

Broodstock Program Yields Outstanding Results

What comes first: The salmon or the egg? That “debate” is part of the conversation within Mowi Canada West’s Broodstock department, where they can observe the entire “circle of life” of the salmon.

Over the past six years, Breeding and Broodstock Production Manager Yvonne Sheehan and her team have developed and advanced the Broodstock program from a traditional breeding program into a genomics-based program, with outstanding results.

“The eggs produced in the last two years have been bred to maximize growth, gill health, pigment uptake and to minimize early maturation,” Yvonne notes. “The coolest discovery in our program has been the discovery of a gill health QTL – a genomic marker found in the DNA. The 2021 Year Class is the first that we hope will show some major improvements for production for these traits.

“We work closely with MOWI Genetics AS and they are impressed with our large data set. This data set helped us find the gill health marker in our salmon DNA.”

Yvonne has been salmon farming for 24 years, the past 6.5 with Mowi Canada West, and leads the teams at the land-based Freshwater Farms (FWF) facility in Duncan and Tsulton in Port McNeill, as well as two salt-water sites at Glacial Creek in Jervis Inlet, and Shaw Point near Campbell River, where she has worked from her home office since the pandemic started.



Fresh snow arrives at Glacial. Inset: Lindsay Codd at work

The “circle of life” starts with the fertilizing of baby broodstock eggs at FWF, Yvonne explains.

“Here they are grown to fry and then shipped to our freshwater smolt facilities at Big Tree Creek and Ocean Falls,” she states. “Then the broodstock smolts are sent to two specifically chosen SW sites. One of these sites holds the broodstock until about 800 grams. Then they get shipped to our Shaw Point site where they are grown to harvest size, just like all our production sites.”

At about 5.5 kg average, only the largest individuals are hand

selected. These hand selected future brood are then fed a specialized broodstock diet in their final year before maturity. “This diet aids and boosts their nutrition for optimal gonad development. Half-way through their year to maturity they are moved to our Glacial Creek site where they will finally mature and spawn,” she adds. “Once they are ready to spawn, the eggs are stripped from the females and milt from the males.”

Each male and female are sampled for known viruses and bacteria, and the gametes are then individually labelled and packaged

with oxygen and shipped to the hatcheries, where the eggs and milt are then matched for fertilization based on a known breeding index in their pedigree.

“Yes, pedigree,” she notes. “We know the family tree of every single fish for many generations through their DNA. We know how they will grow and perform from measuring a group of fish that are their parents siblings, our performance evaluation (PE) fish.

“We track and measure every individual in this PE group from egg to smolt to harvest.”

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Full Speed Ahead for PHPP With Parsons

A familiar face has a new assignment at **Mowi Canada West's** Port Hardy Processing Plant. **Janet Parsons** was named Plant Manager in September, after serving as Office Manager since 2008. Janet started in the salmon farming industry in 1999 on the processing floor cutting and packing fish at **Englewood Packing**, which was a joint venture with **Stolt Sea Farms**. She then worked in the shipping department and the office before joining Mowi in 2008.

"I was surprised to learn that I was the first female Plant Manager in Mowi," says Janet. "I was very excited when I was offered the position, and I am looking forward to the challenges and opportunities ahead."

PHPP is highly automated and efficient, utilizing gutting machines, packing lines and robotic palletizing systems. It has 76 employees, processing up to five days per week, and over 40,000 fish each day.

"I have been involved in the industry for over 20 years," she notes. "I have taken any training available and have moved into any advancement opportunities that have been offered to me, including my involvement in union negotiations, Human Resources, Capital Planning and annual budget development."

"Port Hardy Processing plant has always had a lean focus over the years, and that has helped me develop myself in many different areas of the process."

Janet observes that during her time as manager, "So far, the feedback has been nothing but positive. Due to my length of service and working with many of the same staff over the years, I feel they are very excited to be working with me."



Janet Parsons is the plant manager of Mowi's Port Hardy Processing Plant

New public health orders and directions for all of BC



High-risk group fitness suspended



Non-essential travel advisory



Masks mandatory in indoor public places



Socialize with your household only



No events or gatherings



No sports spectators or travel

COVID-19 IN BC

Seagate Feed Station Producing Great Results



Roger Stagg and Michael Stoskopf in the Seagate Feed Station.

Innovation and technological investments in Port Hardy's **Seagate Feed Station** at the beginning of the year is already producing great benefits for Mowi Canada West and staff members.

