

Research vessel and field safety operations

Engaging students and increasing reciprocity amongst marine labs



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Why have I offered this topic?

1. Few examples that fit smaller labs and vessels (eventually led me to SBSA)
 - Increasing demands of funders
 - Could this be a space for NAML/NEAMGLL to provide resources to members?
2. Observations over past 5-10 years;
 - Decreasing baseline skill sets and comfort levels
 - generational, pandemic and other factors?
 - Employers and internships desire (more) credentials and practical skills
 - Minimal discussion on the topic amongst our labs



A (personally) renewed vision of the role of marine labs for delivering safety and operational skills to early level students with attention to increasing the comfort level of students from all backgrounds

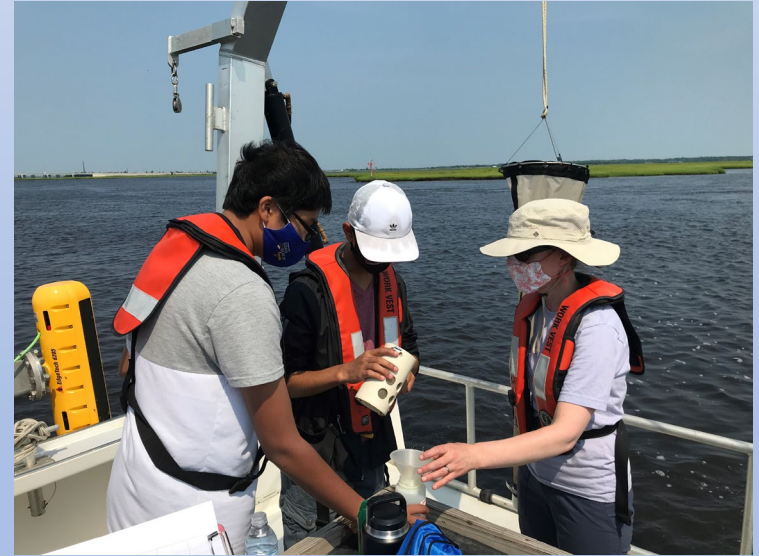


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Where do I hope today's conversation goes?

- Shared examples/stories
- The role of marine labs in delivering safety and operational skills
- Can/should there be a NEAMGLL platform to connect labs on safety issues?
 - Standing discussion at annual meetings, story sharing activities, etc.
 - Dovetails into efforts of the DEI committee (NSF requirements, etc.)



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NAML member survey (2021)

Q. 16 asked do you offer small boat training to staff and students?

- 79.1% answered yes
 - Unclear what percentage offer to students
 - Unclear what programs are being used

Q. 18 asked about field trip safety training

- Only about 50% offer training to participants

Q. 38 asked about extracurricular training opportunities; public speaking, writing, etc.

- less so about hands-on skills



Q. Does your lab train on hand tools, marine operations, knot tying, etc.?

Q. Do you feel that lab support staff should be filling this role?

Q. If yes – can/should there be a NAML platform for sharing best practices?



Engaging students in the culture of safety

Tips and tricks to go beyond the minimum safety requirements

Dockside chats and signed waivers are not enough

- Students preparing for field and at-sea careers need structured training opportunities
 - Safety and practical skills
- Credentials are key to student success – build that CV!
- Marine labs and their staff should take the initiative to promote these efforts



Engaging students in the culture of safety

Tips and tricks to go beyond the minimum safety requirements

Recognize the diversity of your student body and create equal experiences for all

- Avoid making any assumptions
 - Boats, marshes, and big water can be intimidating
 - Marine operations staff play critical role in creating the comfortable environment
- Students are not likely to disclose concerns like anxiety, ADHD and other diagnosed or subtle disorders that affect their behavior and experience in field settings



Engaging students in the culture of safety

Tips and tricks to go beyond the minimum safety requirements

Recognize the diversity of your student body and create equal experiences for all

- Some student groups will have less experience in marine environments
 - Start dockside with less experienced groups
- Vehicles and transportation to marine labs seems to be an increasing issue
 - Offer ride sharing or other options to any optional activity
 - Increasingly important to DEI and general equitable access initiatives



