

# Mecha Mules News

Quarterly Issue 1-October 2023



## Back to School



2016



2022



2015

Peter Vik and Arwynn Haney-two seniors who joined robotics when it started up as a 4-H club in our county.

Summer break is over and the kids are back in school. For several members of the team, this school year is their last. Two in particular started out in 4-H robotics when it first came to Wahkiakum. Joining within the first two years were Peter Vik (8th year) and Arwynn Haney (4th year). Last year they were the Vice President and President of the Club. Other seniors on our

team this year are Nathan Garrett (3rd year), returning from the earlier years-Dalton Bruntmeyer (2nd year) who is also in the 2015 picture above in a green shirt, Sem Hoogendoorn (3rd year), and Libby Davis (1st year).

The nice thing about being a part of the robotics club is you come away with so many life skills that can be used wherever you go when you graduate: public speaking, team work, communication, documenting, coding, engineering etc... Coaches and Mentors are hoping to add a few more to that list with the new toy in the robot room. Through the Career Connect Washington Grant, WSU Wahkiakum County Extension/4-H (WSU/4-H) bought a 3-in-1 Printer for both the Wahkiakum (WHS) and Naselle (NGRVHS) High Schools. This machine has a quick change head and plate, allowing it to 3D print with filament, laser engraving on wood, or CNC machining on metal. This is fresh off the press technology. So much so, WSU/4-H waited almost a full year to get it after placing the order.



Setting up the printer in Naselle are Steve Hart, Ron Wright, and Jessica Vik. WHS has the same printer installed in their Robotics Room.

The printers are quite large and need a sturdy table to call home. Putting them together was a minimum two person job . Ron Wright and Jessica Vik (an employee of WSU Wahkiakum County Extension) put the WHS printer together and quickly realized it took two sets of hands and more than one pair of eyes to double check the steps. Yep, they learned the hard way after getting a few things mixed up! When it came time to set up the printer at NGRVHS, they enlisted the help of Steve Hart and brought the owner's manual. This went much quicker having a third helper as well as having the experience of setting one up already. Remembering the pitfalls, they were able to avoid them the second time around, and the process went much faster.

A reminder: The Mecha Mules Newsletter will be emailed out quarterly on October 1, January 1, April 1, and July 1 or whatever week day falls the closest. You will see a new format this season while keeping the coaches corner the same. Thank you for supporting our youth and expressing an interest in what they do by subscribing to this letter. See the end of this letter for more info on how to help someone you know subscribe.

## July-September

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## Donated Equipment

Last summer two SW WA FTC teams, Octo-pi and Steel Hearts, shut down their operations and donated their equipment to us. Their original team members aged out and moved on to other activities. They no longer had a use for their FTC equipment, knew that we could use some of it, and could be counted on to share some equipment with other teams as needs arise. They also liked us due to our unflagging Gracious Professionalism behavior at competitions. There were tools, robot parts and more robot parts, cabinets, storage systems, competition fields, old competition elements, etc. Overall it was a large van and a car full of parts. Thanks to mentor Bob for assistance in moving. The equipment will be shared with the new Naselle FTC team, and with other teams throughout SW WA. There are many parts and partial robot assemblies that we have never tried: a treasure trove for team members to explore.



## Summer Events



### **June: Seaperch Robot Practical Application**

A large crew drove our SeaPerch robot assisting Mr. Rooklidge's class taking a survey in a stream just before school was out. See the full story in the Eagle article.

<https://www.waheagle.com/story/2023/06/15/wahkiakum-people/biology-teams-up-with-robotics/22435.html>





### June: SkillsUSA Nationals

Mentor Ron Wright helped chaperone Naselle team members Alia and Lewis as they represented Washington state at the national competition in Atlanta. Alia and Lewis placed seventh even though they had never before touched the robot hardware with which they had to work. They have it now. This event was pivotal in adjusting the course of robotics curriculum progression in Wahkiakum and Naselle.

### July: Bald Eagle Days

A very small crew entered a float and robot chaser in the parade. Ron Wright's electric-power trike pulled the wandering robot throne with King Elijah riding and driving the robot chase vehicle while passing out goodies to fair goers. A fair-goer climbed aboard the throne for the harrowing descent down the steep hill whilst our King took the more prudent course and walked. Our float earned the third place award.



