

**Thunder Bay National Marine Sanctuary
Advisory Council**

- January 21, 2014 Meeting Minutes-

Date: January 21, 2014

Time: 6:30pm

Location: Great Lakes Maritime Heritage Center, 500 W. Fletcher Street, Alpena, MI

MEETING ATTENDEES

NOAA: Jeff Gray, Jean Bauer, Sarah Waters, Cathy Green, Russ Green, Harriet Smith, Tane Casserley, Stephanie Gandulla, Abbie Diaz

State of Michigan: Wayne Lusardi

SAC Members: Lynda VanDusen, Herbert Palmer, Olin Joynton, Vera Kavanaugh, Shawn Sexton, Mark Upham, Jason Snyder, Carol Shafto

SAC Alternates: Chuck Wiesen, Joe Sobczak, Jim Dessenberg, Rick Fluharty, Ron Meneghel, Susan Nielsen, Robert Doyle, Roger Baumgardner

Ex-officio Member: None

Public: Lesslee Dort, Daniel Moffat, Jay Dutcher

Media: Nicole Grulke, *The Alpena News*

WELCOME AND ACTION ITEMS

Olin called the meeting to order. Sarah introduced AmeriCorps member Abbie Diaz. Abbie will be at Thunder Bay NMS for 10 months helping out with education and outreach.

Lynda motioned to approve the November 12, 2013 meeting minutes. Chuck seconded the motion. All were in favor.

SANCTUARY OF THE GREAT LAKES BRANDING UPDATE –

Jay Dutcher – Alpena High School student – co-leader of Fresh 45

Group is working to promote what Alpena has to offer and create events for teens. So far they have had two dances at Bay Urban and two teen nights at Northern Lights Arena; all four events have been successful. The group continues to work on coming up with new ideas to get students more excited. Fresh 45 has been asked to be a part of planning the after prom party, dodge ball nights at AHS and other teen related events in the area. Funds raised by Fresh 45 will be donated to either the branding committee or to the Friends of TBNMS.

Lesslee Dort – Downtown Development Authority

Lesslee gave an update on the Michigan Main Street Designation application that has been submitted by the DDA. A Main Street designation would give zero dollars but offers education, analysis opportunities, real estate agencies to sell in a commercial market outside of Alpena, marketing, etc. The designation would also give Alpena another checkbox on grant applications which would help bring in money.

Lesslee will be going to Lansing to present the video that was shot in downtown Alpena. There is a group of eight going so far, but others can go to show their support. Main Street is about Community driven grass roots action, not top down.

The DDA will be contacted on February 9th if Alpena is chosen.

If you support Main Street and would like to write a letter of support or travel to Lansing for the presentation contact Lesslee Dort at the DDA If you have any contacts in Lansing, please use them.

Lesslee showed the Main Street video being submitted.

2013 Northeast Michigan Great Lakes Stewardship Initiative (NEMIGLSI) REPORT – Daniel Moffat

NEMIGLSI just completed a documentary film on place-based education. It will be showed at the Film Festival on Sunday. If you're interested in a copy talk to Daniel or Jean. It is also on YouTube. The website for NEMIGLSI is <http://nemiglsi.org/>.

In supporting, and delivering regional NEMIGLSI place-based stewardship education program activities, the following was accomplished:

- More than 30 school buildings across eight counties in northeast Michigan participated in programming activities during 2013, receiving access to teacher professional development participation and/or funding support for student activities support through regional NEMIGLSI programming.
- 118 total educators directly supported by professional development activities.
- 6,010 youth directly engaged through their learning, with community partners in fielding place-based stewardship education projects during the 2013 calendar year (3,155 students in 2012-13 school year + 2,855 students in 2013-2014 school year thus far). This reflects engagement of approximately 18-20% of the 14,500 total student population of targeted six counties covered by AMA and COP ESDs during a given school year. One out of five students are directly engaged in these projects
- More than 100 unique organizational partners supported student-led place-based projects, ranging from local government, state and federal agencies, university, community colleges, natural resource NGOs, businesses, and community youth development, and more.

EDUCATION UPDATE - Sarah Waters

TBNMS hosted approximately 320 different programs and outreach events, with approximately 4,000 people reached during these specific events which included 23 classroom cruises, 24 group tours, three conferences, wine tours, library programs, class lectures, workshops, etc.

Staff and volunteers participated in dive shows, boat shows, four county fairs, nautical festivals, a Freshwater Summit, and an Engineer Day in Sault Ste. Marie.

TBNMS hosted a field school and helped teach a Marine Tech class. The sanctuary also supported every section of the Shipwreck Alley class, hosted both an Earth Day Fair and the first Annual Youth Watershed Summit.

The sanctuary also hosted Evenings of Archaeology, Sunday at the Sanctuary Cinema and Halloween Trick or Treat.

Two new exhibits were installed, the Science on a Sphere theater and the Green Roof demonstration garden.

Just a reminder, the **Regional ROV Competition** is on **May 17, 2014** and the **International Competition** is **June 26-29, 2014**.

Tane gave a demonstration of the new ROV simulator which is currently being used as a traveling exhibit for outreach event, but will be moved to the exhibit space by the SOS theater. ACC has as similar one that the students use for training. Jeff suggested at a future meeting visiting ACC to see the lab that has been developed for the Marine Tech program.

FRIENDS BOARD UPDATE – Jeff & Cathy

The Friends were formed four years ago right before our 10th anniversary. The original board members were Chuck Wiesen, Carol Shafto, and Judi Stillion. The current board members are now Chuck, Carol, Missi LeFave, Al Moe and Beach Hall. The board meets quarterly. The Friends group is an independent 501c3.

One of the main things the Friends group does is manage and operate the store. The revenue from the store allows the visitor center to stay open by paying for the store staff. The store has some great new products coming in for the 2014 season. Other income is generated from bike rentals, rental of the education room, theater and visitor center, and fee for service programs.

The second part of the Friends' funding comes from fundraising. Fundraising is critical in order to keep the visitor center free. Friends are also a critical part of our granting we have used the Friends to apply for numerous grants.

The Friends are now focusing on sustained giving to help keep the education programs and visitor center going. By ramping up our Friends work, we are creating partnerships not just raising money. In an effort to reconnect to people that have participated in the past, we sent out a letter recruiting people to donate and become a friend. To date, we have had over 70 people become or renew their membership. This is just a start of what we can do to connect with the community to raise funds.

The Friends and sanctuary staff continue to develop a plan to engage at many different levels. Hope that all of the advisory council members will become a Friend. All Friends receive store discounts, monthly communications, etc. We welcome any input you have or any suggestions of what we can do as a friends group or if you want to get involved.

Chuck Wiesen and Carol Shafto spoke about the importance of the Friends group and the importance of having 100% staff and advisory council commitment. It will make it easier for the Board to solicit and leverage donations if they can say that they have 100% support from staff and SAC. The dollar amount doesn't matter, just the commitment is important.

All of the Friends' membership money goes to our endowment fund at the CFNEM, long-term funds for down the road, but the having the money there still helps us today.

Skiff Raffle – The Friends are doing another raffle fundraiser. Last year we raffled a kayak, this year we are raffling a Skiff. The skiff was built by the Thunder Bay Community Boat Building Program. Raffle tickets are available for SAC members to sell. See Stephanie to get tickets if you are interested in helping sell them.

SANCTUARY & BOUNDARY EXPANSION UPDATE

Monthly digital newsletter *Thunderstruck* sent out in January – will continue monthly. If you didn't receive it let the staff know.

Expansion is continuing to move forward. Jeff had some great meetings in Washington and is hoping to have some good progress in the next couple of months.

Great Lakes Maritime Heritage Center – At the beginning of 2013, sanctuary staff set the goal to have 100,000 visitors. That goal didn't happen. The government shutdown was a huge factor, missed out on Lighthouse Festival Weekend, end of the season boat tours, and many school groups. Staff is committed to continuing to work on reaching that number this year. Marketing in our own community is important. Stephanie's work with the media has been tremendous.

2nd Annual Thunder Bay Film Festival – The 1st Annual Thunder Bay Film Festival was held in October last year. Staff decided to shift it to January for 2014. The Festival has a full line up of films and social events. Reception Friday, filmmakers' panel on Saturday, and a Film Festival wrap party on Sunday at 5:00 at the Black Sheep Pub (who is one of the festival sponsors.)

The Thunder Bay Winery is also a sponsor. They are also currently selling their "Rockport Red" wine with the proceeds being donated to the Friends.

The Mayor proclaimed the week of January 20th the Thunder Bay Film Festival Week.

RESEARCH UPDATE –

Last summer, Thunder Bay provided staff and information for a documentary that just premiered in the UK - Ghost Ship of Thunder Bay. The film debuted to approximately one million viewers.

Shipwreck Data to Date:

Total known sites 93
Site visit/images/video – 77
Sonar image 42
Mosaic – 11
Site sketch 16
Site plans - 24

In 2013:

53 days on the water
255 dives in TBNMS and other ONMS site

Looking at putting out some new mooring buoys this summer on four wrecks *Monrovia*, *Wilson*, *New Orleans*, and *John Shaw*.

Russ demonstrated the storing and analyzing of shipwreck data the staff uses called GIS (Geographic Information System). During his demonstration, he highlighted a few of the wreck sites and explained how they collect and share the data with others.

In July, sanctuary staff will help co-teach some ACC marine tech classes. Grand Valley State University will also be here.

Also this summer the research team will continue their work in the Middle Island sinkhole, as well as their work on the reef restoration project and zebra mussels.

PUBLIC COMMENT – None.

ADJOURN - The meeting was adjourned at 8:32pm.

**Thunder Bay National Marine Sanctuary
Advisory Council**

- March 18, 2014 Meeting Minutes-

Date: March 18, 2014

Time: 6:30pm

Location: Great Lakes Maritime Heritage Center, 500 W. Fletcher Street, Alpena, MI

MEETING ATTENDEES

NOAA: Jeff Gray, Jean Bauer, Cathy Green, Russ Green, Stephanie Gandulla, Chuck Bennett, Daniel Moffatt, Jacob DeWitt, Abbie Diaz

State of Michigan: Wayne Lusardi

SAC Members: Herb Palmer, Vera Kavanaugh, Lynda Van Dusen, Mark Upham, Shawn Sexton, Don Newport, Olin Joynton

SAC Alternates: Chuck Wiesen, Robert Doyle, Ron Meneghel, Roger Baumgardner, Jim Dessenberg, Joe Sobczak

Ex-officio Member: None

Public: Jerry and Barb Meek

Media: Nicole Grulke, *The Alpena News*

WELCOME AND ACTION ITEMS

Olin called the meeting to order.

Don Newport motioned to approve the January 21, 2014 meeting minutes. Chuck Wiesen seconded the motion. All were in favor.

AMERICORPS REPORT

Shipwreck Preservation and Education: Alternative Break Weekend – Abbie Diaz

The Alternative Break Weekend is a volunteer weekend in partnership with Central Michigan University. During the weekend of April 4th-6th 12 CMU students, including two site leaders, will come to TBNMS and provide 15-20 service hours doing artifact conservation and documentation, exhibit maintenance, archival work, and research. Abbie will also lead them in an ROV build.

