Governing Board Meeting
16 April 2021
Via ZOOM Video Conference
https://sjsu.zoom.us/j/81531922646

PASSWORD: mlmlspring

10:00 am	CALL TO ORDER
Chair Michael Lee	**ZOOM Protocols - How meeting will be moderated** **Introductions – Roll Call by moderator** ● Members, New Members and MLML Attendees ● Update Consortium Campus Info in Directory via email to Kathleen Donahue **Acceptance of Spring 2020 Minutes:** ● currently in Draft, approved by Dean, Director, Chair and Vice Chair
10:30 am	**MEETING CONVENES**
	ADMINISTRATIVE CAMPUS – IMPLEMENTATION TEAM UPDATE
Dean Michael Kaufman	● Summary of background, timeline of events ● Implementation Team update ● News or updates from consortium campuses? ● Director's Search
Jim Harvey	**DIRECTOR'S REPORT** **MLML/COVID19/SJSU Repopulation Planning** **SJSU/MLML External Review March 2021** **Faculty** ● Professor Nick Welschmeyer, Biological Oceanography retired January 2020. Nick is remaining at MLML as an Emeritus and researcher ● We are pleased to announce Dr. Sarah Smith as the new Biological Oceanographer at Moss Landing Marine Laboratories. Sarah will start the

position in August 2021.

- Sarah completed her Master's degree at MLML in 2009. She received her PhD in 2014 from Scripps Institution of Oceanography, studying gene expression and carbon metabolism in diatoms with application to the development of algal biofuels. She is currently an Assistant Professor at the J. Craig Venter Institute.
- Dr. Smith has SJSU PI status, has started providing webpage content and advising students and submitting research proposals

- Gitte: NSF CAREER Award, NATURE
- Grand: CA SeaGrant New Faculty Award for seaweed aquaculture with Dr. Gardner
- Kahn: Nautilus Live Expedition

Staff

- SJSU One IT Recruitment for MLML IT Help Desk Support
- MLML Lab Research Technician
- MLML Animal Care Coordinator
- Mike Prince, 40 years with MLML Marine Operations and Development, US Navy and soon NSF consultant for building of new icebreaker vessel to operate in Antarctica

Visiting Scientist

AY20-21

- Dr. Scott Shaffer, Professor of Biology at SJSU is serving as MLML's visiting scientist during AY20-21. Scott is also an Adjunct Professor with UC Santa Cruz's Ocean Sciences Dept.
- He teaches undergraduate courses in physiological ecology, morphology, conservation biology and spatial ecology.
- Scott has a wealth of research experience involving field studies on seabirds and marine mammals in remote locations around the globe

AY21-22

- Professor Karen Crow, San Francisco State Univ, Dept of Biology has accepted this position.
- Karen is an alumnus of the MLML Ichthyology Lab, class of 1995
- Her research in the SFSU Fish Lab involves applying knowledge from model systems, like zebrafish, to understand the evolution of traits in non-model taxa, like paddlefish, rockfish, surfperch, lionfish, and seadragons.

AY22-23

- This job has been posted with a link to the new CSU hiring system (CHRS)

	● Kathleen emailed the post to all members and requests that you distribute the post throughout your campus ● MLML welcomes faculty from all academic disciplines and welcomes the opportunity for our students and researchers to engage with faculty from all subject matter areas. **CSUMB Faculty Advisors to MLML Graduate Students in the MLML Masters Program** **SJSU/MLML-Univ of CA Joint PhD Program** **MLML Dive Support to SFSU**
11:30 am	**BREAK**
Terra Eggink **Ivano Aiello**	**<u>Graduate Program Report</u>** ● FTES ● Course Schedule ● Graduates ● Scholarships ● COAST, RSCA and Sea Grant Awards ● Open House 2020 Crowdfunding Campaign raised $22,835 ● Open House 2021: Crowdfunding and a virtual Silent Auction **<u>Curriculum Committee</u>** ● Online Courses ● Adjustments due to COVID 19 ● Scientific Diving Fall 2020 and Spring 2021
Jim Harvey	**<u>Operations</u>** ● Fire Marshal Inspection ● Trenching ● Sea Water Pump System ● Diversity, Equity, and Inclusion Committee, chaired by Kahn and Lage **<u>Research</u>** ● Colleen Durkin: Maxwell/Hanrahan Individual Award in Field Biology and CSU COAST Development award to study ecological mechanisms of carbon export in the CA Current ● OPC awarded $3 mill to Professor Hamilton and Dr. Starr to support monitoring of marine protected areas ● US EPA Grant - Bowers and Clark

	● MOBY awarded $2.4 Mill from Univ of Miami ● NOAA designates MLML as new CIMEAS Institute ● Dr. Qing Wang, MLML research Affiliate from NPS will install two weather towers at the Shore Lab as part of the US Navy's Coastal-Air-Sea Interaction Project which aims to improve meteorological forecasting ● Dr. Iliana Ruiz-Cooley, MLML Research Faculty member has joined the faculty at CICESE in Ensenada, Baja CA and her manuscript on cooperative feeding in common dolphins was accepted for publication in the Journal of Animal Ecology
Capt. Brian Ackerman	**<u>Marine Operations</u>** ● Fall and Spring semester update ● New Research Vessel
Professor Mike Graham	**<u>Aquaculture Center</u>** ● CA Sea Grant/CSU COAST Awards: *Max Grand, Amanda Kahn, Luke Gardner (w/Wasson, Elkhorn Slough)* ● Rearing natve Scallops ● Updates on native Olympia Oyster project, seaweed growth testing ● Dr. Luke Gardner serves as Vice Chair on the US-Japan Natural Resources Panel on Aquaculture
Jim Harvey Kathleen Donahue	**<u>MLML Operating Budget Reports</u>** ● State ● SJSU Research Foundation F&A Return ● Marine Operations ● Tower Foundation - donations **<u>Annual Reports for AY19-20, AY18-19</u>** ● The Chancellor's Office requires all affinity groups to write an annual report in October each year, signed and submitted by the administrative campus President. A draft of MLML's Annual Report for AY19-20 is currently being reviewed by SJSU. ● The Annual report for AY19-20 was submitted to SJSU on September 13, 2020. The report was due to the CO September 30, 2020. ● MLML has an Annual Report webpage we encourage you all to visit!
Kathleen Donahue	**<u>MLML Media and Outreach</u>** ● Jim Harvey hosted a ZOOM version of MLML's annual In House Open House, recording posted on YouTube, please share with colleagues, your campus leadership and prospective students! ● SJSU-MLML has had an active year in the press. Visit our website or social

	media pages to see our recent media coverage: o CSU Newsletter Nov 2020 o CCWG Director, Ross Clark's column "Earth Matters" in the Santa Cruz Sentinel o Sea Otter Savvy "Sea Otter Awareness Week" o Dr. Rosemary Romero, alumnus, SJSU/MLML Phycology Lab, 2009 named Naturalist of the Year by the Western Society of Naturalist at WSN2020 o US Environmental Protection Agency o NOAA's Global Ecology and Conservation o Drop In Blogs o Panetta/Stone Visit o MLML Featured in SJSU's 150th year Anniv Heritage Day video o Provost's Podcast "The Accidental Geographer": Khan and deep sea sponges o Dr. Scott Benson's findings on the steep decline in Leatherback sea turtles has gained international attention
1:30 PM	**MEETING ADJOURNS**

MLML Governing Board Meeting
Via Video Conference
16 April 2021

MINUTES

Governing Board Voting Members in Attendance:
Lee, Michael (Chair, CSU East Bay - Faculty)
Murray, James (CSU East Bay – Faculty)
Richaud, Mathieu (Vice Chair, CSU Fresno - Faculty)
Lawson, Andrew (CSUMB – Dean, Admin)
Lindholm, James (CSUMB - Faculty)
Coleman, Ronald (CSU Sac - Faculty)
Hammersley, Lisa (CSU Sac - Administration)
Wagner, Amy (CSU Sac - Faculty)
Evans, Dave (CSU Stan - Admin)
Sardella, Brian (CSU Stan - Faculty)
Bernstein, Sophie (MLML/SJSU – Student Body President)
Connolly, Tom (MLML/SJSU - Faculty)
Graham, Mike (MLML/SJSU – Faculty)
Hamilton, Scott (MLML/SJSU - Faculty)
Harvey, Jim (MLML, Director - Admin)
Nielson, Karina (SF State - Faculty)
Gabet, Manny (SJSU - Faculty)
Kaufman, Michael (SJSU - Dean, College of Science)
Stacks, Pam (SJSU - AVP, Research)

Governing Board Alternates and Non-Voting Attendees:
Kramer, Krista (COAST – Director)
Logan, Cheryl (CSUMB - Faculty)
Bhaduri, Rhitin (CSU Stan – Faculty)
Ackerman, Brian (MLML/SJSU Marine Ops Manager)
Aiello, Ivano (MLML/SJSU – Faculty)
Bishop, Ann (MLML/SJSU – Student)
Bugbee, Bennett (MLML/SJSU – Student)
Donahue, Kathleen (MLML/SJSU Asst. to Director)
Douglas, Jocelyn (MLML/SJSU EHS Officer)
Flaniken, Stephanie (MLML/SJSU – Student)
Geller, Jon (MLML/SJSU – Faculty)

Grand, Max (MLML/SJSU - Faculty)
Kahn, Amanda (MLML/SJSU – Faculty)
Keefe, Michelle (MLML/SJSU – Staff)
Lage, Katie (MLML/SJSU - Faculty, Librarian)
Matthews, Kinsey (MLML/SJSU – Student)
McDonald, Gitte (MLML/SJSU – Faculty)
Neylan, Katherine (MLML/SJSU – Student Body, Vice President)
Prince, Mike (MLML - Staff)
Radojevic, Michael (MLML/SJSU – Staff)
Sawyers, Kate (MLML/SJSU – Staff)
Tenarashi, Grace (MLML/SJSU – Student)
Webster, Jane (MLML/SJSU - Staff)
Abousalem, Mohamed (SJSU – VP, Research and Innovation)
Del Casino, Vincent (SJSU – Provost)
Kunde, Eugene (SJSU Research Foundation, Interim Executive Director)
Shaffer, Scott (SJSU - Faculty)

Call To Order: 10:20 am
Minutes: Caroline Rodriguez, MLML Graduate Student, Invertebrate Ecology Lab

Items to put forth to vote:

Voting for Chair and Co Chair

Jim Harvey

- We solicited the Gov Board to see if anyone else was interested in being chair or Vice Chair. No one responded.
- For a long time the Governing Board operated with just a chair and not a Vice Chair. The Gov Board realized that was incorrect and added a Vice Chair.
- Michael Lee and Mathieu Richaud are allowed to stay on as Chair and Vice Chair.
- Proposed that Michael Lee and Mathieu Richaud remain as Chair and Vice Chair.
- Michael Lee and Mathieu Richaud have both had two 2-year terms. Bylaws have no term limits.