### July: Sons of Norway Regional Picnic at the Norse Hall

Nathan and Jamey led our team at the Norse Hall giving the picnickers a great review of last year's successes. They were assisted by mentors Amanda, Josh and Ron. While our presenters did a great job, there is no doubt that the highlight of the event was the desserts brought and shared potluck style by the picnickers. This is not to be missed next year!



### August: Cathlamet Wooden and Classic Boat Festival

Mentors Paula and Ron showed off our champion SeaPerch robot driving underwater looking at boat bottoms at the docks while mentor Phyllis staffed our fundraiser booth up on land. Weeds constantly tied up the propellers. We learned that any device to be used in the future for boat bottom surveys will need to have protected propellers. The highlight occurred during the second of about 15 dives ... the robot sank to near the bottom where, just before being befoiled, we saw a school of 6 fish looking us over. It was surprisingly spooky.

### August: Clark County Fair

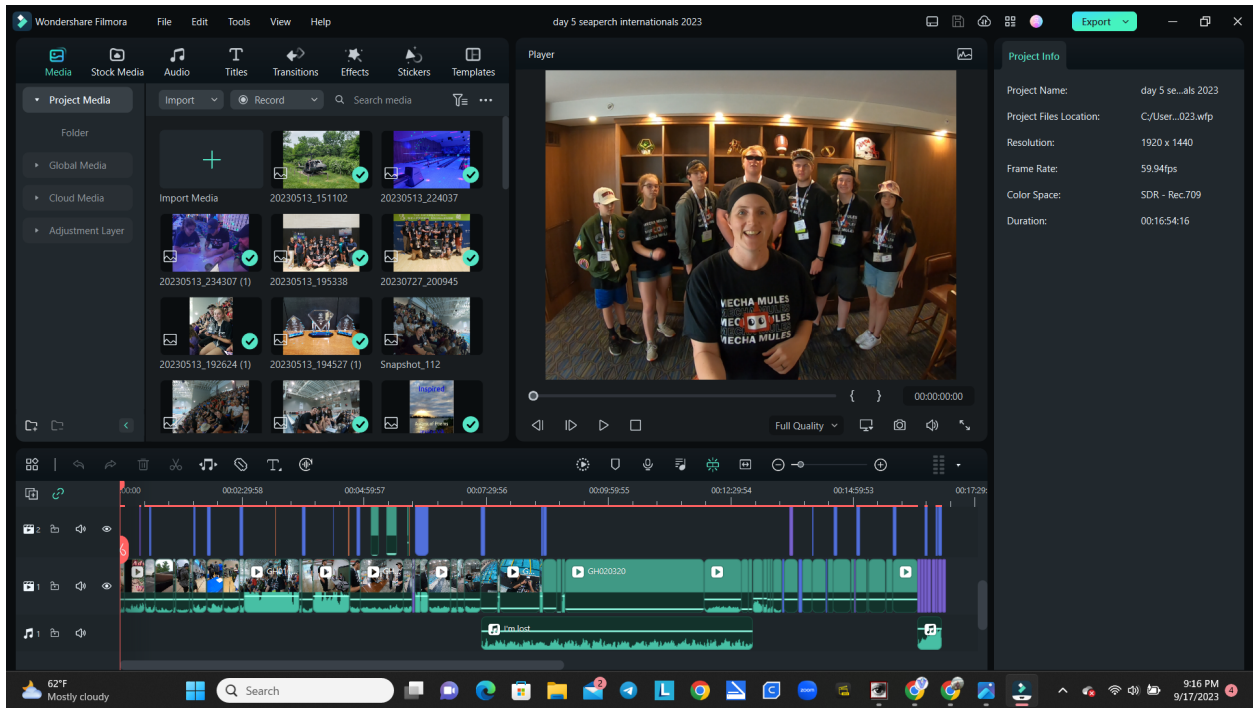
Naselle team members Alia and Lewis joined our team members Jamey, Elijah, and Micah as we hosted the robot booth for one day. Mentors Amanda and Ron assisted. Alia and Lewis pioneered using the robot arm as a donation tool. It holds out a cup, and when money is deposited, moves and empties the cup into our piggy bank.



