

Spring 2018

A publication of Pacific Marine Research
a 501(c)(3) non-profit.
www.marinescienceafloat.org



Creature Feature:
Sea Gooseberry
Page 2



**Welcome New
Board Members**
Pages 4

INSIDE: Thank You Donors! (Page 2), Next Generation Science Standards (Page 3)



Ocean *Currents*

Dear Friends and Crew,

We at PMR are busy gearing up for our Marine Science Afloat™ 2018 season, our 33rd!! We are so very grateful for the continued support from the community; schools, teachers, our vessel the 'Spirit of 76', volunteers, staff, and donors. We would not be able to provide our program to over 3,000 students and around 700 accompanying adults per year without this support.

There are just a few dates left available for the 2018 season and they are filling fast, contact booking@marinescienceafloat.org for details. Along with a couple of yet to be booked dates that can be filled with up to around 75 students there are a few dates with room for a class of approximately 25 students and few dates with room for smaller groups, such as families, home schoolers, scouts, clubs, or other informal groups.

We look forward to another season of educating and training the future stewards of Puget Sound!



Sincerely,
Pat Maxwell
Executive Director

Our Scholarship Program Grows!

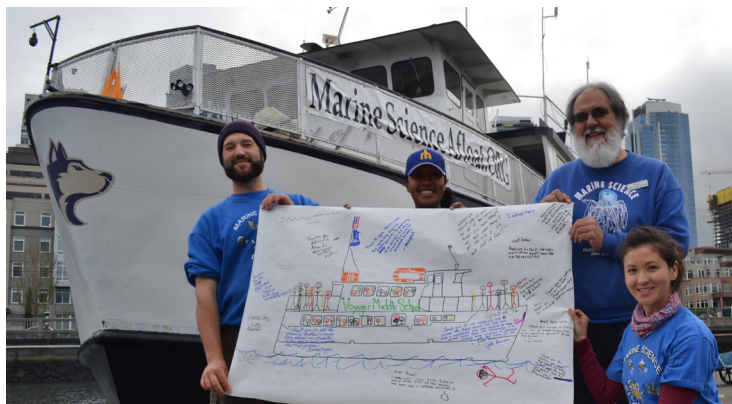
We are proud to announce that we are recommended for a Waterworks grant from King County in an amount up to \$35,000 to support our scholarship fund and staff to manage it. We are just awaiting final King County Council approval. This grant, combined with a generous anonymous donation of \$6,500, will help kick off our 2018-2019 fundraising efforts.

Already, we are thrilled to provide scholarships for approximately 325 students this year thanks to generous donations from you! We would like to thank the following major donors:

- Mathisen Family Foundation
- Fae Lewis
- George Robertson: Reuban B. Robertson Foundation

- David Todd – Realtor, Lake & Company Real Estate (206-734-5151) who donates money with every house sale
- Pizzo Family – past Marine Science Afloat™ participants
- Cable Family – past Marine Science Afloat™ participants
- James Rogers & Shelly Hall – past Marine Science Afloat™ participants
- “Cinco-headed Imaginjinjas” – Gavin, Kiran, Emma, Penelope, and Loghan from Columbia Elementary who created a fundraising project for us and of course all the other donors big and small.

Every bit helps, and we greatly appreciate it. Thank you for your support and making this program possible for ALL students.



A special thank you to Voyager Middle School students who presented us with a poster filled with their appreciation and favorite moments of their Marine Science Afloat™ trip last year.

OUR MISSION

“To Educate and Train the Future Stewards of Puget Sound”



Thank You Donors We believe education is the key to creating the future stewards of Puget Sound and are always working towards increasing our scholarship funds to open this opportunity to even more students in the Puget Sound region. Please consider making a monetary donation today towards our scholarship fund.



We also accept donations of equipment, both replacements and upgrades, and would like to thank the following for their generous contributions;

- Jackie Halstead from Research Net donated a plankton net
- James Lombardo donated funds for water sampling equipment
- Rose Donner and Ocean Technology Systems provided donations for 2 Guardian full face masks and ear microphone assemblies.