Discussion

- Michael Lee is happy to keep doing it or let someone else do it. The idea is that since a new Director is coming to MLML, it may be a good idea to have both stay on since they have a lot of institutional knowledge.
- Michael Kaufman (SJSU, Dean, CoS): It's also good to have new people coming into leadership roles. Kudos to Michael and Mathieu.

Motion to Vote: Jim Harvey
No objections
Passed: Michael Lee and Mathieu Richaud will remain as Chair and Co-Chair of Gov Board

Acceptance of Fall 2019 Gov Board Meeting Minutes

- Michael Lee: no objections. Approved by unanimous consent
- Motion to accept the minutes passed

Administrative Campus Update

- Dean Kaufman (SJSU, Dean, CoS) gave a summary of the background, report of recommendations, and creation of a Working Group who will review the MLML GB ByLaws and identify sections to be changed or updated.
  Discussion
  - Pay for Play Model, consideration of sustainable funding for the lab.
  - Transfer of tuition revenue to SJSU for delivering academic programs.
  - Arrange for provision of student services by CSUMB and corresponding transfer of fees.
- In March the implementation team had an in-person meeting. CSUMB wants to put all of the things related to transfer of money into one agreement. There was a discussion about how tenure track faculty are chosen at MLML. They will continue to work on this document this summer.
- Michael Lee (Chair, CSU East Bay): Collected info from survey about pay to play model. The questions were more about what they valued about MLML and what they want for the future. Sense is that consortium schools value their relationship with MLML, but hopefully if certain parts of the recommendations go through (housing, Academic Village) their involvement will increase. They want to know what the price looks like to better understand how involved they can be.
- Michael Kaufman (SJSU, Dean, CoS): we need a better idea of what campuses want so all of the consortium campuses are represented.
- Proposal for Updated ByLaws: didn't get as much done as hoped. Propose that the implementation team has a multi-day working session on the bylaws so they can get sustained progress on the bylaws.
- James Lindholm (CSUMB): Without more concrete information, it's hard for the campuses to give more substantive feedback.
- Andrew Lawson (CSUMB): What is the role of the Director and Gov Board in facilitating the consortium? Want this to be explicit for both the Director and Gov Board.
- Michael Lee (Chair, CSU East Bay): The mechanism to solicit feedback wasn't very effective. Need something more pointed and specific and maybe the multi-day working bylaw session could work to create a more concrete survey.
- Michael Kaufman (Dean, CoS, SJSU) agrees it should be a working group, but separate from the ByLaws session

Discussion

- Ronald Coleman (CSU Sac): Housing at MLML is critical. Survey needs to be more specific (yes/no) instead of vague questions.

- Tom Connolly (Faculty, MLML): a specific timeline on when services will be transferred will be helpful for students so they know when they will be able to access resources at CSUMB.
- Andrew Lawson (CSUMB): all MLML students will be given an OtterID so they can receive all of the resources at CSUMB. This has been worked out and Student Services is pretty much there. It just needs to be all put together as a package.

News/Updates from Consortium Campuses

James Lindholm (CSUMB)

- Central issues for CSUMB are to find a resolution for the role of CSUMB consortium faculty advisors who are not on staff at MLML. The criteria for graduate student committee chair at MLML states MLML TT Faculty members must act as Advisor and there is a history there. CSUMB wants faculty from the consortium to be able to advise MLML students and be committee chair. Has this been resolved? It needs to be resolved sooner rather than later.
- Krista Kamer (CSU COAST): tracking COAST scholarships is confusing. Who is a MLML or CSUMB student? They need to know for tracking scholarships; it is unclear.
- James Lindholm (CSUMB): MLML tenure track faculty have to be chair of committees and a certain number of MLML faculty have to be on committees too. So, even though a CSUMB advisor is the primary advisor, MLML lists a MLML faculty member as the primary.
- Michael Lee (Chair, CSU East Bay) and Dean Kaufman (SJSU): We will talk with Andrew Lawson about this. This is a front burner topic that needs to be addressed this summer.

Michael Kaufman (SJSU)

- We need to wrap up fiscal agreement, figure out what changes need to be made to the ByLaws, and resolve the issue James Lindholm (CSUMB) brought up.

Director's Report

Jim Harvey

- COVID-19: MLML shut down and transitioned to all online classes for Spring 2020 classes. No research or field work conducted by MLML during the shutdown. SJSU provided essential MLML staff with access to the buildings to keep essential activities going.
    - No one in the MLML community has tested positive (to our knowledge).
- Transition to research: MLML Faculty and Staff put a lot of effort into writing a 25 page draft plan for re-opening. The draft plan explains how MLML would operate for field, laboratory, diving, and boating work. It was submitted to SJSU.
    - MLML created an online form for all researchers and asked them questions about what resources they would need to continue their research, what are their contingency plans if someone gets sick, what is the timeline for their research, etc.

    - MLML will go through a phased approach. Things that need to be conducted now (time sensitive) or can be done safely (i.e. fieldwork with social distancing) will hopefully be approved first. Then MLML will try to, slowly, open up the lab safely. Hopefully over time MLML will continue to add on projects.
- MLML has been operating under SJSU, Santa Clara, and Monterey County directives. Luckily both counties have had similar orders. There are still some questions that need to be resolved about which agency rules MLML students should follow. Still unclear in the future if CSUMB MLML students will operate under the SJSU rules, but currently, every MLML student is following SJSU rules.
    - James Lindholm (CSUMB): is every student at MLML required to follow SJSU policies? Or can they follow their home campus policies?
    - Michael Kaufman (Dean, SJSU): SJSU will decide who comes back into MLML because SJSU is the administrative campus. SJSU will approve anything that falls under the auspices of MLML (field work, boating, etc.) One of the challenges in the current consortium structure becomes obvious when things like this come up. If a CSUMB student at MLML works for the SJSURF, which rules do they follow? A student could get caught in the middle of competing requirements, so to avoid confusion, it's easiest if all MLML students follow what SJSU says.
    - Andrew Lawson (CSUMB): Agreed with Michael Kaufman, but he stated it depends on where the research is being conducted. It doesn't matter where the student is registered, it matters where the research is being conducted. If a student is working at CSUMB, they are under CSUMB rules.
- Faculty changes: Nick Welschmeyer retired at the end of 2019. SJSU/MLML conducted a search and hired Dr. Sarah Smith, MLML alumnus, Bio Oce Lab 2009, currently employed at the Venter Institute. She will start in August 2021 as the new Biological Oceanographer.
- MLMLVisiting Scientist (VS): Scott Shaffer (SJSU CoS, Biology) will start in Fall 2021. He's a physiologist and ecologist who does a lot of work on marine mammals.
    - VS for 21-22 is still up and the position is open. July 1st is closing date for that position

Faculty Updates

Ivano Aiello (MLML)

- Spring 2020 we had 74 students in the MS program and 8 non-MS students.
    - 23.3 FTES from CSUMB, 7.7 FTES from SJSU (75% of FTE comes from CSUMB and 25% from SJSU)
    - MLML faculty taught 8 classes
    - In March 2020, MLML moved classes completely online. It was tough, but successful
    - 4 students graduated (one completely online) in Spring 2020

    - In Fall 2019 8 students graduated. Thus a total of 12 students graduated in the 2019-2020 school year
- Scholarships: 27 students got scholarships
- Fall 2020: 91 applications and offered 36 students admission, 30 students accepted (19 SJSU and 10 CSUMB and 1 CSU East Bay)
    - Fall 2021: 7 classes will be offered. Some will be in-person, some will be hybrid. This is possible because of MLML's small class size and MLML's large seminar room where students can be spaced out. Labs will be operated in sub-groups and other methods to ensure social distancing. Still waiting to see if this will be approved.
    - There will be PPE and cleaning before and after classes.

Discussion

- Michael Kaufman (SJSU, Dean CoS): as much as possible should be moved virtually, but MLML is uniquely set up to manage this plan for in-person classes. SJSU says that anyone that is able, works at home, and should telework so that other people that need the spaces can use them.
- James Lindholm (CSUMB): what % of the admitted students will actually show up? What proportion do we think will actually show up?
    - Ivano Aiello (MLML): Fewer than 30 will show up, but not sure
- Ron Coleman (CSU Sac): MLML draws people from a distance and MLML doesn't have great housing options so they need to decide what to tell students as soon as possible so that students can decide to move or not.
- Vincent del Casino (SJSU, Provost): density of staff at MLML will be an issue especially for shared offices. Virtual work will remain an important part of the CSU system. All classes will be turned into the CSU system and there's a conversation at the system level about in-person and hybrid courses.
- Michael Lee (CSU East Bay, Chair): is there any opportunity for incoming students to defer? On campus housing will be modified and this could mean that there's fewer residential opportunities for CSUMB and MLML students.
    - Ivano Aiello (MLML): students can reapply, but hadn't considered housing
    - Andrew Lawson (CSUMB): dorms will not be open at CSUMB (where 60% of students live). For graduate students, they should still be able to have space on East campus for MLML students as long as the classes are in-person. If the program is not face-to-face, they would not be eligible for on campus housing. Since the MLML program requires research, which is in-person, MLML students are eligible for housing.
    - Michael Lee (Chair, CSU East Bay): would SJSU enrolled MLML students be able to get housing at CSUMB?
        - Andrew Lawson (CSUMB): not sure. CSUMB wanted to empty all housing so not sure if there will be housing for SJSU students, but any

program that requires in-person attendance will be allowed to use CSUMB housing. So maybe.