Roger Stagg, a Feed Supervisor at Seagate along with **Mike Stoskopf**, notes the feed station was expanded to the Seagate Pier in January. It was set up with four feeding stations, and the crew will be expanding to feed four sites once new **Quinsam Communications**, **ScaleAQ** and **Rogers** communication towers are completed. It is currently feeding Doyle Island and Marsh Bay, although Robertson Island was fed to harvest in the past.

"The result of having this feed office is that there are little to no lost feed days due to extreme weather on high energy sites," says Roger. "It seems that others are impressed with the technology that we are using and they are looking

forward to having us feed their sites," Roger adds.

Also, we have cameras set up so we can monitor site and staff to ensure that everything and everyone is safe.

"A centralized feed office also provides consistent feeding where we are able to focus on feeding alone, without the distractions of other issues that can pop up on the sites. The feed office also frees up site staff to focus on all the other aspects of the job, without having to have a person feed for the entire day."

Roger has been with the company since 1997, starting at Cleagh Creek in the Quatsino area. He was an Assistant Manager at Duncan Island before arriving at the feed office in March.

Mike has been with Mowi for 15 years, and has worked at most of the sites in the Port Hardy and Quatsino areas. He was Assistant Manager at Shelter Pass before

starting off the feed office at the Omega dock in April, 2019.

Jason Saunders is Operations Manager in Port Hardy, and for the past two months has served as Interim Production Manager for the Port Hardy area. He has been with Mowi since 1997. He notes that Port Hardy Production Manager **Riley McFadyen** was the main driver behind getting the remote feed station started.

"With being able to feed from the remote station it has eliminated many missed feed days due to weather," Jason observes. "It has added to production because it frees up staff members onsite all day to be able to do onsite work, and offers consistent feeding because having the remote feed station allows the crews to focus on feeding only, where onsite feeding has many distractions."

Jason states that other areas of the company are beginning to move in this same direction as well.



Jason Saunders

"The technology behind this was a huge benefit for the Port Hardy area, allowing our crews to focus on the day to day tasks onsite," he says. "Improving safety was a major reason behind this project, as it has eliminated our crews travelling in some unfavorable weather conditions, as Port Hardy sees the worst weather around the coast."

University Classmates Become Mowi Colleagues

When **Amanda Luxton**, **Yingqiang Zhang** and **Jessica Leck** attended university on Canada's East Coast, little did they realize they'd become colleagues years later on the west coast.

All three studied aquaculture at **Dalhousie University Agricultural Campus** in Truro, Nova Scotia, and they're now working in Mowi's Freshwater Department, having joined the company in 2012-13.

"It is certainly easier to work with classmates, especially since we get along well," says Yingqiang, Interim Manager at FWF for the past three months. "I realize that being classmates and friends makes it easier to discuss issues or concerns related to work."

Amanda, Assistant Manager at Big Tree Creek Hatchery, says it has been fun working with classmates.

"Jess and I learned a lot of the

same things, being in the same classes, but when she moved here, she was Saltwater and I was Freshwater, so we didn't have much in common workwise. Now, with both of us being in Freshwater, it's been nice. If I have questions about brood I can ask Jess, and when she has questions about the hatchery and RAS, she can ask me. Ying and I still stay in contact, and when we need advice or help with things that come up, it's nice being able to help each other out."

Amanda Luxton

At Big Tree Creek Hatchery, Amanda helps ensure that everything that happens at the hatchery from egg to smolt goes smoothly and that the fish are happy and healthy.

"The Freshwater Department focuses on fertilizing and hatching our best eggs and growing these fish into strong, big smolts for the sea sites," she notes. "Freshwater and Saltwater Departments are



Amanda Luxton and Jessica Leck

night and day when it comes to their focuses, with one exception: Keeping our salmon healthy."

Amanda was the Supervisor during start-up of the newly built 14M RAS system, adding it was challenging, as "we had to learn how to use the system, putting the first fish into the tanks and growing them to produce smolts. Learning and teaching staff on site about this system, grading, vaccination, smolting and shipping the fish off the site."

"After travelling across the country and moving to Campbell River we realized that myself and Jess lived a block away from each other. We moved in together shortly after. We lived together for three years, and had a lot of adventures (traveling, camping, diving) and we remain close friends now," she says. "Ying and I worked together at Dalrymple Hatchery, that was the first site I started at when I

moved here from Nova Scotia. We were on opposite shifts but working on the same systems for three years until I went to Georgie Lake."

Yingqiang Zhang

Yingqiang attended some courses with Amanda and Jessica at the **Nova Scotia Agricultural College (NSAC)**, now under the Dalhousie umbrella, "but I have to admit that I don't recall talking to them while I was at the College. I come from a small town in south-east China, and we met in Truro, Nova Scotia. I became friends with Amanda and Jess after we joined Mowi."

