

# CLARION

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Colorado Lake and Reservoir Management Association  
P.O. Box 9504 Denver, CO 80209  
[www.clrma.org](http://www.clrma.org)

## President's Doc

By Shelley Stanley



For eight years my office was at City Hall. I had a view of Webster Lake and its surrounding park. It is a beautiful park. The 100 year old cottonwoods living sculptures, their branches thickened by snow in the winter and partially hidden

by leaves in the summer. The trees are a reminder of past times. I wonder if the farmer that once used the "lake" for irrigation water planted them or if they volunteered and in doing so provided farm workers and now urban dwellers respite from the heat. In those eight years, the lake taught me a few things; geese can walk on thin ice with impunity, teenagers not so much, the biggest fish can be caught by the aerators (duh) and the lake is beautiful when the walkway around it is alight with luminaries.

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There is hustle and bustle year round at the lake, frosty temperatures or record heat are not deterrents for people seeking a little exercise or perhaps a respite from hectic lives. Last year, my office moved to the water treatment plant. My new view is of the clarifiers. Lake view lost but private lake gained, the terminal reservoir (TR).

On warm days, it is my habit to eat lunch at the TR. Most times I enjoy watching the fish jump or bird watching, interspersed with the occasional glance at the Front Range, yep that is West. *Article continued on page 2.*



## President's Doc, Continued from Page 1

One beautiful summer day I was engrossed with watching the *Bouteloua gracilis* wave in the breeze, love the little eyelashes. Out of the blue I heard a piercing scream behind me. I hit the ground in time to avoid talons poised to rip my flesh off, or so I envisioned, couldn't really say as I was face down on the ground. A second protest echoed in passing, the bird landed on a cottonwood tree a couple hundred feet away, a near miss. When I recovered my senses, which doesn't take long with an adrenal rush, I had a good laugh. Apparently, I had encroached on the hunting ground of the resident red tailed hawk and she was not interested in sharing the space with me!

A couple days later the lake called again. This time I took reinforcements, Sonja. We trucked up the embankment, keeping a watchful eye out for the dive bombing hawk. Sure enough, she showed up. At this juncture in the story you are probably wondering why I keep referring to the bird as a she. I brought a bird guide with me on this second foray into danger. Seems we had a hawk family, parents and two fledglings, that also enjoyed the TR. This time, she protested my presence by flying over us several times, at a greater height thank goodness, no dive bombing occurred. Thankfully, both parents were more interested in encouraging their preteens to fly off the stockpiled dirt at the opposite end of the reservoir. They were not successful, a challenging age regardless of the species. The fledglings seemed content to watch the fish surface on the TR and maybe even noticed the grass waving in the breeze. Its spring time in the Rockies, let the lake call you.

**Coming Soon!**  
**Lakes Appreciation Month in July!**

**Start planning now for the 2010 CLRMA's Lakes Appreciation Month (LAM) in July.** A national NALMS event that's celebrated in most states, LAM is quickly becoming a mainstay in Colorado. Each year lakes around Colorado are featured with the 2009 focus being on Ridgway Reservoir. Special events were also held at Barr Lake and Cherry Creek Reservoir. This year, Grand Lake, among others, will be the focus for this three-day LAM event July 16-18. Canoeing, kids fishing, H2O Joe, a CLRMA booth, algae identification, kid's activities, a monitoring meeting, and self-guided boat tours complete with a Secchi dip-in by the Mayor occurred in 2005. Planning for a sequel is underway with the Grand Lake Chamber ([www.grandlakechamber.com](http://www.grandlakechamber.com)), local watershed groups and government entities. Stay tuned for more specific details in the next CLARION.

For people on in the Front Range, Barr Lake will be hosting a shoreline clean up on July 17th. Last year over 400 people showed up in the morning to help remove exotic plants and trash from the shoreline, a free BBQ lunch was provided along with free fishing gear and canoeing lessons.

For people on in the Western Slope, Ridgway Reservoir will be hosting the second annual Lake Appreciation Day on July 17th. Last year's LAM event saw record attendance at the park.

More information about these events and others will be updated on the CLRMA website. If you know of or are planning a Lake Appreciation event in July, let CLRMA now and they will help get the word out.

## Green Mountain Reservoir – A Colorado Recreation Gem!



*By Elizabeth Brown,  
CDOW State Invasive  
Species Coordinator*

Green Mountain Reservoir is located on the Blue River, which is tributary to the Colorado River.