- Not sure what CSUMB is thinking about for East Campus housing. All East Campus housing is available for any student (normally it's upperclassmen and grad students). Typically has between 4000-5000 students living on campus.

- Jim Harvey (MLML): this is the largest incoming class in the last 30 years. All of the 30 students have accepted, but not sure how many students will actually come.

Marine Operations

Brian Ackerman (MLML)

- Developing protocols to keep research safe once field operations are allowed to resume.
- Plan to start with state mandated research and slowly increase the amount of work and hopefully, one day, be able to do thesis cruises and class cruises.
- Created a protocol for using vessels and an online form that researchers can fill out.
- Developing a survey for students to find out what students need and how Marine Ops can facilitate ongoing research.
- The question about research in other places is also relevant for Marine Ops. If someone is conducting research in another state, do they follow MLML policies or that location's policies?
- UNOLS has COVID-19 protocols.
- New Vessel
    - Not much progress since last Gov Board meeting/COVID
    - Invited to speak at Saint Francis Yacht Club July 1 about the Ocean Planet Explorer 111 and SJSU/MLML. Jim Harvey and Emily Lane (Tower) are invited to join
- Del Mar Wharf
    - Met with MBARI (Mike Kelly). They have no collaborative interest at this time
    - Looking into collaboration efforts with other institutions including NPS, COAST, UCSC, USGS, etc.
    - Mixed use project: Fisheries, Public Access, MLML new vessel, guest berthing, loading and instrumentation
- Payment for all of this: all of the Marine Ops staff is writing grants. We are going to apply for a DOT grant for port development for <$10,000,000. Sent this out for bidding and two companies are putting together quotes.

Aquaculture Center

Scott Hamilton (MLML)

- Exponential growth of research at aquaculture center
- Working to get CSU approval to designate it as the Center for Aquaculture which would be able to serve the consortium and the whole CSU. It's at the Provost level right now.

- Industry partners on site: Monterey Abalone Company is still operating, MB Seaweeds is still operating. Business is slow for both.
- Projects currently happening: integrated culture of seaweeds and shellfish so growing them together to mitigate ocean acidification (working on a publication for that)
    - Ranching purple sea urchins. Bring them into the aquaculture facility and fatten them up and sell them. Did this with aquaculture class. Led to NPR segment.
    - Proposal has been sent to see if it can be profitable working with someone at the Middlebury Institute for International Studies, Monterey (MIIS).
    - White abalone babies will be kept for 2 years and will then be outplanted into the wild. Several students will work on this.
    - Purple hinge rock scallops project to develop them as a new species for aquaculture.
    - What local species of seaweeds can we cultivate and use a feedstock to reduce methane production in livestock? Collected a bunch of local seaweed species and each will be screened to see which ones have good methane reduction potential when they're fed to cows.
    - Develop alternative feeds for two fish species. Replacing fish oils with the algae for feed to see if the fish will do well.
    - Culturing monkeyfaced eels to be used as a sustainable alternative to unagi. They eat seaweed so they will grow seaweed at the lab and test the growth of eels. Will use the new feeding mill.
    - Ocean acidification and hypoxia studies. Testing the effects of these stressors on different species (4-5 students currently working on this).
- Proposals out
    - Develop new techniques to grow bull kelp in the center and test techniques to outplant them in the wild.
    - Developing techniques for cultivating sea stars and outplanting them into the wild.
    - Feed mill. Someone from China was supposed to come and train staff how to use the feed mill, but it was delayed due to COVID 19.
    - Understanding socio economics of aquaculture and some of the ecosystem services provided by aquaculture.
    - Biofuel. How you can produce biogas from seaweeds.
    - Another researcher (Maya de Vries, SJSU) is working on a proposal (for new faculty) to work at the MLML aquaculture center.
    - Sent in a pre-proposal for another project that was approved for a full proposal.

Discussion

- Mike Graham (MLML, Faculty)
    - The US President made an Executive Order to streamline the permitting process to make NOAA the head of all permitting for national aquaculture. Doesn't really open up CA right away, but having a national leader on permitting would be great.

    - Anticipate that funding will increase and MLML is well primed for funding. So we might see a lot more RFPs showing up related to aquaculture.
- Michael Lee (Chair, CSU East Bay): Luke is the lead person on aquaculture development at the state level. Will be good for MLML.
- Jim Harvey: Dr. Luke Gardner is a CA Sea Grant Aquaculture Specialist hired by UC San Diego and assigned to work onsite at MLML. MLML pays 25% of Luke Gardner's salary and CA Sea Grant pays 75% of his salary. MLML got involved in aquaculture early on and clearly the work is blooming at MLML.

Budget

Jim Harvey

- Funding sources: for State funding most goes to salaries and benefits (80%. MLML receives some funding from consortium campuses and CSUMB gives $50,000 per year. Then a variety of other small sources.
- State funding
    - $3 million of the $3.8 million goes to salaries
    - Not many administrative operating expenses.
    - This budget includes faculty startup funds and 25% of Luke Gardner's SeaGrant salary. The money for operational and administrative supplies is very small.
    - Instructional supplies are about $52K. $10K goes to diving. Enviro Health and Safety Officer has a small budget (this may need to grow due to COVID 19). Facilities budget is $140K. Library services $110K from MLML and the same from MBARI to serve both institutions' needs. IT gets $34K.
    - Budget may change in August due to COVID financial crisis if the CSU budget is affected. Still waiting to see the financial impact on the lab. MLML tried to find places in state budget where they could cut funds if the state budget gets reduced
- SJSU Research Foundation F&A Return for Admin and Facilities
    - $10-18 million in grants each year and some of this money is returned to MLML (average F&A for many years was between $500,000-600,000 per year).
    - MLML grant activity has gone down a little bit over the years because we lost the R/V Point Sur. The expenses needed by SJSU have gone up. This combination has reduced the F&A returned to MLML dramatically (estimate for Oct 2020 is $20,000, which is a dramatic change for MLML).
    - MLML is going to have to make difficult decisions about how to cut costs. Jim is going to work with Dean Kaufman to resolve this.
    - We hope that income will increase in the future and hopefully we'll get out of these dire straits.
- SJSU Tower Foundation
    - Philanthropic arm of SJSU.
    - We get a fair level of donations that are administered by SJSU Tower Foundation.
    - Total donations AY19-20 to MLML was $160K.

    - MLML hopes to be much more active in the philanthropic world in the future. University Advancement at SJSU is going to do a campaign that may involve MLML in the fundraising. The wharf and research vessel at Marine Ops would be included but the focus is on building housing at MLML. The land is ready, just need the funds and permits to build the Academic Village.
- This budget will probably have to be re-visited if the state budget gets modified.

Annual Report AY 18-19, 19-20

Jim Harvey

- MLML is still considered a CSU affinity group and is required to submit an annual report to the CO via the SJSU President each year.
- MLML is waiting for approval of the AY18-19 report from SJSU. Once approved and submitted to the CO, the annual report will be posted to the MLML website and Gov Board will be notified

Outreach and Education - Open House

Jim Harvey

- Largest fundraising event for grad students.
- Students ran a crowdfunding campaign in place of Open House in 2020. Typically, students raise $8000-$12,000 from Open house events. This year raised $23,000 on the crowdfunding campaign alone.
- Next year will likely return to the normal public Open House.

Closing Remarks – Jim's Retirement

Jim Harvey

- Will retire as the Director of MLML at the end of the year 2021.
- Plan is that the search will begin in early Fall semester and hopefully conclude before the end of semester.
- An interim director will be appointed until a new director has been hired and is in place.

Discussion

- Michael Lee (Chair, CSU East Bay): the Gov Board will have a role in the search for a new Director, but unclear what that role is.
- Michael Kaufman (SJSU, Dean of CoS): the Gov Board will have a role.
- Kudos to Jim Harvey for all of his work at MLML.

Motion to adjourn

Michael Lee
Meeting adjourned: at 12:38

SJSU

MLML Governing Board Meeting
16 April 2021

DIRECTOR'S REPORT

GRADUATE PROGRAM

1. **Spring 2021 Enrollment**
   a. **Headcount: 113**
      - 90 current students in M.S. program
      - 23 non-M.S. students taking MLML classes this semester
        - 12 SJSU undergrads
        - 1 CSUMB undergrad
        - 4 SJSU grad students
        - 6 SFSU grad students

   b. **FTES: 40.3**
      - by campus as follows:

		Total Students by Level			Total Units by Level		FTES	
Campus		*Total (U)*	*Total (G)*	*Total Enroll*	*Total (U)*	*Total (G)*	*Total FTES*	*Campus FTE %*
East Bay		0	0	0	0	0	0.00	0.00%
Fresno		0	0	0	0	0	0.00	0.00%
Monterey		1	57	58	4	199	16.85	41.79%
Sacramento		0	0	0	0	0	0.00	0.00%
San Francisco		0	6	6	0	24	2.00	4.96%
San Jose		12	37	49	52	216	21.47	53.25%
Stanislaus		0	0	0	0	0	0.00	0.00%
TOTALS		13	100	113	56	439	40.3166667	
		U=Undergraduate; G=Graduate						
		MLML graduate students enrolled in zero-unit course are included in total enrollment and FTES						

2. **Spring 2021 Class Schedule**

	Course	Unit	Instructor(s)	Day	Time
MS 131/231	Marine Botany/Biology of Seaweeds	4	Graham	M	9-5
MS 143	Chemical Oceanography	4	Grand	Th	9-5
MS 204	Sampling & Experimental Design	4	McDonald	T	9-5
MS 208	Scientific Methods	4	Graham	Th	9-5