He joined Mowi in 2012 at Dalrymple Hatchery, where he was promoted to the RAS Supervisor position, joined the Broodstock team in 2019 where he became Assistant Manager at FWF, and now Interim Manager. With support from Mowi, he obtained his Master's Degree in Aquaculture



Amanda Luxton enjoys catching salmon when she is not growing them

Technology Management from Memorial University of Newfoundland in 2018.

Yingqiang's responsibilities as Freshwater Projects Manager include being familiar with Work-SafeBC construction regulations and ensure they are followed by staff and all contractors, ensuring the safety and training of projects staff and of outside contractors working on site as per Mowi Canada West policy and procedures, managing, directing, and scheduling the projects personnel, and directing and leading staff in new construction at the FW facilities.

He also works with the Procurement Department, suppliers and engineers, and Freshwater site managers, as well as with the Finance Department to track capital costs and be responsible for delivering projects on schedule and on budget.

The Freshwater Department focuses on producing high quality broodstocks, eggs and smolts in a safe, cost effective and environmentally responsible manner. Freshwater facilities, especially the land-based hatcheries, have much greater control over the rearing environments, such as temperature and water quality.

"It is much easier to provide optimum conditions for fish to grow," he notes. "Most of the land-based facilities are indoors or in enclosed building where is considered as more preferable working environment especially during winter."

Jessica Leck

Jessica is currently filling the manager position at FWF in Duncan, filling in for Yingqiang, who is now FW Projects Manager.

"Right now my main duties include keeping people and fish happy and healthy," she notes. "But on top of that I am learning about a facility that has four separate year classes on-site. We have incubation (eggs) all the way up to spawning brood fish."

"Every stage needs its own lighting, temperatures, vaccination, water treatment and sorting plans. It's a big job but I am excited for the challenge because I have done many other stages of the growing process just not all at once."

Prior to this post, Jessica's focus has been on the brood program, since arriving in Freshwater four years ago. The goal continues to be giving production the best genetic gains to improve gill scores, growth and reduce kudoa.

"That means we have to sort fish and hand select each fish that are used for breeding," she explains. "Each fish is pit tagged and genetically tested so we can make the perfect match to get as many gains as possible. You have to understand the entire cycle when working with brood as you are both the end product and the start of the next generation."

Jessica and Amanda had classes together at NSAC, but didn't really get to know each other until they moved to BC, where they were roommates for three years while working at Mowi. "Those small connections we made in college became more important after moving to a new place without our friends or family," she notes "At first we had different schedules, but as soon as our shifts aligned there was no stopping the adventures, fun and friendship."

Working in the same department has been helpful for all of them.

"Our connection was already made, so there is no hesitation when you need to ask for advice, procedure or even a simple question," she says. "Those two are so smart and can give you any information on any systems they've worked with. It's astonishing, the knowledge they have learned already and what they have done with it."

"Our education was only the start, and working at Mowi has helped our connection by giving us opportunities to work with each other, even if it's from different sites," she adds. "That's how Freshwater works: Everything is connected."



