The Sea Star

Newsletter of the Wasatch Marine Aquarium Society Founded 1995 Issue 39 March 2001

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Inside this Issue

Welcome New Members
Tyler Burningham
Greg Freeman
Steve Lopez
Bob Murphy
Brett Richins
Monti Treadway

April 5th Meeting

Member Jim Perry will speak to the WMAS regarding his 650-gallon reef aquarium built-in to his living room wall. Jim's tank was on the reef tour and he will show and tell us how he designed it and how he made it work.

We will also do Mushroom Leather Coral propagation. A cutting will be given to every member at the meeting.

Due to health complications, LeRoy and Sally Jo will not be able to visit with us in April. They are very good friends of the WMAS and are very active in promoting the marine aquarium hobby by their promotion of the techniques of coral propagation and aquacultured live rock. Some of the finest reef aquariums in the west are found at Geothermal Aquaculture Research Foundation in Boise Idaho (www.garf.org).

Many of the early club members, and countless other hobbyists around the world, first heard about coral propagation and aquacultured live rock from LeRoy. Please see the videotapes of his presentations at WMAS meetings, available in the WMAS Library. He taught us how to grow our own reef and his enthusiasm is contagious. We will miss this anticipated meeting with LeRoy and Sally Jo, but are very pleased to have Jim Perry speak to us.

Thanks Pet Shops

Thanks to the retail stores and wholesale distributors. On behalf of all hobbyists the Wasatch Marine Aquarium Society thanks you for providing livestock and supplies to the marine hobby.

Thu Phan's Regal Blue Tang

Upcoming Events

May 3rd

Bob Goemans, Ph.D., a well-known marine aquarist, has agreed to visit and speak to us in May. He will present his research into the efficacy of the Plenum system and offer his viewpoints about other filtration systems as well.

June 7th

In June, Randy Olson, owner and operator of Mountain Shadow Marine, an aquarium maintenance company will introduce us to his new "high end" marine retail store in Centerville and

will also discuss successful reefkeeping.

July 14th

The annual Barbecue will be held at SeaBase near Grantsville

September

Julian Sprung and the Reef Aquarium Tour all in one Saturday!

Reef built by Aaron George

January Meeting

The January meeting was a great one for two reasons.

First, we viewed the manufacturing of an Acrylic Aquarium by Danh Ngo, club Vice President, and Adam Blundell, a past club V.P. Dan has voluntarily made many acrylic tanks for The Living Planet.

Second, we had a load of coral and supplies in the raffle.

February Meeting

The February meeting was well attended with ample items for raffle thanks to the generosity of several members. Thanks to the following for their presentations:

Keith Dickenson
Joe and Cindy Jones
Suzy Applegarth

Suzy Applegarth has been a WMAS Member for five years. She gave an informative presentation on Coral Nutrition, stating that as a nurse she sees some similarity between the nutritional needs of people and coral. There is a need for hobbyists to know the nutritional needs of their tank inhabitants, just as we need to know our own. She pointed out that we tend to overfeed our tanks just as people tend to overfeed themselves!

Joe and Cindy Jones taught us how to propagate Candy Coral. The way you split the growing tip affects the way it propagates itself. If you missed it, ask them. They are always glad to help. We appreciate their company, Mountain Corals, and the Velvet Green and Rotifers they supply to the industry.

Keith Dickenson owner of Pets Unlimited in Ogden has been in business for over six years. He has recently moved into much larger quarters where he can more adequately serve his growing clientele. If you haven't been to his store, it is worth the visit. He is only 40 minutes from downtown SLC at the south end of Ogden. Take the Riverdale exit to the Newgate Mall. He is right behind the Mall. (Petland is on the other side of the mall so you can visit two stores within a few minutes of each other, which means you will find something you want at both stores).

Keith discussed his interest in seeing the hobby reach a point where fair priced captive raised livestock will dominate the wild caught specimens. He plans to make volume purchases of captive raised fish in order to provide them at an attractive price.

During his presentation, he asked a revealing question. How many had ever used the Internet to purchase marine items? Practically every hand went up. He is serious about keeping our business. He asked us to let him know what we find to buy via the internet, contact him and he will do his best to compete. After all, you can get personal service and loyalty when you deal with someone face to face.