Jeff stressed that the AmeriCorps members are key to our staff here. We've asked Huron Pines to come give a presentation on their larger mission at a later SAC meeting.

FRIENDS BOARD UPDATE – Cathy Green

Friends of TBNMS Mission – to support the mission and programs of TBNMS.

Membership & participation isn't just about collecting funds, it's also about sharing information with other people and reaching out to the community. It's also about inviting people to participate. There are many ways you can participate. Some examples are the boat building program, conservation lab, education & outreach programs, Maritime Festival, the ROV competition, as well as financial contributions.

As of today, the Friends year-end campaign raised \$13,416 from 90 individual contributions.

Revenue Generation – The Sanctuary Store has lots of great NOAA gear, as well as general Michigan and Great Lakes items. The store is currently being renovated to accommodate more merchandise and more displays. All of the funds generated by the store are used for store inventory and staffing of the exhibits. As we move forward, our goal is to have revenue from the store also cover additional programming, as well as exhibit updates.

Special Events – The Friends group makes it possible for the sanctuary to have special events including the recent Thunder Bay Film Festival. The film festival was very well attended (over 400 people), reaching lots of new people that we haven't reached before. There was a tremendous amount of media coverage (27 media stories) which included local and national coverage. The Friends partnered with local businesses for sponsorships and in kind donations.

All of the sanctuary's events bring in people, which help to spread the message of the sanctuary's mission, generating good press, and maybe even some revenue.

Community Partnerships – The friends are working with other businesses like Stoney Acres, Thunder Bay Winery, Marketplace, City of Alpena, and the Alpena Chamber of Commerce. The Friends also support networks of environmental groups and teachers.

The Future – The Friends have made great progress on all fronts. In April, Jeff and Cathy will be attending training on fundraising in Washington, DC. Going forward Jeff, Cathy, and the Friends' Board will be working together to build the Friends' strategic and communications plans. The Friends' current board members are Al Moe, Carol Shafto, Chuck Wiesen, Missi LeFave, and Beach Hall.

Your Role – As a member of the SAC you are already a friend by volunteering your time and helping spread the sanctuary message. Donations are welcome and there is no dollar limit to become a friend.

SANCTUARY UPDATE

The SAC toured the store to view the renovations, the boat building to see the Mackinaw boat being built by a group of community members, and the conservation lab.

MATE International ROV Competition will be held here June 26-28, 2014.

Stephanie showed a video of the actual mission that was put together to help students learn about the tasks. Stephanie gave an overview of the different missions the teams will have to perform. The competition will bring approximately 1,000 people to the area. Great for the local economy and exposing people to Northern Michigan.

Partnering with ACC to promote ACC Marine Tech Program.

Hoping for lots of national and international press from the ROV Competition, which will create a tremendous opportunity to promote the Marine Tech Program at ACC. Industry professionals will also be here and have exposure to ACC and its program.

ACC received a grant that provided funding to send a couple of students with ACC staff member David Cummings and Russ Green to a trade show in New Orleans called "Underwater Intervention." Russ & David presented a paper on the ACC partnership with TBNMS. Several thousand people attend this event.

During their visit to New Orleans the students visited Oceaneering which is a large commercial ROV company that builds ROVs and does off shore work and were given a special 3-hour tour. This is one of the paths ACC students can chose. There is a large demand for jobs in this field.

Another company that builds ROVs, Seaview out of Dexter, Michigan, will be coming to TBNMS with no cost to us; we will provide them with some boat time for testing their ROVs.

2GRobotics which does underwater laser scanning out of Connecticut will also be coming for a week at no cost to us, we will give them boat time for using their scanner and we can evaluate and see how we might use this technology. The value of what they are bringing is upwards of \$25,000.

Andrew Augustyn who works in the store and is a graduate of the ACC program received an internship on the NOAA ship *Okeanos Explorer*.

The BWET Grant has been extended for another \$50,000. This is the third year we have received this grant.

Daniel Moffatt introduced Jacob DeWitt, AmeriCorps Member who will be working with GLSI until November. He will be working with schools to do water testing and entering the information onto a website. He is also working with Alpena High School teacher John Caplis' Shipwreck Alley class.

Daniel Moffatt was invited by the National Marine Sanctuary Foundation to talk to several congressional committees regarding the topic Science for Solutions. He spoke about National Marine Sanctuaries and what they do, as well as the innovative partnerships his program has with TBNMS.

At our next SAC meeting on May 13th, Dr. Drew Gronewold, Physical Scientist with the National Oceanic and Atmospheric Administration (NOAA), will offer a perspective on historical Great Lakes water level observations and projections, as well as an overview of the key drivers behind water level change.

The public calendar is on the sanctuary website www.thunderbay.noaa.gov. The “News & Events” tab is located on the left side of the homepage. This calendar lists all of our events, as well as our partner’s events.

US Heritage Route 23 has been working with NEMCOG to do more interpretation to promote tourism and has developed a series of short films. The first film completed is called “Shipwreck Alley.” This film was shown during the meeting and can also be viewed at www.heritage23.org. The plan is for the video to be incorporated throughout the heritage route in some kiosks and will also be available on the website for vacation planning.

PUBLIC COMMENT – None

ADJOURN - The meeting was adjourned at 8:15pm.

**Thunder Bay National Marine Sanctuary
Advisory Council**

- July 29, 2014 Meeting Minutes-

Date: July 29, 2014

Time: 6:30pm

Location: Great Lakes Maritime Heritage Center, 500 W. Fletcher Street, Alpena, MI

MEETING ATTENDEES

NOAA: Jean Bauer, Jeff Gray, Sarah Waters, Russ Green, Harriet Smith, Abbie Diaz, Chuck Bennett, Tane Casserley

State of Michigan: None

SAC Members: Lynda VanDusen, Herb Palmer, Vera Kavanaugh, Olin Joynton, Steve Kroll, Susan Nielsen, Robert Doyle, Shari Davis

SAC Alternates: Chuck Wiesen, Ron Meneghel, Jim Dessenberg

Ex-officio Member: None

Public: Andrew Augustyn, Phil Hartmeyer, Don McMaster

Media: Nicole Grulke, *The Alpena News*

WELCOME AND ACTION ITEMS

Olin Joynton called the meeting to order.

Steve Kroll motioned to approve the May 13, 2014 meeting minutes. Lynda VanDusen seconded the motion. All were in favor.

FAC & SAC CHAIRS JOINT MEETING – Steve Kroll & Olin Joynton

Olin Joynton and Steve Kroll attended the annual SAC Chairs and Federal Advisory Committee meetings in Galveston in early June at the Flower Garden Banks National Marine Sanctuary.

During the week there was a joint meeting with the marine protected areas FAC members and the SAC Chairs. During that joint session, Dan Basta spoke on his most recent paper *Placed Based Stewardship*. Matt Stout presented on the tourism initiatives being worked on at each sanctuary. Thunder Bay NMS was highlighted during the session with mention of our partnership with *Lady Michigan*.

Steve Kroll is a member of the FAC which is made up of 20 people from around the country. The FAC provides is the advisory council for the Marine Protected Areas (MPA). There are approximately 1700 MPA's across the United States. The MPA FAC is looking at a much broader base than what the SAC is looking at.

During the joint meeting a document was drafted, “A Call to Action from the Marine Protected Areas Federal Advisory Committee and the National Marine Sanctuary Advisory Councils – *Destination Marine Protected Areas: Sustaining America’s Most Treasured Ocean Places for Recreation and Stewardship*” (see attached.)

Chuck Wiesen made a motion to discuss the document and Lynda VanDusen seconded it.

Steve and Olin presented the resolution and spoke about the effort that was put into creating this document. There was some compromise by all involved in drafting this language, so there might be something in here you don’t agree with it but try to find something you do agree with. Steve really pushed the language “and the Great Lakes” because the lakes are just as important as the ocean.

Where does the document go from here? It is going to the Department of Commerce and the Department of Interior, which are the agencies that proposed the question to them and asked for a recommendation.

Olin called for a vote in favor of supporting this document, all were in favor.

BOUNDARY EXPANSION UPDATE – Jeff Gray

Our final Environmental Impact Statement will be filed on Friday. It will outline our preferred alternative for boundary expansion. Sometime within the next 30 to 45 days or so the final rule will be published which will essentially be expansion of the sanctuary. Next time we meet we should be officially expanded.

Jeff has been pushing to get the expansion done by September. On September 6th the Friends of TBNMS will be hosting an event to celebrate the sanctuary and all of the accomplishments of 2014. There will be community events during the day, including free glass-bottom boat tours and an evening fundraiser event (more details will be emailed at a later date.)

During the following week TBNMS will be hosting the annual ONMS Leadership Team meeting, so all of the superintendents from around the country, along with ONMS leadership will be attending the evening celebration event.

During Capitol Hill Ocean’s Week in June, Senator Levin introduced the bill for NOAA to look at more Great Lakes sites. On September 6th, TBNMS will also be hosting a workshop for communities around the Great Lakes that are interested in becoming sanctuaries.

INTERNATIONAL ROV COMPETITION

We have received tremendous feedback from MATE, participants, parents, the community, etc. Lots of great stories of hotel owners driving teams to Walmart, fabricator Scott Stevens staying up all night to help a team build a part they needed, and another community member provided directions to a team that was lost while walking around town.

The International ROV competition brought over 1,000 people to our community. It also resulted in over 13,000 news stories around the globe, 500 million media impressions, which is valued over \$5,000,000.

Since the event we have had a lot of people inquiring about how they can get involved or get a team together and sanctuary staff have been conducting ROV building workshops (see attached information).

The tank has been utilized for workshops and the ACC Marine Tech Program; we are continuing to find new ways to attract people and are hopeful that this continues to be another attraction point to Alpena. Also planning to utilize the tank for the annual regional competition.

We would like to host the International ROV Competition here again in 3-4 years.

Oceaneering, a large company that is involved in the oil and gas industry, with ACC staff and provided advice on the Marine Tech program. Oceaneering also conducted job interviews with the three Marine Tech graduates. All three graduates, including sanctuary employee Andrew Augustyn, were offered jobs as ROV technicians. This is a growing industry, with many job opportunities available. In 3 to 4 years, they can be making six figure salaries.

Oceaneering also left a simulator here for ACC, which is valued at approximately \$100,000.

Since the ROV competition, enrollment numbers for the ACC program have increased.

SANCTUARY UPDATE

Sanctuary staff will be teaching ACC's Marine Tech 120 – Ocean Issues in the Great Lakes. During this course the students are learning technical skills required to do research at sea and they are tasked to plan and execute ROV and side scan sonar surveys. The students are also learning basic and advanced boat handling techniques that are instrumental in their development in marine science careers.

Thunder Bay NMS is also partnering with Grand Valley State University. GVSU brought some students here this summer for a two week program.

Maritime Festival was the best festival yet. Hoping to continue to grow the event.

PUBLIC COMMENT – None.

ADJOURN - The meeting was adjourned at 7:15pm and moved to the *Lady Michigan* for the SAC's private shipwreck cruise.