Yingqiang Zhang

If you
have to ask,
wear a mask



COVID-19 IN BC

Mars Rustler Receives Ceremonial Blessing



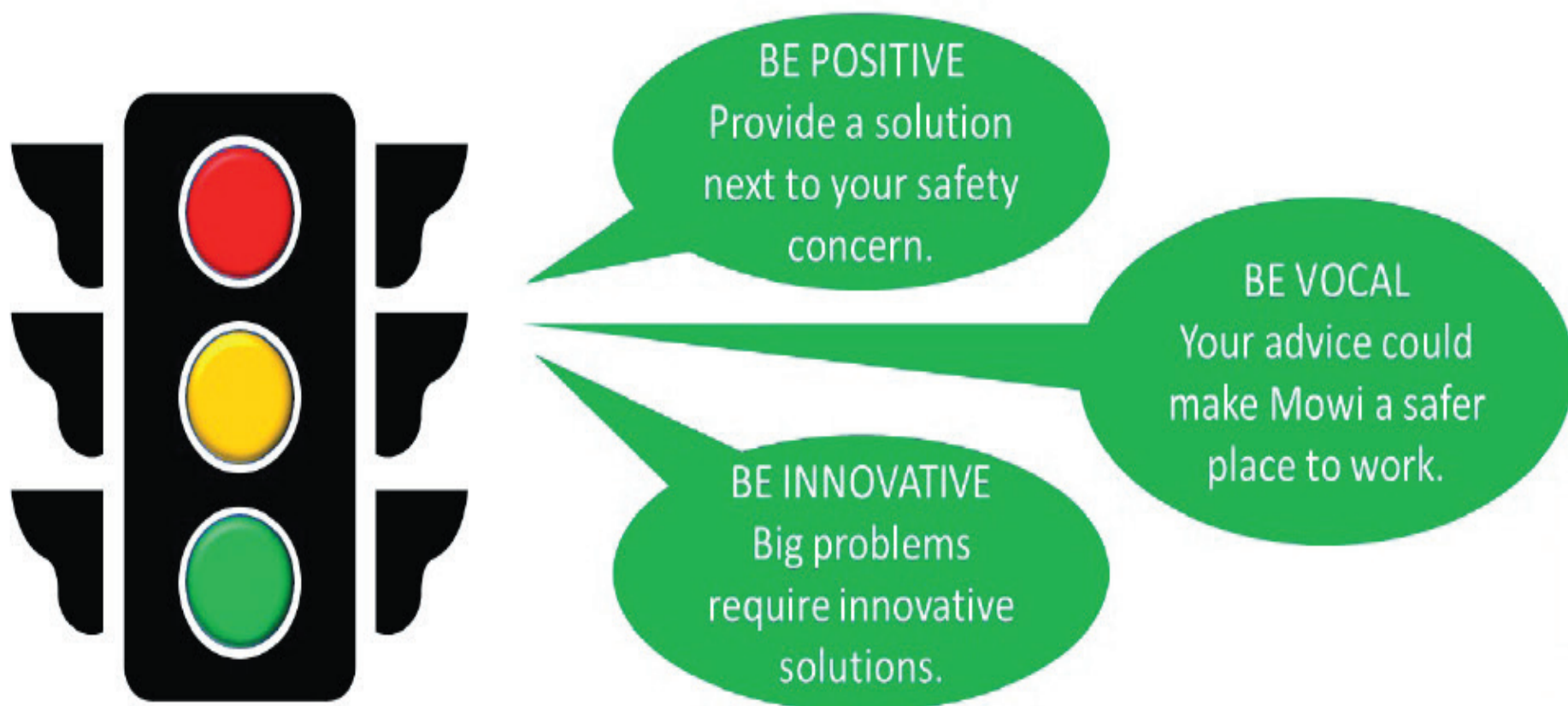
The Mars Rustler, the new addition to the k'awat'si Marine Transport fleet, was blessed at a recent ceremony in Port Hardy. Norm Napoleon, Indigenous Relations Director, was fortunate to attend the celebration and took these pictures. "I was very proud to have attended the blessing of the Mars Rustler," Norm said. "This new vessel is already working, delivering supplies to our Port Hardy sites. It is a great addition to the service that k'awat'si Marine Transport offers and is a fine example of the collaboration which is such an important part of aquaculture."

A rainbow formed a beautiful arc over the Mars Rustler during the ceremony.

It was a very special event to attend.



All Sites Participate In Red Zone Exercises



One of the key parts of Mowi Global Safety Week was the Red Zone exercise that all sites carried out.

The Red Zone is a supportive project that helps Mowi to understand what is working well and what needs future improvement. Each site carried out a group activity that allowed team members to raise any safety concerns or improvements that they felt should be addressed at their site or in Mowi as a whole. Any concern raised was recorded and the results sent to the Health and Safety Department.

All of the submissions have been assessed and the findings of this exercise are now being acted on. There were a wide range of possible actions and some common themes have been identified. These are topics which are relevant to many or all of you.

The Health and Safety Team is working on a plan to roll out information and training programs to address these issues. However, if you are carrying out any of the tasks below and

you are unsure about any aspect of it, contact your supervisor to ensure that you are doing it safely.

Ergonomics

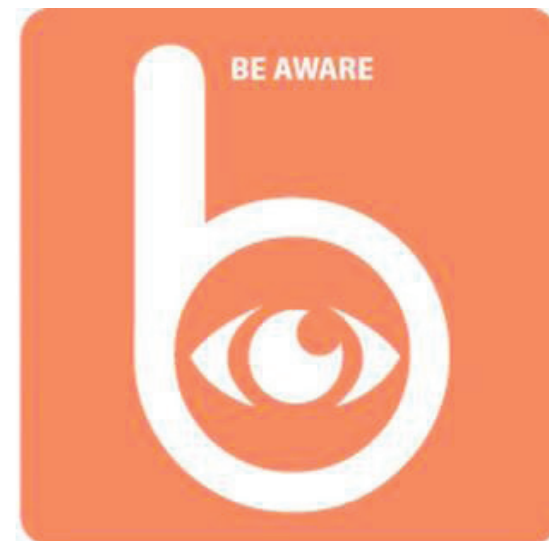
Lifting or moving heavy or awkward loads. It was identified that there needs to be a better awareness of the importance of ergonomics and body movement processes. This needs to be supported within our procedures and discussed regularly across the company.