- Robert and George Maxwell Families donation of funds for a live dive video transmission system spare parts and system improvements.

How YOU Can Help Our equipment goes through a lot and salt water takes its toll. If you, or a company you know of are interested in supporting us with our equipment needs we are looking for the following.

- video microscope upgrade
- shipboard aquarium upgrade
- sea life tables (modified 6' tables)
- water sampling davit
- stereo microscopes
- dive camera lighting
- video camera and housing upgrade
- laptop



Sea Gooseberry: An overlooked branch on the tree of life

CREATURE FEATURE

The sea gooseberry, *Pleurobrachia bachei*, is a common sighting in our thrice-daily plankton tows. Like their tasty namesake, these comb jellies have small, round bodies with lines running top to bottom. These eight lines are featured on all species of comb jellies (or ctenophores), an often overlooked branch on the tree of life.

Each of the eight lines is a row of paddles, with each tiny paddle composed of a row of cilia (hair like appendages) that are fused into combs. In fact, the name ctenophore literally translates to “comb-bearer.” When these paddles are rapidly flapped, which is how the sea gooseberry, and all its ctenophore cousins, move through the water.

While they may resemble jellyfish, they're as closely related to jellyfish as they are to us...not very closely at all. However, like jellyfish, they have clear gelatinous bodies, and radial symmetry (symmetrical without any midline, like a wheel), rather than bi-

lateral symmetry (symmetrical left and right sides). Like jellyfish they are also plankton – oceanic drifters not powerful enough to fight strong currents. I suppose we can't blame scientists for placing the two groups on the same branch in the past.

But, recent genetic studies have shown that ctenophores' nerve cells, or neurons, are fundamentally different from those found in all other animals, including jellyfish, ants, snails, fish, and us. What does that mean? Why do astrobiologists shake with glee when they learn about the strange ctenophores and their genetically distinct nerve cells?

Quite simply, it means that here on Earth, nerves have evolved separately at least twice. If the nervous system can evolve twice here, perhaps they can evolve anywhere there's life – meaning intelligence may be possible anywhere in the universe that there is life.

So, keep looking up (and down)!



A Sea Gooseberry (top) and a land gooseberry (bottom). As you can see, they are practically indistinguishable. ;)

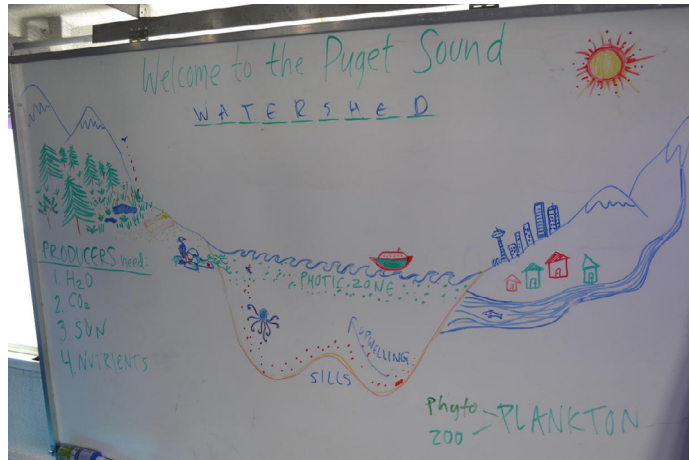
Images courtesy of Wikimedia commons.

Next Generation Science Standards

SPOTLIGHT ON: CURRICULUM

In preparation for our spring Marine Science Afloat field trip season, our team of shipboard instructors has completed a review and update of PMR's marine science educational materials. Thank you to staff member Kelly Steffen for taking a lead role in this project. The team's focus was increased flexibility in content modules for various length of field trips, such as shorter-day Wednesday hours; improved options for pre-trip and post-trip instruction for teachers to use in the classroom; as well as clear alignment to the Next Generation Science Standards (NGSS).

The NGSS are K-12 science content standards that set the expectations for what students should know and be able to do in science in order to make sense of the world around them and be ready for college, careers, and citizenship. They provide consistent science education through all grades, with an emphasis on engineering and technology.