*A Call to Action from the
Marine Protected Areas Federal Advisory Committee and the
National Marine Sanctuary Advisory Councils*

**Destination Marine Protected Areas: Sustaining America's Most Treasured
Ocean Places for Recreation and Stewardship
June 2014**

This is a call to action from the nation's leading advisory bodies on marine protected areas. It reflects our collective commitment to ensure proactive management of growing ocean recreation in these special places in order to sustain the natural and cultural assets that we treasure.

Recreation is growing rapidly throughout the US, and recreation along our coasts and in our ocean is no exception. From sport fishing, to bird and whale watching, to stand-up paddling, Americans are playing in our oceans, Great Lakes and along our coasts in numbers and ways not anticipated just a few years ago. We believe strongly that healthy, viable marine ecosystems are fundamental to successful ocean recreation and tourism. People are drawn to clean waters, healthy habitats, diverse biological communities and intact cultural resources. Consequently, maintaining these qualities within marine protected areas through management of recreational uses will, in turn, ensure continued visitation and use along with the attendant benefits they generate to coastal communities. Most importantly, visitation to these places may help reshape how we, as a people, relate to our oceans.

A new Executive Order (#13597) calls for the significant expansion of travel and tourism in the US, particularly among federal lands and waters. As members of the Marine Protected Areas Federal Advisory Committee and the National Marine Sanctuary Advisory Councils, we call upon federal ocean agencies, working with state, local, territorial and tribal governments, and indigenous groups and communities, to chart a new course for America's MPAs. That course must embrace recreational uses where appropriate, and manage them to ensure these places have a lasting role in America's future.

When planned and managed sustainably, recreational activities in MPAs can yield health, education and economic benefits to users and coastal communities. However, if recreational uses are allowed to expand haphazardly, they have the potential to inadvertently undermine the very qualities that draw people to these special ocean and coastal places everywhere in America today. The following federal actions in four related areas will, in our view, greatly enhance the ability of all MPAs to meet both the challenges and the opportunities posed by America's renewed attention to the sea, especially in a time of change.

1. Invite People to Play (Responsibly) in MPAs

Ocean agencies, working with local communities, should actively shape how and where ocean recreation occurs in MPAs and along our coasts. Powerful actions with lasting benefits for protected ecosystems, cultural resources and coastal communities, include: (i) highlighting MPAs as destinations for sustainable recreation through travel, tourism and outdoor equipment industries; guides and charters; educational programs; hospitality industry; general media; and visitor centers; (ii) using a consistent set of messages to inform visitors about compatible uses in MPAs and along our coasts; and, (iii) ensuring that ongoing national recreation, travel and tourism initiatives sustains the natural and cultural assets that make these places special.

2. Embrace the Human Dimension of Ocean Places

Ensuring that recreational uses are sustainable in MPAs and along our coasts requires more than just a welcome sign. To effectively manage growing recreational uses and to realize their largely untapped potential for building lasting constituencies, MPA agencies must also better understand how, where and why people connect to these special places, and how their recreational activities reflect and shape local communities, cultures and economies. To this end, federal programs should collaborate and invest now in understanding: (i) the origins, drivers, status and emerging trends in recreational uses of MPAs; (ii) the social, cultural and economic benefits and possible detriments of those uses to coastal communities; (iii) how recreational uses fit into the broader and evolving picture of other commercial, military, scientific and tribal and indigenous uses in these areas and along our coast.

Marine protected areas (MPAs) are defined as "Any area of the marine environment that has been reserved by federal, state, territorial, tribal or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." MPAs vary widely in their purposes and level of protection. Familiar examples include National Marine Sanctuaries, National Parks, National Wildlife Refuges and the state counterparts to these programs.

3. Sustain MPA Ecosystems and Values

Expanding ocean recreation poses new challenges to MPA managers who may lack sufficient information, tools or authorities to sustainably manage them. MPA agencies should invest in filling that gap where it exists, for example by: (i) improving understanding of carrying capacities for common recreational uses (i.e. how much is too much?); (ii) implementing new and proactive management approaches to ensure sustainability, including special use areas to allocate specific activities to appropriate areas within the MPA; (iii) evaluating the adequacy of, and if necessary, adjusting existing management authorities to meet anticipated needs for ecologically sustainable recreation and thereby informing all communities along our coast.

4. Engage Recreational Users as Ocean Stewards

Many recreational users share strong conservation values and understand the importance of sustaining the ecosystems and cultural sites they choose to visit. MPA sites can do much to encourage sustainable recreation by, for example: (i) engaging key user groups in adopting best practices that ensure the long-term viability of the ecosystems they value; (ii) forging innovative public-private partnerships with recreational industries and associations with the ability to influence key user groups; (iii) fostering citizen science to engage visitors in data collection for management; (iv) promoting visitor centers to connect inaccessible sites to the broader public; and, (v) developing cadres of ocean stewards (e.g. on the water docents) including youth and underserved communities, linked by common experiences of recreating in MPAs and carrying those conservation messages to other ocean areas wherever they travel.

Making It Happen

We are acutely aware of the fiscal challenges facing all coastal and ocean agencies. Many of the actions recommended above involve collaborating and sharing resources and capabilities across agencies. Others require additional funding and can build capacity among our partners. It is in the national interest, and critical at this time, for you to consider these ideas and commit the necessary resources, guidance and programming to ensure that our nation's special ocean places can realize their vast potential to serve America and its future.

This statement was developed based on joint sessions of the Marine Protected Areas Federal Advisory Committee and the Chairs of the National Marine Sanctuary Advisory Councils in December 2012 and June 2014. It was formally adopted by the Marine Protected Areas Federal Advisory Committee on June 4, 2014, and will be presented to each of the 13 National Marine Sanctuary Advisory Councils and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve Advisory Council for formal approval during Summer 2014.



George Geiger
Chair, Marine Protected Areas Federal Advisory
Council

Rick DeVactor
Chair, Gray's Reef National Marine Sanctuary
Advisory Council

Dianne Black
Chair, Channel Islands National Marine
Sanctuary Advisory Council

Dominique M. Richard, Ph.D.
Chair, Gulf of the Farallones National Marine
Sanctuary Advisory Council

George Clyde
Chair, Cordell Bank National Marine Sanctuary
Advisory Council

Adam Pack, Ph.D.
Chair, Hawaiian Islands Humpback Whale
National Marine Sanctuary Advisory Council

Ken Nedimyer
Chair, Florida Keys National Marine Sanctuary
Advisory Council

Susan Langley, Ph.D.
Chair, Monitor National Marine Sanctuary
Advisory Council

Jesse Cancelmo
Chair, Flower Garden Banks National Marine
Sanctuary Advisory Council

Margaret (P.J.) Webb
Chair, Monterey Bay National Marine
Sanctuary Advisory Council

Dean Hudson
Chair, National Marine Sanctuary of American
Samoa Advisory Council

Richard F. Delaney
Chair, Stellwagen Bank National Marine
Sanctuary Advisory Council

Timothy E. Johns
Chair, Northwestern Hawaiian Islands Coral
Reef Ecosystem Reserve Advisory Council

Olin Joynton, Ph.D.
Chair, Thunder Bay National Marine Sanctuary
Advisory Council

Lee Whitford
Chair, Olympic Coast National Marine Sanctuary
Advisory Council

STEM Community Explorations

Underwater ROV Days

August 13, 14 & 15, 2014



Join the Alcona 4-H Student Stewards in partnership with the Thunder Bay National Marine Sanctuary (TBNMS) and Alpena Community College for three fun filled days exploring STEM through Underwater ROV at the Harrisville VFW hall across from the harbor from 10 am - 2 pm each day. Registration recommended as supplies are limited but all are welcome. Register at 356-8805 or thunderbay@noaa.gov

August 13

- Drive an ROV
- Try out the TBNMS Underwater ROV simulator
- Make a fan-boat



August 14

- Try out the TBNMS Underwater ROV simulator
- Build payload tools
- Build a Coat hanger ROV



August 15

- Work with a team to build an underwater ROV (ROV in a bag kit)
- Build a Blinky kit and practice soldering

STEM?

Science
Technology
Engineering
Mathematics



This project is funded through a grant from the Michigan STEM Partnership Straits Hub with support from 4-H, The Thunder Bay National Marine Sanctuary and Alpena Community College.

DRAFT

**Thunder Bay National Marine Sanctuary
Advisory Council**

- September 16, 2014 Meeting Minutes-

Date: September 16, 2014

Time: 6:30pm

Location: Great Lakes Maritime Heritage Center, 500 W. Fletcher Street, Alpena, MI

MEETING ATTENDEES

NOAA: Jean Bauer, Jeff Gray, Russ Green, Pat Saker, Phil Hartmeyer, Harriet Smith, Stephanie Gandulla, Chuck Bennett

State of Michigan: Wayne Lusardi,

SAC Members: Shari Davis, Olin Joynton, Jeff Kowalski, Steve Kroll, Don Newport, Herb Palmer, Carol Shafto, Shawn Sexton, Mark Upham, Lynda VanDusen

SAC Alternates: Ron Meneghel, Susan Nielsen, Chuck Wiesen

Ex-officio Member: None

Public: Barb & Jerry Meek

Media: Nicole Grulke, *The Alpena News*, Allison Preston, WBKB

WELCOME AND ACTION ITEMS

Olin Joynton called the meeting to order.

Lynda VanDusen motioned to approve the July 29, 2014 meeting minutes. Mark Upham seconded the motion. All were in favor.

BOUNDARY EXPANSION AND EVENTS – Jeff

On September 5th and 6th Thunder Bay NMS's boundaries officially expanded. On the 5th the rule was published and on the 6th we received a letter from the Governor saying that the State of Michigan is in agreement with the expansion.

The process to expand the boundaries started many years ago and it was through the efforts of the SAC that it happened. The staff is grateful for your patience and your encouragement to get this done. We are excited to move forward with our expanded boundaries and take the responsibility seriously.

Steve Kroll and Carol Shafto were on the boundary expansion working group when we first started this endeavor. During their discussions the issue of SAC government seats was brought up and the

importance to include representatives from the newly expanded boundary government agencies. We value having local governments at the table and feel that they have been a major reason for our success.

Now that the expansion is finalized we will need to address this issue. Our council is limited to 15 seats and 15 alternates. We would like to form a working group to discuss restructuring the SAC and provide recommendations to Jeff Gray and Dan Basta.

Looking for ways to bring more people to the table from areas that have been very excited to be involved. It is possible to have non-voting members beyond the 15 seats. Our charter does outline what the seats should be, and it should be more constituency based than government, we just happened to have more government seats.

Carol mentioned that there are currently four Alpena government seats, so it is possible that the group may come back with a recommendation to eliminate some of those; please don't take it personally.

Olin Joynton called for a motion to reconvene the working group. Chuck Wiesen motioned to form a working group to look at restructuring the council. Shawn Sexton seconded the motion. All were in favor.

Steve Kroll, Carol Shafto, Olin Joynton and Don Newport volunteered to serve on this working group. Feel free to give your thoughts on restructuring to the committee so they can be addressed during their meeting.