Although it was briefly stated at the meeting, there are a couple of afterthoughts written here for what they are worth.

Internet/catalog buying is a source, but local pet shops are a better source. The advantage to buying at local pet shops is the ability to see what you are getting and to easily return it if you are not satisfied.

The local pet shops take the loss on livestock shipments. Of course they add that to their prices, but when you buy livestock and have it shipped, you risk the entire loss. Livestock is best purchased as you see it, and that includes live rock. And then there are some people that still like bad surprises!

Local Pet Shops as well as distributors want to keep your business. Remember Steve Larsen of

Intermountain Pet Wholesalers spoke to the club a few months ago. They will do their best for you if you are willing to communicate and work with them and be reasonable. They need to make a living. Don't haggle over little differences. Good will is worth many dollars. Do business with them and you won't regret it.

Happy Birthday WMAS

By Mark Peterson

Act 1: WMAS Beginnings
Scene 1: Local Pet Store
Mark: "Do you keep a salt water aquarium?"
Customer: "Uhh, yes?"
Mark: "Did you know there's a salt water club?"
Customer: "No. ...really?"
Mark: (Handing them a business card.)"It's called the Wasatch Marine Aquarium Society."

This little scene has been repeated hundreds of times. In fact, for me it has been six fun years of promoting the best thing that ever happened to my aquarium. The club first met on the evening of March 6, 1995 at the home of WMAS founders, Tim and Tina Weidauer. The other night I was in their Living Room once again. Joe and Cindy Jones and I were at the Weidauer's to help take down his aquariums. Tim has decided to take a break from aquarium keeping to remodel the house. The old carpet has soaked up its last drops of salt water! Tim's house is where it began. I have fond memories of my experiences in the WMAS. The people I have met in association with the club are some of the best. I would not have a beautiful reef aquarium, if not for the WMAS and LeRoy Headlee. (see www.garf.org\UGLY) Perhaps it is time to write a history of the formation and life of Utah's first and only marine aquarium club.

Eight people met at the Weidauer home in response to a flyer which Tim placed in the local pet shops. Tim and Tina, Joe and Cindy Jones, Rich Frey, Chris Bagley Tina's brother, Tory, and myself met that evening. We got acquainted and talked about our aquariums. I remember thinking how great Tim's tank looked even then! We discussed a name for our group. By the end of the gathering we had tossed around the name "Great Salt Lake Marine Society".

We met the next month at Joe and Cindy's house in Ogden (check out www.mountaincorals.com). Everyone hopped into my van for a "Mr. Toad's Wild Ride" to Ogden. I was so excited that I almost put the van on two wheels as it went around on the old freeway entrance at 6th North. A guy named Bob Bolds and someone else I can't remember joined us this time and we were awed at the beauty of Joe and Cindy's aquariums, including fresh water tanks. I wondered how I could ever hope to have a tank as nice as theirs. We came to a decision on the club name. It was to be the "Wasatch Marine Society" to avoid confusion with the freshwater club, the Great Salt Lake Aquarium Society. It was not until about a year later that the descriptive word "Aquarium" was added. That's why our banner, made early in the first year is missing the word.

Our first guest speaker came in September of that year (1995). Albert Theil (www.theil.com) introduced us to the wider world of the hobby. Here was a person that had been "around the pike" so to speak. He had even written books. He was an expert and we were so excited to hear from him. Later on he introduced me to mangroves which are still


Mark's Clown standing guard over eggs

growing in my refugia.

The WMAS grew to around 25 members by the end of the year. President, Tim Weidauer worked very hard at making the club a success. He organized interesting meetings and did a great job with the Sea Star. I tried to approach any hobbyist that seemed the least bit interested inviting them to the meetings and to join the club.

In November of that first year, we read in the

SeaScope about LeRoy Headlee (www.garf.org) and his Geothermal Aquaculture Research Foundation. He was culturing Live Rock in the Gulf of Mexico and he was located in Boise. Wow! How exciting to have someone, so into the hobby, so close to us! We wondered if he could become a resource to the WMAS. And wow, what a resource he became!

Because my brother lives in Boise, I had the opportunity to visit G.A.R.F. the next month. My family, including my parents, sat in the living room of the GARF facility viewing his gorgeous tanks. I mean these were jaw dropping, beautiful aquariums so full of reef life that we could hardly pry ourselves away.