Inflows into the reservoir are entirely from native

inflows. There are several tributaries into the Blue River upstream of Green Mountain Reservoir.

Green Mountain Reservoir is approximately twelve miles southeast of Kremmling in Summit County.

The reservoir was constructed by Reclamation between 1938 and 1943 to provide compensatory storage to West Slope residents for water diverted to the East Slope as part of the C-BT Project. Located at the base of Green Mountain Dam, the power plant utilizes the regulated streamflow of the Blue River and the water released from

storage in Green Mountain Reservoir to generate electricity. The reservoir has a total capacity of 153,639 acre-feet.

Green Mountain Reservoir is known for boating, sailing and fishing under a crown of white alpine peaks. Popular fish species include brown trout, cutthroat trout, kokanee, lake trout, rainbow trout and longnose sucker. The recreational boating season begins in May at Green Mountain. Seasonal high use months are June–September. The reservoir is used through December by hunters and anglers.

There are two boat ramps which charge day use fees: Big Green and McDonald Flats. The reservoir is also home to the Heeney Marina, a private marina operated under special permit from the USFS. For the weekend excursion, stay at any of six campgrounds managed by the USFS: Prairie Point, Cow Creek South, Cow Creek North, Willows, Elliot Creek, McDonald Flats. *Article continued on page 9.*



*Photo of Green Mountain Reservoir by Scott Ingram*

## Colorado Volunteer Lake Monitoring Program in its 6th Year

By Steve Lundt

It doesn't seem that long ago when CLRMA first started up the CVLM program. In its 6<sup>th</sup> year, volunteers across the state will be measuring water clarity in some of Colorado's most popular recreational lakes – Stagecoach Lake, Steamboat Lake, Cherry Creek Reservoir, Navajo Reservoir, North Sterling Reservoir, Jackson Lake, Lake San Cristobal, and Trinidad Lake to name a few.

If you are interested in monitoring a lake and participating in the CLVM program, please contact Steve Lundt ([slundt@mwr.dst.co.us](mailto:slundt@mwr.dst.co.us)). It is a great opportunity to learn more about your favorite lake and to help educate others about water quality concerns.

The season officially starts June 1<sup>st</sup> and ends September 30<sup>th</sup>. All equipment is sent to you and

we prefer that volunteers committee to sampling twice a month. New this year for volunteers is the ability to send in data via the updated CLRMA website. There is a new web page dedicated to volunteers to send in their data ([www.clrma.org](http://www.clrma.org)).



## Colorado's First-Ever Alum Permit Issued to Big Elk Meadows

By Steve Lundt

The CDPHE permit department finalized an alum treatment permit on March 12 for Mirror Lake and Willow Lake that are owned and managed by the Big Elk Meadows Association located between Lyons and Estes Park.

The request for a permit was issued by the Association almost 3 years ago and has finally been approved. The purpose of the alum treatment is to inactivate phosphorus that is internally being loaded to the water column in both reservoirs. These lakes have had a history of high nutrients, low clarity, and fish kills. The alum treatment will occur sometime after spring run off in early June.

To see the permit and how the public comments were addressed during the public comment period, go to the CDPHE website:

[www.cdphe.state.co.us/wq/PermitsUnit/PUBLICNOTICE/Marchissuance/CO00047724%20Permit.pdf](http://www.cdphe.state.co.us/wq/PermitsUnit/PUBLICNOTICE/Marchissuance/CO00047724%20Permit.pdf)

There is also a fact sheet that helps explain this one of a kind permit for Colorado.

With the upcoming phosphorus standards for lakes and reservoirs in Colorado, it is exciting to see that the State is willing to consider additional tools to help control phosphorus. Like every other lake management technique, alum is just one way to help control eutrophication and works only when properly planned and applied. Alum also is not the great panacea and will not fix all lake nutrient problems. It is just the newest tool in the tool box for lake managers and if fully understood will be used properly to help improve water quality conditions for lakes around the state.

## CLRMA hosts Algae Workshop



*By Kelly Cline*

On February 22, 2010 CLRMA hosted an Algae Identification Workshop. The class was taught by

Keith Hancock of Spring Canyon Water and Sanitation District and Rhonda Sherman of CHDiagnostics. Both have been in the algae field for a long time. Keith has a diverse range of experience from Algal microscope work, to water distribution GIS, to water treatment Operation's, to Chief to water quality laboratory owner. Ronda has trained in classical phycological techniques to molecular research and development, and is accomplished in protozoan detection and identification from multi-disciplinary facets (CHDiagnostics.com, 2010).

