

TLA Quarterly

OCTOBER 2010

President's Letter

In this issue

Summer 2010 was an extraordinarily busy time for TLA volunteers. On behalf of TLA membership, a BIG THANK YOU TO ALL TLA VOLUNTEERS who continue to help protect Torch, Bellaire, and Clam Lakes.

One of this summer's activities involved more than 500 person-hours of volunteer time searching for near-shore telltale signs of excess phosphorus entering the lakes by documenting the locations of patches of Cladophora bright green filamentous algae. An article in this newsletter briefly describes this summer's internship project that involved six high school interns and five TLA adult mentors kayaking around the 60+ miles perimeter of these lakes plus the time preparing a written report and presenting summaries of the project findings. Part of the good news is that far fewer patches of Cladophora were found this summer than were found in a similar survey conducted in 2004, which means more residents are conscientiously caring for their lawns, septic systems, shoreline greenbelts, and storm water run off in a lake friendly manner.

E. coli test results from more than two-dozen tributaries were obtained and reported each month this summer, thanks to several volunteers who contributed more than 100 person-hours of time on this ongoing project. Information from this monitoring program helps reduce uncertainties regarding the high variability in test results and the information helps locate potential sources of contamination.

Thanks to the efforts of TLA's Zone Directors, TLA's membership is growing and now exceeds 500 memberships. The names of zone directors in each township are identified on pages 2 of each TLA Newsletter. Please do not hesitate to become acquainted with your zone director and to express your expectations from TLA.

TLA's Environmental Education Outreach Program has been remarkably successful, thanks to the efforts of Patricia Roush. Her personal contact with each of the 95 science teachers and principals in the four school districts within our watershed is helping to build partnerships with the schools and the future environmental stewards within this watershed.

For those that would like to read an advanced copy of TLA quarterly newsletters via e-mail, and receive an occasional piece of lake-related news in a timely manner, please become a SUBSCRIBER to TLA's Web-based TLA Alert system by submitting your name and e-mail address to our Website: www.3lakes.com. Simply fill out the box in the lower right corner of the Website's homepage entitled "Subscribe to Alert List", and then click "submit". Typically Alert messages are one or two sentences that very briefly indicate the nature of the message plus a link to click on, if you want to read more information about the specific Alert, for example the Newsletter. E. coli test results are posted shortly after the results are received from the lab.

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Regards, Dean Branson

The Mission of the Three Lakes Association is to provide leadership to preserve, protect, and improve the environmental quality of the Elk River Chain of Lakes, especially Torch Lake, Clam Lake, and Lake Bellaire, for all generations



THREE LAKES ASSOCIATION

Founded 1966

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Keller Family

July 10, 2010

We are writing to tell you our story about how five cousins cleaned up Torch Lake. A few days after the Fourth of July we canoed down the Rapid River and into Torch Lake. When we were canoeing home through Torch Lake we saw lots of trash. We knew we had to try to do something about it. The next day we strapped on our goggles and slipped into bathing suits so our Aunt Cynthia could take us on the jet-ski with a paddle board dragging behind to pick up trash by the sandbar. The first time we came back with cans, bottles, an anchor, and sunglasses. Wow! We had seen more trash but had over filled the jet-ski the first time so we went back for more. This time we took the canoe instead of the paddle board behind the jet-ski. We found fewer cans, only 2 bottles, and a hat. We were surprised and sad to see that the cans and bottles were normally gathered in large groups under the water. It seemed as though someone had just dumped all their cans in the lake. Red cups were also abundant, yet spread out. We think that everyone should pick up trash in the lake. We've made it our annual Fourth of July pickup and you can too. All you need is a boat and a few trash bags. You can also help by making sure that when you're on a boat you keep all possessions, including trash, inside the boat in a place that it can't blow away. Torch Lake is the third most beautiful lake in the world and we'd like to keep it that way. Thanks!



Greta and Sophie Keller, Tommy Conroy, and John and Jane Patti

P.S. We found 270 cans and glass bottles, recycled them, and made \$27.00 which we are donating to the Three Lakes Association. We sent the check by mail today.