MS 221	Adv. Topics in Invertebrate Zoology: Natural History of Intertidal Inverts	4	Kahn/Geller	M	9-5
MS 263	Data Analysis Techniques	4	Tom Connolly	T	9-5
MS 272	Subtidal Ecology	4	Hamilton/Steller/Kahn	Th/F	9-12
MS 274	Adv. Topics: Aquaculture	4	Gardner	W	9-5
MS 274	Adv. Topics: Analytical Chemical Oceanography & Chemometrics	3	Grand	F	9-12
MS 285 & 274	Grad Seminar & Adv. Topics: Climate Change & Sci. Communication	4	Aiello	F	9-1
MS 285	Grad Seminar: Waves & Mixing	2	Connolly	F	1-3

3. Graduates

a. Spring 2021 (expected)

- Bonnie Basnett, Fisheries and Conservation Biology

Geographic and Ontogenetic Variation in the Tropic Ecology of Lingcod (Ophiodon elongatus) Along the U.S. West Coast

- Ann Bishop, Phycology

Feeling the Heat: Reproductive Competition Between Macrocystis pyrifera and Sargassum horneri

- Justin Cordova, Pacific Shark Research Center

A Systematic Revision of the Genus Apristurus Garman from the Southwestern Indian Ocean

- Taylor Eddy,

Multiscale habitat use and effects of resource availability on California spiny lobster (Panulirus interruptus) population success

- Dan Gossard, Phycology

Epiphyte-host dynamics between Pyropia and Nereocystis in central California

b. Fall 2020

- Jacoby Baker, Ichthyology

Gene Expression Responses of Larval Gopher (Sebastes Carnatus) and Blue (S. Mystinus) Rockfish to Ocean Acidification and Hypoxia

- Mason Cole, Vertebrate Ecology

Detecting Feeding and Estimating the Energetic Costs of Diving in California Sea Lions (Zalophus californianus) Using 3-Axis Accelerometers

- Lindsay Cooper, Phycology

Compartmentalization & seasonal variability in storage compounds of Pterygophora californica

- Amber Reichert, Pacific Shark Research Center

Habitat Associations of Catshark Egg Cases (Chondrichthyes: Pentanchidae) off the U.S. Pacific Coast

- June Shrestha, Ichthyology

Fish pee in the sea: a surprising source of limiting nutrients in California kelp forests

4. **Time to Degree**

Average time to graduation for the above 10 graduates:
5 years (10 semesters)

5. **2021 MLML Scholarships** (in process)

- *John H. Martin Scholarship* ($3000.)
- *Xiphias Martin Scholarship* ($500.)
- *James Nybakken Scholarship* ($2500.)
- *Bill Watson Memorial Scholarship* ($2500.)
- *Sonia Linnik Hamilton Marine Science Scholarship* ($1000.)
- *MLML Scholar Awards* ($2000. ea.)
- *MLML Student Body Wave Awards* ($500.-900. ea.)
- *Archimedes Scholarships (*$1000. ea.)

6. **2021 Admissions** (in process)

- 112 applications received
  - 24 offers of admission so far (as of 4/13/2021)
  - 11 accepted offers so far (as of 4/13/2021)

FACULTY – *SJSU Tenure Track*

Professor Ivano Aiello, Geological Oceanography: Dr. Aiello has two papers in press both with his ex graduate students: 1) K. Knudson, AC. Ravelo, I.W. Aiello, C. Knudson, M. Drake, T. Sakamoto, 2021. Science Advances; 2) M. Drake, AC. Ravelo, I.W. Aiello, 2021. Gamma-ray attenuation bulk density an indicator of diatom valve abundance and fragmentation in Pleistocene biosiliceous sediments of the Bering Sea. Geological Society of America Special Volume. Dr. Aiello is also the lead editor of a Special Volume of the Geological Society of America on the Monterey Formation and Related Biosiliceous Units which is about to be published. Recent research funding includes a grant from Columbia University to study core sediment from IODP Exp. 385 to the Guaymas Basin, Gulf of California and a grant from the Elkhorn Slough Research Foundation to study the effect of marsh restoration through sediment addition.

Assistant Professor Tom Connolly, Physical Oceanography: Along with his students in the Physical Oceanography lab, Dr. Connolly contributed to two papers on deep sea currents and ecosystems in a special issue of Deep Sea Research Part II, along with scientists and engineers from the Monterey Bay Aquarium Research Institute (MBARI). In addition to advising students at MLML, Dr. Connolly served as a mentor in an eight-week nationwide virtual Research Experience for Undergraduates (REU) program organized by Rutgers University. Dr. Connolly and Physical Oceanography student Miya Pavlock both presented research at the Ocean Sciences Meeting in

San Diego. In addition, Dr. Connolly continues serving as a PI for the Central and Northern California Ocean Observing System (CeNCOOS), contributing to the observing system, analyses of the data, and the development of ocean observation tools and techniques.

Professor Jon Geller, Invertebrate Zoology: The Invertebrate Zoology and Molecular Ecology lab has been active in faculty and student research. Ongoing projects with, and sponsored by, the California Department of Fish and Wildlife, the Smithsonian Institution, the Charles Darwin Foundation, and the Prince William Sound Regional Citizens' Advisory Council have furthered our work on the ecology and genetics of marine invasive species, primarily in California but also South and Central America including the Galapagos Islands. We are beginning a new project to study invasive species in the US Great Lakes. Emily Pierce defended her thesis on aspects of environmental DNA production and degradation and is beginning a PhD program at the University of Maine. Felicia Miller travelled to Friday Harbor Laboratories to complete biomechanical analyses of mussel byssal threads and expects to defend her thesis in Fall of 2020. Emily and Felicia presented posters at the 2019 SICB meeting in Austin, Texas. Emmet Haggard is completing a transcriptomic analysis of venom production in sea urchins.

Professor Michael Graham, Phycology: Received two CA SeaGrant awards for new research to support sustainable aquaculture and kelp forest recovery. One was awarded for the "Development of techniques for the cultivation of monkeyface pricklebacks as a sustainable alternative to unagi" with Scott Hamilton and the other for "Assessment of practical methods for re-establishment of northern California bull kelp populations at an ecologically relevant scale". He has submitted five other proposals to support aquaculture research at MLML, is graduating 3 students in Fall 2020, and accepted 4 new students. Dr. Graham is in the last years serving as the Editor for the Journal of Phycology, the largest journal on the science of seaweeds.

Assistant Professor Max Grand, Chemical Oceanography: Received a NSF award to develop a new generation of microfluidic trace metal and nutrient analyzers. As part of this collaborative proposal with the University of Hawaii, we will instrument the CeNCOOS Moss Landing Shore Station with phosphate and silicate analyzers to monitor these chemical species at hourly intervals for at least a year. Three MLML students are currently involved in various aspects of this work. He published a paper in Science of the Total Environment with colleagues from the British Antarctic Survey, organized a session at the 2020 Ocean Science meeting in San Diego and welcomed 3 new students to the chemical oceanography lab this Fall (now advising 4 students directly). Dr. Grand was recently awarded a CA SeaGrant New Faculty award along with Dr. Gardner to quantify bromoform emissions from seaweed aquaculture. This project opens up a new and exciting avenue of research in the chemical oceanography lab and will start in early 2021.

Professor Scott Hamilton, Ichthyology: Received two CA SeaGrant awards for new research to support sustainable aquaculture and resilient coastal communities. One was awarded to his student Katherine Neylan "Evaluating microalgae supplemented feeds for sablefish nutrition and growth" and the second for the "Development of techniques for the cultivation of monkeyface pricklebacks as a sustainable alternative to unagi". Along with Drs. Aiello and Starr, he is working on two statewide Marine Protected area projects evaluating performance of the marine reserve network.

Assistant Professor Amanda Kahn, Invertebrate Zoology: Has participated in research cruises with MBARI to study coral and sponge communities at Sur Ridge, and with the Monterey Bay National Marine Sanctuary to study benthic communities and deep-sea octopus aggregations at Davidson Seamount. Along with coauthors from various institutions in Canada and the United States, she published journal articles in Frontiers of Marine Science, Deep-Sea Research Part II, Marine Biodiversity, and to a conference proceedings for a new collaboration with Drs. Ivano Aiello (MLML) and Phil Heller (SJSU). She recently received funding for that collaboration through the SJSU Level-Up Grant program. The project will investigate whether sponge spicules can be proxies for biosilicification in oceanic sediment records. She is mentoring 4 graduate students directly and co-advises several others. They are all starting up their thesis research, with invertebrate-centric projects ranging from the intertidal to the deep sea.

Associate Professor Katie Lage, Librarian: Presented ongoing research on new ways to track research output and impact at the International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) annual conference. Planned and organized to co-host a conference of the Pacific Coast regional group of the International Association of Aquatic and Marine Science Libraries and Information Centers. (Unfortunately it was cancelled two weeks before it was to be held, due to COVID.) Transitioned all library services online in Spring 2020 when campus closed due to COVID. Supported library student employees' transition to remote work. Continue to support teaching, learning, and research through remote services, changing or reinventing processes as needed. Created eight new online library guides, ingested two large research data collections into the MLML institutional repository, and continued to make progress on processing two former faculty archival collections. Is revising a co-authored article which analyzes citations to show the use of fundamental laws in chemical physics with colleagues at MBARI.

Associate Professor Gitte McDonald, Vertebrate Ecology: In the Fall 2019, Dr. McDonald and one of her graduate students completed their first field season at Cape Crozier, Antarctica, studying the foraging ecology of emperor penguins with her New Zealand collaborators at NIWA. She presented preliminary results at the Scientific Committee of Antarctic Research virtual conference this summer. She was awarded a NSF CAREER award to continue her emperor penguin research for the next 5 years. She published 8 papers this year including a paper In NATURE: Climate Change that used biologging data from crabeater seals to project future shifts in their foraging habitat in the rapidly changing western Antarctic Peninsula and a paper in NATURE using tracking data from 17 bird and mammal species to identify important regions in the southern ocean. She received two grants to support the Moss Landing Stranding Network (Prescott Marine Mammal Stranding Assistance Grants, NOAA, and California State Funds through UC Davis). She and her students gave numerous science and outreach talks including the first webinar hosted by International Bio-Logging Society "The Breadth of Bio-Logging" and serving on a career panel at Westlake Elementary School.