The algae workshop was held at the Colorado Division of Wildlife (CDOW) Hunters Education Building on 6060 Broadway in Denver. I would like to give a big shout out to Elizabeth Brown and staff for organizing and hosting this event. The food and customer service was outstanding. When we entered the building we were greeted with smiles and donuts. This was a good day!

Introductions were the first order of business. Elizabeth handed out t-shirts to the people who drove the furthest. There were 46 people in attendance. CDOW and Consolidated Mutual

Water had the most attendees (6); followed closely by the City of Longmont (5), while the other attendees were from various Cities and Counties, State organizations, EPA, water districts, and Aquatic Nuisance Species Task Force.

After introductions, Rhonda Sherman began the presentation. She presented a power point which covered all the major taxonomic algae groups. Each group was categorized by common characteristic, which are used to separate and classify the algae. Rhonda did a great job in presenting the different algae. The photographs were outstanding and really helped to portray the distinguishing characteristics of all the different algae groups. The major algae groups covered were Bluegreen Algae, Chlorophyta, Euglenophyta, Dinophyta, Cryptophyta, Chrysophyta, Rhodophyta, and Diatoms. Other things like amorphous debris (clay, silt, sand, inorganic, and detritus), and diatomaceous earth were also covered. At this point, Paul Winkle from CDOW asked, "How do you tell if something is diatomaceous earth or a diatom"? Answer: No chlorophyll a in diatomaceous earth, it is just a shell. Good question Paul!

After a short break, the presentation continued with a detailed description about protozoa and ciliates and some general characteristics. I heard a few folks say this was particularly helpful because many of these critters have shown up in plankton tows and they didn't know what to call them. *Article continued on page 10.*

Join CLRMA!  
Visit [www.clrma.org](http://www.clrma.org) for a 2010 membership form.

## Introducing Mr. Rusty Crayfish

*By Elizabeth Brown,*  
State Invasive Species Coordinator

The ice is slowly melting off the plains reservoirs and in a few short weeks the snow and ice will be melted off the high country lakes and reservoirs. That means it's time to get inspectors on the ramps to prevent zebra and quagga mussels or any other harmful invasive species that hitchhike on boats and trailers from getting into our precious waters! We are busy working with our partners to get staff hired, trained and on the ground. Although we have more than enough work to protect our waters from mussels, there's a new kid in Colorado that is requiring quite a bit of attention... Introducing Mr. Rusty Crayfish!

Rusty crayfish (*Orconectes rusticus*) is an invasive crustacean that colonizes lakes, rivers and streams. They are more aggressive than native crayfish (although there are no crayfish native to the west slope of Colorado). They are also better able to avoid fish predation and can harm native fish populations by eating their eggs and young. They graze on and eliminate aquatic plant populations that provide necessary habitat and food source for native fish and waterfowl.

Rusty Crayfish are native to the Ohio River Basin in Ohio, Kentucky, Tennessee, Indiana and Illinois. They have expanded their native range to include 22 other states and Ontario. The primary method of introduction is through bait bucket release by anglers. Other methods of dispersal include aquarium release by hobbyists, activities of commercial harvesters, and live study specimen release by teachers and students who buy them from biological supply houses. Despite warnings and regulations they are released into inappropriate natural locations. Females can carry fertilized eggs or a male's sperm so the release of just one female could establish a new population.



This crayfish can be up to four inches long (excluding claws) and is distinguished by the rust-colored patch on each side of the carapace, black tips on the pincers, and an "S-shaped" moveable pincer. Education of anglers, bait dealers, and teachers is the best method to prevent introduction of this species. There is no eradication method that does not also kill fish and other aquatic species.

The CDOW staff discovered rusty crayfish in a main-stem impoundment of the Yampa River and in two river locations between Steamboat Springs and Stagecoach Reservoir in 2009. The specimens were identified as rusty crayfish by the State Fish Pathologist, the Assistant State Fish Pathologist and confirmed by the Illinois Natural History Museum. ANS Regulations require a positive identification by a minimum of two experts in order to declare a water positive. In this case the burden of proof exists to declare select areas of the Yampa River Basin positive for rusty crayfish.