Sophie Keller

Stream Monitoring for E. coli

by Bob Oswald, Becky Norris, and Jack Norris

TLA's Environmental Lake Watch Program continued its stream monitoring efforts in 2010 with three scheduled sampling events, one each in June, July, and August, and several follow-up sampling events to determine if elevated E. coli counts that were found were transient or persistent. On the first sampling event only one stream, Spencer Creek at Alden Harbor, was found to be slightly polluted with an E. coli count over 300 colonies per 100 ml (the Michigan water quality standard upper limit for body contact with water). Rechecks later in the summer found E.

coli counts well within expected limits for natural surface water. On the second sampling event there were ten sites with elevated E. coli counts, mostly from creeks flowing into the northeast tip of Torch Lake. These results could have been weather-related, with stormy weather stirring up bacteria from creek bed sediment into the running waters. One stream in particular, Wilkinson Creek, has continued with repeated sampling, to show markedly elevated E. coli counts. This resembles findings in other years for Eastport Creek. Both of these creeks flow through large areas

of wetlands with mucky floors. Further testing of Wilkinson Creek for possible presence of disease-causing E. coli is ongoing. Results from TLA's testing of Wilkinson Creek may be reviewed with the health department. Last year extensive exploration and upstream sampling of Eastport Creek failed to identify any remediable source of E. coli contamination. Testing of Eastport Creek also for disease-causing E. coli may be warranted in the future.

For a more extensive list of tributaries than seen here see the TLA website {www.3ales.com}.

E. coli count (colonies/100 ml)			
Location	2010 Range	2009 Range	2008 Range
Spencer Creek @ Alden Harbor Creek @ 10407 SWTLD	96-483 87-548	51-119 23-31	75-93
Powell @ 7056 NWTLD Creek @ 6187 NWTLD	144-1414 150-649	30-548	119-326
The Creek @ 6049 NWTLD Creek @ 5843 NWTLD	111-1046 58-579	88-308 35-179	115-285 138-192
Eastport Creek @ M-88 Wilkinson Creek @ 4358 NETLD	214-1046 135-2419	210-1414 77-147	210-387 73-947
Do-Di-Ah-Da @ 4054 NETLD Bennett @ 3487 NETLD	101-2419 36-687	19-67 32-58	84-178
Wolgammott @ 3296 NETLD Meggison S. of 3028 NETLD	96-345 144-727	38-91 36-365	75-326 31-55
Krause @ 253 NETLD Clam River @ Butch's Marina	49-308 9-26	23-38	19-53
Intermediate River @ Bellaire Hwy Cedar River @ Schuss Mt Rd	32-113 17-40	7-11	9-29
Shanty Creek @ M-88 Grass River @ Grass River Rd	9-37 19-155	12-48	17-41
Cold Creek @ Tyler Rd	12-35	14-15	10-56

New Members Since July

Carol Wierda, Erick and Susan Zanner, Jason and Michelle Sprik, Annabelle Miley Family, Libby Giannestras, Kevin and Holly Hatch, Lath and Whitney Keller, Bryan and Patty Edmonson, Laurel Dawson, Jeff and Amy Bucklew, Jason and Anne Helbig, Bobb and Andrea Ford, Greg and Bonnie Wojtaszak, Stuart and Claire Doyle, Jeanne Newman, Susan Celek, John Courtright, Michael Daley, Mike and Lynn Atkins

Eurasian Watermilfoil: Pioneering Colonies in Torch Lake

by Dean Branson and Norton Bretz

In response to recently discovered small colonies of Eurasian watermilfoil on the east shore of Torch Lake just south of Clam River, TLA is developing a battle plan. This invasive aquatic weed spreads rapidly to form dense mats which can interfere with boating and fishing. It can replace native aquatic vegetation and is spread from other lakes on boats and boat trailers. It is not unusual for areas around docks, boatlifts, and harbors