Professor Emeritus Nick Welschmeyer, Biological Oceanography: Professor Nick Welschmeyer, Biological Oceanography has retired. He joined MLML in 1989 and served as the main advisor to 24 alumni between 2001 – present. Nick's research focused primarily on the assessment of ballast water management and abatement of aquatic invasive species; this research has been conducted in collaboration with Cal Maritime Academy since 2010. Nick will remain at MLML as an Emeritus Faculty member and researcher continuing his subject matter expertise on the 'best available science' for rendering non-viable organisms for use by ballast water treatment

protocols. Dr. Welschmeyer's lab utilizes techniques/instrumentation fundamental to the understanding of growth and physiology of marine plankton.

Professor Emeritus, Dr. Greg Cailliet, Ichthyologist: Professor Emeritus, Dr. Greg Cailliet, Ichthyologist: Continues to serve as a Trustee (and now President) of the Myers Oceanographic Trust, which provides grants to graduate students at MLML and other Monterey Bay area research and educational institutions. Dr. Cailliet continues to work publishing scientific papers with various co-authors and former graduate students. He is active working with the Cannery Row Foundation and Western Flyer Foundation in Monterey. He regularly attends Research Activity Panel (R.A.P.) meetings of the Monterey Bay National Marine Sanctuary (M.B.N.M.S.).

MLML RESEARCH FACULTY

Rrefers to those persons who have demonstrated a commitment to the education and research goals of MLML. Further, Research Faculty are those researchers who are in residence at MLML, hold a Ph.D. degree, serve as Principal Investigators (PIs) on grants, can be appointed as lecturers, and are permitted to serve on student thesis committees.

Dr. Colleen Durkin, Biological Oceanographer: Dr. Durkin received a 2020 Field Biology award from the Maxwell Hanrahan Foundation, which provides unrestricted funding to promote creative exploration in field research. She was also selected for a CSU COAST grant development award "Ecological mechanisms of carbon export in the California Current resolved by a fleet of autonomous imaging robots". She published two articles in Deep Sea Research II that each use new approaches to identify the biological contents of sinking particles that are responsible for deep ocean carbon sequestration. In December 2019 she sailed on a research expedition on the R/V Sally Ride along with her graduate student Annie Bodel. Another student, Cindy Michaud, successfully defended her thesis and is preparing this work for publication in a journal.

Dr. Dave Ebert, Pacific Shark Research Center: Over the past six months the PSRC has produced 21 publications, including three books and a monograph. Dr. Ebert co-organized and moderated the American Elasmobranch Society annual meetings, which were held entirely virtual. Dr. Ebert also gave virtual presentations to several groups, including the popular Sharks4Kids education and outreach program, and was a guest on the podcast Top of Mind with Julie Rose. Dr. Ebert did interviews for The Guardian, New York Times, Washington Post, Smithsonian Magazine, and BBC, among other publications. Dr. Ebert filmed programs for NatGeo Wild and the BBC that will air later this year.

Dr. Luke Gardner, CA Sea Grant Aquaculture Specialist: Aquaculture research continues to increase at MLML. The aquaculture research facility is constructing a new deck to accommodate more tanks for the monkeyface prickleback project and seaweed/livestock project. Dr. Gardner is a Co-PI on a grant from OPC to develop the California State Aquaculture Action Plan. Gardner participated as a US delegate in the US - Korea Joint Participation on Aquaculture and as Vice Chair of the US - Japan Natural Resources panel on Aquaculture. Gardner was awarded grants to study the depuration of dungeness crabs in response to domoic acid exposure, nutritional examination of purple hinged rock scallops early life stages and with Dr. Grand and Dr. Kahn on bromoform production in seaweeds aquaculture and Olympia oyster restoration respectively. Ongoing projects include white abalone restoration aquaculture, Olympia oyster restoration

aquaculture, purple urchin ranching, cattle methane reduction potential of seaweeds, and hatchery development of purple hinged scallops. Gardner accepted a 1 student co-advised with Dr Kahn.

Valerie Loeb, Biological Oceanography: Inclusion in an NSF funded project awarded to Drs. Karen Wishner and Brad Siebel, University of Rhode Island, "Small-scale Biological and Physical Variability at Midwater Depths in the Eastern Tropical North Pacific Oxygen Minimum Zone". Some marine organisms have physiological adaptations to exist in extremely low oxygen levels as survival mechanisms (e.g., predation avoidance) during their life history cycles. Valerie is currently engaged in establishing the species, maturity stage, and size attributes of mesopelagic fishes collected by stratified MOCNESS tows between 0 and 1000 m to assess their relationship to extreme vertical and horizontal differences in oxygen concentrations. Preliminary results suggest that these very low oxygen waters may provide a refuge for vulnerable transitioning stages between larval and juvenile forms. These form the basis for a manuscript entitled "Midwater fishes and Oxygen minimum conditions in the Eastern Tropical Pacific" by Loeb, Wishner and former MLML student Dawn Outram. Valerie also collaborated in a multi-author manuscript by Nadine Johnston et al. entitled "Status, change and futures of zooplankton in the Southern Ocean" that is currently under review in Frontiers in Ecology and Evolution, Conservation and Restoration Ecology".

Dr. Iliana Ruiz-Cooley, Vertebrate and invertebrate Ecologist: Dr. Ruiz-Cooley and colleagues from Fisheries and Oceans Canada published their work on cetaceans' trophic ecology in the journal of Ecology and Evolution. She and her collaborators from the Center for Scientific Research and Higher Education in Ensenada (CICESE) and NOAA have two manuscript in review: one in Ecosphere regarding fish nutrition and isotopic fractionation, and another one in the Journal of Animal Ecology regarding their novel findings on feeding cooperation in common dolphins throughout ontogenesis. Together with her colleagues and potential postdocs, they submitted three proposals to CONACyT for research on the role of fisheries and the near extinct cetacean the vaquita in the upper Gulf of California; migration of swordfish; and coastal food web dynamics in Baja California. Dr. Ruiz-Cooley is currently collaborating with researchers from NOAA and other various institutions in the project "Rapid response to increase our understanding of the origins of thiamine deficiency in Central Valley Chinook salmon". As the Principal investigator, she and her co-PIs from SCCOOS and UCSC were recently interviewed by the California Sea Grant communication team for their work on nitrogen tracing and domoic acid trophic transfer in Monterey Bay, https://caseagrant.ucsd.edu/news/tackling-toxic-algal-blooms-from-two-directions. Recently, her manuscript on cooperative feeding in common dolphins was accepted for publication in the Journal of Animal Ecology.

Dr. G. Jason Smith and Dr. Holly Bowers, Environmental Biotechnology Lab: It has been a good, productive year for the EBL team, but also one of transition. Smith worked with his international team of colleagues to summarize the efforts of the Moore Foundation's Experimental Model Systems grantees on enabling genetic transformation and manipulation of diverse and ecologically critical groups of marine protists. This enabling work will have impacts on our understanding of species interactions within marine microbial communities. This past year also brought the final year of our tremendously successful Alliance for Coastal Technologies (ACT) program by wrapping up our evaluations of field compatible phytotoxin detection technologies and guiding the development of a technical workshop on current sampling and extraction bottlenecks in marine eDNA surveys. The COVID19 pandemic forced this workshop into a virtual

workshop so the team has gained expertise in a range of e-meeting applications. Associated with this eDNA focus, Dr. Bowers received a 3 month Visiting Scholar fellowship from the Cawthron Institute in Nelson NZ to work with their staff to assess potential for development of passive eDNA sampling. Two manuscripts have resulted in that collaboration, with the first being 'in review': Towards optimization of eDNA/eRNA sampling technologies for marine biosecurity surveillance. This collaboration also resulted in spin off projects to characterize Pseudo-nitzschia around New Zealand and continue with specificity testing of our Pseudo-nitzschia probes (which dovetails with our OPC-USC Seagrant project).

Dr Bowers (Smith Co-PI) continues with the OPC-USC Seagrant to develop 'point of sampling' molecular detection assays for California's suite of harmful alga species, and will be bringing on a virtual REU student for the summer to develop one of the assays in silico. MLML graduate student Lyndsey Claassen will soon be coming back on board to perform cell counts and qPCR in support of this project. Dr. Bowers was also awarded an EPA STAR grant with MLML's Ross Clark and CCLEAN's Dr. Mine Berg to assess response of harmful algal bloom species to nutrients found in agricultural run-off. Various types of bioreactors are used to remove nutrients and this project will study their effectiveness. The project was chosen as a spotlight for SJSU Research Foundation's Annual report, and the next step will be to construct mesocosms. H. Bowers continues to serve as co-chair of the National HAB Committee, and has been helping to lead a complex updated decadal plan: *Harmful Algal Research and Response National Environmental Science Strategy 2020-2030.*

Dr. Rick Starr, Fisheries and Conservation Biology Laboratory: In the summer of 2019, Starr and Dr. Scott Hamilton started work on a $1 million grant from the Ocean Protection Council to coordinate collaborative fisheries monitoring programs across the entire state and to evaluate changes in MPAs since 2007. Starr also started work on a $2.4 million grant to lead a group of researchers from four organizations to evaluate changes in mid-depth rocky habitats using a variety of underwater visual census tools. These two grants are intended to provide the California Department of Fish and Wildlife and Ocean Protection Council with information to evaluate the MPA network in 2022. In the last few years Dr. Starr has been working with The Nature Conservancy and National Marine Fisheries Service to conduct visual surveys of continental shelf fishes. The purpose of the research is to help improve the stock assessments for fishes that live in high-relief rocky habitats that are not surveyed by NMFS trawl gear. In AY19-20, Starr and students spent 10 days at sea surveying habitats near San Clemente Island.

Dr. Diana Steller, Phycologist and Scientific Diving Safety Officer: Is conducting CA Sea Grant funded research on 'Assessing the disturbance impacts of boat mooring on the rhodolith beds of Catalina Island'. This research is a collaborative grant between MLML and San Diego State University.