Engaging students in the culture of safety

Tips and tricks to go beyond the minimum safety requirements

EMERGENCY RADIO PROCEDURES

SLOWLY, CLEARLY, and CALMLY say all phrases in **RED**

- Make sure the VHF is on, you have the correct mic in hand and the volume is up. **Select channel 16.**
- Press the mic button and calmly say, "**MAYDAY.MAYDAY.MAYDAY, this is the R/V Skimmer. OVER.**"
- Release the mic button and wait 20 seconds for a reply. If no answer, repeat step 3.
- If still no answer or if the USCG or another vessel answer, say or provide information below
 - "MAYDAY, this is the R/V Skimmer"**
 - State your location twice** (latitude and longitude or range/bearing from a known point)
 - State the nature of your distress**
 - State the number people on board and number of injuries if any**
 - State condition of the vessel**
 - Describe the vessel. **"Z1" grey hull center console"**
 - "No life raft aboard, PFD's and EPIRB available."**
 - "I will be standing by on VHF Channel 16. This is R/V Skimmer. Over."**
- If the situation allows stand by the radio and answer any further communication. If no one answers repeat the above 1x and then try the above on Channel 68 or any other channel.

How do we prepare them for the culture of safety they will find in the workplace?

Find ways to fully engage them not just make them sign!

- Even for low-risk trips - share ERP plans and lead discussions about "what if"
- Put a station bill and call signs on every boat – even the small outboard skiffs

EMERGENCY RESPONSE PLAN QUICK REFERENCE GUIDE

To be used for operations operating in the Seaside Heights area

EMERGENCY LANDINGS: all at-sea emergencies should utilize first responder and marine operations training of the crew. In cases where advanced medical care is potentially needed the vessel operator shall designate a landing site and communicate that to the individual coordinating the advanced medical care arrangements (i.e. USCG and/or 911 local emergency for the purposes of mobilizing EMT to a landing site). The following landing sites are to be utilized as determined by the vessel operator:

1. Island Beach State Park Marina
24th Ave. and S. Bayview Ave.
Seaside Heights, NJ 08752

* there is no active or monitored phone at the marina itself, but it is a good meeting location for 911 response

** the last street on the bay on south end of town

2. Seaside Park Municipal Boat Ramp
24th Ave. and S. Bayview Ave.
Seaside Heights, NJ 08752

* there is no active or monitored phone at the landing itself, but it is a good meeting location for 911 response

** this is where the vessel is launched from



R/V Rudy G. Arndt – emergency equipment locations and procedures

Emergency equipment locations

- A. Life ring** – forward of wheelhouse on the starboard side
- B. Life jackets, first aid, abandon ship bag, dewatering pump and flares** – starboard wall hatches inside the wheelhouse
- C. EPIRB** – on top of cabin, starboard side aft
- D. Immersion suits when aboard** – under steering helm in plain sight
- E. Fire fighting:** handheld extinguishers (1); below port side table in wheelhouse

Vessel name and description: R/V Rudy Arndt

- 26-foot cabin-forward boat
- Black outboard motor
- White hull and top top
- Port side davit

Emergency communication info.

- Located on starboard side helm station near the shaft binnacle
- Channel 16 for emergencies only

Fire and Emergency

- If smoke or fire is detected alert the Master. The Master and Mate are responsible for activating or directing the activation of fire fighting apparatus.
- The Master or Mate should communicate the situation to the USCG via Channel 16.
- If safe send one person to secure lifejackets and ditch bag for all passengers from SOLAS kit box. If further than 1nm from shore or in cold water situations secure immersion suits for all passengers including those handling the emergency.
- **All persons not directed to engage in safety measures are to assemble on the open deck.** don lifejackets or immersion suits and await instructions. An on-deck person should take charge and go over possible abandon ship actions with those on deck
 - Manually secure the EPIRB and be prepared to activate it
 - If the fire situation is escalating be prepared to abandon ship

Adverse weather procedures

- Check the watertight integrity of deck hatches and secure items on deck.
- Ensure all persons aboard have lifejackets donned.
- Remind persons of their responsibilities if the conditions worsen – EPIRB, life raft, ditch bag and immersion suit locations. Have stored safety items brought into the cabin area for quicker action, including immersion suits.
- Contact the USCG via VHF Channel 16 if there is any indication that conditions may reach a stage dangerous to the safe operation of the vessel.
- Be aware of other vessels in the area and establish communication.
- Monitor bilge pumps by observing activation as indicated by red light illumination.
- If crew need to go on the open deck use lanyards and monitor their actions in case of a POB situation.