Site Inspections

We carry out site inspections regularly at all of our sites. However, it was identified that this process would be improved if there was some consistency and training to ensure that the process is as valuable as possible.

Lock Out Procedures

Some equipment requires a Lock Out, or Tag Out procedure for safe operation/maintenance. This has been flagged as an area that requires increased information and training to ensure safety.



The Red Zone exercise is an extremely valuable process. It helps us to ensure that we are all working

in a safe environment. Be Vocal is a key part of our Brainsafe safety program. If you have any concerns

about the safety of a task you are carrying out, be sure to raise it with your supervisor.

COVID 19 Second Wave: Stay Safe!

During this second wave of Covid-19, transmission of the virus continues to escalate rapidly requiring increased health and safety controls including NEW mask precautions.

Responsibility and authority

All senior managers are accountable and site/hatchery/plant managers are responsible to ensure that this standard is adhered to.

Updated Health & Safety requirements

- Masks must be worn in all workplaces and accommodations for indoor shared work areas and common areas. This includes kitchens, living areas and hallways. Everyone must have a mask available at all times.
- Masks must be worn in all transport where there is more than one individual.

- Masks must be worn by visitors to any facility indoor or outdoors – with exception to a single person working outdoors on her/his own without people in the area. (A Risk assessment / Eye check MUST BE used). Visitor is defined as any person who is not part of the specific site crew.

Remember that, even with heightened mask protocols, this does not change the importance of washing your hands, physical distancing, regular cleaning and all of the good practices that we have been carrying out.

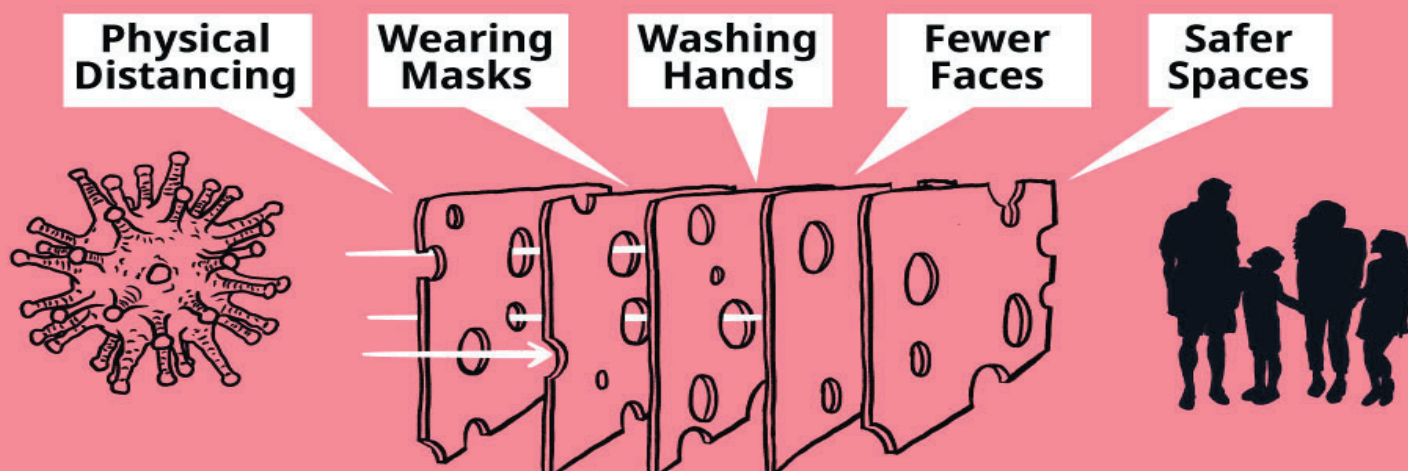
Please continue to take seriously your role as essential workers, following the safe protocols that have been set up for working and also those protocols that we have for safety in camp living quarters. Now, more than ever, we need to be vigilant and be leaders in the fight against Covid-19, and in the protection of our colleagues, our families and our communities.

How to wear a mask



COVID-19 IN BC

The Swiss Cheese Model



All layers are important because no layer is perfect.

COVID-19 IN BC