to the Benzie County Drain Commission, Terry Money & Bob Crossman, for maintaining the Outlet Dam and measuring lake level. Graphs of historical lake levels are posted at http://www.clwa.us/water_quality.htm#LakeLevelMonitoring. 



CRYSTAL LAKE "WALKABOUT" - FALL 2009

The Crystal Lake **"Walkabout"** is a program to teach students, property owners, and visitors about the Crystal Lake Watershed using a "hands-on" approach of observational monitoring and environmental exploring. The program focuses on hydrology – how water moves about the watershed - but also addresses water quality, ecology, land use, zoning, wells and septic tanks, green belts, sustainable development and local history. Participants "walk about" Interpretive Sites that represent different parts of the Crystal Lake Watershed, guided by professionals from the cosponsoring organizations. The **"Walkabout"** has now been expanded to include twelve different Interpretive Sites. Those visited this fall included three new Sites: Round Lake, Hurdman's Bay, and the Betsie Lake Utility District, and one previous Site: the U.S. Coast Guard - Station Frankfort.

The Crystal Lake **"Walkabout"** was held on Tuesday, Oct. 6, for 180 students from the 8th grade classes of Benzie Central and Frankfort/Elberta Schools. The enthusiastic participants encountered a crisp fall morning – with some rain – to visit four Interpretive Sites to learn about the Crystal Lake Watershed. The **"Walkabout"** is supported by the dedicated teachers and administrators of Benzie County schools who provide their inquisitive students as participants. Special thanks are extended to the Fall 2009 Site Interpreters: Ed Hoogterp, Jim Laarman, and Sandra O'Neal of **CLWA**; Marie Scott, Jennifer Wurts, and Bill Herd (retired) of Sleeping Bear Dunes National Lakeshore; Dendra Best, Onsite Wastewater of Northwest Michigan; Ernie Elliott and the BLUA staff; and the crew of USCG - Station Frankfort. Dr. Stacy L. Daniels of the Crystal Lake & Watershed Association (**CLWA**) is the **"Walkabout"** Coordinator.

This year (2009) represents the 17th year of the Crystal Lake **"Walkabout"**. Since 1993, this successful program has been presented to more than 4,000 students, residents, and visitors to the Crystal Lake Watershed. It is offered three times each year: Spring (6th grades), Fall (8th grades), and Summer (general public). Each participant receives a commemorative **"Walkabout"** T-shirt with a colorful map of the Crystal Lake Watershed, and (in the Fall) a copy of the **"Walkabout"** Interpretive Manual (available online at www.clwa.us/educ_comm.htm#EDUCATION). Additional **"Walkabout"** T-shirts, Watershed maps, and Interpretive Manuals are available for purchase from the **CLWA**. 

OTHER PLAUDITS, THANKS & CONGRATS

BookWear® by Field Crafts, Inc., for yeoman duty in printing our Fall 2009 **"Walkabout"** shirts.

BaySide Printing, Inc., for continued publication of the Directory & Crystal Whitecaps.

Hadley Boehm, 2009 Summer Intern, for her dedicated research efforts on Swimmer's Itch.

L'Chayim Delicatessen and **Crescent Bakery** for their support.

Steve Loveless, State of the Art Framing & Gallery, for the image on our fall fund-raising letter.

CLWA Members, for their continued interest and support.

Jay Pettitt, former **CLWA** Board, and chair of the Benzie County Building Authority. The Building Authority recently paid off the mortgage on the Benzie County Jail, which will reduce county taxes.

Karen Dennis, Day Bookkeeping, for handling **CLWA's** financial and membership databases.

CLWA ANNUAL MEETING

The Annual Meeting of the **CLWA** was held Saturday, July 18, 2009, at the CSA Meeting Hall, 2128 Pilgrim Highway (M-22). Various posters of watershed issues were on display. Hadley Boehm, our 2009 **CLWA** Summer Intern reported on the status of her research on monitoring of Swimmer's Itch. The recently completed 3-D Model of the Crystal Lake Watershed was unveiled. It will be used in permanent displays at the Point Betsie Light and the Benzie Area Historical Museum. Our thanks to Corey Bechler, Art Teacher at Benzie Central Middle School for his artistic creation.


A short business meeting was followed by Committee updates. Newly elected Board members (2012): Julianne McKnight and Sandra O'Neal; reelected were: Jim Laarman (Board), Alan Appelhof (Vice President), and Bob Schmidt (Treasurer). Our thanks to former Board members: Elizabeth Hill and Susan Kirkpatrick.