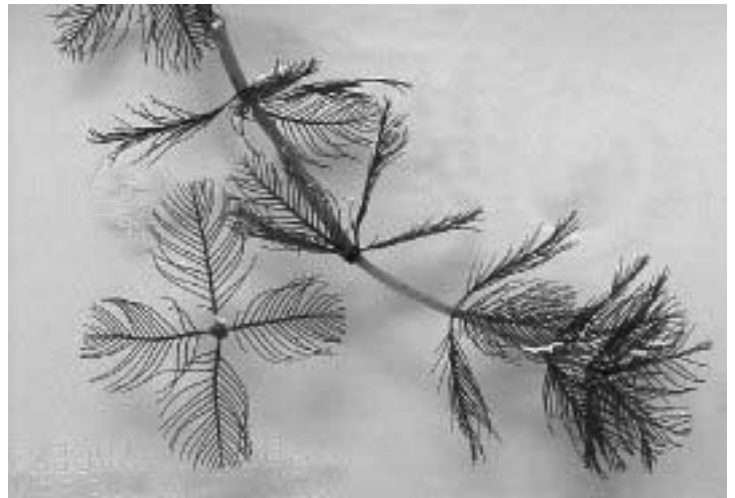
in other lakes to become so infested that very costly annual measures are needed to manage these weeds. Eurasian watermilfoil has been in Alden Harbor and at Butch's Marina since about 2000. TLA treated both areas with an herbicide in 2005 and several areas on Six Mile Lake are currently being controlled with weevils. So far the Torch Lake colonies are relatively small and cover a limited area; so our goal is to develop a

plan for early-stage removal of whole plants, i.e. nip this problem in the bud, if possible.

The predominant mode of spreading for Eurasian watermilfoil is through broken fragments that float around the lake, collect around shorelines, docks, and existing native weedbeds, and then take over via their rhizomal clusters of roots.



Northern (native) watermilfoil



Eurasian watermilfoil

The conventional wisdom from Eurasian watermilfoil experts from MSU, DNRE, other lake associations, and Enviroscience (supplier of Eurasian watermilfoil-eating weevils) is to remove whole plants from small pioneering colonies, as soon as possible. A firm that works collaboratively with Enviroscience (Aquacleaners of Michigan) has been identified that uses divers to hand-dig plants and then suction equipment to transfer the dug plants into filter bags on the surface. DNRE does not require a permit to remove small patches of Eurasian watermilfoil plants using diver-assisted suction equipment. For larger infestations, experts recommend introducing naturally occurring weevils that feed on Eurasian watermilfoil, covering the plants with black

plastic film to deprive the plants of light, or using herbicides at critical times during the Eurasian watermilfoil growth cycle. In fact, underwater mowing is used on a number of Michigan lakes to control Eurasian watermilfoil. In 2005, TLA worked with an aquatic weed control firm, the owners of Alden Harbor (Helena Township), and Butch's Marina to apply an herbicide to known colonies in these areas. Eurasian watermilfoil was substantially reduced but not eliminated. There are downsides to all these control methodologies including cost, non-specificity, and ineffectiveness.

At TLA's September 14th Board meeting, a special taskforce was asked to conduct a late-fall survey of suspicious beds of existing aquatic vegetation to determine the size

and location of other possible colonies of Eurasian watermilfoil, and to propose a set of specific actions to address this problem early next spring. Several families and organizations, including TLA, have already indicated a willingness to help implement the recommended action plan and TLA will be actively soliciting donations and other support from riparians in the problem area. If you observe either a suspicious floating fragment, or if you are interested learning more about TLA's recommended response to this threat to our lakes and would like to express your willingness to help, please contact either Norton or Dean (info@3lakes.com) 231-533-4852 or P.O. Box 689, Bellaire, MI 49615.

TLA Environmental Education Outreach Begins Third Year

by Patricia Roush

Over the summer, the Three Lakes Association Board of Directors voted to continue the education outreach program and to fund it at \$10,000 for the 2010-2011 school year. \$3,200 is dedicated annually to underwrite a learning experience aboard the schoolships of the Inland Seas Association for one classroom in each of the four districts served by the program; Bellaire, Central Lake, Kalkaska and Mancelona. The remaining funds will be available to science teachers who request help with events, trips, materials, equipment, etc. to enhance the students' learning experience. TLA refers to these requests as Wish Lists. In early September, information packets will be given to every teacher of science and the administrators in our four districts. The packets contain all the information and guidelines necessary in order to participate in the Wish List Program, as well as reminder letters that the Carol Gray Norris Education Fund is available to their students at any time during the school year to help with science project expenses.