Dr. Alison Stimpert, Vertebrate Ecologist and Bioacoustics: Co-authored a paper in the journal of Science with collaborators at Hopkins Marine Station (Stanford). The paper synthesizes a decade of cetacean tagging research to investigate body size in large whales. She also published a paper about noise produced by scientific equipment during fisheries surveys so as to better understand how this noise might affect the behavior of the fish being surveyed, and a paper evaluating the utility of bio-logging tags on large whales for determining which animal is producing recorded sounds. One of her students first-authored a paper in Peer J that describes the first underwater, on-animal (recorded by a tag) footage of humpback whale nursing

behavior, coupled with quantitative body movement and behavioral data, revealing exciting new insights about the frequency and duration of nursing bouts on humpback foraging grounds.

MLML RESEARCH AFFILIATES

Researchers who are generally in residence at MLML, generally hold a Ph.D. or a M.S. degree, most can serve as Principal Investigators on grants, but they typically do not mentor students or teach courses. Research Affiliates can serve on thesis committees if they have a Ph.D. degree.

Scott Benson, NOAA Fisheries Ecologist, Marine Turtle Ecology and Assessment Program: Research and monitoring of endangered Pacific leatherback turtles at central California foraging grounds resumed in AY 2019 aided largely by support from a local NGO (Upwell) that provided $43k in vessel support for use of the R/V Sheila B., and an additional $88k for aerial surveys and reconnaissance. Six leatherback turtles were captured and sampled before being released with satellite-linked transmitters. Data on abundance and movements of leatherback turtles was provided in near real-time to the California Department of Fish and Wildlife and the Dungeness Crab Working Group to inform stakeholders prior to the opening of the commercial Dungeness Crab fishing season. Further MLML vessel support was received for AY 2020-2021 from Upwell ($66k). Benson was part of a first-ever global status review of leatherback turtles published in August 2020 by NOAA and USFWS and co-authored published journal articles on leatherback foraging ecology and leatherback maturation attributes and reproductive longevity.

Gena Bentall, Director, Sea Otter Savvy: At Sea Otter Savvy we have continued to evolve and expand our outreach to adapt to the changing times of COVID-19. We created digital materials for teachers and parents, including do-it-yourself learning activities, contests, and art projects. We lead the organization and promotion of Sea Otter Awareness Week 2019 with a digital campaign emphasizing stewardship and science-based information about sea otters, and a field station network that logged over 5000 peer-to-peer contacts statewide. We organized and co-hosted the 5th Annual California Coastal Wildlife Disturbance Symposium at the Asilomar Conference Center with seventeen talks addressing the topic of wildlife disturbance and a special panel session on law enforcement and wildlife disturbance. We are currently planning an entirely virtual 6th symposium for Nov. 17-18 of 2020. In December 2020, Sea Otter Savvy Science Communication Director, and MLML graduate Heather Barrett represented us at the World Marine Mammal Conference in Barcelona. Heather was awarded Best Student Regional Award for her speed talk on her thesis work on the energetic cost of disturbance to sea otters. So far in 2020, Sea Otter Savvy has collaborated on research projects with students from Cal Poly and University of Bristol and is working with MLML Vertebrate Lab student Sierra Fullmer on her thesis work investigating the effect of disturbance on sea otter spatial use and group dynamics on the CA central coast. We are currently at work in collaboration with Dr Tim Tinker of Dalhousie University on fine tuning an innovative model for evaluating the effect of multiple variables (including human stimulus) on sea otter activity in California.

Dr. Dustin Carroll, Physical Oceanography, Jet Propulsion Laboratory: Dr. Carroll continues to develop a next generation, global-ocean biogeochemistry model (ECCO-Darwin) that assimilates both physical and biogeochemical observations. This effort is in collaboration with colleagues at the Jet Propulsion Laboratory and Massachusetts Institute of Technology. Dr. Carroll was recently selected for funding through the NASA Ocean Biology and Biogeochemistry program as

Co-I on the project "Ecosystem Engineers: The Role of Diel Vertical Migrators in Redistributing Marine Biogeochemical Properties." Dr. Carroll also recently published peer-reviewed papers as a co-author in Earth System Science Data Discussions, Journal of Atmospheric and Oceanic Technology, Geoscientific Model Development, and Remote Sensing.

Ross Clark, Director, Central Coast Wetland Group (CCWG): The Central Coast Wetland Group (CCWG) continues to develop tools to document the environmental benefits of wetland management and restoration. This year the Group submitted documentation to the State demonstrating the incremental water quality improvements (achieving water quality objectives) within the Moro Cojo Slough that has resulted from 20 years of wetland restoration within the watershed. The Group has received two research grants and will be working with Holly Bowers at the MLML Environmental Biotechnology Lab on an EPA grant to document how reductions in nutrient loads (through wetland restoration activities) from local watersheds can reduce offshore harmful algal blooms. The Group is leading a group of faculty from four other California universities to develop an estuarine monitoring program (based on findings in Clark and O'Connor (2019) for California's 24 estuarine Marine Protected Areas. CCWG also continues to work on sea level rise adaptation strategies within Monterey Bay, focusing presently on flood risks to Salinas Valley farmers and impacts to beaches of Santa Cruz and sand dunes between the Salinas River and Moss Landing. Ongoing restoration activities in partnership with Coastal Conservation and Research are focused on the Moss Landing sand dunes and the Hugo Tottino wetland restoration project within the Moro Cojo Slough. More information is available in our recent newsletter and website www.centralcoastwetlands.org.

Dr. Karin Forney, NOAA Fisheries, Marine Mammal and Turtle Division: Research activities have primarily focused on collaborative projects to assess and mitigate whale and turtle entanglement risk in nearshore pot and trap fisheries. As a Scientific Advisor to the California Dungeness Crab Fishing Gear Working Group, Forney conducted aerial surveys during October 2019 to examine whale and leatherback distributions just before the start of the Dungeness crab fishing season. These surveys provided near real-time data to the California Department of Fish and Wildlife to inform their management actions to protect whales and leatherback turtles. A new, dynamic spatial model of humpback whale density and distribution has been developed and is being used in ongoing entanglement risk assessments and socio-economic trade-off analyses for the Dungeness Crab fishery. Ecosystem changes that led to increased whale entanglements during 2014-2016 were identified by a multidisciplinary team, and this research was published in Nature Communications during early 2020 (Santora et al. 2020). Other collaborative research projects include an evaluation of population trends for California harbor porpoises and leatherback turtles, assessing potential impacts of seal bombs (used in California purse seine fisheries) on harbor porpoises in Monterey Bay, and improving estimates of statistical uncertainty in habitat-based spatial models of cetacean abundance off the U.S. West Coast and around Hawaii.

Wesley Heim, Project Director, Marine Pollutions Study Lab- DFW (MPSL): MPSL continues work to better understand contaminates transport and fate in the environment. MPSL has a project funded by the California State Board Surface Water Ambient Monitoring Program. MPSL has capacity to expand and add additional projects once SJSU lifts current COVID related restrictions. MPSL has expertise in trace metal field and analytical work and is ELAP certified.

Laboratory capabilities include trace metal and mercury analysis in multiple matrix types as well as a host of other ancillary analysis.

Mark Yarborough, Principal Investigator, Marine Optical Buoy (MOBY): MOBY is an autonomous optical buoy which is moored off the island of Lanai in Hawaii. The Marine Optical BuoY (MOBY) is a NOAA funded project to provide vicarious calibration of ocean color satellites (SeaWiFS and MODIS) (Clark et al., 1997). Moss Landing Marine Marine Laboratories (MLML) was selected through the NOAA grant process to participate in the engineering and construction of the prototype and operational version of the system in 1989. The system was designed for measuring sunlight incidents on and scattered out of the ocean. These measurements are provided in near real time for the vicarious calibration procedures conducted by ocean color scientists. MOBY collects data on a daily basis. Additionally, MLML has had the primary responsibility for maintaining, calibrating the buoy and data production of the system.

Dr. Jenifer Zeligs, Principal Investigator, Science, Learning and Education With the Help of Sea Lions (SLEWTHS): SLEWTHS is finishing a three-year study digitizing sea lion mobility for development of unmanned underwater vehicles in collaboration with West Chester University and George Washington University. This work has been approved for a continuing 3-year renewal of funding although research continues to be on hold due to COVID19. The SLEWTHS project also contributed to a chapter in the upcoming book *Zoo and Wild Animal Dentistry*. Although most of our educational and outreach programs (including all in person) are on hold due to COVID19, with major support from SJSU IACUC, Dean Kaufman, College of Science, SJSU Tower Foundation and MLML leadership, we were able to continue working daily to care for the five rescued sea lions we have adopted. Our lab currently consists of 16 CSUMB and SJSU undergraduates and 2 MLML graduate students and a few unaffiliated volunteers. Dr. Zeligs transitioned two CSUMB classes to fully online asynchronous formats. The two courses were offered by the biology and psychology departments at CSUMB for the winter 2021 intersession and were attended by 22 undergrads at CSUMB. Our educational outreach programs continued to be on-hold however we did successfully provide online programs to five elementary school groups featuring marine research, conservation, and a beach clean-up. Dr. Zeligs taught online workshops in both California and Germany and presented at an International horse conference. Dr. Zeligs also serves on the Moss Landing Animal Care Committee.

MLML ADJUNCT FACULTY

Adjunct Faculty have Principal Investigator status through MLML and SJSU Research Foundation, they conduct research through MLML, potentially using some of the facilities, and can serve on student thesis committees. However, Adjunct Faculty do not have a physical presence at MLML, thus they may or may not have lab space and do not have an office.