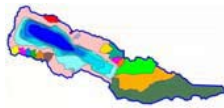
A very special program celebrated "A Century of Environmental Studies of the Crystal Lake Watershed", with remarks by Dr. Alfred M. ("Woody") Beeton, former Chief Scientist, NOAA, who has been involved with Crystal Lake since his PhD research in 1958 (See www.CLWA.us).

Hadley Boehm, our 2009 **CLWA** Summer Intern completed a study of "Monitoring Cercarial Shedding from Snail Intermediate Hosts in Crystal Lake, Beulah, Michigan". She monitored snail populations and gathered water level and water quality data, for use in controlling SI. She also developed presentations on aquatic and terrestrial nuisance species, and helped to coordinate public displays.

Her snail studies showed significant levels of the snail parasites that cause Swimmer's Itch at three of four sites tested around the lake. Separate studies by the Glen Lake and Lake Leelanau associations also found significant infestations of the parasites in those lakes.

Hadley is now enrolled in a M.S. program in Environment & Resources at the University of Wisconsin-Madison to study restoration ecology and plants, planning to continue for a doctorate and teaching at a university or working at a research institution.

Our goal is to continue the snail studies with science interns and, when possible, with assistance from professional biologists or university researchers. 



FINANCIAL DEVELOPMENT

CLWA MEMBERSHIP

Membership in the Crystal Lake & Watershed Association includes: Crystal Whitecaps, The **CLWA** Newsletter; the Annual **CLWA** Membership Directory; progress reports on Crystal Lake Watershed activities and issues; and an active voice in the protection of the Crystal Lake Watershed.

CLWA memberships are \$35 per year. Gifts to the 2020 Vision Fund are for stewardship projects, scientific studies, and educational programs; and those to the Endowment Fund are for future needs. Please contact the **CLWA** with your concerns and comments.

THE CRYSTAL LAKE & WATERSHED ASSOCIATION

"The purpose of the **CLWA** is to protect and promote the natural qualities of Crystal Lake (Benzie Co., MI) and its surrounding Watershed. The goal of the **CLWA** is to preserve for future generations the beauty and recreational resources of Crystal Lake and its Watershed. To these ends, the **CLWA** will engage in water-quality monitoring, educational programs, promotion of harmonious land development, and promotion of the safe use of Crystal Lake. It will conduct other such activities as needed to advocate and ensure the continued aesthetic beauty and environmental integrity of the Lake and its Watershed." (**CLWA** Bylaws)

The **CLWA** is a nonprofit 501(c)(3) organization with over 1,000 members that support a comprehensive program of activities affecting students, riparian owners, and visitors in the Crystal Lake Watershed. The **CLWA** encourages members to contact local and state government on local issues of critical importance to the sustainable development of the Crystal Lake Watershed. The **CLWA** is comprised of the Executive Committee; four standing committees: The Water Quality Committee, the Zoning & Land Use Committee, the Education & Communication Committee, and the Financial Development Committee; along with ad hoc committees on Public Access, Shoreline Stewardship, Finance, Swimmers Itch & Invasive Species, and Long-Range Planning. Our newsletters and webpages describe recent and ongoing activities. Please contact the **CLWA** if you would you like to participate on a Committee!

SUMMER 2009 EVENTS

The **CLWA** continued its outreach activities to the public at six 2009 summer events: the 13th Spring Craft Fair - Frankfort, The Beulah Art Fair, the 33rd Annual Frankfort Art Fair, and the **CLWA** Annual Meeting. Similar events are planned for 2009.

PITTER-PATTER

Have you ever listened to the "pitter-patter" of rain falling on a lake? Have you mouthed sounds like water drops falling on a warm spring pond? The science of how water drops impact a liquid surface is a function of drop size and impact velocity whereby bubble-entraining drops make underwater noise. Bubbles formed by droplets falling into water bodies also affect the exchange of oxygen, the orientation of plankton, the absorption of carbon dioxide, the seeding of the atmosphere with particulates to nucleate rain, and the dispersal of plant spores.

"There will be but few of my readers who have not, in some heavy shower of rain, beguiled the tedium of enforced waiting by watching, perhaps half-unconsciously, the thousand little crystal fountains that start from the surface of pool or river; noting now and then a surrounding coronet of lesser jets, or here and there a bubble that floats for a moment and then vanishes." -- Arthur Mason Worthington (1852-1916), *A Study of Splashes*, London, 1908, 129pp.