Wish Lists are due in mid November; the Education chairperson and officers will make selections and recommend approval of the full board in January. Awards will be announced and funds given to the schools by the end of January. By giving out awards in January, requesting teachers will be able to implement this school year. (Please find



Carrick Conway and Kyle Hiltman, biology students at Central Lake High School using a phosphate kit at Thurston Park in Central Lake. Eric Boyce is their biology teacher.

archived articles on the TLA Environmental Education Outreach Program in TLA Newsletters from 2008, 2009, and 2010.)

Education is part of the mission of Three Lakes Association. Our organization educates in various ways: newsletters, summer education events, yearly intern programs which work with high school students to do science research on our

lakes, team or individual mentoring, and the outreach program. Our efforts make a difference to area students and adults alike and support of the membership makes it happen. We encourage members to earmark donations to education.



Annual Meeting: July 21, 2010

by Dean Branson

About 100 TLA members attended our Annual meeting at Shanty Creek Resort. TLA's activities for the previous 12 months were officially ratified, and the voluntary services of three board members who resigned during the past year were recognized (Bob Kollin, Judy Stuart, and Secretary Claudia Drake). Seven board members who completed a two-year term and agreed to service for another two-year term were re-elected, and a new Zone

Director for Milton Township, Don Watkins, was elected. During this past year Nancy Hanson and Vickie Avery were appointed by the Board during this past year, as new Zone Directors for Helena and Forest Home Townships, respectively. The Board also appointed Tina Fields to be TLA's Secretary.

Kim Clark, Bellaire High School Biology teacher, was one of the science teachers who received a grant from TLA last year, as part of our Environmental Education

Outreach Program. Kim presented an overview of the project for which the grant was received. In addition to an enjoyable meal, attending TLA members also enjoyed some humorous music by Mike Ridley.

2010 TLA High School Internship Program

by Norton Bretz, Melissa Makowski, and Art Hoadley

This year our interns completed a Cladophora Survey of Lake Bellaire, Clam Lake, and Torch Lake. The interns were six high school Juniors: Emily Blaney of Ellsworth High School, Jake Crawford of Kalkaska High School, Marisa Kerr of Bellaire High School, Jessica Kubin of Mancelona High School, Natalie Ranger of Elk Rapids High School, and Sadie Small of Bellaire High School. Our TLA volunteers were Melissa Makowski, Doug Morse, Trish Narwold, Becky Norris, and Art Hoadley. An orientation program was held in mid-June and the cladophora survey was begun June 25 on Lake Bellaire and finished August 6 on Torch Lake. The field work was done on Friday mornings from 8 AM until 12 noon with TLA providing lunch at the end of each day. The students and volunteers kayaked 61 miles of shoreline and identified 51 cladophora sites. All the sites were sampled and their location established with GPS coordinates.

Three weeks in August were spent writing a report summarizing the results and preparing a PowerPoint presentation for the interns to deliver to their school boards and the TLA Board (to

be done October 12). A comparison was done with our 1983 and 2004 surveys, but little correlation either in the lakes having the majority of the sites or in the location of the sites one each lake. For example, in 2004 there were 69 major sites with 45 of them in Torch Lake while in 2010 there were 26 major sites with 22 of them in Clam Lake. The report is still being reviews by the students and volunteers but will be finished before the October TLA Board Meeting. Student presentations to the five school boards will begin in October and continue through December. We are grateful for the support of the Grand Traverse Regional Community Foundation's Antrim County Endowment Fund.

TLA did Cladophora surveys in 1983 on Torch Lake and with high school interns in 2004. The table below shows a comparison of the number of sites for each year. In this table CSI is the Cladophora Site Index, a measure of the size of the patch: $CSI = (\text{Length in feet}) \times (\text{Width in feet}) \times (\text{Filament length in inches})$. In 2004 no patches with a CSI under 50 were recorded and in 1983 only Torch Lake was sampled.

