

# Summary Report of the National Association of Marine Laboratories 2021 Member Survey February 2023

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## Executive Summary

The National Association Marine Laboratories (“NAML”) is a 501(c)(3) non-profit organization established in 1989. NAML was founded primarily to bring together the directors of marine laboratories across the United States to share issues and best practices to improve operations. NAML has grown during its history into a major advocacy organization for the marine, coastal, and aquatic sciences in the United States. A recent focus of NAML advocacy efforts has been to maintain federal support for marine and great lakes research, education, and public outreach through its contract with Federal Science Partners LLC. NAML consists of 99 member institutions representing the three coasts of the continental United States, the Great Lakes Regions, Alaska, Hawaii, Bermuda, the Caribbean Sea, and the territory of Guam. It is governed by a Board of Directors elected from three regional organizations: the Northeastern Association of Marine Laboratories and Great Lakes Laboratories (NEAMGLL, from Delaware to Maine, and the Great Lakes states), the Southern Association of Marine Laboratories (SAML, from Maryland to Florida, Florida to Texas, and Bermuda), and the Western Association of Marine Laboratories (WAML, California, Pacific Northwest, Alaska, Hawaii, Guam). This report summarizes the major findings from a Member Survey consisting of 43 questions that was conducted in 2021. Survey questions were designed to cover the spectrum of a typical NAML member institution’s operations and activities. We have divided this report of the Member Survey results into five categories: 1. Demographics, 2. Educational Activities, 3. Research Activities, 4. Operations, and 5. Diversity, Equity, and Inclusion (DEI). The summary data presented in this report represents information obtained from the member survey with 75 members responding.

NAML remains a strong association providing significant benefits to its members. NAML has a variety of different kinds of members. The bulk of NAML members are academic institutions that range in size from very small private colleges/universities to very large public universities. There is great strength in non-academic members that bring a range of different expertise and perspectives to the table. These non-academic partners include a museum, aquariums, research institutes, IOOS, and Sea Grant members. The dialog among the members on research, education, and policy is unique and invaluable.

Members are heavily involved in degree programs grounded in marine science and policy. NAML members reach out to the broader communities with internship programs that are popular, serving not only the academic communities of higher education, but K-12 and adult education. Research areas favor the biological sciences but are very strong in chemistry, geology, policy, and physics.

Given the existing structure and function of our organization, we see **three areas for potential growth in NAML operations**. **First**, the geographical scope of our members is increasing, covering the three continental coasts, the Great Lakes, and beyond to the Hawaiian Islands and Western Pacific. This geographic scale provides an unprecedented network of facilities and people that are measuring and studying many variables that are directly forced by climate change. We are in a strong position to increase our coordination of this existing monitoring data to understand how a rapidly changing environment is impacting specific regions of our coasts, lake shores, or island systems. We can see great potential for targeting federal funding that improves the technical aggregation, synthesis, and communication of these important data. **Second**, an area for increased growth is the advocacy component as a voice for marine and Great Lakes science in Washington and beyond. The last few years have seen an increase in the number of targeted white papers that have grown organically from our membership. We see this as an effective tool for advising and steering legislation that impacts the health of aquatic ecosystems and coastal communities, through continued support of all the operations of our member labs. **Third**, over the last two years, we have realized that there are clear opportunities to harness public interest in our operations to increase the underrepresented minorities in science, technology, engineering, and math (STEM fields) through a shared interest and concern for the oceans and Great Lakes. The recent success of the “Virtual Field Program,” anchored by principal investigators from NAML and the Organization of Biological Field Stations (OBFS) is one leading example of an approach that takes advantage of unique facilities in environmentally sensitive locations. We see other opportunities that focus on the strength of an expansive network of coastal, island, and Great Lakes laboratories coupled with an organization that includes the full spectrum of diversity of the people of the United States and its Territories.

# Preamble

This report is based on the results of the 2021 NAML Member Survey of the National Association of Marine Laboratories, or NAML. The 2021 Member Survey was developed in 2021 under the guidance of NAML President Bob Dicky, with input from NAML Executive Director Lou Burnett, NAML President-Elect Dave Carlon, and the Chair of the Education Committee, Aly Busse. Survey questions were designed to get a better sense of the current size and structure of NAML member institutions, and in particular the kinds of research, education, and outreach activities that are supported by our member laboratories and organizations. At the same time, NAML became increasingly aware of the need to increase support of our efforts to increase diversity, equity, and inclusion (DEI) in the areas of marine science and policy. Accordingly, a block of questions focused specifically on DEI representation and DEI activities.