QR code for on-line operating procedures



** ALWAYS report any significant injuries to the USCG and the University chain per section U.10 in the MOSOP

Person Overboard

- Call out "Person Overboard" and **keep your eyes on the victim**
- Throw any floatable objects overboard to assist in re-location (including life ring, extra PFD, small buoys or even trash).
- All available crew should keep an eye on the victim while others prepare for recovery and to deploy the life ring.
- The operator should save a POB waypoint on the GPS and prepare the vessel for a safe approach back to the victim.
- If there is any delay in locating the victim report the situation to the USCG via channel 16 and continue search
- Retrieve the victim relative to the vessel and the condition of the victim. If the victim is coherent and able, allow them to board via ladder.
- Begin first aid assessment once aboard. Observe for shock and hypothermia, treat accordingly.

Abandon ship procedures:

- Prepare to abandon ship only at the verbal direction of the Master. Stay calm and follow crew directions.
- The Master will issue a **MAYDAY on channel 16**
 - In summer months and when close to shore don lifejackets – **if time allows do not utilize inflatable life vests**
 - In cooler or cold weather/water – make all possible attempts to don immersion suits per procedure below
 - You may be directed to grab the "DITCH BAG" while securing life vests – be sure to bring it with you (It floats)
 - Secure the EPIRB
 - Stay together in the water and stay with the ship if possible
 - Grab any available flotsam and stay with the vessel if it does not sink below the water surface. Gather, use lanyards or rope to attach to one another.

Flooding emergency

- If flooding is observed inform the Master
- Don life vests if warm and close to shore, make all efforts to don immersion suits if cold
- Identify the flooding cause
- Secure any open deck hatches
- Assist where possible and follow the directions of the Master or crew
- Be prepared to abandon ship

Donning immersion suits



close main and arm zipper enter water feet first

Engaging students in the culture of safety

Tips and tricks to go beyond the minimum safety requirements

- Run dockside or poolside drills – distinguish between highly unlikely events and more likely events >> emphasize the value of safety awareness even when it feels “over the top” for the activity at hand
- Use float plans and have the participants fill in their own names – forces them to look at the float plan and appreciate its usefulness

- Engage student clubs – it can help fulfill activity days for them
- Plan events on advising days or evenings when students are available
- Give it a name for their CV
- Offer CPR/First aid classes



Engaging students in the culture of safety

Tips and tricks to go beyond the minimum safety requirements

Consider spring break workshops for more robust programs – students not travelling will stick around for a solid experience and resume builder



Stockton Marine Tech Boot Camp, Spring Break 2023



Teaching students hands-on physical skills

Tips and tricks to share hands-on vocational skills

- Use vessel transit time to do knot tying
- Add some cleats around your facility, leave out some ropes and post challenge signs
- Include basics in practical testing – add a few safety items to practical exams
 - You can't get out of this class without tying me a bowline!
- Request your marine operations staff to engage students at all opportunities
 - Look out for the less-engaged students and make extra efforts!



Teaching hands-on skills to students

Tips and tricks to share hands-on vocational skills

- Offer small boat operation opportunities
 - USCG Safe Boating course is only a start
 - Follow up with hands-on experiences and explore credentialed programs
- Avoid “doing it for them” – hand them the tools and be patient!
- Offer volunteer opportunities to help prepare for deployments or other activities
- Have a hydraulics operation activity dockside
- Create labs, general studies classes or student club activities



Safety and operational skills for all!

Values gained at Stockton's marine lab

Students love it!



- Decreases barriers amongst different groups
- Increases self-confidence
- Strengthens student-student relationships
- Helps build early level CV content



Get it on paper – finding credentials that count!