Cladophora Site Number Data Summary						
	Torch Lake		Clam Lake			
	CSI > 50	1 < CSI < 50	CSI > 50	1 < CSI < 50	CSI > 50	1 < CSI < 50
2010	4	5	22	7	0	2
2004	45	n/a	11	n/a	13	n/a
1983	12	50	n/a	n/a	n/a	n/a



Student Interns Marisa Kerr, Jake Crawford, Emily Blaney, Natalie Ranger, and Jessica Kubin

Closing Your Cottage for the Season?

Please don't throw away any food packages or cans that are not open. The Bellaire Food Bank would be thrilled to accept all of your foodstuffs, even those with an expired "use by" date. Drop off your donation at the

food bank located at 205 East Broad Street (across from the courthouse) in Bellaire. The hours of operation are Mondays 10-4; Thursdays 10-4; and Saturdays 10-12. The need is great as unemployment in this county

is horrendous. Cash donations are welcome for this 501(c)(3) charity, which can be sent to Box 252, Bellaire, Michigan, 49615.

Bay Harbor CKD Leachate Problem: Update

by Dean Branson and Gary Knapp

A third consensus letter was sent from the Regional Stakeholders Group (RSG) to EPA and DNRE officials on August 25th. This letter represents a major accomplishment in developing an expression of community acceptance for a package of final remedies for the Bay Harbor site. The topics covered in this consensus letter include the following:

- The RSG acknowledged that some CKD-related mercury will continue to migrate around the leachate collection system and into Little Traverse Bay, and that some of the concentrations of mercury are expected to exceed the State's criteria of 1.3 parts per trillion (ppt). The RSG supported the use of EPA and DNRE existing regulatory rules, "Technical Impracticability" for determining whether sufficient containment of the CKD has been achieved.

- The RSG rejected, as not viable, the alternative remediation that would involve full removal of CKD from the site and constructing a new CKD

containment system for the removed CKD, but recommended retaining the option of targeted removal of a portion of the CKD. The RSG supports the concept of viability being based on Effectiveness, Implementability, and Cost.

- The RSG supported the recommendation that EPA's, DNRE's and CMS's current "pre-Interim Response" measures are already in place or being installed at three of the four locations in the Development Area (West CKD, Seep 1, and Seep 2) are sufficient, and that no additional remedies at these locations are needed.

- For the 4th location, Pine Court, the RSG agreed to take more time to evaluate possible additional engineering controls such as installing various types of water diversion technologies, before developing a consensus statement.

The RSG were unable to come to an agreement to treat the CKD leachate in the City's wastewater treatment plant. Two new permit applications are being reviewed by the RSG...one permit application to

build a new wastewater treatment plant on-site and discharge treated leachate that complies with the State's surface water criteria for mercury & other chemicals of concern, and another permit application to drill an on-site deep injection well.

Besides TLA, the RSG consists of about a dozen other organizations, including watershed & environmental councils, several local units of government, and other lake associations. EPA, DNRE, CMS, the Health Department, and the Little Traverse Bay Band of Odawa Indians are part of the RSG but non-voting, ex-official active participants. There appears to be general agreement within the RSG that the less CKD-mercury released to the Bay, the better.

For further information TLA members are encouraged to contact TLA's representatives on the Regional Stakeholders Group, Gary Knapp or alternate Dean Branson.

TLA Chain of Lakes Loon Research Program

by Joe Kaplan

Three Lakes Association invited Joe Kaplan, director and co-founder of Common Coast Research and Conservation (CCRC), to draft this article for our Newsletter in part to help explain our Board's rationale for contributing \$1,000 along with an additional generous challenge grant of \$1,000 from the Dole Family Foundation. CCRC is a non-profit research and conservation organization located in Escanaba, Michigan. This research organization emphasizes long-term monitoring of Common Loon populations throughout the Upper Great Lakes, including the Chain of Lakes. Joe has co-authored several research papers on mercury-related threats to loons.