We would like to have recommendations ready for the November SAC meeting. Officer elections were supposed to happen this meeting but will be postponed until we have a decision on how we will move forward with restructuring.

Jean Bauer will email the working group to schedule a meeting.

Expansion Events – The sanctuary had three different events on September 6th. During the day the Alpena Shipwreck Tours and the sanctuary offered free glass bottom boat cruises as a thank you to the community for their support of expansion and all of our events that took place during the summer. The tickets were sold out by 10:00am that day. ACC was also on hand giving ROV demonstrations and there was extra interpretation in the exhibits.

That evening the Friends of TBNMS hosted the annual Celebrate the Sanctuary event which focused on boundary expansion. Approximately 250 people were in attendance for the celebration. During the event guests heard from Senator Levin, Dr. Robert Ballard, Dr. Lubchenco and Dan Basta. Dr. Lubchenco is the former head of NOAA and was involved the one that gave us permission to move forward with expansion. When she retired she said she would be back to celebrate with us. It was an honor to have her and all of our special guests in attendance.

The third event took place during the day and was a workshop sponsored by the National Marine Sanctuary Foundation for communities around the Great Lakes that are interested in bringing a sanctuary to their community.

In 2000, there was a hold placed on creating more national marine sanctuary sites. Thunder Bay NMS was the last one to be designated. The sanctuary nomination process opened up in June 2014 and there has been demand around the country for designating sanctuary sites.

In January, Levin introduced a bill for NOAA to pay special attention to communities around the Great Lakes and is the reason we hosted the workshop here at Thunder Bay.

There were representatives from four Great Lakes' states in attendance – New York, Illinois, Pennsylvania, and Wisconsin. During the workshop they heard presentations from Thunder Bay staff, Senator Levin, and the national marine sanctuary program. Carol Shafto, Steve Kroll and Sandra Clark from the Michigan Department of Natural Resources hosted a panel.

Jeff thinks we will see more and more communities from around the Great Lakes looking to us for guidance on becoming a sanctuary.

Thunder Bay NMS also hosted the annual sanctuaries Leadership Team meeting September 6-11. The meeting was attended by all of the sanctuary superintendents, regional directors and leadership from the national marine sanctuary program, 40 people in total. It was a great opportunity for them to be here for the sanctuary celebration on the 6th.

OUTREACH UPDATE

Between International ROV and the boundary expansion we have had the following media coverage:

June 13,000 stories = 500 million impression = \$5 million (in equivalent advertising)

September – 700 stories = 42 million impressions = \$1.1 million

Impression is how many times a person sees a story.

THUNDER BAY FILM FESTIVAL – Stephanie Gandulla

The dates for the 2015 TB Film Festival are January 21-25. The film festival is a community celebration of film, education, and the environment. Film festivals create awareness about issues.

Last year all seven of the screenings nearly sold out, with approximately 500 people in attendance. The festival had 30 media and 12 area sponsors.

2015 Film Festival highlights:

- Rogers City screening
- Preview party with local businesses
- Wine tastings
- Award winning films
- Science on a Sphere films
- Michigan and visiting filmmakers
- Filmmakers' panel
- Filmmakers' workshop
- Wrap party

2015 Film Festival volunteer opportunities:

- Film screenings
- Sanctuary Ambassador
- Ticket takers
- Theater ushers
- Filmmakers' liaison
- Photographer
- Fundraiser
- Event planning
- And more

Please contact Stephanie if you are interested in volunteering.

VOLUNTEER PROGRAM – Stephanie Gandulla

Volunteer Appreciation Celebration – October 2, 5:30pm-7:00pm at the GLMHC.

Increased 2,000 volunteer hours last year, this year we've increased another 2,000.

Next volunteer opportunity is the Downtown Halloween Trick or Treat event on October 24, 5:00-7:00pm. The Home Depot is going to partner with us again and will be having a kids' boat building activity in the education room.

RESEARCH UPDATE – Russ Green

Wayne has been working on mooring buoys in the expanded area.

We've been awarded a grant from MDOT for \$250k to do outdoor interpretation extending to the new boundaries.

Thunder Bay staff have been working in the expanded boundaries since Dr. Robert Ballard was here in 2001 and have worked at 72 of the 92 sites that are in the expanded boundaries.

Russ talked about the process used for deploying mooring buoys and determining the positioning of where to drop the anchor.

Have conducted side scan sonar on many of the northern boundary wrecks. Also on wrecks to the south.

Russ showed examples of the side scan sonar and still images that have been collected on many of the wrecks.

Worked with US Fish & Wildlife on Six Fathom Bank, Lake Trout spawning area.

Also working on the Port Site Collaborative Survey conducting sonar survey at Rogers City.

SANCTUARY UPDATE

Visitor status last year was 82,000. We are currently over 84,000 with a quarter of the year to go. Our goal for this year is 100,000.

Revenue from the store and Friends' donations help to staff the visitor center and fund most of our education programs.

The Friends of TBNMS annual campaign kicked off in September with the Sanctuary Celebration and a mailing. Besides donating, another way the SAC can help is thinking of people you know that may be interested in being involved with the Friends. Feel free to hand out Friends' brochures or give their contact information to Cathy Green.

GREAT LAKES ENVIRONMENTAL RESEARCH LAB

Observing the Great Lakes – Steve Ruberg, GLERL

Scientist Steve Ruberg gave a presentation regarding the work GLERL does in the Great Lakes, particularly deploying and using data buoys to collect lake science information.

PUBLIC COMMENT – None

ADJOURN - The meeting was adjourned at 8:30pm.

**Thunder Bay National Marine Sanctuary
Advisory Council**

- November 18, 2014 Meeting Minutes-

Date: November 18, 2014

Time: 6:30pm

Location: Great Lakes Maritime Heritage Center, 500 W. Fletcher Street, Alpena, MI

MEETING ATTENDEES

NOAA: Jean Bauer, Jeff Gray, Cathy Green, Pat Saker, Phil Hartmeyer, Harriet Smith, Chuck Bennett, Tane Casserley, Sarah Waters

State of Michigan: Wayne Lusardi

SAC Members: Olin Joynton, Steve Kroll, Herb Palmer, Shawn Sexton, Carol Shafto, Mark Upham

SAC Alternates: Roger Baumgardner, Jim Dessenberg, Robert Doyle, Ron Meneghel, Susan Nielsen, Charles Wiesen

Ex-officio Member: None

Public: Don Labar, Ellen Marsden, University of Vermont

Media: Nicole Grulke, *The Alpena News*

WELCOME AND ACTION ITEMS

Olin Joynton called the meeting to order.

Chuck Wiesen motioned to approve the September 16, 2014 meeting minutes. Mark Upham seconded the motion. All were in favor.

The draft 2015 meeting dates were discussed. The normal January meeting date would've been the same week as the Film Festival, plus there will be a lots going on with the potential of restructuring the SAC. Council members felt waiting to meet until March was too long. Carol motioned to add a January meeting date. Shawn Sexton seconded the motion. All were in favor. Jean will send out the updated 2015 meeting dates after the staff looks at their calendars.

Ocean Exchange Report – Dr. Olin Joynton

In October, Olin attended the Ocean Exchange in Savannah, GA. The Ocean Exchange promotes innovative organizations and entrepreneurs who are implementing tangible solutions that shape the future. At the 2014 event the highlight was *accelerate sustainability* – that is, generate economic growth and increased productivity, while reducing the use of nature's resources and waste. (See attached for more information.)

RESTRUCTURING THE SAC DISCUSSION – Carol Shafto

At the last SAC meeting a working group was formed to look at restructuring the council to include the counties within the newly expanded boundaries. Carol Shafto, Olin Joynton, Steve Kroll, and Don Newport volunteered to look at the options and provide their recommendations.

The working group met last week and came up with the following recommendations (see attached document for the full summary):

The major changes are the governmental seats. Previously had 2 township seats (Alpena and Sanborn) but there are now 13 townships in the new boundary area: 4 in Alcona (Greenbush, Harrisville, Haynes, and Alcona); 2 in Alpena (Sanborn and Alpena); 6 in Presque Isle (Presque Isle, Krakow, Pulawski, Rogers, Ocqueoc and Bearinger); and a small portion of Benton in Cheboygan County. It was briefly considered to designate one seat a “Townships” seat and have that represent all – but it was thought that this could better be accomplished with the local government seat assigned to each county.

There are also two more shoreline cities on board – Rogers City and Harrisville. The reason the City of Alpena retained a seat (in our recommendations) is that it is where the major land and water operations are. Working with the City of Alpena is vital for permitting, bridge operations, etc.

It is the hope of the committee that other local governmental interests will be combined with the three county seats. For example, a Rogers City official or citizen could be appointed as an alternate to Presque Isle County’s voting member. Since each of the statutory seats chooses who they appoint, it does not HAVE to be a County Commissioner, City Council member or Underwater Preserve member. They just have to represent the interests.

There are also some proposed changes to the non-governmental seats. The group recommends that we add another citizen-at-large seat because that is the most flexible seat. We thought that tourism/recreation were similar enough that we could combine them to one seat to free up the spot for the new citizen-at-large seat.

It was also suggested that we change the Maritime History seat to a Shipping/Industry Seat to fulfill a request that was brought up during the boundary expansion public comment period. Adding the Shipping seat was a recommendation from some national and local groups asking why there wasn’t a seat during the boundary expansion process. Broaden it to Shipping/Maritime Business or Industry.

There are no limitations on the number of non-voting seats. We will keep the current ones CORA, US Coast Guard and add the Friends Board. The Friends is being added in the event that there isn’t already a board member on the SAC.

Other topic discussed was to have all of the seats reapply, so everyone was in the same position of having to reapply for their seat. Everyone could then indicate which seat they hold. The committee would have the ability or authorization to manipulate those and put them in the seat they think

would work to try to fit everyone in and balance the interest of the different counties by who holds the rest of the seats. Currently have some diversity; we do have some from Alcona and from Presque Isle.

Ron suggested we include a sentence or two on the application indicating people may apply for more than one seat.

When will this change happen? The Federal Register notice will get published and applications will be accepted starting February 5. Open for 30 days. Once the applications are received, a committee will review the applications and give their recommendations to Jeff. Jeff will review their recommendations and then send to the State of Michigan and Dan Basta of ONMS for approval. After they have been approved by the State and ONMS the applications are submitted to HQ personnel for background checks. It's a long process, but we are hoping to have it finalized by May. We could then use the May meeting as the last meeting of the current SAC and/or the first meeting of the restricted SAC. Everyone that is currently on the council is encouraged to reapply.

Mark Upham motioned to approve the recommendations of the working group with the additional change of calling the new seat "Maritime Industry/Business." Shawn Sexton seconded. All were in favor.

Jim Dessenberg motioned to accept the working group's recommendation for the current SAC to be disbanded and have all seats reapply. Chuck Wiesen seconded the motion. All were in favor.

Jean will update the Sanctuary Advisory Council Charter and send it to the council with these changes reflected.

At the next meeting we will have a better timeline in place and will keep everyone posted.