The Member Survey had 43 questions (Appendix A) and was administered using Survey Monkey over a period of several months. Respondents included 75 NAML members out of the 98 members of NAML in 2021. Not all survey respondents answered every question. Thus, in many cases the results are reported in such a way to characterize the answers only of those who responded.

The intent of this report on the 2021 Member Survey is twofold. **First**, it provides NAML members with a broad perspective of NAML membership and NAML activities, information that will be helpful to make sure that each member is continually supported by their own administration. The majority of our members run facilities that are a component of the research and teaching resources of a larger college or university (see section on **1. Demographics** for more details on how labs are supported). The strengths of NAML, as exemplified by our collective members, which in 2023 stands at 99 institutions, that represent the coasts and Great Lakes region of the Continental United States and its territories, will be useful to stakeholders on local, regional, and indeed global scales. Our **second** intent of this report is to provide a more accurate picture of the current scope of our activities so that our collective concerns are better represented to the different branches of local governments and the United States government. We hope that this report will be useful to members in this regard, but also aid our government affairs and advocacy firm, Federal Science Partners LLC, in their targeted efforts to educate those responsible for legislation that directly impacts activities and operations at NAML member institutions.

The raw survey results are available to NAML members by request, and inquiries can be sent directly to the NAML Executive Director, Lou Burnett ([secretariat@naml.org](mailto:secretariat@naml.org)).

This report is divided into four main sections:

1. Demographics
2. Educational Activities
3. Research Activities
4. Operations
5. Diversity, Equity, and Inclusion (DEI).

# 1. Demographics –Size and Structure of NAML Member Institutions

NAML has three regional organizations: the Northeastern Association of Marine and Great Lakes Laboratories (NEAMGLL), the Southern Association of Marine Laboratories (SAML), and the Western Association of Marine Laboratories. NAML has divided its member institutions into three size classes and charges annual dues accordingly.

## **Small Member Institution– \$800**

Few (<5) or no year-round scientist, resident director or not, some year-round staff, seasonal use, mostly classes and field trips low research activity

## **Medium Member Institution – \$1,900**

Resident director, 5-20 resident scientists, up to 30 resident staff, year-round operation, several funded research programs, some visiting researchers

## **Large Member Institution – \$3,000**

Resident director, other administrators, over 20 resident scientists, over 30 resident staff, year-round operation, many funded research programs, many visiting researchers.

Using the three size classes above, there are 38 small institutions, 37 medium, and 24 large. SAML is the largest regional organization with 44 members; NEAMGLL has 30 members and WAML has 25. This does not count the handful (n = 8) of Associate members that are members only of a regional organization (NEAMGLL = 0; SAML = 3; WAML = 5).

Of the 99 NAML member institutions in 2023, 80% are situated in academic settings and 20% are in non-academic settings. The majority of those in academic settings (67%) are public colleges/universities and the remainder are private. Over half (55%) of NAML members report that they operate as an independent academic unit. Another 26% are separate departments. Some 23% of our members operate as an independent school, the largest level of academic institutional organization.

Referencing those members at academic institutions, the message from the responses to operational questions is that the majority of our members are serving a broad academic constituency, an interpretation that is supported by the results of academic research topics that are featured at member institutions (see *Research Areas*, under **Section 3. Research Activities**) while simultaneously reaching a variety of local stakeholders and communities (see *K-12 and Adult Education*, under **Section 2. Educational Activities**).

## ***Activity in Other Scientific Organizations***

NAML member institutions are active in other scientific organizations: 21 respondents were members of the Consortium for Ocean Leadership. COL (now defunct), 21 are members of the Organization of Biological Field Stations, OBFS, and 25 reported being members of other scientific organizations.

## ***Serving a Broad Range of Minority Programs***

NAML members are serving a broad range of minority groups (Table 1). Of the 77 respondents to *Q11. Minority-Serving Programs*, 35 reported they are active in minority-serving programs that focus on one or more minority groups. Around 30% of the 74 respondents, report that they either serve Historically Black Colleges and Universities (HBCU), are members of the Louis Stokes Alliance for Minority Participation (LSAMP), or are a Hispanic Serving Institution (HSI). Also significant, are the locations of NAML institutions with respect to serving Alaskan Natives and Pacific Islanders. For example, the University of Hawaii has an enrollment that is 17% Pacific Islander; and operates two large marine laboratories that are NAML members: the Hawaii Institute of Marine Biology and the Kewalo Marine Laboratory. Similarly, the University of Guam has an enrollment of 2,968, and their marine laboratory is also a NAML member.