I could hardly wait to return, so in January, through a blizzard, I again drove to Boise. I drove like a wild man with passengers, Tim Weidauer and Tom Miller (see www.geocities.com/capecanaveral/hanger/6279). We were passing an 18-wheeler when slush splashed onto the windshield obscuring the view for a few seconds, which seemed like minutes, until finally I found the windshield wiper switch. Just another hair raising moment in the car with Mark!

The drive was scary but the looks on Tim and Tom's faces as they beheld the marvelous beauty of LeRoy's aquariums was a real treat. Thus began a lasting and fruitful relationship with LeRoy and Sally Jo, cherished so fondly by many of us.

In 1996 Tim contacted Rick Greenfield, owner and President of CaribSea. Rick shipped a pallet of more than 100 bags of his aragonite substrate! What a support CaribSea has been to the club. Rick was here in 1997. He shared his vast knowledge of aragonite and salt water chemistry with us and at about midnight, Tim and I drove him out to the Great Salt Lake to see if the sand was oolitic aragonite. (It is not and is better left out of our aquariums.) As we pulled to a stop near the beach, the Park Ranger pulled up behind us! He checked to make sure we weren't drunk and causing trouble. After deciding that our story was too strange to be a lie, he showed us where to get the best sand.

And then there was the time that a gazillion Reef Janitors were singing the praises of the WMAS. They were so grateful to us for saving their little lives from almost certain death from freezing on the bleak highway at night in the middle of winter just outside Provo. Following is the story as told by Tim in the March 1996 issue of the Sea Star.

Coral Beauty Angel by Damien Blevins

Remember the Great Crab Scare of '96

By Tim Weidauer

What, didn't you hear the news? Yeah, some 80 thousand crabs came up almost frozen on the east shore of Utah Lake a couple of weeks ago! Yeah, reports say that they were even involved in some sort of auto accident that had extensive damage. I even heard that they were begging for fresh salt water... Hmmm.... that must have been some strange incident.

Wonder what I am talking about? Well, three members of the WMS including myself know about it all too well because we were there! I received a strange call around 9:00 p.m. from LeRoy Headlee of the Geothermal Aquaculture Research Foundation in Boise. He asked me for help "Tim", he said, "I have crabs stuck in Provo! Can you help me out?" Well apparently LeRoy's assistant, the infamous BeeMan, was wiped out in a snow related accident while transporting 80,000 crabs and snails back from Mexico. The truck was totaled and it was getting late. The crabs would freeze and had to be rinsed in fresh saltwater or they would die! Thank God that no one was hurt. Well, a few phone calls later our Treasurer Mark Peterson, Les Herschi and myself were on the road to

Provo to save the crabs. We were successful in locating BeeMan and we loaded his cargo into the van and headed back to my house for some serious crab cleaning.

We unloaded the boxes and began making 40 gallons of salt water. When everything was acceptable, we rinsed small batches of crabs two times each then re-boxed them to complete the journey. Or should I say the "Great crab migration of '96?" Well maybe not. If you have never seen 80,000 crabs in one location, you have no idea of how many that really is.

Well, about 3:30 in the morning we finished up and loaded them in Les's truck so they could drive to Boise in the morning. As we all stood there and waved to the crabs driving down the road in Les..... Err OOPS.... Maybe I was just tired and imagining things? Anyway, it was apparent that we were successful in saving them. LeRoy said the boxes were still pretty warm when he got them, with a minimum of dead crabs. A job well done!

I personally want to thank my friends Mark and Les for their dedication and help. Especially to Les for driving clear to Boise. I wrote this article to entertain you a little, but also to point out the importance of having an organization like our very own Wasatch Marine Society. With a group like ours, we have many resources that can be very useful. These contacts currently spread from coast to coast. Every month we receive calls from other individuals and organizations who are interested in our club. Someday these friends will be there when needed.

I know we have dedicated people within the club who are always willing to do what is necessary to help out in a crisis. If Leroy did not have access to us here in Salt Lake, he would have lost the shipment and that would have been tragic.