SANCTUARY UPDATE – Jeff Gray

Jeff announced that Phil Hartmeyer who was a former intern, is officially joining the Thunder Bay NMS staff. Phil was hired by Dan Basta and will be doing work for our site as well as the Great Lakes Northeast Region for new sites that come on line. Phil will also be working as a liaison with students that want to come here for research and internships.

Phil introduced Don Labar, from Pleasanton, California. Don is conducting research on the Gilchrist Family and their important role in Alpena's lumbering and shipping heritage. Don's research is fueling a master's thesis that will be written when Don heads to Flinders University in Adelaide, Australia in February to pursue a Masters of Arts degree in Maritime Archaeology.

The Great Lakes Maritime Heritage Center visitor number for the year is currently at 94,000, we will come very close to our goal of 100,000.

Sarah spoke about upcoming events, including a lecture series that is starting this week and will continue through December 18th (see attached flyer.)

Store will be having 10% off this holiday season. If you have a Friends membership or sign up to become a Friend you can combine your current 10% with the holiday 10% for a total of 20% off all merchandise, including glass-bottom boat tickets. The visitor center will be open on Christmas Eve until 5:00pm for any last minute shoppers.

The sanctuary education team will be visiting 3rd and 4th grade classes in December to conduct *Christmas Tree Ship* programs. Students will listen to a reading of the *Christmas Tree Ship*, use materials to determine whether the story is fact or fable, and make an ornament to take home. See the attached flyer for more information on this outreach program.

Friends Update – Cathy Green

Thunder Bay staff is working on growing all of our programs now that the sanctuary has expanded. We are also working on growing our friends group and fundraising. Annual campaign kicked off this fall. Letters went out this week for 2015 membership. Invite your friends and neighbors to be involved. Once people are connected they are then notified about events and volunteer opportunities.

Thunder Bay International Film Festival - January 21-25, 2015 – Stephanie Gandulla

The Thunder Bay Film Festival is expanding to Rogers City this year with a special screening on Wednesday, January 21st at the Rogers Theater from 6:30-9:30pm.

Also new this year is a filmmakers' workshop which will be held at the Saturday before the festival. The cost is \$20. Workshop participants will make a film that will be screened at the festival on Sunday, January 25th in the education room.

Other Highlights:

Thursday, January 22, 6:00-9:00pm – Sneak Peek at the Thunder Bay Winery - Free
Friday, January 23, 6:00-9:00pm – Opening Reception and Films - \$30
Saturday, January 24, 10:00am-8:00pm – Film Screenings - \$5/per session
Saturday, January 24, 3:00-5:00pm – Filmmakers' Panel - \$5
Sunday, January 25, 10:00am-3:00pm – Film Screenings - \$5/per session
Sunday, January 25, 4:00pm – Film Festival Wrap Party at the Black Sheep Pub - Free

Please see the attached documents for more information on the Thunder Bay Film Festival or contact Stephanie Gandulla at steph.gandulla@noaa.gov or 989-356-8805 x38.

PUBLIC COMMENT – Carol Shafto asked for a moment of silence for the people that were lost on the *Carl D. Bradley* on this day in 1958.

Herb Palmer announced that Thunder Bay Island lighthouse was officially transferred to the Alpena Township.

ADJOURN – The meeting was adjourned at 8:30 and moved to the theater for *Artificial Reef Presentation* – Ellen Marsden, Professor Chair, Wildlife and Fisheries Biology Program, Rubenstein School of Environment and Natural Resources, University of Vermont.



Gulfstream

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Event

2014 Event

Solutions that Accelerate Sustainability

Welcome to the Ocean Exchange's 2014 Annual Event, held at the [Savannah International Trade and Convention Center](#) on October 5 - 7, 2014.

Following a Call For Solutions, selected solution creators have been invited to Savannah, GA to present their work. Our Board of Governors and invited guests representing a cross-section of professions from industry, government, conservation, research and academia will select the Gulfstream® Navigator Award and WWL Orcele Award Winners.

Ocean Exchange seeks innovative, proactive and globally scalable Solutions with working prototypes that can leap across industries, economies and cultures. This year we highlight innovations that *accelerate sustainability* - that is, generate economic growth and increased productivity, while reducing the use of nature's resources and waste.

The event has now sold out, but look for us on twitter throughout the proceedings under [#QEx2014](#). We will be live-tweeting from [@TheOceanExch](#).

Watch this space for information about our mobile app with detailed event information, including agenda documents, Solutions information, and more.

The Ocean Exchange is the intersection where organizations from around the world advance and promote their cutting edge solutions and innovations in materials, devices, processes, and systems. We have created the knowledge based catalyst for organizations to achieve Corporate Social Responsibility Goals.

By connecting innovators and organizations, The Ocean Exchange empowers the successful application of solutions for the greater good.

We are advocates for innovators. We are advocates for collaboration across industry and geography, while protecting the intellectual property of the innovator.

The Ocean Exchange promotes innovative organizations and entrepreneurs who are implementing tangible solutions that shape the future today. We invite you to register your solution in our Gallery.

All Solutions passing prescreening are showcased in our online Gallery where organizations from around the world seeking innovative solutions can discover your work, learn more about your solution and contact you.

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Solutions Awards

\$100,000 Gulfstream & Orcele awards



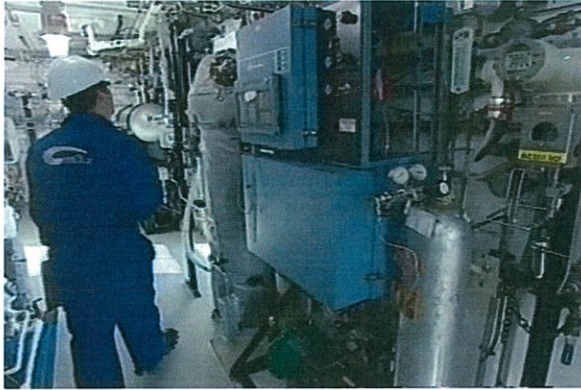
Founded in 2010, the Ocean Ex

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HYDROGEN ECONOMY TODAY



More Efficient Production of Heavier Crudes



CRUDE OIL DESULFURIZATION

Genoil is tackling the challenge of how to meet the world's energy needs while also reducing the impact of petroleum consumption on the environment.

Genoil's hydroconversion upgrading technology removes impurities from crude oil & refinery residues. The Genoil GHU reduces the carbon ratio in crude by adding hydrogen, thus Genoil's process is a carbon reduction technology. This technology and process can upgrade all the world's heavy oil reserves making this one of the largest business opportunities.

When crude oil & refinery residues are burned they turn into greenhouse gases. These impurities are Sulfur, Nitrogen and metals to name a few.



Crude oil

- The engine of the world's transportation needs since the early 20th century.
- This will continue for decades to come because oil is irreplaceable and 25% of the world's capital infrastructure investments are based on crude oil. Those sunken costs will ensure oil will be a predominant source of energy.
- Oil demand continues to grow about 3% every year despite alternative energy options coming to market.
- Crude oil is becoming heavier and dirtier due to the fact that light, sweet, higher quality crude oil reserves are depleting and thus light production is falling. In the past light oil reserves supplied the world's demand for transportation fuel, however now currently there is a shortfall supplied by heavy oil of around 10% of the total worldwide demand.
- Current world proven reserves of light are 400 billion barrels, and 900 billion barrels of heavy. Annual world consumption of light oil is 29 billion barrels.



Challenges with heavy crude oil production

- Light sweet crude oil burns much cleaner than heavier sour crude oil and below 18 API heavy oil has logistical problems due to its viscosity. It has to be heated or diluted to move down a pipeline.
- Light crude refines into more transportation fuel than the heavier crude. If a refinery changes from light crude to heavy the transportation fuel production would fall by 30% on average based on carbon rejection. (requiring the world oil production to grow 30% to meet existing demand.)
- A problem with heavy oil production is that 30% of the daily oil production is returned to the mine as contaminated waste. (For example, every day Canada produces about 1.85 million barrels of heavy oil, however they use a carbon rejection (coking) technology to lighten it and make it transportable and saleable. This technology rejects around 560,000 barrels per day in waste (30% of their total heavy production). Coking removes 37% of the sulfur compared with 99.5%.

With Genoil's technology and process there is no waste on volume output, so rejected unutilized barrels can be sold to refineries for clean transportation fuel production



Every day Canada produces about 1.85 million barrels of heavy oil, however they use a carbon rejection (coking) technology to lighten it and make it transportable and saleable. This technology rejects around 560,000 barrels per day in waste (30% of their total heavy production). Coking removes 37% of the sulfur compared with 99.5%

With Genoil's technology and process there is no waste on volume output, so those 560,000 rejected unutilized barrels would be sold to refineries for clean transportation fuel production.



Genoil has created a "zero waste" technology and process which burns the residue from our GHU in an Integrated Gasification Combined Cycle Unit to produce all required utilities creating a self sufficient unit. Genoil is unique because it was initially designed to be independent of a refinery but then was adapted for the refinery as well. The Genoil GHU is perfect for remote locations where there is no access to external hydrogen or utilities. Integration with an IGCC unit is unique to the industry.

The same thing that applies to crude oil applies to bunker fuel. Genoil's process can economically remove sulfur from low value fuel oil. It is the only technology that can.

To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



WASTE TO PLASTICS



Recovery of High-Purity Plastics From Complex Waste Streams = Higher Economic Recycle Rates



W2 PLASTICS

A team from Delft University of Technology has developed a technology to provide plastics recyclers with a separation process for packaging waste.

There is a large potential reservoir of used plastic debris which does not degrade in the environment; instead it tends to accumulate, creating long-term environmental problems. These plastic wastes are complex mixtures of materials and difficult and expensive to recycle in an effective way. For this reason, only a small fraction of plastics wastes sold are recycled into products where the recycled replaces virgin resins. The reason for this huge gap is the low efficiency of the current sorting and separation technologies for the secondary plastics, which recover little value from the polymer, and in consequence create a low incentive to recycle.

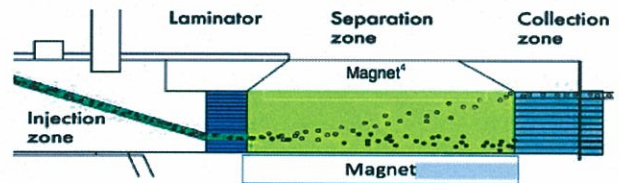


Plastics production requires significant quantities of resources, both as a raw material (oil) and to power the production process (about two kg oil are necessary to produce 1 kg of plastics).

By turning plastics wastes into high quality secondary raw material resource the W2Plastics solution can effectively decrease the amount of plastics which are currently either improperly disposed of or burned in incinerators.



W2Plastics technology is based on a newly developed Magnetic Density Separation (MDS) technology which recovers high-purity plastics from complex wastes at low cost. The most important feature of this new concept derives from its ability to accurately separate many different materials in a single process step, using an environmentally friendly and cheap process fluid. Because of its intrinsic flexibility, this technology can easily be implemented to separate any kind of plastic materials in an economically sound way.