Table 1. The percentage of NAML member institutions that serve different under-represented minorities. “*Q11. Minority-Serving Programs*.” In the survey, a number of minority-serving programs were listed and respondents were asked to indicate any program with which there was an affiliation. Out of 75 surveys returned, 35 respondents checked at least one of these categories. “Other” programs included the following:

- Whitney's IDEA (Inclusion, Diversity, Equality, Access) Committee
- Ronald E. McNair Program
- Indigenous Nations Organizations and Tribal Colleges
- GOALS program for high school students
- Geo-PATH (NSF)
- Ohio State University @ Newark, First Generation Program
- SCAMP (South Carolina Alliance for Minority Participation)

ANSWER CHOICES	RESPONSES	
Asian American and Native American Pacific Islander Serving Institutions (AANAPISI)	5.71%	2
American Indian and Alaskan Serving Institutions, Native American Serving Nontribalo Institutions (NSI)	0.00%	0
Alaskan Native Serving Institution	2.86%	1
Native Hawaiian Serving Institution	5.71%	2
American Geophysical Union Bridge Program	5.71%	2
Pacific Islander Serving Institution	5.71%	2
Historically Black Colleges and Universities (HBCU)	28.57%	10
Louis Stokes Alliance for Minority Participation (LSAMP)	28.57%	10
Hispanic Serving Institution (HSI)	28.57%	10
Other (please specify)	34.29%	12
Total Respondents: 35		

### ***Geographic Vulnerability***

There is one other significant and interesting survey result in terms of our geographic positioning across the United States and U.S. Territories. The coastal or lakeside position of nearly all our members make them vulnerable to climate change, including extreme weather events and sea level rise (Table 2). In response to *Q20. Vulnerability*, 64% of our members report they are vulnerable or highly vulnerable to severe storms and hurricanes, and 59% report they are vulnerable or highly vulnerable to sea level rise. A smaller percentage responded that they are vulnerable or highly vulnerable to earthquakes (20%) and tsunamis (17%).

Table 2. NAML member institutions have vulnerabilities associated with their locations.

	NOT VULNERABLE	SOMEWHAT VULNERABLE	VULNERABLE	HIGHLY VULNERABLE	TOTAL
storm/hurricanes	9.09% 6	27.27% 18	24.24% 16	39.39% 26	66
sea level rise	15.15% 10	25.76% 17	28.79% 19	30.30% 20	66
earthquake	71.21% 47	9.09% 6	9.09% 6	10.61% 7	66
tsumami	68.18% 45	15.15% 10	6.06% 4	10.61% 7	66

## 2. Educational Activities

To assess the contribution of NAML institutions towards educating students, degree programs in which undergraduate and graduate students spend a significant time at an institution’s laboratory involved in coursework or research toward a degree were assessed. Brief field trips or workshops did not qualify as being supported by NAML member laboratories.

### *Areas of Student Training*

NAML members support training in a variety of areas (science communication, statistics, using large data sets, and “omics”) at the undergraduate and graduate levels (*Q38 – College Student Training*). There was significant activity in all these areas (Table 3).

Table 3. Extracurricular training opportunities with a marine emphasis are strongly supported by NAML member institutions.

	UNDERGRADUATE STUDENT	GRADUATE STUDENT	TOTAL RESPONDENTS
Science Communication - public speaking/presentation	84.00% 42	80.00% 40	50
Science Communication - writing	80.00% 40	84.00% 42	50
Statistics	85.71% 30	82.86% 29	35
Using Large Data Sets	67.44% 29	86.05% 37	43
Omics (e.g., genomics, proteomics, metabolomics)	62.96% 17	92.59% 25	27

### *Degree Programs*

Respondents were asked to provide the number of degree programs supported in the marine or limnological areas of study with the caveat that supported students spend a significant amount of time at the laboratory/institute involved in coursework or research toward a degree (*Q39 – Degree Programs Supported*). Clearly degree programs are a prominent feature of the academically-oriented NAML member institutions. Bachelor’s degrees are supported by 42 respondents with an average of 4.4 different degrees per member. Master’s degrees are supported by 47 respondents with an average of 3.1 different degrees per member. Doctoral degrees are supported by 38 respondents with an average of 2.9 different degrees per member.

Missing from these survey questions but also important to the undergraduate experience are **marine science semesters**, programs that are typically taught in residence at marine laboratories and other field stations that offer immersive and hands-on experiences, often culminating in an independent research project. We (the authors) have researched and identified 19 of these programs in a separate program review across the country in 2018. Eight of these programs operate as residential semesters or hold classes, laboratories, and field trips at NAML labs.