### August: Wahkiakum County Fair

Mentor Ron and club member Cor held down our booth at the fair. There was not a lot of action from fairgoers even though we had drivable robots, the robot arm going, and the SeaPerch robot to view. Thanks to mentor Jess, we had a very nice pictorial display.





## Video Links

This summer Jess has been reliving the SeaPerch trip to Internationals as she made the videos for the team. When they were on the trip, Jess had a GoPro in her hand everywhere they went to capture the trip for parents and students. This is why on the back of her club sweatshirt, they put the nickname GoPro. On competition day team members Jamey and Anna were enlisted to help from the stands, and Peter wore a head cam on the pool deck.

However, that was only half the work. After the trip, Jess had many hours of footage to go through for each day. The editing process was no quick feat. Coming home to a busy summer made it hard to get the videos out sooner. The goal was to have them all edited before school started. She made it!

Jess said, "I enjoy pulling these memories together for the kids. When they are in the moment and focused on the competition, they can't worry about pictures. They will be able to look back on these videos and relive the event without the stress of competition and enjoy it." We hope you enjoy watching what these kids did too.

This link will take you to a playlist of seven videos. This covers the trip, competition, the 1st place video they submitted, and a tour at the Neutral Buoyancy's Research Lab at the college.  
<https://www.youtube.com/playlist?list=PLDDqvq0s50qJWG-5zc-pH2yHX81dDFkNU>

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# Coaches Corner



## The Seaperch Season is Just Around the Bend

By Amanda Heston, Mecha Mules-Water Damage Coach

Here we are again at the beginning of the school year. Our first robotics meeting is tomorrow night, and I'm looking forward to seeing all the kids again. Parents will also get a chance to come in and hear about what we have planned. I will be only coaching Seaperch, our underwater robotics competition, this year. Seaperch generally releases the new game rules and mission by late October. Every year the obstacle course remains the same: maneuver the ROV through

a series of five 18-inch hoops as fast as you can. The mission course, on the other hand, changes from year to year. The mission course really dictates the build of the ROV. It's always exciting for our team to hear about the new course and brainstorm what attributes of a robot will best complete the mission. Last year, our lead builder, Peter Vik created a few 3D-printed robot prototypes, but he ran out of time to make a competition-ready model. The good thing is that our standard ROV works amazingly well, so it's a great fallback if we find that 3D printing a whole new robot isn't in the cards again. With every print, our team gains valuable information, so the sooner we can start that process, the better. We will also gain access to the pool earlier this year, and it looks like it will be cleaned for most of our practice and our regional competition. One thing we are doing a little differently this season in Seaperch is to suspend the courses in the deep end of the pool. This is the way they are set up at the international competition, but so far, we have practiced only in the shallow end of our pool. When the course is suspended, there are ropes holding it in place which creates more obstacles. At Internationals in May, the suspension ropes caught Nathan Garrett off guard. In our local pool, he could practically run that course in his sleep, but maneuvering around those additional ropes was an unforeseen challenge that ultimately caused him to drop a piece he was carrying. I hope that suspending our practice course will reduce the likelihood of this happening again. When you have such a



high-functioning and talented team, it's those fine details that really encourage us to push the limits of the robot and team's ability. Working in the deep end of the pool also means that I'll need a full wetsuit to be able to reach objects that are dropped while practicing. This will certainly push my limits, too! I truly love being out there at the pool, even in the cold and rain, watching our team try out the latest adjustments that the builders and coders have made in the warm robot room! And although we are World Champions, our biggest competition is ourselves, the year before. Three of the five members of our team this year are seniors. It will inevitably be an emotional year as we work with these kids for the last time in this capacity. I can't wait to get started, but I hate for it to end.



## Fall Horizons

By Ron Wright, Skills USA Coach and Robotic Tech Club Advisor

We are in transition in two ways: First, we lost some integral team members due to graduation last spring. Now, our few seniors, led by Arwynn and Peter, will be focusing on legacy as they help us transition to new team leadership for the next school year and beyond. Additionally, we lost Rook due to "graduation" into retirement. Last spring's graduates will be much missed. Second, our k-12 progression of robotics and engineering programs is being refined. The rest of this article will summarize that for you as it was presented at the September school board meeting. The related slide deck in pdf format is on our website at <https://www.mechamules.com/> Email me if you would like to meet to discuss the details.