A robust MDS pilot plant able to recover more than 90% of high-grade polymers from complex wastes has been built and tested in an industrial environment.

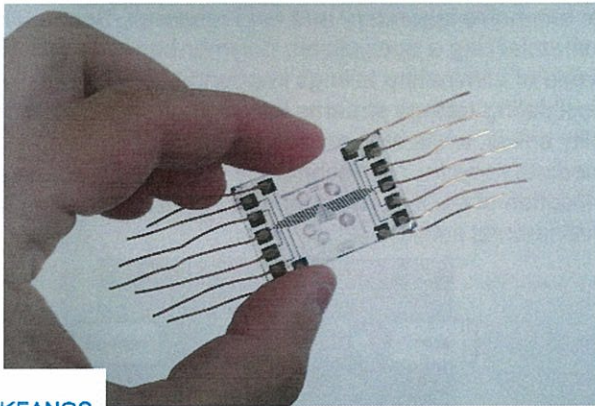
The MDS technology can be effectively used also to purify waste streams from the electric and electronic industry, the mining industry and the agriculture industry.



To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



DESALINATION AT THE SPEED OF LIGHT



Desalinated Water with Radically
Energy Efficient Process

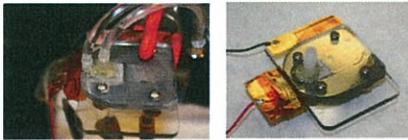


ELECTROCHEMICALLY MEDIATED DESALINATION

Modern desalination technologies use energy-greedy processes which are ultimately dependent on the combustion of fossil fuels to create extreme hydraulic pressures (Reverse Osmosis), massive heat sources (Distillation) or extreme electrical currents (Electrodialysis). This dependency tethers desalination to pre-existing energy and water distribution (e.g. piping) infrastructures via centralized water production (utility) models. As a result, desalination is more expensive than fresh water harvesting, and its penetration into the overall water market has been limited geographically to only the most highly water-stressed, gentrified areas (desalination represents today merely a \$20B slice of an overall \$360B total water market).



The **Okeanos WaterChip™** is a solid-state, Massively Paralleled Desalination (MPD) platform that uses a newly characterized, patent-pending microscale process called Electrochemically Mediated Desalination (EMD) to desalinate with radical energy-efficiency. It is completely membrane free, and the first technology of its kind ever developed. The platform desalinates a millionths of a liter at a time – that is, they “Microdesalinate” – and they do this using tiny microstructures, which are then massively paralleled to produce useful water flows.

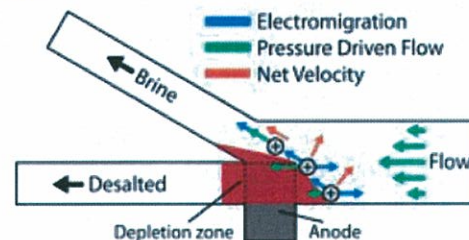


>20,000 Microdesalination centers/cm²



EMD is ultra-efficient because its “engine” is limited by electron rather than ion-transfer kinetics, as is the case with all other desalination technologies.

In essence we exploit the built-in, corrosive potential of seawater and, in very tiny spaces, and at the “speed of light”, redirects this corrosive potential towards the useful task of desalination.

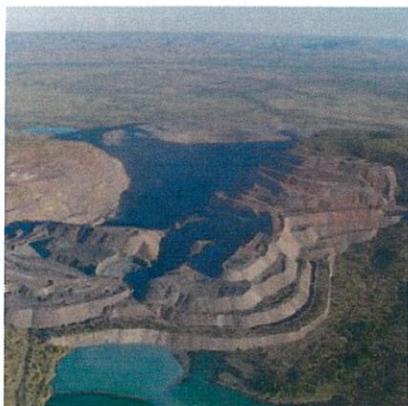


The efficiency of WaterChip™ powered desalination will be great enough to enable off-grid desalination on alternative energy sources, and a new distributive model where water is desalinated from brackish/oceanic sources when needed, by whom it is needed, where it is needed. In the developing world this will make the difference between life and death, and in the developed world, it will open entirely new desalination markets to help ameliorate their water problems and change our trajectory from crises to sustainability.

To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



ATA™ RAPID MINE WATER RECLAMATION

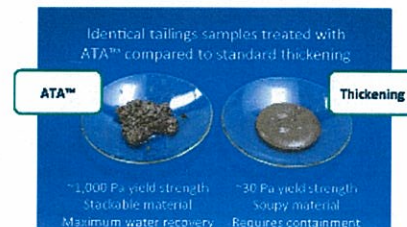


SOANE
MINING



ATA TAILINGS TREATMENT TECHNOLOGY

After extensive laboratory and field research, Soane Mining is commercializing a specialized, polymer-based technology capable of eliminating tailings impoundments by rapidly consolidating tailings streams into high strength, reclamation quality solids, while also recovering clarified water for immediate recycle. The technology can also be adapted to the clarification of existing impoundment areas, mitigating a major environmental liability.



The ATA Process, comprises three basic components: an Activator polymer, a Tether polymer, and an Anchor particle. First, a small dose of the Activator polymer is added to the fine tailings stream, causing the suspended fine particles to aggregate. Separately, Anchor particles are coated with a Tether polymer. When the two treated streams are combined, the Tether-bearing Anchor particles quickly bind to the aggregates in the Activated fines stream, forming robust complexes that can be easily separated from the waste stream. No complex mechanical separation or thickening is required to recover or dewater the solids.



Two output streams emerge from the ATA process: a clean water stream that can be reused on-site, and a dewatered solid that possesses sufficient mechanical integrity for landfill, construction, and/or reclamation. Recycling of clean water produced by the ATA process can significantly decrease the need for fresh water intake.

Soane Mining is developing technologies for increasing productivity and/or treating waste streams for the following mining industries:

- Coal
- Phosphate
- Potash
- Rare earth elements
- Silica
- Specialty metals

To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



DEEP GREEN



Economic Energy Generation in
Low Current Velocity Water



DEEP GREEN - TIDAL AND OCEAN CURRENT ENERGY



Power generation from tidal and ocean currents is predictable and reliable compared to other renewable energy sources. Minesto has a unique position in the emerging marine energy industry since its technology is the only one known to operate economically in low current velocities, of only 1.2-2.5m/s, meaning that the technology unlocks hitherto inaccessible renewable energy resources.



Deep Green resembles an underwater kite, comprised of a wing and a turbine, which is secured to the seabed with a tether and moves with high speed in an 8-shaped path in the tidal or ocean current, reaching a speed 10 times higher than the ocean current speed.

The unique principle offers a number of advantages:

- **High efficiency** has the ability to increase the relative flow by a factor of 10.
- **Small in size and lightweight** a 0.5MW plant weighs 7 tonnes
- **Low-cost offshore operations** smaller boats and equipment for installation, service and maintenance.
- **Availability at sites for offshore operations** Deep Green sites are accessible up to 14 hours per day versus in high-velocity currents boats can only operate for a maximum of 3 hours per day.

The unique design and all the above reasons lead to the ultimate advantage of a low cost of energy.



Other tidal technologies are designed for high- speed currents with velocities above 2.4 m/s. These sites contain large amounts of energy, but their geographical areas are limited and due to strong water currents, the sites are difficult to operate in.

Due to the ability to operate in lower velocities Deep Green complements other technologies rather than compete with them.

To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



H₂ ASSISTED COMBUSTION: SAVES FUEL/REDUCES EMISSIONS



Hydrogen Enhanced Combustion



HYDROPLANT™ SYSTEM

Reduces vehicle operating costs by improving fuel efficiency up to 20%, while lowering greenhouse gas emissions up to 70%. By utilizing an on-board, real-time, on-demand electrolysis system to separate hydrogen and oxygen from water, the technology eliminates the need for high-pressure hydrogen storage or hazardous chemicals while producing a stable, inexpensive alternative fuel source.

By offering a constant, real-time monitoring system as part of a hydrogen fuel solution with retrofit capability into standard vehicle engines, HPTG provides emission-reducing fuel savings to a broad spectrum of industry, including logistics, trucking, heavy equipment, marine and agriculture



The HydroPlant™ is a bolt-on fuel reformer that splits water and allows H₂ and O₂ gas to safely enter the air intake of any diesel engine or generator, thus improving combustion efficiency. HydroPlant™ enables a 10-25% improvement in fuel efficiency, as well as a 10-50% drop in GHG emissions.

The HydroPlant™ solution uses a polymer electrolyte membrane (PEM) electrolysis unit to split distilled water into hydrogen and oxygen, which are fed into the air intake of a diesel or gasoline engine.



Proven Results

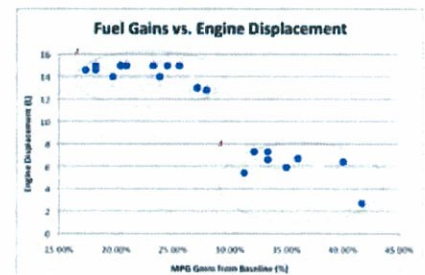
Class 8:

14-24% fuel saving



Class 5-7:

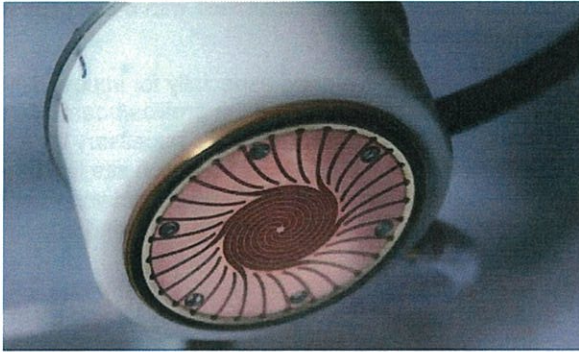
20-35+% fuel saving



To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



OZONE: SHIELD, PRESERVE, PROTECT



Safe Sterilization and Decontamination in Sealed Containers for Food & Medical Markets



COLD PLASMA OZONE GENERATION HEADS

A unique patented technology for the easy and safe generation of active oxygen (ozone) inside sealed containers. Ozone is a recognized powerful germicide. No external ozone supply is needed; this cold plasma technology harnesses the air inside the container to make ozone directly.

This allows for sterilization or decontamination of the contents of a pre-sealed container without the risks associated with handling ozone in open atmosphere and without damaging the integrity of the package.

This system has the ability to reduce the contamination of foodstuffs with pathogens such as yeast, mold and bacteria (Campylobacter and E.coli.)



This device is unique in that it can be applied to standard sealed packaging and does not subject the package contents to any significant electric fields. This system can be used to modify the atmosphere inside the package by generating active species such as free radicals and ozone from the gas within it.



Ozone (O₃)

Attributes as a germicidal agent:

- Extremely powerful germicide, rapidly killing almost all pathogens,
- Can be created directly from oxygen (O₂) already present in the sealed package, and
- Spontaneously decays back to oxygen after a short period of time, leaving no residual chemicals.

Challenges:

- Difficult gas to handle: it cannot be stored as it spontaneously (sometimes explosively) breaks down,
- Extremely toxic and very corrosive.

