



New Millennium Dive Expeditions

nmde@att.net / www.nmde.org



Project Report:

Phase 2 of 2

Supporting the UNR *Chara* Bed Research and Exploration
Camp Richardson and South Shore Mound (The NUB)

Initial Notes

- Funding was not available for Phase 2 of the collaboration between New Millennium Dive Expeditions and the University of Nevada, Reno to investigate the growth and extent of the Camp Richardson *Chara* bed. Therefore, the Principle Scientist at UNR and the Board of New Millennium incurred out of pocket expenses to fund Phase 2 work to complete previously-established objectives before winter.
- New Millennium Dive Expeditions (NMDE) would like to acknowledge the efforts of its members; Michael Soldwisch, Marc Briseno, Jimi Quinn, Wendy Wangberg, Dr. Steven Parker, James Novaes and Martin McClellan; along with Global Underwater Explorers' Project Baseline members, Todd Kincaid and Vanessa Belz. Without their commitment and dedication, along with all their personal hours volunteered (see below), the success of this project would not have been possible.
- This initial work has generated significant information related to key hot spots in the lake that support much of Lake Tahoe's plant and invertebrate diversity. These hot spot patches in turn have been shown to be very important areas for Lake Tahoe's lake trout (*Salvelinus namaycush*) fishery. The information collected can directly assist the TRPA in the management of the nearshore aspects of Lake Tahoe, biodiversity of the lake bottom, and could be of general interest to the fishing community.

Project Goals

Phase 2:

- Retrieve potted *Chara* samples that were placed on the lake bottom on 29 June 2013 for growth evaluation.
- Take a second set of "biomass" samples along the transect established during Phase 1 to determine biomass differences between the two sampling periods and understand seasonal growth patterns.

Dives

Project Dives September 8, 2013

Mission Plan: 1 Dive

Goals

- Collect 10 – 15 *Chara* biomass samples along the transect every 30 – 40feet.
- Retrieve the 10 potted *Chara* plants for growth evaluation
- Photo and written documentation of all activities

The Phase 2 dive, was conducted by a team of three divers to a maximum depth of 117 feet for 82 min (including decompression time). With our 400 foot transect in place and marked with GPS coordinates, we descended on the south-eastern point of our transect and arrived upon the bottom within 15 feet of our subsurface marker. At this point, we photographed the existing potted *Chara* growth samples and then began to place them carefully into 5 gallon bucket containers and secured each bucket with a lid for transport to the surface. Once the buckets reached the surface, the surface team from UNR collected the buckets and secured the potted *Chara* samples for evaluation.

We continued toward the north-west end of our 400 foot transect, collecting biomass samples along the way. We were able to take 13 *Chara* samples, travelling along the transect using a 5-Gallon plastic bucket with the bottom cut out as a coring device. This open-ended bucket was placed over an area of *Chara* and driven into the bottom by hand in a circular motion. Each *Chara* biomass sample was then scooped by hand from inside the bucket and placed in a numbered zip-lock bag. The distance from the southeast end of the transect and specific depth of each sample was noted. Photos and video of the sampling process as well as of the general condition of the *Chara* along the transect were collected. At the north-western end of the transect, a large mesh bag containing all of the biomass samples was sent to the surface with an inflatable marker buoy where the surface team from UNR collected the samples for evaluation. The dive team then ascended following a standard decompression profile.

Summary

Phase 2 of this project continues to demonstrate the positive collaboration that has developed between New Millennium Dive Expeditions and Project Baseline: Tahoe, and the scientific community trying to determine the ecology of the critical habitat for endemic invertebrates and game fish at the bottom of Lake Tahoe.

Our scientific and dive teams developed an executable plan for both phases of this project and with the successful completion of the above dive, this initial project is now complete. The UNR scientists clearly communicated their underwater sampling needs in all phases of this project. Our dive team was able to successfully complete all project goals, safely conduct all dive operations and return with information that exceeded the scientific sampling goals of this project.. The growth rate and other life history characteristics of *Chara* have not been investigated in Lake Tahoe due to the difficulty of studying these unique deep-water communities. With the placement of the potted *Chara* from Phase 1 and the retrieval of those specimens during Phase 2, growth rates of this deep water plant community for the first time will be measurable. Overall, these

dives have made possible very difficult scientific investigations and hold valuable potential for future scientific discoveries in deep parts of Lake Tahoe that are biologically-rich, yet extremely difficult to study due to accessibility. As with most scientific investigations, answers to some questions have led to the development of many more questions. We hope that we are able to obtain funding for continued collaborations between scientific investigators and New Millennium Dive Expeditions to develop a more complete understanding of these unique and threatened biological communities that are so important for maintaining recreational opportunities, native biodiversity, and ecological dynamics in Lake Tahoe.

We completed 7 dives over 5 days during both phases of this project and are very proud of our accomplishments considering our late involvement and small amount of funding associated with this project. Again, we want to acknowledge and thank the League to Save Lake Tahoe for its initial support of this project.

We hope to contribute to further exploration of the south end of the lake in search of the existence of more plant beds. Fishing captains of the lake have informed us that there are many more beds than what lies off Camp Richardson, but they have not been investigated by the scientific community. Specifically, funded exploration of the Nub should be a priority along with the exploration of the Tahoe City lake area since its underwater environment is similar to that of Camp Richardson and extensive plant beds were discovered in this area in the 1960s.

If provided with funding sufficient to continue this work, New Millennium Dive Expeditions along with Project Baseline: Tahoe look forward to being involved in more research activities within the Lake Tahoe research community. Our divers possess the underwater training, skills and experience required to safely and efficiently execute dives for this and similar projects.

Respectfully Submitted,

Martin McClellan - New Millennium Dive Expeditions