The health of our aquatic systems is often measured by the life it supports. The Common Loon, an iconic symbol of wilderness that inspires admiration among naturalists and artists alike, is a sentinel of environmental health. In Michigan, the loon is designated Threatened Species with fewer than 800 breeding pairs remaining in the state. The factors that challenge the future survival of this species are the same that threaten the integrity of our lakes. Fortunately, concerned citizens and scientists have worked diligently over the past two decades to stabilize loon populations and their efforts appear to be



Joe Kaplan and a 19-year old male loon banded in July 2010 on Lake Bellaire, photo courtesy of Bill Truscott.

working. Loons respond to conservation. Shoreline protection, pollution reduction, and public education all play a part in maintaining, and in many instances, enhancing loon populations in Michigan. Nowhere in Michigan is there a better

example of this than in the Elk River Chain of Lakes Watershed. Encompassing more than 500 square miles, the watershed includes 14 connected lakes which hosts nearly 20 loon pairs and a dedicated group of volunteers committed to maintaining a viable breeding loon population.

Unfortunately, not all threats that loons face have known solutions. Driven by the proliferation of invasive species such as the zebra and quagga mussels and round goby, the re-emergence of botulism on the Great Lakes has now killed over 15,000 loons over the past 10 years. The recent Gulf oil spill also casts an uncertain light on the future of Michigan loons because the entire breeding population will return to the ocean to spend the winter. We know from banding recoveries that our loons utilize both the Gulf and the Atlantic Coasts, however the proportion of those wintering on each is yet unknown. Also unknown is what influences the routes individual birds take to reach the ocean environment. These critical questions need to be addressed to understand the implications of threats, like the Gulf oil spill, pose for breeding loons.

As a means of comprehending the emerging threats to loons, CCRC, a

Please see LOON RESEARCH Page 8

Lake Trout Consumption Advisory for Torch Lake

by Kory Groetsch,
Health Department Toxicologist

TLA invited Kory Groetsch, Toxicologist with the Michigan Department of Community Health (MDCH), to clarify the newest Fish Advisory for Torch Lake.

On July 22, 2010, the MDCH issued an update to the fish consumption advisory for lake trout from Torch Lake (www.michigan.gov/eatsafefish). The new advisory was based concentrations of dioxin-like chemicals (DLCs) of lake trout fillets samples collected in 2009 from Torch Lake that exceeded the State's health criteria. The figure shows that the average concentrations of DLCs in these lake trout fillets was four to five times higher than the State's health-based screening value. MDCH advises that **NO ONE EAT LAKE TROUT FROM TORCH LAKE**. This advice is protective of the health of the general population, pregnant women, and children. This article provides additional information about the Torch Lake Fish Advisory and about DLCs.

Since 1996, the MDCH has issued fish consumption advisories for lake trout in Michigan. Fish advisories are based on the fish fillet concentrations of a variety of toxic chemicals such as polychlorinated biphenyls (PCBs), mercury, chlordane, DDT, and most recently DLCs. These chemicals persist in the environment and will remain in surface water for many years. DLCs also accumulate in the fat of fish, animals, and humans. MDCH considers the persistent, accumulative, and toxic characteristics of DLCs in the Fish Advisory Program

DLCs are a group of 28 chlorinated chemicals [seven polychlorinated dibenzodioxins, nine dibenzofurans, and twelve polychlorinated biphenyls (PCBs)],

each with a known potential to cause toxicity, such as carcinogenicity and reproductive effects through the same molecular pathway. Think of each chemical like a key. Each of these keys fit into the same lock, yet, some keys fit into the lock better than others. When the key is turned, some start the toxicity process more efficiently than others. If the key only partially turns the lock, then only a small amount of that chemical's concentration is counted toward the total risk to human health. The sum of these potency-adjusted concentrations are referred to as toxic equivalent concentration or TEQ. The State's health-based screening value for DLC TEQ is 10 parts per trillion (ppt). The average TEQ for lake trout in Torch Lake in 2009 in the size range 20 to 30 inches is 50 ppt, considerably larger than the State's health criteria.