This technology uniquely gets past all of these difficulties by generating precisely the amount of ozone required in situ in the package (or sealed container) after sealing, opening up a huge range of new applications for this versatile gas.



An unusual plasma source allows the generation of plasma exclusively within a sealed container or bag, from an entirely external electrode system. This device is unique in that it can be applied to standard sealed packaging and does not subject the package contents to any significant electric fields. This system can be used to modify the atmosphere inside the package by generating active species such as free radicals and ozone from the gas within it.



Target market for this technology:

- **Food processing** where it has the potential to improve food safety and extend shelf life through post packaging treatment of food. About to enter production trials with major UK food producers in fresh fish processing, bakery and chilled goods.
- **Medical Services** where device applications offers a unique capacity: end-point decontamination of goods in their final, sealed wrapping. By directly addressing cross-contamination risks from inadequately cleaned instruments and from pathogen reservoirs in sink drains, Anacail's technology is confronting a major healthcare challenge that is not met conventionally.

To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



Recycles All Plastic Garbage From Land & Ocean



Social Approach to Waste Collection
And Recycling Plastics



ECOPOST

ECOPOST, located in Kenya, manufactures eco-friendly plastic lumber from plastic waste and sawdust. Integrating a commitment to environmental excellence with a business wide approach to sustainability.

EcoPost's products are designed especially for impoverished areas in Africa. Once manufactured the profiles/boards can be put together to build whatever size house necessary for a family or a communal area. Materials found on site like straw and cardboard can be added into the spaces between EcoPost boards for more insulation against very strong wind and to provide thermal and sound insulation.

EcoPost profiles and boards are easy to work with just like timber, and can be assembled into houses by joining them together with nails or bolts.



In just 3 years of operation EcoPost has:

- Created 40 direct and 500 indirect jobs for the people in the marginalized areas who collect, sort and provide the waste we require for manufacturing.
- Withdrawn and recycled over 2 Million kilos of waste that would have otherwise been dumped in open areas, rivers, clogging our sewers and even encroaching people's homes.
- Manufactured and sold over 30,000 profiles which have provided a suitable alternative to timber and thus saving over 350 Acres of forest while generating Millions of Kenya shillings in Revenue Per Annum.
- Prevented over 2.5 Million Kgs of CO2 emissions from the environment further mitigating climate change.



To advance to its full potential, EcoPost needs to secure:

- The flow of raw material. Set up more collection yards for purchasing waste material.
- Funds to purchase adequate plastic and sawdust waste from the marginalized youth and women groups who will be collecting and selling the waste to the collection yards, other labor and electricity.



This business is a for-profit operation. Currently operating 100% through revenue from sales of products (sales of posts worth \$US 250,000.) EcoPosts profitability stands at 25 – 35% of the capitol employed.

To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



The Ocean Cleanup

THE OCEAN
CLEANUP
FOUNDATION



THE OCEAN
CLEANUP

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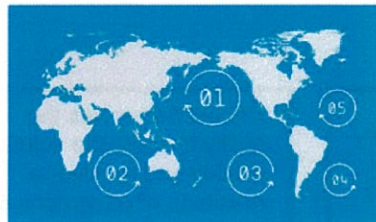
OCEAN
EXCHANGE

A Passive Cleanup Solution

THE OCEAN
CLEANUP
FOUNDATION

The world's oceans are characterized by a system of large-scale rotating currents, called 'gyres'. The ocean systems are constantly moving as a result of the turning of the earth and wind patterns. If the ocean's water is constantly moving according to predictable patterns, so is the plastic pollution.

This led to the idea of a 'passive cleanup': The Ocean Cleanup concept consists of an array of floating barriers and platforms, moored to the seabed, where buoyant plastic particles can be caught, while neutrally buoyant marine organisms remain underneath the boom in the flow of water.



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EXCHANGE

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2

Basic Principles

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Through this proven feasible concept, plastic can efficiently be extracted from seawater in three phases:

- 1) the particles are caught in front of the boom, by rising from the main ocean flow into the almost stationary water in front of the booms.
- 2) the particles accumulate while slowly progressing along the boom towards the platform, and new particles are continuously added to this stream.
- 3) streams of particles from both sides of the array meet in front of the platform and the increased concentration allows for efficient collection.

For more extensive information about the concept, read Chapter 1.7 of the feasibility report, available on our website.

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3

Environmental and economic impact

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For the project to be a worthwhile venture, contributing to a better environment, the benefits should naturally significantly outweigh the costs of the project.

- In terms of environmental impact, the feasibility research has shown that the collection platform's primary energy source can be solar, and that the impact to sea life is negligible. The entire project would emit carbon emissions equal to 372-1,367 cars.
- Determining the full economic cost of marine litter is challenging. While the expense of fixing or replacing damaged equipment can be directly measured, it is more difficult to calculate all of the costs resulting from impaired ecosystem services. Given the implications for ecology, economics and human health (see Chapter 1.3), a cleanup would reduce these negative impacts.
- Plastic pollution directly causes damage to fishing, shipping and tourism industries. A recent report by UNEP conservatively estimates these direct damages to industry at \$13 billion per year. Moreover, the removal of garbage from coastlines costs up to \$25,000 per ton of plastic. A cleanup, calculated at €31,7M per year is significantly less costly and vital in preventing further damage costs.
- The indirect effects of plastic pollution in the oceans include lost ecosystem functions and reduced biodiversity. For example, plastic marine debris that enters the food chain can indirectly result in increased human medical expenses.

To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)

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4

PROJECT SENSE



Monitoring Emissions from Ships During Cruise



PROJECT SENSE

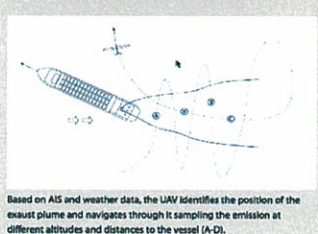
Project Sense introduces a cost efficient and reliable system for monitoring emissions from ships during cruise using low-cost drones equipped with environmental sensors to sample plumes. In combination with AIS data and advanced data analysis the system can detect non-compliant behavior and report back in real-time, enabling effective enforcement of the emission regulations.

Project Sense is very innovative in both its approach to air sampling overall and the use of drones as a way of monitoring ships during cruise.



Most air sampling technologies today that measure air quality rely on expensive sensor technologies with a very high level of sensitivity. Project Sense takes the opposite approach – if we can get close enough, we don't need sensitivity. We just need to be able to tell if the sulphur content is above or below the 0.1 % limit applicable from 1 January 2015.

Flight Mission and Systems Overview



Project Sense has the ability to scale the solution quickly and to cover a multitude of geographies at the same time, thus ensuring an enforcement impact on a large scale.

Project Sense is based on ready-available, inexpensive hardware components that can easily be multiplied combined with bespoke software capable of handling large amounts of data.



Project Sense is focused on the ship emission enforcement task. However components of the technology, or even modified versions of the existing platform, can be used in a multitude of other industries and markets such as general air monitoring, environmental enforcement on land-based sources, and farming to name a few.

To learn more about this and other innovative solutions
Go to [OceanExchange\(dot\)Org](http://OceanExchange(dot)Org)



Recommendations for the Restructuring of the Thunder Bay National Marine Sanctuary Advisory Council

In discussion on this issue were: Restructuring Working Group Members: Carol Shafto (chair), Olin Joynton and Steve Kroll; Staff members: Jeff Gray, Russ Green and Jean Bauer. Member Don Newport was absent (in China). We also had written input from Chuck Wiesen.

To reiterate, **the national charter limits Sanctuary Advisory Council Membership to 15 voting members and 15 alternates**, regardless of size of the Sanctuary. Boundary expansion does not allow us to add seats, but we can realign seats and that is the purpose of this working group.

The **current** 15 Sanctuary Seats are as follows:

Statutory Seats (Those appointed by the body that hold them, rather than an individual applying)

Alpena County
Alpena City
Alpena Township
Sanborn Township
Thunder Bay Underwater Preserve

Regular Seats:

Tourism
Recreation
Economic Development/Business
Maritime History and Interpretation
Fishing
Diving
K-12 Education
Higher/Secondary Education
Citizen at Large (2)

Seat	Voting Member	From (which County)	Alternate	From (which County)
<u>Statutory Seats:</u>				
Alpena City	Shawn Sexton	Alpena City (Alpena)	Susan Neilson	Alpena
Alpena County	Jeff Kowalski	Alpena City (Alpena)	Eric Lawson	Alpena
Alpena Township	Marie Twite	Alpena Twp. (Alpena)		
Sanborn Township	Lynda VanDusen	Ossineke (Alpena)	Ken Gauthier	Ossineke (Alpena)
TB Underwater Preserve	Mike Lakin	Alpena	Joe Sobczak	Alpena
<u>Regular Seats:</u>				
Tourism	Mary Beth Stutzman	Alpena City (Alpena)	Roger Baumgardner	Harrisville (Alcona)
Recreation	Mark Upham	Ossineke (Alpena)	Rich Sullenger	Alpena
Economic Dev/Business	Don Newport	Greenbush (Alcona)	Greg Laskowski	Ossineke (Alpena)
Maritime History	Herb Palmer	Alpena	Vacant	
Fishing	Jason Snyder	Alpena	Ronald Meneghel	Alpena
Diving	Steve Kroll	Rogers City (Presque Isle)	Bob Doyle	Presque Isle
K-12 Education	Kathleen Hubbard	Alpena	Shari Davis	Alpena
Secondary Education	Olin Joynton	Alpena City (Alpena)	Chuck Wiesen	Alpena
Citizen at Large	Vera Kavanaugh	Alpena	Jim Dessenberg	Alpena
Citizen at Large	Carol Shafto	Alpena City (Alpena)	John McVeety	Alpena
<u>Non-Voting Seats:</u>				
Coast Guard				
State of Michigan				
Tribal Indians				
NOAA Local Staff				

The Restructuring Working Group makes the following recommendations:

Current Seat	Proposed Seat	Rationale
Statutory Seats:		
Alpena City	Alpena City	Location of Maritime Heritage Center. Only incorporated place in largest County.
Alpena County	Alpena County	Core County. Each of the three counties are proposed to have a seat.
Alpena Township	Alcona County	New county; each of the three counties are proposed to have a seat.
Sanborn Township	Presque Isle County	New county; each of the three counties are proposed to have a seat.
TB Underwater Preserve	No Change	TBUP laid the groundwork for the current sanctuary; has historic affiliations with State.
Regular Seats:		
Tourism	Tourism/Recreation	Similar interests; Tourism is vital. Combination frees another seat to be “At Large”. .
Recreation	Citizen at Large	Citizen at Large seat allows the most flexibility in filling vacancies with best members.
Economic Dev/Business	No Change	Economic Development is critical to the mission and purpose of the Sanctuary.
Maritime History	Industry/Shipping	History combined with education mission; needed new seat for a vital interest.
Fishing	No Change	Fishing, both recreational and commercial, are a vital interest to the TBNMS.
Diving	No Change	Diving is a primary to recreation, exploration, research, archaeology,
K-12 Education	No Change	School groups and elementary and secondary education part of the primary mission
Post Secondary Education	No Change	ACC plays vital role with new Maritime programming; could also be another institution.
Citizen at Large	No Change	The Citizen at Large seats are the most flexible of all of the voting members. Person can be from any constituency, any area, any interest group, any background.
Citizen at Large	No Change	
Non-Voting Seats:		
Coast Guard	No Change	
State of Michigan	No Change	
Tribal Indians	No Change	
NOAA Local Staff	No Change	
Friends Board Liaison	New Seat	It is important to have a link between the two boards. If a regular SAC member is also a Friends Board member, there is no need to fill a seat beyond that but this could happen. If there is a time when there are no SAC members on the Friends Board, this should be filled separately.