Dr. Qing Wang, Naval Postgraduate School: Dr. Qing Wang is Full Professor in the Meteorology department at the Naval Postgraduate School in Monterey and a Research Affiliate at Moss Landing Marine Laboratories. She currently directs several multi-disciplinary and multi-institutional programs nationwide and is working with MLML's Chemical Oceanography Laboratory regarding the role of fog in the transport of contaminants from the sea to the land. She is an expert in electromagnetic ducting at the air-sea interface: the study of how light and radio-waves are bent and distorted forming mirages and radar distortion along the horizon. Her studies employ instrumentation to measure heat and water vapor flux, marine aerosol

composition, atmospheric water droplet inventory and optical/infrared/x-band radio distortion. Qing Wang and her team from NPS will be installing o weather towers at the Shore Lab this year as part of the US Navy's Coastal Land-Air-Sea Interaction Project (CLASI) to improve meteorological forecasting, especially wind speed, at the coast line.

MARINE OPERATIONS

Partial resumption of work since March 17, 2020

- Missions essential for health and safety, i.e.: Municipal water and sediment sampling for Watsonville, Marina and Cal-Am
- Support for approved Projects for Grad Student and Faculty research
- Classroom Film Project
    - Phys-Oce CTD
- Support of in-class diving operations

R/V John H Martin:

- Completed annual maintenance haul out.
    - Combination of new coating technology and electrical bonding project resulted in an ability to delay the frequency of hauls (average $10k) from one year to 18 months.

R/V Sheila B:

- Catastrophic engine failure (starboard) caused loss of data collection for 2020 Pacific Leatherback Turtle season EDR: May 2021
- Completed work re-building port engine.

Small Boats:

- Installed new 20hp outboard on Blue Whaler with Grant from Duke University
- White Whaler out-of-service: Graham/Hamilton grant to help replace 60hp outboard
- Navy Whaler staged in Monterey Harbor to support student thesis work

SJSU:

- Collaborations with two teams from the Business School:
  MIS Practicum Projects: Information Technology projects for SJSU students.
  The class is a practicum for Information Systems majors in the Business School. The idea is to provide a real world experience for them so they can practice applying the business and technical skills they've learned in other courses to something an organization will actually use.
    - Team 1: Contact tracing smartphone app
    - Team 2: Automated Reservation Calendar system

Upcoming Projects:

- NOAA & Upwell Pacific Leatherback Turtle: MLML Research Affiliate, Dr. Scott Benson - *Sheila B*
- Deployment of Mini-Landers in Carmel Bay: MLML Research Faculty member, Dr. Rick Starr – *Sheila B*
- Naval Postgraduate School Micro-atmospherics: MLML Research Affiliate, Dr. Qing Wang – *JH Martin*, RHIB
- Stanford's Hopkins Marine Center: Whale Tagging: Dr. Jermey Goldbogen – *JH Martin*, RHIB

MEDIA AND OUTREACH

OPEN HOUSE 2020/STUDENT BODY FUNDRAISER: Because MLML's annual Open House was cancelled in 2021 due to COVID19, the Student Body worked with SJSU University Advancement to launch a crowdfunding campaign with a goal to raise $15,000. In concert with the crowdfunding, MLML also held a "Virtual Open House" on social media that garnered up to 800 views of past Open House videos, puppet shows and tours of MLML labs. **The end total raised was $22,835!** MLML students are planning crowdfunding campaign and virtual silent auction for Open House 2021.

Washington Post (April 8, 2021): The results of a recent study led by MLML research affiliate Scott Benson were highlighted in a Washington Post article titled "*Steep decline in giant sea turtles seen off US West Coast*". Benson and his co-authors, including MLML Director Dr. Jim Harvey and research affiliate Dr. Karin Forney, found that in less than 30 years, the number of western Pacific leatherback sea turtles in the foraging population off of California plummeted 80%. The results of this study were originally published in the scientific journal *Global Ecology and Conservation*.

Santa Cruz Naturalist Podcast (March 8, 2021): SJSU/MLML Ichthyology Lab graduate student Kristin Saksa was interviewed by MLML alumna Emily Donham '16 on the Santa Cruz Naturalist Podcast hosted by KSQD Community Radio. They discussed Kristin's research on the impacts of climate change stressors on larval rockfish in Monterey Bay.

Sea Lion Bowl (February 6, 2021): The Sea Lion Bowl is an ocean sciences-themed academic competition for Northern and Central California high school students hosted by CSU Monterey Bay. Teams of students compete in the virtual day-long trivia event and the winners advance to the National Ocean Sciences Bowl. Several SJSU/MLML students volunteered at the bowl and we also hosted a virtual informational booth to educate the high school participants about the research and educational work done by our marine lab.

CSU Office of the Chancellor Newsletter (2020): MLML was featured in the annual CSU newsletter, "Systemwide Collaborations" published by the California State University Office of the Chancellor.

National Geographic (December 27, 2020): Associate Professor Gitte McDonald was featured in a Nat Geo video about a group of mischievous emperor penguins invading her research camp in Antarctica. The video was shared on the National Geographic Facebook page and received over 1.1 million views.

California State University News Feature *"Upending The Food Pyramid"* (November 24, 2020): The innovative aquaculture research led by SJSU/MLML research faculty member Dr. Luke Gardner and his graduate students was highlighted in a feature story on the CSU website. In the next 30 years, global seafood demand is expected to grow 30% and aquaculture is expected to meet nearly all of that increased global demand. Dr. Gardner is working on using seaweed to reduce methane emissions from cows. Another project at MLML has students culturing Olympia oysters for transplant into Elkhorn Slough.

The Accidental Geographer Podcast (November 18, 2020): Assistant Professor Amanda Kahn was interviewed on the third episode of the Accidental Geographer podcast hosted by SJSU Provost Vincent Del Casino. Throughout the 45-minute podcast episode, they discussed Dr. Kahn's research on marine sponges and the important role they play in global climate change.

Sea Otter Awareness Week (September 20-26, 2020): Sea Otter Savvy, an MLML-affiliated research and community engagement non-profit, organized Sea Otter Awareness Week 2020 in partnership with Defenders of Wildlife. MLML alumna Heather Barrett '19 led the initiative and coordinated with zoological and educational institutions, governmental agencies, and communities to plan events that highlighted sea otters. The week-long celebration included sharing stories, disseminating science, and generating media that inspire a deeper awareness of these unique marine mammals, their ecological importance, and the many challenges they face.

Shark Week on the Discovery Channel (August 9-16, 2020): SJSU/MLML research faculty member and Pacific Shark Research Center director Dr. David Ebert was featured on the Shark Week television program "Extinct or Alive: Land of the Lost Sharks." Dr. Ebert also appeared on the Shark Week program "Alien Sharks: First Contact" alongside MLML alumnus Paul Clerkin '17.

YouTube Animation (August 11, 2020): Research faculty member and biological oceanographer Dr. Colleen Durkin created an amazing YouTube animation of the Wire Walker, a surface-tethered, free-drifting profiler that uses wave energy to continuously "walk" up and down the water column. During the NASA EXPORTS campaign in the North Pacific, Dr. Durkin and colleagues used the Wire Walker to collect continuous profiles down to 500 meters in order to study how carbon fixed by phytoplankton in the surface ocean is transported into the deep ocean.

The Drop-In Blog (year-round): MLML's student run blog The Drop-In officially relaunched on the new MLML Student Life Website. Founded in 2008 by a small group of SJSU/MLML students looking for a platform to candidly talk about their experiences as grad students, The Drop-In now has over 600 posts written by MLML grad students past and present. Twenty-four new blogposts have been posted since the blog's relaunch and students in Professor Ivano Aiello's scientific communication course are currently writing a series of new posts that aim to demystify climate change science.

FINANCIAL REPORTS

1. **SJSU-College of Science-MLML General Fund**
2. **SJSU Research Foundation-MLML F&A Return Overhead**
3. **MLML Marine Operations**
4. **SJSU Tower Foundation-MLML Fundraising/Donations**
5. **MLML Space Rental Revenue (SJSU Misc Trust Acct)**

MLML State Budget FY 19/20, FY 20/21, & FY 21/22 Proposed

			FY 20/21 Budget		FY 20/21 Actuals as of 03/31/2021		FY 20/21 Projected Year End		FY 21/22 Proposed Budget	
REVENUE		Salary	2,080,058		1,535,525		2,036,402		2,053,985	
		Benefits	976,490		780,600		1,073,325		1,073,325	
	[9]	OE&E	228,743		228,743		228,743		228,473	
		Utilities	310,775		223,478		297,971		310,775	
	[2]	Salary Recovery / Reimbursement	-		(32,068)		(47,635)		-	
		Benefits Reimbursement	-		(9,723)		(22,972)		-	
		Visiting Scientist Support	21,425		-		21,425		21,425	
		Other Reimbursement/Support	12,000		3,000		3,000		-	
		CSUMB Contribution	50,000		-		50,000		50,000	
		Prior Year Balance Forward	39,853	[16]	39,853	[16]	39,853	[16]	11,424	[17]
	[1]	Roll-Forward Encumbrances	55,599		7,380		42,319			
TOTAL REVENUE			**$ 3,774,943**		**$ 2,776,789**		**$ 3,722,431**		**$ 3,749,407**	
SALARIES (Salary $)										
	[3]	Faculty	933,829		633,294		837,411		904,191	
	[4]	Staff	901,044		679,468		904,375		901,044	
	[5]	Temporary Faculty	-		-		-		-	
SALARIES (OE&E)										
	[6]	Visiting Scientist	30,000		23,489		31,411		30,282	
	[7]	Graduate Assistants	71,123		52,027		70,770		71,123	
	[8]	Student Assistants	147,345		115,179		144,800		147,345	
BENEFITS			976,490		770,877		1,050,353		1,073,325	
TOTAL SALARIES & BENEFITS			**$ 3,059,831**		**$ 2,274,334**		**$ 3,039,120**		**$ 3,127,310**	
OPERATING EXPENSES										
ADMINISTRATION										
		Taxes / Liability Premiums	1,400		884		884		1,400	
		Office Supplies	5,000		274		300		5,000	
		Copiers & Maintenance	8,000		3,840		3,840		8,000	
		Furniture/Equipment	4,500		-		3,000		4,500	
		Postage / Postage Meter Rental	1,605		644		926		1,605	
		Telecommunications	6,000		8,400		8,400		6,000	
		Memberships	5,880		3,000		5,700		5,880	
		Faculty / Staff Recruitment	15,000		-		-		15,000	
		Startup Funds	-		356		356		-	
		SeaGrant Position Reimb. (25%)	27,000		19,195		27,000		27,000	
		Travel / Training	4,000		-		-		4,000	
		Miscellaneous	2,500		-		-		2,500	
		Reimbursable Grant/Award Exp.			270		3,000			
		COVID-19 Expenses (4716)			1,242		1,500			
		Roll-Forward Expenses	-		5,524	[11]	5,524	[11]		[11]
		TOTAL ADMINISTRATIVE EXPENSES	**$ 80,885**		**$ 43,630**		**$ 60,429**		**$ 80,885**	
INSTRUCTIONAL SUPPLIES										
		Equipment/Services	18,000		12,365		14,282		18,000	
		Aquarium Room Refresh	1,000		-				1,000	
		Class Materials & Supplies	8,000		2,625		3,500		8,000	
		Baja/Chile Course	5,000		-		-		5,000	
		Miscellaneous	1,000		-		-		1,000	
		Roll-Forward Expenses			-	[11]	-	[11]	-	[11]
		TOTAL INSTRUCTIONAL SUPPLIES	**$ 33,000**		**$ 14,989**		**$ 17,781**		**$ 33,000**	