Bubbles formed by raindrops falling on Round Lake.

As noted by Andrea Prosperetti and Hasan N. Oguz [The Impact of Drops on Liquid Surfaces and the Underwater Noise of Rain, *Ann. Rev. Fluid Mech.* 25, 577-602 (1993)], "While One can almost regret that so beautiful a process should have been so long unwatched; in addition to aesthetic, scientific reasons for its investigation are readily found."

Under certain conditions, an air bubble can become temporarily entrained in the water. Sound energy radiated by the bubble is often greater than the sound energy radiated by the impact of the water droplet itself! The "patter" may be greater than the "pitter".

For a great video clip of water droplets impacting on a water surface <http://gizmodo.com/5400402/i-never-thought-water-drops-looked-like-this> (Credit: Dr. John W.M. Bush, Professor, and Director of the Fluids Laboratory at MIT.)

(All twelve "Walkabout" Interpretive Sites are marked by on our Watershed map!)

on our Watershed map!)

CLWA 2010 SUMMER INTERNSHIPS

The **CLWA** is anticipating continuing its successful internship program in 2010. If you know of any exceptional young persons with environmental interests and qualifications, please contact the **CLWA**.

Board of Directors

Officers

President:

Ed Hoogterp

Vice President:

Alan Appelhof

Secretary:

Sue Teteak

Treasurer:

Bob Schmidt

Members at Large

Bill Beck

Jim Buzzell

Tom Clare

Stacy L. Daniels

Doug Gibson

Jim Hooker

Jim Laarman

Julianne McKnight

Phil Meek

Sandra O'Neal

Wanda Shreiner

Hugh Walton

Ex-Officio

Bob Appleford

R. William Decker

• 2010 TENTATIVE CALENDAR OF EVENTS •

CLWA

MaySpring "Walkabout"
 May 22..... Board Meeting
 June 26..... Board Meeting
 July 17 Annual Meeting
 Aug.....Summer "Walkabout"
 Aug 14..... Board Meeting
 Sept 18 Board Meeting
 Oct..... Fall "Walkabout"

*Dates for **CLWA** events subject to change.

**All Board Meetings start at 9:00 am in the BLDHD conference room.

LOCAL

Feb 13..... Winterfest - Beulah
 Feb 19-21..... Shiver by the River - Frankfort
 June 19..... Craft Fair - Frankfort
 July 4..... Parades/Fireworks – Beulah/Frankfort
 July 4..... Firecracker 5K Race - Beulah
 July 10 Beulah Art Fair
 July 17 Elberta Art & Crafts Fair
 July 17 Port City Run
 Jul 28..... CSA Arts & Crafts Fair
 July 31 Ecology Day - CSA
 Aug 7..... Crystal Lake Team Marathon
 Aug 20-21 Frankfort Art Fair

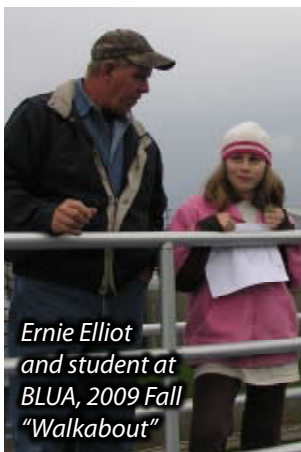
For updated event lists: www.CLWA.us • www.benzie.org • www.frankfort-elberta.com



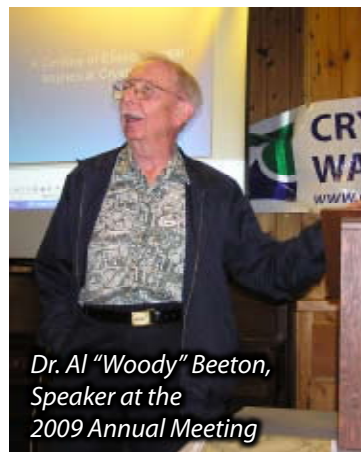
Hadley Boehm and Terry Herban head out on a research project.



Sunset on Crystal Lake, Summer 2009



Ernie Elliot and student at BLUA, 2009 Fall "Walkabout"



Dr. Al "Woody" Beeton, Speaker at the 2009 Annual Meeting



Observers from other lake associations at the Spring "Walkabout" in Beulah Village Park.



A young visitor at the CSA Art Fair with mayfly in hand.



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