In summary, the major changes are in the governmental seats. There are now 13 Townships in the new boundary area. 4 in Alcona (Greenbush, Harrisville, Haynes, and Alcona); 2 in Alpena (Sanborn and Alpena); 6 in Presque Isle (Presque Isle, Krakow, Pulawski, Rogers, Ocqueoc and Bearinger); and a small portion of Benton in Cheboygan County. It was briefly considered to designate one seat a "Townships" seat and have that represent all – but it was thought that this could better be accomplished with the local government seat assigned to each county.

There are also two more shoreline cities on board – Rogers City and Harrisville. The reason the City of Alpena retained a seat (in our recommendations) is that it is where the major land and water operations are. Working with the City of Alpena is vital for permitting, bridge operations, etc.

It is the hope of the committee that other local governmental interests will be combined with the three county seats. For example, a Rogers City official or citizen could be appointed as an alternate to PI County's voting member. Since each of the statutory seats chooses who they appoint, it does not HAVE to be a County Commissioner, City Council member or Underwater Preserve member. They just have to represent the interests.

Final Recommendation: If it is found to be permissible under the national charter, the working group recommends that ALL seats be temporarily vacated and everyone reapply for a seat. This will give realignment a totally new perspective because people will be applying for the seat most suited to them; it will mean there are no "sacred cows"; and all members are treated equally. Seats will be filled not only with the interests and constituencies being considered, but also to allow for a new geographic balance. Also a person can be reconsidered based on their value to the body and its mission. To continue to move forward, progressively, we need interested, involved people – not only for the 6 meetings a year, but to volunteer at events; attend functions; participate in raffles and show interest in fund raising through the Friends and all of the various aspects of what a member of the Sanctuary Advisory Council can bring to this fine organization.

Respectfully Submitted to the SAC on behalf of the Working Group by Carol Shafto, Chair

This fall, Thunder Bay National Marine Sanctuary brings you exciting stories of shipwrecks, archaeology, and maritime history. Join us for an *Evening of Archaeology* on Thursdays at the Great Lakes Maritime Heritage Center, at 500 West Fletcher Street in Alpena, Michigan.

Heavy Metal on the High Seas, an Evening of Archaeology

Thursday, November 20, 6:30pm – 8:00pm

Join NOAA archeologist Tane Casserley as he discusses the history of the USS *Monitor*, its discovery, and the expeditions to the shipwreck. Casserley was the project archaeologist for eight years and his talk will highlight the *Monitor*'s technological innovations, major artifact recoveries, conservation, and the burial of the *Monitor* sailors' remains at Arlington National Cemetery.

This FREE event is part of the sanctuary's Evening of Archaeology series. Stay tuned for more!

For more information, please call 989-356-8805

Citizen Science at 180 Feet: Diving Deep to Protect the Wreck of the *Kyle Spangler*

Thursday, December 4, 6:30pm – 8:00pm

Why would someone spend their vacation exploring just a single shipwreck among hundreds in Lake Huron's cold and unforgiving depths? For one Great Lakes wreck hunter, joining NOAA archaeologists to help document his amazing discovery might have been the ultimate way to share the find with future generations. Join sanctuary archaeologist Russ Green as he shares imagery from this exciting project and discusses the ways in which it continues to help strengthen the sanctuary's resource protection efforts.

This FREE event is part of the sanctuary's Evening of Archaeology series. Stay tuned for more!

For more information, please call 989-356-8805

The Life & Times of the *A.J. Goddard*, a Klondike Paddlewheeler

Thursday, December 11, 6:30pm – 8:00pm

Thunder Bay National Marine Sanctuary continues its fall lecture series with a presentation by State of Michigan maritime archaeologist Wayne Lusardi. Join Lusardi for an engaging presentation as he shares his research on the Klondike Gold Rush paddlewheeler, the *A.J. Goddard*. Lost in an October storm in 1901, the final location of the *Goddard* remained a mystery until 2008. Thunder Bay researchers were invited to take part in the 2010 recording expedition where Lusardi led efforts in artifact recovery and conservation. Steam-powered vessels like the *Goddard* hauled people and supplies on the rivers and lakes of Canada's Yukon Territory during the gold rush of the late 1800s to early 1900s. Stake your claim in this exciting exploration of 19th century frontier life.

This FREE event is part of the sanctuary's Evening of Archaeology series. Stay tuned for more!

For more information, please call 989-356-8805

Queen of the Lakes: The Steamer *Pewabic* and the Geological, Cultural, and Economic Frontiers of the Keweenaw Peninsula

Thursday, December 18, 6:30pm – 8:00pm

Maritime Archaeologist Phil Hartmeyer presents his latest research on the history and identities of one of Thunder Bay's most famous (and deadly) shipwrecks, *Pewabic*. Hartmeyer draws on social, cultural, economic, and archaeological sources to illuminate *Pewabic* as a reflection of America's turbulent climate during, and immediately following, the Civil War.

This FREE event is part of the sanctuary's Evening of Archaeology series. Stay tuned for more!

For more information, please call 989-356-8805

All events are free and open to the public.

**Brought to you by Thunder Bay National Marine Sanctuary, protecting the Great Lakes
and their rich history for this and future generations.**



Thunder Bay National Marine Sanctuary Presents

The Christmas Tree Ship

A 3rd and 4th Grade Outreach Program

This **FREE** ninety-minute educational program for 3rd and 4th graders uses the children's book, *The Christmas Tree Ship* by Jeanette Winter to explore how factual events can become fables

Students will:

- Listen to a reading of *The Christmas Tree Ship*
- Work together using primary source materials to determine whether what they are hearing is fact or fable
- Make a holiday ornament to remind them of the story of *The Christmas Tree Ship* so they can share it with their families!

Where: YOUR CLASSROOM

When: Please choose one of the following sessions:

Monday, December 15th: 1:00pm

Tuesday, December 16th: 10:00am or 1:00pm

Wednesday, December 17th: 10:00am or 1:00pm

Thursday, December 18th: 10:00am or 1:00pm

Friday, December 19th: 10:00am or 1:00pm

*signs up will be taken on a first come,
first serve basis

To sign up for a session please contact

Harriet Smith at

989.356.8805 x39 or harriet.smith@noaa.gov



Thunder Bay International Film Festival Hits the Big Screen in Alpena

January in Michigan... the snow is falling and the big lakes are frozen. What better time to grab friends and family and enjoy an evening at the movies? This January in Alpena, the *Friends of Thunder Bay National Marine Sanctuary* are offering the opportunity to do just that. From January 21 through 25, join Michigan movie fans for the Thunder Bay International Film Festival. In its third year, this unique festival showcases some of the most impressive ocean- and Great Lakes-inspired films from around the world.

"Through the powerful form of visual communication," Film Festival Coordinator Stephanie Gandulla says, "the Thunder Bay International Film Festival offers both a means to communicate ocean and Great Lakes issues and bring new and different cultural events to northeast Michigan."

The five-day festival will screen nearly fifty films, ranging in length from two minutes to feature-length. Film screenings will be complemented by social events, educational activities, and opportunities to meet filmmakers. Features of the Alpena event include films from the San Francisco International Ocean Film Festival, a long-running, acclaimed festival of ocean-themed films, largely unavailable to the general public.

According to the President of the Alpena Area Convention & Visitors Bureau Mary Beth Stutzman, "the Thunder Bay International Film Festival is an exciting event for northeast Michigan...a unique event that combines two of our favorite loves -- our water resources and the film experience."

Open social events include a "Sanctuary Sneak Peek" at the Thunder Bay Winery in downtown Alpena on Thursday, January 22. Watch movie trailers while sipping the latest vintage from northeast Michigan's newest winery. On Sunday, January 25, enjoy another festival gathering at the Black Sheep Pub, where film festival staff, volunteers, and filmmakers will enjoy a "Wrap Party," with appetizers and themed-cocktails available.

This year, the festival committee added to the educational offerings with a *Filmmakers' Workshop*. The workshop will take place on Saturday, January 17 in Alpena, with an opportunity to screen workshop-produced films on the Sunday of film fest weekend. The fee for the workshop is \$20, and tickets can be purchased in advance by calling the Sanctuary Store at 989-356-8805.

The Thunder Bay International Film Festival is an annual fundraiser for Thunder Bay National Marine Sanctuary, which encompasses 4,300 square miles in northwestern Lake Huron. Designated in 2000, the sanctuary exists to protect a significant collection of historic shipwrecks, and through innovative and accessible educational programs, works to protect the Great Lakes for future generations.

Film Festival BONUS:

Enjoy NOAA Science on a Sphere® premiere programs for FREE!

Science On a Sphere® is an animated globe that can show dynamic, animated images of the atmosphere, oceans, and land of a planet. Only 100 of these exhibits exist around the world, and one is in Alpena!

Science on a Sphere® entry included with every Film Festival ticket purchase.

Tickets are \$30 for the opening reception and films on Friday, January 23, and \$5 for each subsequent program. A full weekend pass can be purchased for only \$50 (a \$10 savings!), and includes the Friday night opening reception and films all day Saturday and Sunday. Call 989-356-8805, ext. 38, or come into the Sanctuary Store at 500 West Fletcher, Alpena to buy your tickets today!

For more information about the Thunder Bay International Film Festival, please contact 989-356-8805, ext. 38 or email Steph.Gandulla@noaa.gov.

TBIFF...at a glance!

Wednesday, January 21 - **\$10**

6:30-9:30 pm

Reception & Films

Rogers Theater, Rogers City, MI

Thursday, January 22 - **free**

6:00-9:00 pm

Sanctuary Sneak Peek

Thunder Bay Winery, downtown Alpena.

Friday, January 23 - **\$30**

6:00-9:00 pm

Opening Reception & Films

Saturday, January 24 - **\$5**

10:00am-12:00pm

*Film Screenings**

Saturday, January 24 - **\$5**

1:00-3:00pm

*Film Screenings**

Saturday, January 24 - **\$5**

3:00-5:00pm

*Filmmakers' Panel**

Saturday, January 24 - **\$5**

6:00-8:00pm

*Film Screenings**

Sunday, January 25 - **\$5**

10:00am-12:00pm

*Film Screenings**

Sunday, January 25 - **\$5**

1:00-3:00pm

*Film Screenings**

Sunday, January 25 - **free**

4:00pm – Official Film Festival Wrap Party!

Black Sheep Pub, downtown Alpena.

*Film Screenings shown at Great Lakes
Maritime Heritage Center, 500 West
Fletcher, Alpena, MI