Torch Lake is by no means the only lake in the Great Lakes Region with this type of chemical contamination. Since all lakes in the Great Lakes Region receive these chemicals through atmospheric deposition, it is anticipated that fish consumption advisories will be revised to include DLCs as test data becomes available. Small amounts of DLCs in air deposit to the lake water are taken up within the food chain and stored in the fat of small fish that are in turn eaten by larger fish. In this way, DLC concentrations biomagnify up the aquatic food chain with the highest concentrations occurring in the oldest, largest, and fattiest fish. DLCs persist in deeper and colder lakes like Torch Lake for longer times allowing for greater accumulation and biomagnification. Lake trout fillets from Lake Michigan, Green Lake and north Lake Leelanau also contain DLCs, but a comparison of lake trout of similar size from each shows that DLC concentrations are somewhat

higher in lake trout from Torch Lake.

The Department of Natural Resources and Environment monitors the trend of several chemicals such as DLCs and PCBs in several species of Great Lakes fish. In general, DLCs, PCBs, DDT, and chlordane are all declining at a rate of 5 to 10 percent per year. According to the EPA, past incineration practices in the United States were one of the major sources of DLCs and some PCBs in the Great Lakes Region. These practices have since been reduced or stopped completely, which may be the reason for these observed declining trends in fish samples. However, in Torch Lake in 2009 mercury in large lake trout was 1,000 parts per billion (ppb) and the health criteria is 500 ppb.

Consuming lake trout from Torch Lake is not the only way people can be exposed to persistent and bioaccumulative chemicals like DLCs. The United States Food and Drug Administration (FDA) reported a wide range of DLC concentrations in grocery store foods and estimated the typical amount of exposure a person may get from their daily diet. For most people, 95 percent of all DLC exposure comes from the consumption of food, such as dairy products, beef, chicken, pork, and eggs. Using FDA's estimates, a 160-pound adult consumes about 1,400 pg (picogram, one trillionth of a gram) of DLC TEQ per month. In contrast, one 8-ounce meal of lake trout from Torch Lake would contain about 9,500 pg DLC TEQ.

Editorial note: No other similar lakes in Michigan have a lake trout advisory probably because no other lakes have been tested as extensively for a number of years. The most recently reported MDCH lake trout dioxin tests on Grand Traverse Bay were done in 1997.

Loon Research

Continued from Page 7

non-profit organization dedicated to the protection and study of loons, expanded its research efforts this summer to include Intermediate, Clam, and Bellaire lakes. A total of 15 adult and juvenile loons were safely captured at night, color-banded, sampled for contaminants through blood and feathers collection, and released. These banding efforts will allow subsequent monitoring next spring to determine if survival rates have changed. Over the past 20 years, monitoring by CCRC indicates that adult loons exhibit very high annual survival rates, approximately 96%.

Included in the cohort of loons banded this summer was an adult male

from Lake Bellaire originally banded as a chick on Clam Lake in 1991. At 19, he is one of the oldest known loons in North America (the oldest, at 23, is a male at Seney National Wildlife Refuge). In addition to the banding, new miniature archival tags (2 grams per tag) were attached to the leg bands of four loons to track their movements as they migrate south to spend the winter. The tags record ambient light and use algorithms to calculate a daily latitude and longitude position, providing a geographical location.

In addition, the tags record diving depths, water temperature, and arrival and departure from a marine environment (salt water/fresh water). Combined with the watchful eye of loon monitors, recording the arrival of loons to the lakes next spring, it will be

possible, for the first time ever, to not only determine migration routes and wintering areas but also the exact time it takes for the loons to complete their migration journey. Understanding the consequences that threats, such as oil spills, botulism outbreaks, and mercury have on Michigan loons will provide critical information to help design future conservation efforts for this important species. With anticipation, this research will not only answer these questions but also serve as a template of how scientists and citizens can work together to protect loon populations and inspire a deeper interest in our natural world.

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The Mission of the Three Lakes Association is to provide leadership to preserve, protect, and improve the environmental quality of the chain of lakes watershed for all generations.

October 2010 issue of the TLA Quarterly

THREE LAKES
ASSOCIATION