	FY 20/21 Budget	FY 20/21 Actuals as of 03/31/2021	FY 20/21 Projected Year End	FY 21/22 Proposed Budget
MARINE SCIENCE DIVING				
Supplies & Repairs	10,000	5,435	7,246	10,000
Roll-Forward Expenses	-	-	-	
TOTAL MAR. SCI. DIVING EXPENSES	**$ 10,000**	**$ 5,435**	**$ 7,246**	**$ 10,000**
ENVIRONMENTAL HEALTH & SAFETY				
Supplies & Permitting	8,600	6,067	8,089	8,600
Museum	1,500	-	-	1,500
Roll-Forward Expenses	-	- [11]	- [11]	- [11]
TOTAL EHS EXPENSES	**$ 10,100**	**$ 6,067**	**$ 8,089**	**$ 10,100**
FACILITIES				
Janitorial Services & Supplies	33,425	23,419	31,225	33,425
Landscaping / Restoration	5,040	4,020	6,432	8,712
Vehicle Maintenance & Repair	7,000	3,270	4,359	7,000
Gasoline Charges	8,000	1,227	1,636	8,000
Marine Operations	3,000	2,411	3,214	3,000
Proposed Facility Projects	20,000	10,228	13,638	20,000
Scheduled Maintenance & Repair	10,000	6,489	9,485	10,000
General Supplies & Repairs	34,750	31,071	37,788.11	34,750
Seawater System	21,000	13,191	17,588	21,000
Roll-Forward Expenses	-	700 [11]	700 [11]	[11]
TOTAL FACILITIES EXPENSES	**$ 142,215**	**$ 96,025**	**$ 126,065**	**$ 145,887**
UTILITIES				
Electricity	226,039	161,562	215,417	226,039
Gas	52,812	41,121	54,828	52,812
Water	5,293	3,192	4,256	5,293
Sewage	7,534	5,190	6,920	7,534
Trash	19,097	12,413	16,550	19,097
TOTAL UTILITY EXPENSES	**$ 310,775**	**$ 223,478**	**$ 297,971**	**$ 310,775**
LIBRARY				
Books/ILL/Supplies	17,000	6,627	8,836	17,000
Periodicals	92,220	62,255	83,006	92,220
Roll-Forward Expenses		4,436	4,436	
TOTAL LIBRARY EXPENSES	**$ 109,220**	**$ 73,318**	**$ 96,278**	**$ 109,220**
NETWORK				
Hardware	17,000	4,783	6,377	17,000
Software/Training/Misc.	16,300	660	880	16,300
Roll-Forward Expenses		- [11]	- [11]	[11]
TOTAL NETWORK EXPENSES	**$ 33,300**	**$ 5,443**	**$ 7,257**	**$ 33,300**
TOTAL OPERATING EXPENSES	**$ 729,495**	**$ 468,384**	**$ 621,118**	**$ 733,167**
TOTAL EXPENSES	3,789,326	2,742,718	3,660,238	3,860,477
TOTAL REVENUE	3,774,943	2,776,789	3,722,431	3,749,407
CASH FLOW BALANCE	(14,383)	34,070	62,192	(111,070)
ADJUSTED BALANCE	**$ (14,383)**	**$ 34,070**	**$ 62,192** [17]	**$ (111,070)**

Notes:

[1] Open encumbrances from previous fiscal year are rolled forward into the next year's budget

[2] Faculty buyout

[3] Faculty = 9

[4] Staff = 10 (1 position covered 30% by CoS)

[5] Temporary Faculty: AY 2020 Fall 2020 = 0, Spring 2021 = 0

[6] OE&E Salaries - MLML pays salaries and all benefits

[7] Graduate Assistants: AY 2020 , Fall 2019 = 7, Spring 2020 = 7

[8] Student Assistants: AY 2019, Summer 2020 = 15, Fall 2020 = 11, Spring 2020 = 11

[9] State Support OE&E budget

[10] Actual expenses only, no blanket encumbrances

[11] Expenses on rolled encumbrances from the previous fiscal year

[12] Salary budget based on estimated totals for FY 20/21; salary monies are now centrally held, so any salary savings are eliminated.

[13] OE&E reduced to cover salaries that do not have regular salary lines (SA, GA, TF)

[14] Faculty buyout now held centrally, can only be used as credit to hire TF replacements

[15] MLML reimburses UC San Diego for 25% of salary and benefits for SeaGrant Aquaculture position

[16] Balance from MLML's Cost Recovery Fund, currently being held centrally until FY 20-21

[17] Can only roll forward a maximum of 5% of Operating Budget

FY 20-21 Projects		FY 21-22 Projects	
TBD	20,000	TBD	20,000
Shorelab Seawater Line			

MLML Operating Budget: SJSU Research Foundation: AY20-21 and AY21-22

Includes MLML Operations, Norte, Del Mar, Sandholdt, Firehouse and Shore Lab

REVENUE	AY 2019-2020 ACTUALS	AY 2020-2021 BUDGETED	AY 2021-2022 BUDGETED
Carryover From Prior AY	(262,590)	(274,265)	(350,000)
Other Income Estimated - Cost Center Revenue	40,000	10,000	10,000
Rental Income (Del Mar, Sandholdt Center)	116,370	111,525	115,000
F&A Return *(Less 10% to PI's, Res 198, Reserve)*	68,836	77,328	20,342
SJSURF Admin and Facility Supplement	190,000	190,000	190,000
Revenue	**152,616**	**114,588**	**(14,658)**
Operating Budget:	**561,872**	**509,073**	**342,000**
Year End Balance:	**-266,267**	**-394,485**	**-356,658**

OPERATING EXPENSES	AY 2019-2020 ACTUALS	AY 2020-2021 BUDGETED	AY 2020-2021 SPENT TO DATE	AY 2021-2022 PLANNED
Salaries, Wages and Benefits	428,684	307,123	243,301	150,000
Administrative Costs	406	89,250	82,931	80,000
Information Technology	19,107	20,000	12,235	20,000
Supplies and Equipment	2,176	5,000	776	4,000
Services & Facility Costs	75,656	46,200	38,676	50,000
Building Maintenance and Repairs	19,147	23,500	19,065	20,000
Diving Costs	1,696	3,000	-	3,000
Small Boat Support	15,000	15,000	-	15,000
Operating Costs:	**561,872**	**509,073**	**396,984**	**342,000**

RESERVE	AY 2019-2020	AY 2020-2021	AY 2021-2022
Balance Reserve Account	563,513	574,560	575,000

REFINANCING ACCOUNT	AY 2019-2020	AY 2020-2021	AY 2021-2022
Balance Refinancing Account	(2,969,142)	(2,958,095)	(2,955,000)

Dean Kaufman and Director Jim Harvey are working on a financial plan to address MLML's current F&A Return budget issues.

MLML MARINE OPERATIONS

Marine Ops 2020 Summary

	Operating Costs	Salary & Benefits	Revenue
John H Martin	$28,455	$21,531	$20,231
Sheila B	$14,408	$1,385	$0
RHIB	$1,377	$2,250	$425
Mar Ops	$37,273	$92,082	$0
Tombolo	$15,526	$0	$17,738
Small Boats	$4,429	$3,045	$385
Total	**$101,469**	**$120,293**	**$38,779**

Marine Ops YTD 2021 Summary

				Budget		***2021 Balance***
	Operating Costs	**Salary & Benefits**	**Revenue**	**Expense**	**Revenue**	
John H Martin	$22,554	$4,302	$6,702	$65,000	$135,000	$114,846
Sheila B	$4,469	$0	$0	$45,000	$70,000	$65,531
RHIB	$0	$0	$0	$12,000	$15,000	$15,000
Mar Ops	$8,560	$27,023	$0	$95,000	$0	-$35,583
Tombolo	$0	$0	$0	$8,500	$10,000	$10,000
Small Boats	$4,630	$2,534	$385	$5,000	$500	-$6,279
Total	**$40,213**	**$33,859**	**$7,087**	**$230,500**	**$230,500**	**$163,515**
Net Revenue			**(66,985)**		$0	

DONATIONS & FUNDRAISING (SJSU TOWER FOUNDATION)

MLML General Fund	**75,476**
50th Anniversary Book Donations	*7,693*
Simpkins Endowment	*18,865*
Library Upgrade Donations	*3,403*
Craig Hunter Donation for Instrumentation 2020	*500*
TOTAL DONATIONS OBLIGATED:	***30,461***
Balance Available for General Use:	**45,015**
Friends of MLML Tours	**105**
Store	**4,124**
Total MLML Donations To Date:	**41,948**

CLASSROOM AND SPACE RENTAL REVENUE AY20-21

Seminar Room and Classroom Rental Revenue **$5,000**

SJSU-University of Alaska Fairbanks Space Use Agreement **$60,480**