The State of Colorado Rusty Crayfish Management Plan has been drafted to bring together all interested parties in a collaborative process to determine the best management practices for containment of rusty crayfish in the Yampa Basin and prevention of introduction into new waters. If you have any questions or comments, please contact me at 303-291-7362 or [elizabeth.brown@state.co.us](mailto:elizabeth.brown@state.co.us).

## Crayfish Field Identification

By Carolyn Gunn, CDOW Assistant State Fish Pathologist

Keep your eyes open in the field for possible rusty crayfish and send suspect specimen to the CDOW Aquatic Animal Health Lab (CDOW AAHL Attn: ANS – 122 E Edison, Brush, Co 80723). Collecting crayfish for accurate taxonomic identification may not be easy. Follow the guidelines below to be sure you get a sample that can be identified to species!

Breeding male crayfish (Form I males) are used for accurate taxonomic identification of crayfish, as they exhibit the necessary characteristics for accurate identification. Females, juveniles and Form II males (males that have partially transformed back to juvenile-like morphology after the breeding season) should not be used for identification to species. Because crayfish body size increases with each molt, size cannot be reliably used to identify Form I from Form II males, as a Form I male in its first reproductive year can be smaller than older Form II males.

Form I males are distinguished from juvenile and Form II males by the presence of rigid projections on the tips of the pleopods (shown in top photo). These pleopods extend from the base of the abdomen and lie against the ventral body wall. They can be extended from this position by lifting them up with forceps or the tip of a sharp object. In Form II males, these projections are less clearly defined, softer, and a more dull color. In females, they are small and flexible or completely lacking. Females can be distinguished from all other crayfish by presence of a seminal vesicle (shown in bottom photo).



Pleopods on Form I male crayfish



Seminal vesicle on female crayfish  
(Photos by C. Gunn)

## NALMS NEWS

By Chris Knud-Hansen



This column will be a regular feature in the Clarion, with the goal of keeping the CLARA community informed of what's up at NALMS. First topic, what is NALMS?

Those new to CLRMA may

not appreciate that we are one of over twenty Affiliate Members of the international North American Lake Management Society, or NALMS ([www.nalms.org](http://www.nalms.org)). Furthermore, CLRMA's own Steve Lundt is the NALMS coordinator for the Affiliate Member organizations.

NALMS was founded in 1980, with a primary focus on education at many levels. Members come from all walks of life, with a common interest in protecting and managing our freshwater lakes and reservoirs. Scientists, regulators, professional lake managers, academics, volunteer monitors, legislators, students, lake property owners, homeowner associations, lake users, and lake lovers are among the variety of folks who have joined the aquatic melting pot known as NALMS.

*CLRMA is one of over twenty affiliate members of NALMS. Check out [www.nalms.org](http://www.nalms.org) for more information on the National Lake Management Association.*

NALMS provides the North American lake community a variety of ways to learn, network and communicate. Perhaps the most notable is the annual International Symposium held each fall. This year will be the 30th, and will take place in Oklahoma City, OK, on November 3-5, 2010. In addition to the monthly electronic newsletter called NALMS NOTES, NALMS also publishes two quarterly publications: LakeLine Magazine targets the general public and lake users, while Lake and



Reservoir Management is an international journal with technical, peer-reviewed papers. NALMS also has a professional certification program, and there are about 70 Certified Lake Managers (CLMs) nationwide, including five CLRMA members (Travis Bray, Kelly DiNatale, Chris Holdren, Chris Knud-Hansen, and Steve Lundt). There are other services NALMS provides, including policy statements, educational resources, a "water words" glossary, a NALMS store, job listings and advertising opportunities. NALMS is also an important resource for volunteer monitoring programs, and a sponsor of the annual Secchi Disk Dip-in, a nationwide (becoming worldwide) mid-summer survey of lake water clarity.

Organizationally, NALMS is divided in similar regions as the EPA. Colorado is in Region VIII, and Chris Knud-Hansen is the current NALMS Director for Region VIII. There will be a NALMS Board meeting in Denver on April 24th, 2010, with many members joining CLRMA baseball enthusiasts at the Rockies game on April 25th. So, if you have any questions about NALMS, or have ideas how NALMS can better serve your lake management needs, or why you should consider joining NALMS if you haven't already, please contact Chris (contact info on last page of the Clarion).