Mary and Ken Raisor's reef

The Nitrogen Cycle

Author Unknown

The Nitrogen Cycle is the circulation of nitrogen among the atmosphere, the soil and water, and the plants and animals of the earth. All living things require nitrogen, but most organisms cannot use the nitrogen gas that makes up about 78 percent of the atmosphere. They need nitrogen that has combined with certain other elements to form organic compounds. But the supply of this *fixed nitrogen* is limited, so complex methods of recycling nitrogen have developed in nature.

One part of the nitrogen cycle involves circulation of nitrogen between the soil and living things. After plants and animals die, they undergo decomposition by certain bacteria and fungi. These microorganisms produce ammonia from nitrogen compounds in dead organic matter and in body wastes excreted by animals. Plants absorb some of the ammonia and use it to make proteins and other substances essential to life. The rest of the ammonia is changed into nitrates by *nitrifying bacteria.* First, nitrifying bacteria called *nitrite bacteria* convert ammonia into nitrites. Then *nitrate bacteria* change nitrites into nitrates. Plants absorb most of the nitrates and use them in the same way as ammonia. Animals get nitrogen by eating plants or by feeding on animals that eat plants.

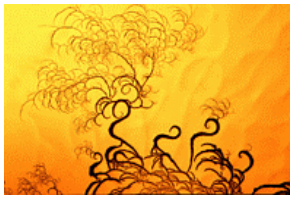
In another part of the cycle, a process called *nitrogen fixation* constantly puts additional nitrogen into biological circulation. In this process, *nitrogen-fixing* bacteria in the soil or water, or living within plants such as legumes, convert nitrogen from the atmosphere into nitrogen-containing organic substances.

While nitrogen fixation converts nitrogen from the atmosphere into organic compounds, a series of processes called *denitrification* returns an approximately equal amount of nitrogen to the

atmosphere. *Denitrifying bacteria* convert nitrates and nitrites in soil into nitrogen gas or into gaseous compounds such as nitrous oxide or nitric oxide. However, fixed nitrogen may circulate many times between organisms and the soil before denitrification returns it to the atmosphere.

Some human activities influence the nitrogen cycle. Industry fixes vast quantities of nitrogen to produce fertilizer, much of which is washed off farmland and into waterways, polluting the water. The combustion of certain fuels produces nitrogen compounds that pollute the air. These compounds may also play a part in the warming of the earth's climate.

This article and the next were found at the Society Of Industrial Microbiology web site www.sim.org



Bacteria colonies can be beautiful!

Bacteria

By Rachel age 14

Strep throat, cholera, pneumonia, whooping cough. These diseases, and more, are often the only things bacteria get credit for doing. I have researched these microscopic, unicellular organisms and found out that bacteria are responsible for much more than just diseases. There are thousands of kinds of bacteria. Most of them are harmless to humans. There are about two thousand species of bacteria identified, and even more where that came from. It is possible for bacteria to reproduce as often as every twenty minutes. If all the newly formed bacteria survived, there would be about 500,000 new bacteria cells every six hours. That is a lot! Thankfully, this does not happen. Bacteria are the oldest, the simplest, and the most numerous forms of life.

Bacteria were here 3.5 billion years ago. A bacterium's structure is quite simple. From the outside in, there is the capsule, the cell wall, and then the cell membrane. Inside is the cytoplasm, which holds the hereditary material, and at times the endospore. There are no intracellular organelles.

Even though there are 2.5 billion bacteria in one gram of soil, you may never see a single bacteria in your entire life. If you lined 10,000 bacteria up, side by side, it would only make up 2.5 centimeters of space and could only be seen under a powerful microscope. Even though bacteria are extremely small, they are found nearly everywhere.

Bacteria are even found in the Dead Sea. For instance, the bacteria that causes acne can be found on a pay phone. There are seven different kinds of bacteria on a locker room shower floor. On a movie theater seat and a school lunch table there are five different kinds of bacteria.