Large labs and marine operations

- 9 of 32 labs are UNOLS members. 3 operate an ARF vessel (UD, UM, and WHOI)
- If most of us are not UNOLS-guided...
 1. what are we using as standards for our small boat operators?
 2. what training are we providing our students?

Medium/small labs and marine operations – most of NEAMGLL

- Options for developing, updating, refining safety policies might include;
 - USCG auxiliary safe boating guidance - minimal
 - NOAA and WHOI Small Boat Operator Training Course (limited entry)
 - AMSEA programs (commercial fisheries oriented but can be applied)
 - USFWS Motorboat Operator Certification Course (MOCC – limited entry)
 - Scientific Safe Boating Association – ***Dan Battaglia joining us now!***





Scientific Boating Safety Association SBSA

<https://scientificboating.org>



Dan Battaglia

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Small Boat Training Specialist-
Oregon State University

SBSA Training Director (2023-24
Term)

A brief history of the SBSA

Year 2000,

Initial conversations identified:

- Many boating programs were informal.
- Training was on an as needed basis, with few curriculum or instructor qualification guidelines.
- Often there was no clear responsibility for safety issues and equipment maintenance.
- Funding issues were common. In some cases there was no dedicated budget for boating at all.

A brief history of the SBSA

Years 2005-2007

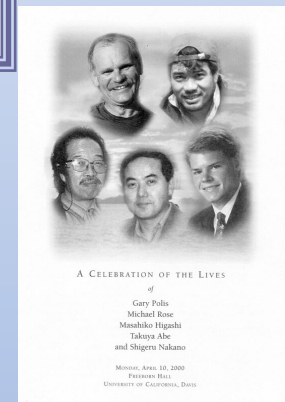
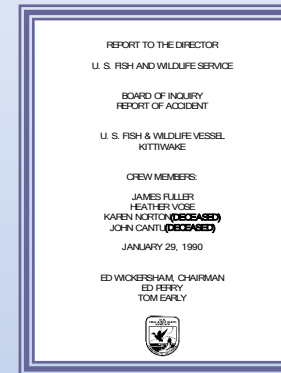
- Non-profit was established
- Generic base curriculum adopted (DOI/USFWS MOCC)
- Boating Safety Guidelines approved

Years 2007-present

- MOTC Course curriculum further refined and developed
- Participation in 2012 revision of DOI MOCC
- Boating Safety Guidelines revised 2016
- Process for MOTC instructor training developed

MOCC/MOTC Historical Context

- Researchers on a **routine mission** hit bad weather.
- Some equipment didn't work but they made do...although they didn't know how to properly use all their safety resources.
- The vessel took the wrong course and entered dangerous water/bad weather.
- The vessel was not loaded properly for the situation it took on water, became unstable and capsized, one got out and lived, two died in the vessel...
- Result...Improved Standards and Training



MOTC Standards

Minimum Subject Areas. The following mandatory subject areas will be presented in the MOTC.

The MOTC must be at least 24 hours of instruction...

But works best when 32 hours long.

A student to instructor ratio of 3:1 must be maintained for all on water activity...

an extra instructor is a great benefit

MOTC Standards

Minimum Subject Areas. The following mandatory subject areas will be presented in the MOTC.

- A. Bureau Watercraft Policies
- B. Required Safety Equipment
- C. Aquatic Invasive Species
- D. Motorboats and Motorboat Maintenance
- E. Trailer Orientation and Maintenance
- F. Navigation Aids/Rules of the Road
- G. Emergency Operations
- H. Assessing Risk using GAR
- I. Fire Suppression
- J. Motorboat Orientation/Marlinspike
- K. Motorboat At-Speed and Low-Speed Maneuvering
- L. Alongside Maneuvering
- M. Trailing
- N. Rendering Assistance (Towing)

Course Instruction Classroom & Field



Instructors provide information and demonstrations, answer questions,... ..observe and coach student performance.

Student Objectives

Complete Written Assignments & Practice Skills

Demonstrate Knowledge and Ability



Course Schedule

Flexible

Student Focused

Weather Effectuated

Understand Student Challenges,
Abilities and Limitations

Facilitate Team Safety
and Crew Coordination





Questions & Discussion



Thank you

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