## Green Mountain Reservoir, continued.

The Dillon Ranger District of the USDA White River National Forest headquartered in Glenwood Springs, CO manages the public developed recreation sites surrounding Green Mountain Reservoir on a seasonal basis annually from May through October. National Forest System lands near Green Mountain Reservoir are located primarily on the North and East shores of the reservoir with 3 sites along the western shoreline.

The town of Heeney is a small rural unincorporated town that is situated on the hillside along the west side of Green Mountain Reservoir, in the valley of the Blue River, between Kremmling and Silverthorne. The community consists of permanent residences and vacation homes perched above the reservoir.

For a unique recreational experience, off the beaten path, surrounded by one of a kind vistas, on one of Colorado's important reservoirs, only a few hours from Denver, check out Green Mountain Reservoir!



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## Algae workshop continued from page 5.

I concur, I've seen all sorts of strange invertebrates in my zooplankton tows, and any help identifying them is always greatly appreciated.

Next came lunch, which was fabulous. There was an assortment of sandwiches to choose from. Mine was particularly good. I tried to talk with a few folks during the intermission, but the sandwich and cookie smorgasbord keep getting in the way. Did I mention an assortment of 7 different types of yummy cookies? Thanks again Elizabeth, my Body Mass Index went up another couple of points.

After lunch there was an open discussion about algae enumeration techniques. Some people concentrate algae via Imhoff style settling cones, or with filter apparatus and filter, while others chose **not** to concentrate at all. Most people ran

live samples, but some chose to preserve with Lugol's solution. The most popular methods used for counting were via Palmer, or Sedgewick Rafter Counting Cells.

The workshop ended with everyone getting to look at live algae samples. There was a large variety of different scopes and plenty of help for everyone if they had questions, or problems. Thanks Keith and Rhonda for providing such good algae samples. Thanks to everyone who brought in microscopes for people to use.

Another workshop has been discussed for the future. We are thinking that a more advanced, and detailed class might be in order. We will be sending out questionnaires to solicit everyone's opinion on what they would like to see in the future.

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## Ask the *Lakespert*



By Steve Lundt

**Q: Now that I took the algae ID workshop, what do I do with that information? How do I set up an algae monitoring program and what will it tell me about my reservoir?**

*Thanks, Wrappin Upe (Power Wash, CO)*

**A:** All very good questions Mr. Upe. First and you probably already knew this, what you learned at the algae workshop just scratched the surface. A second algae workshop scheduled for August will go into more detail about the ecology of algae and focus on blue-greens. Understanding the biology and the few web of your lake or reservoir is key to understanding the entire picture.

Algae are the primary producers and are key to supporting a healthy and balanced aquatic system. Algae provide a steady food base for the grazers which then support fisheries. Algae are great at producing dissolved oxygen and recycling nutrients. Any one who manages or monitors a lake or reservoir should be collecting and identifying algae on a regular basis. The first sign that something maybe out of balance with a lake is when the algae grows excessively.

It does take some special equipment to start up an algae monitoring program. First you need the net to collect the algae. A Wisconsin plankton net with a collection bucket with an 80 micron screen costs around \$250. Then you will need to acquire Lugol's Solution to preserve your samples. That's it. Then you will do one of three things with your samples: 1. Let them build up until your refrigerator is completely packed, 2. You will use

a microscope and count and ID them on a timely schedule, or 3. You will send your samples off to a professional phycologist.

Once you get back the data from your algae sampling, you will have in front of you very important information that can tell you a lot about your lake. Like people, algae are unique and picky. Each kind of algae has a set of unique preferences to grow. Water temperature, light availability, silica/minerals, nutrient levels, and other aquatic conditions determine what kind of algae will dominate.

What most lake managers are looking for are the blue-greens and trying to figure out when they will crop up and how to avoid taste/odor problems and aesthetic issues that they cause. This is what the workshop will focus on in August.

This probably didn't answer your last question on what will the algae data tell you about your lake. I do suggest purchasing a couple of good algae identification books and start learning about their natural growth cycles. Also a great book to have is titled, "Toxic Cyanobacteria in Water" published on behalf of the World Health Organization.



The Lakespert is going hi-tech. A new feature to the CLRMA website will be the Lakespert page. Please send any comments or questions to CLRMA via the Lakespert webpage. A lake professional will answer or address your comments and questions in a timely manner. So go to [www.clrma.org](http://www.clrma.org) if you have any lake and reservoir management questions.



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