

**Annual Summary** 

June 30, 2019

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Michigan's Governor Gretchen Whitmer, at the controls of the C-Worker 5, Autonomous Surface Vessel at the Great Lakes St. Lawrence Governors & Premiers Leadership Summit in Milwaukee, June 14, 2019.

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### **Overview:**

Once again, because of the generous support of the Robbins family, the Great Lakes Research Center (GLRC) at Michigan Technological University (Michigan Tech) has been able to accomplish things, not possible any other way. Let me start by thanking you for your continued and steady support of my efforts and those of the GLRC. Together we have continued to do some very remarkable things!

Again, this year the gift of the Robbins Professor of Sustainable Marine Engineering has continued to provide a wealth of opportunities to the GLRC, our staff and our students that would not be possible without your loyalty and generosity to Michigan Tech. As in previous years, we have not used any of the Robbins funds to support routine efforts or expenses; we have instead elected to invest in strategic, permanent benefits to the Center and the University through our research.

## **Strategic Investments:**

The GLRC continues to grow in reputation as a world class research center and in delivering solutions to real-world problems. This is a time of great change in both the federal government and its priorities. This past year we have directed Robbins funds to three critical initiatives; marine autonomy, the Great Lakes St. Lawrence Governors & Premiers Leadership Summit in Milwaukee and the search for the lost French Minesweepers from WWI.

#### Marine Autonomy:

We have continued our search for funding to acquire an Autonomous Surface Vessel (ASV) for Great Lakes and coastal ocean research. As I mentioned before, we have selected the ASV Global, Co-Worker 5 as the best choice for the GLRC and our research. This has led to the development of the Smart Ships Coalition (SSC) at Michigan Tech (see:

https://www.mtu.edu/news/stories/2018/august/smart-ships-coalition-launched.html ). This is an organization to further marine autonomy, to engage interested researchers and to promote safe operations of these platforms. To further these goals, we also created a Marine Autonomous Research Site (MARS) in the waters surrounding the GLRC. The unveiling of MARS was held in conjunction with the launch of the Smart Ships Coalition, designed to study and set ground rules for the use of autonomous marine vehicles on the Great Lakes. The coalition is made up of scientists, policy makers, resource managers, innovators, navigators and educators that share a common interest in the advancement of autonomous technologies in marine environments.

#### Great Lakes St. Lawrence Governors & Premiers Leadership Summit:

These activities (SSC and MARS) resulted in an invitation to participate in the Great Lakes St. Lawrence Governors & Premiers Leadership Summit in Milwaukee, June 13 – 15, 2019. At the Summit, I was asked to address the eight Great Lakes Governors and two Premiers of Canada on our

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autonomous vessel efforts and then provide a live demonstration of the autonomous, C-Worker 5 operating and providing real-time harbor mapping within the Milwaukee Harbor. The live demonstration came off without a hitch and resulted in the cover photo of this annual summary of Michigan's new Governor, Gretchen Whitmer, operating the C-Worker 5. Robbins funds were utilized to assist in the costs of transporting a new C-Worker 5 from Louisiana to Milwaukee for the demonstration. We gained valuable experience in the operation of these vessels and in their construction. I remain convinced that



this is the correct autonomous vessel for Michigan Tech to operate, as a shared use asset, across the Great Lakes. We are continuing our efforts to acquire such a vessel to tackle the very difficult science questions facing the Great Lakes. There are many examples of operations for which human crewed vessels are not appropriate. These include operations involving harmful or dangerous cleanup or sampling in and around chemical or petroleum spills as well as sampling during adverse and winter conditions, when our research vessels and buoys are not in the water.

#### Search for the lost French Minesweepers from WWI:

Finally, as I indicated in my previous summary, we have also invested a portion of this year's Robbins support into a fun but solemn project. 2018 was the 100-year anniversary of the end of WWI and the 100-year anniversary of the largest single loss of life on Lake Superior (78 souls). During WWI, the French government secretly contracted with a Canadian ship building company in Thunder Bay, Ontario on our north side of Lake Superior, to build 12 steel hulled minesweepers for the war effort. Nine of these 140-foot vessels, were completed and sailed out of the Great Lakes to join the war effort. The last three departed Thunder Bay on November 23, 1918 and were stuck by a gale of November. Two of the three vessels including their French crews, and Canadian Pilots are lost in US waters, north of the tip of the Keweenaw, Peninsula.

We have devoted some Robbins funds to conducting a week-long search this spring (June 3 – 8, 2019) of our "best guess" location of these wrecks. The water in this region of Lake Superior is very deep (600 – 900 feet) and it was not an easy search. As a great gesture of university collaboration, we were able to borrow a very advanced, wide-area bottom searching sonar from the University of California, Davis and the University of Delaware. Both marine centers contributed necessary components of this system which we outfitted on Michigan Tech's Research Vessel Agassiz. This addition allowed us to cover an incredable 44 sq nautical miles of Lake Superior bottom. As you might anticipate, we generated an incredably large amount of sonar data and are now in the process of sifting maticulsly through it all. We are expecting exciting results and will surly keep

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you informed on our progress. Robbins funds were used to support a graduate student intern from Michigan Tech and one each from UC Davis and U Delaware to participate in the search. This experience gave the students hands-on experience in a real-world application of autonomous technologies here in the Great Lakes. As in previous years, the Robbins funds have allowed the inclusions of undergraduate and graduate students in exciting projects. As they return to Michigan Tech from their new careers, they offen comment on the value of the experiences they have gained here on the water.

I wish to personally thank you again for making all this possible with your very generous support of the Robbins Professor of Sustainable Marine Engineering. It has been another fantastic year of growth for the GLRC, where we have been able to do many things that would not be possible without the Robbins Professorship.

Sincerely and Best Wishes,

Gy A. Merdon

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