Kelly Steffen has a BA in Biology from Lewis and Clark College and a MS in Marine Science from The University of Texas at Austin. She has been involved in marine and environmental education for many years and enjoy anything that allows her to get her feet wet.

The state of Washington formally adopted the NGSS in October 2013, and since then it has been called the Washington State 2013 Science Learning Standards. Highlighted PMR/NGSS alignment details the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts by grade for “From Molecules to Organisms,” and “Ocean Literacy.” In our

pre-trip material, we state that PMR's students will view a video about Puget Sound (The Green Machine, link on our website) followed by a short activity to introduce the needs of phytoplankton and how sunlight is the limiting factor for planktonic growth in Puget Sound. After the field trip, students will have the opportunity to create a PSA for a current issue facing Puget Sound.

Will your employer match your charitable donations?



Help us double your impact before the end of 2018! Check with your employer, many companies including **Microsoft, Home Depot, Boeing, Starbucks, Wells Fargo, and Alaska Airline** to name a few, will match all or part of your gift to us. Some, like Microsoft, will also donate cash for employee volunteer hours! We love our socially-responsible local employers. Thank you for your support!

What is Marine Science Afloat™?

Students learn to love and appreciate Puget Sound on our 5 hour hands-on scientific expedition aboard the Spirit of 76 floating classroom. Haul in the plankton nets! Spy into the invisible watery world in the microscope lab! Meet your slimy and squishy underwater neighbors! Follow along with our team of scientific divers as they explore the depths beneath the boat and introduce us to the animals below with our LIVE underwater video system. And most importantly - Learn how your daily actions can help protect this magnificent, but delicate ecosystem that we all share. Follow along with our team of scientific divers as they explore the depths beneath the boat and introduce us to the animals below with our LIVE underwater video system.



Most trips depart Bell Harbor Marina in Seattle from mid-March to mid-June and focus on grades 4-12. For information about school and youth group field trips, please contact booking@marinescienceafloat.org or call (206) 361-1919.

Welcome New Board Members

In November, our board got together to strategize for the coming year, said good-bye to two valued board members, Tom Mickel and Andrew Lewin, and welcomed a new board member, Rose Donner. We would also like to welcome David Maxwell to our financial advisory committee.

Our focus for the meeting was to plan for an expansion of our scholarship program (see page 1) and to review curriculum changes that will align our educational program with the Next Generation Science Standards (see page 3).

We are seeking additional board members or committee advisors to join our passionate and quirky team. Prior board experience is helpful, but not re-



Left to Right: Rose Donner, David Todd, Shelly Hall, Tom Mickel, Pat Maxwell, Kathryn Pizzo, Sarah Mathisen.

quired. We are looking for a variety of backgrounds and skill sets; nonprofit, business, finance and operations, marine/environmental science, fundraising, marketing and communications, and volunteer management. If you are

interested in joining this passionate group, please e-mail us at engage@marinescienceafloat.org.

I would like to help PMR's "Marine Science Afloat™" program educate and train the future stewards of Puget Sound. I am pleased to enclose my donation of:

\$25___ \$50___ \$75___ \$100___ \$150___ \$250___ Other \$_____

Please enclose a check made payable to Pacific Marine Research.

Credit card donations can be made at www.marinescienceafloat.org

Title (Dr., Mr., Mrs., Ms., Other) _____ Phone _____

First Name(s) _____

Last Name _____

Address _____

City _____ State _____ Zip _____

Email _____

This donation is a gift. Please note in my donation letter that it is in honor of:

Send donation form and check to: Pacific Marine Science, PO Box 31137, Seattle, WA 98103

Pacific Marine Research

PO Box 31137
Seattle, WA 98103
(206)361-1919
www.marinescienceafloat.org
A 501(c)(3) non-profit

Pat Maxwell
Executive Director

David Todd
Board Member

Sarah Mathisen
Board Member

Shelly Hall
Board Member

Kathryn Pizzo
Board Member

Rose Donner
Board Member



Find us on Facebook for the latest news