Even though bacteria are so tiny, they play a very large role in their ecosystem. Every living thing would not be here today if it were not for bacteria. Decomposing is one of the most important jobs bacteria do. This is also called mineralization. When an organism dies in the wild, it just sits and rots. What is happening is that bacteria are releasing carbon to the atmosphere which plants use. With no carbon dioxide there would be no photosynthesis, which narrows down to no food. Instead of this catastrophe, bacteria do us a huge favor. By decomposing the dead organisms, the bacteria release essential nutrients into the air and soil. The simpler material made by decomposition can be used by both autotrophic and heterotrophic organisms. Autotrophs use it to help them make food and heterotrophs use it as food. As you can tell, the bacteria that decompose are very important to the earth's ecology. If these bacteria disappeared, everything would suffer greatly. The cycle goes like this: The grass is eaten by a rabbit. Then the rabbit is eaten by the hawk, then the hawk dies. After the hawk dies, bacteria decompose it and returns it to the grass that the rabbit eats, and it all starts once again.

Another very important

job of bacteria is something called nitrogen fixing, or nitrogen cycling. Have you ever wondered why farmers may replant their fields with alfalfa, soybean, or clover in a crop rotation? Well, certain kinds of bacteria called rhizobium live in nodules on the roots of these plants in symbiosis. Rhizobium do the nitrogen cycling. Green plants cannot use the nitrogen in the air, or atmospheric nitrogen. Nitrogen-fixing bacteria (as part of their metabolism) change atmospheric nitrogen into simpler substances call nitrites. Nitrites are needed by green plants. Think about this: In order to make protein, a cow needs nitrogen. This comes from eating grass, which gets its nitrogen from bacteria. Then we eat the cow. So this little chain affects a lot of living things. If there were no nitrogen-fixing bacteria, there would be no plants because the nitrogen in the soil would be used up too quickly. Nitrogen-fixing bacteria helps to replace the nitrogen in the soil so that green plants can survive and flourish. Aren't you starting to feel very grateful to bacteria now? They do a lot of work for us every day. And there is still more.

Vast numbers of bacteria live in our bodies. One example is found in the intestine. This bacteria and humans have formed a symbioses with each other. The bacteria help us with digestion and to produce vitamins. In exchange, they soak up a little extra food for themselves. Neat. Huh? Most dairy products are made by or with the help of bacteria. Some dairy foods are cheese, buttermilk, yogurt, and sour cream. Some other kinds of foods that involve bacteria in their production are pickles and high fructose corn syrup. Can you imagine our soda without high fructose corn syrup, or any other sweet foods for that matter? A hamburger with no cheese or pickles, or chili with no sour cream? The possibilities are endless.

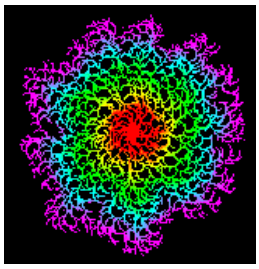
Bacteria help in the production of fuel in two major ways. Some bacteria decompose compost, garbage and sewage and help make methane. Methane is a valuable natural gas. It is used widely as a fuel. Also, over time, the earth's pressure has changed dead and decomposed animals and plants into coal, which is also a widespread fuel.

Bacteria are very important in medicine. Bacteria can actually help to fight themselves. Doctors and scientists have figured out how to use dead or weakened bacteria to prevent other bacterial diseases. This process is called vaccination. Vaccination has helped us all become a lot healthier then we were a hundred years ago. Bacteria also make, or help to make, drugs, hormones, or antibodies.

Bacteria, scientists are discovering, can even help to break down oil to make clean-up after an oil spill easier. This is a big plus for the environment. Scientists are even looking for a use for bacterial-made plastics. In the future, this could be handy and could be broken down easier in the garbage dumps. A group called cyanobacteria produces oxygen. Cyanobacteria is also a source of food. Pink flamingos are one species that feed on cyanobacteria.

Lastly, bacteria play a large part in many commercial industries. They help in tanning, making linen, curing tea and tobacco leaves, extracting precious metals from rock, coloring foods, coloring cosmetics, tenderizing meat, removing stains, processing paper, processing cloth, changing one chemical into another, and more!

Bacteria are an extremely important part of your ecosystem. If, for some reason, bacteria could not do their job, or suddenly and inexplicably disappeared, imagine what a mess we would be in. From what I have learned about bacteria, the earth would probably still



Bacterial colony

be the barren wasteland it was 4.6 billion years ago if bacteria had never showed up. Bacteria may have started everything, and could very well end everything just as quickly. Bacteria do so much for us, where would we be without them?

Thanks for your support of the Wasatch Marine Aquarium Society