**In-school Classes:** using project based learning and diversity concepts to learn about engineering problem solving using robotics

K-5: Each classroom has its own set of Lego robots. The teacher plans and implements curriculum-integrating projects with guidance from our 4-H Liaison and technical assistance from older Mecha Mules team members

MS: One section of robotics using Arduino-based robots, for those students wanting to take their knowledge deeper, and to represent our school in the KM Robotics Cup.

HS: One section of robotics/engineering/programming using advanced Arduino-based robots, modern tools to 3D print, laser engrave, and CNC specialized parts, and Java or Python with Raspberry Pi microcomputers to solve integrated problems.

**After-school Clubs:** projects and competitions going beyond what can be offered in the classroom. Even though this is after school, this is part of our robotics/engineering curriculum.

Robo Rascals: 4-H sponsored bi-weekly club that uses challenges to engage younger students in robotics and engineering related activities beyond the classroom norms. Some Mecha Mules club members help as technical assistants.

Mecha-Mules Teams: One Club, many teams, all focused on becoming professional in everything we do, where “beginners hope to get lucky, amateurs practice until they get it right, professionals practice until they cannot get it wrong.”

FTC: fall to early winter, for MS and new HS robotics students ... learn how to work as a team, the value of different abilities on a team, and the basics of becoming professional.

SeaPerch: late fall to spring, for MS and HS robotics students of all abilities and levels. Our #1 team is the current world champion in the open division, still with room to improve.

SkillsUSA: fall to late winter, for HS students with demonstrated ability to work independently. There are over 100 possible competition events to get involved in. The career-related rewards for successful students are outstanding.

Community Projects: anytime, for very advanced students. Individual projects to solve problems in our community.

Outreach: all year, any Club member. Plan and lead demonstrations, presentations, fundraisers, and prepare articles for the Eagle.

Mentoring: October to May, any HS Club member. Assist teachers in classrooms K-5 as technical problem solvers, assist hosting the KM Robotics Cup, and assist with Robot Rascals.



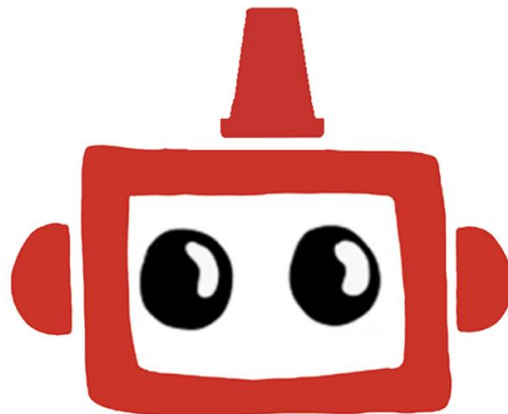
**Funding:** in short, we are very good, leading the state in many ways, and we need to solidify our funding in order to sustain our advanced program.

For most equipment and for local travel, and for registrations, we are in relatively good shape.

When we advance to national or international venues, we are currently financially unsustainable. As shared at the board meeting, we should plan on two groups going most every year: one to SkillsUSA and one to SeaPerch. The cost is about \$1500/person for about 10 people to each competition. This comes to about \$30,000/year. The district has been helping with this more than it can sustain. Eventually, we will need to reach a steady state of funding of roughly: \$10,000 from the district, \$10,000 from family and friends and local donations, and \$10,000 from industry partners. It is this last part that we as a club need to focus on developing.

**Mentors:** we need more adult mentors, and more adults willing to get involved as team coaches. As shared at the board meeting: we have a great thing going here, for our community and for our kids. Come join us, and help us avoid burn-out of our current volunteers. Technical expertise not required ... just the mature adult ability to listen, to ask the right questions, and to gently guide young people's growth.

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Donations can be made to: “Wahkiakum ASB” Memo: Mecha Mules  
**Wahkiakum School District**  
**500 S 3rd St./P.O. Box 398**

**Cathlamet, WA 98612**

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