**Internships**

Internship programs are common among NAML members, with 57 responding institutions reporting one or more kinds of programs (*Q40 – Internships*). Undergraduate students account for most internships, followed by graduate students and high school students from 57 respondents (Table 4).

Table 4. The number of students involved in internships annually at NAML member institutions.

ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Middle School	1	11	16
High School	7	186	28
Undergraduate	19	988	53
Graduate	7	222	33
Adult/Lifelong Learners	4	59	14
Total Respondents: 57			

We asked a follow-up question specifically about Underrepresented Minority (URM) students involved in internships (*Q41 – URM Internships*). Among responding institutions (n = 43), on average URM undergraduates account for nearly twice as many internships as URM high school students, and nearly four times as many as URM graduate students (Table 5).

Table 5. The number of Underrepresented Minority (URM) students involved in internships annually at NAML member institutions.

ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Middle School	0	0	10
High School	4	76	19
Undergraduate	8	311	39
Graduate	2	47	21
Adult/Lifelong Learners	0	1	10
Total Respondents: 43			

Recipients of internships are often targeted by institutions, and we were interested in knowing which groups were specifically targeted by NAML member institutions (*Q42 – Targeted Populations for Internships*). Among responding institutions, URM students are targeted nearly twice as much as first generation college students, followed by non-traditional students and veterans (Table 6). Mentors supervising interns are expected to provide proper guidance in conducting research, as well as providing the interns with the benefit of the supervisor’s knowledge and experience in the research area. One way to ensure a successful experience is to provide training to the supervisor, and an orientation between the supervisor and the student. Among 58 respondents, 60% provided such training while 40% provided no training (*Q45 – Internship Supervisor Training*).



Table 6. Specific populations are often targeted to fill internships. NAML member institutions report targeting four main groups. “Other” groups included the following:

- Low-income individuals
- Students raised and educated in Windward Oahu
- Maine residents, particularly those who live in the vicinity of the lab
- ROTC students

ANSWER CHOICES	RESPONSES	
First generation to attend college	45.45%	15
Veterans	18.18%	6
Non-traditional students (>30 years old)	21.21%	7
Underrepresented minorities (African American or Black, Hispanic or Latinx, American Indian, Alaskan Native, and Native Pacific Islander)	96.97%	32
Other (please specify)	15.15%	5
Total Respondents: 33		

Overall, respondents indicated that 75% of their internship opportunities were funded (*Q44 – Funded Internships*).

### ***K-12 and Adult Education***

Various NAML institutions provide educational opportunities to students in K-12 and adult programs, as well as undergraduate and graduate students, teachers and educators (*Q33 – Number Served by Programs*) (Table 7). The largest group served by NAML member institutions is comprised of adults/senior citizens with an average number of 9,535 individuals and a total number of 486,295 served annually (n = 51). The second largest group served was K-12 students (annual average = 3,327 and a total of 199,592 individuals served annually).

Undergraduates averaged 157 students (n = 61 institutions) annually while graduate students averaged 37 students (n = 58 institutions) a year. Teachers and educators averaged higher than graduate students, with 53 served annually (n = 51 institutions).

Table 7. The number of individuals served by programs at NAML member institutions.

ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
K-12 served per year	3,327	199,592	60
Undergraduate Students served per year	157	9,572	61
Graduate Students served per year	37	2,164	58
Teachers/Educators served per year	53	2,707	51
Adults/Senior Citizens served per year	9,535	486,295	51
Total Respondents: 63			

When we asked a follow-up question about programs targeted toward Underrepresented Minorities (URM) and using the same groups (*Q34 – URM Number Served by Programs*), the proportions were very similar but the total numbers were much lower (Table 8).

Table 8. The number of individuals served by programs of NAML member institutions that are targeted toward Underrepresented Minorities (URM). Compare with Table 7.

ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
K-12 URM served per year	602	20,482	34
Undergraduate Students URM served per year	19	848	45
Graduate Students URM served per year	5	207	38
Teachers/Educators URM served per year	15	439	30
Adults/Senior Citizens URM served per year	1,319	40,888	31
Total Respondents: 46			

Supported activities for K-12 students versus adults differed considerably (*Q35 – Supported Activities, K-12 and Adult Education*). Activities included field trips, outreach to schools, summer camps, residential programs on site, early childhood programs, partnerships with schools, virtual programs, and research. Onsite field trips were very common for both K-12 and Adult Education groups. Outreach to schools was very common for K-12 students. Research activities were popular with both groups.

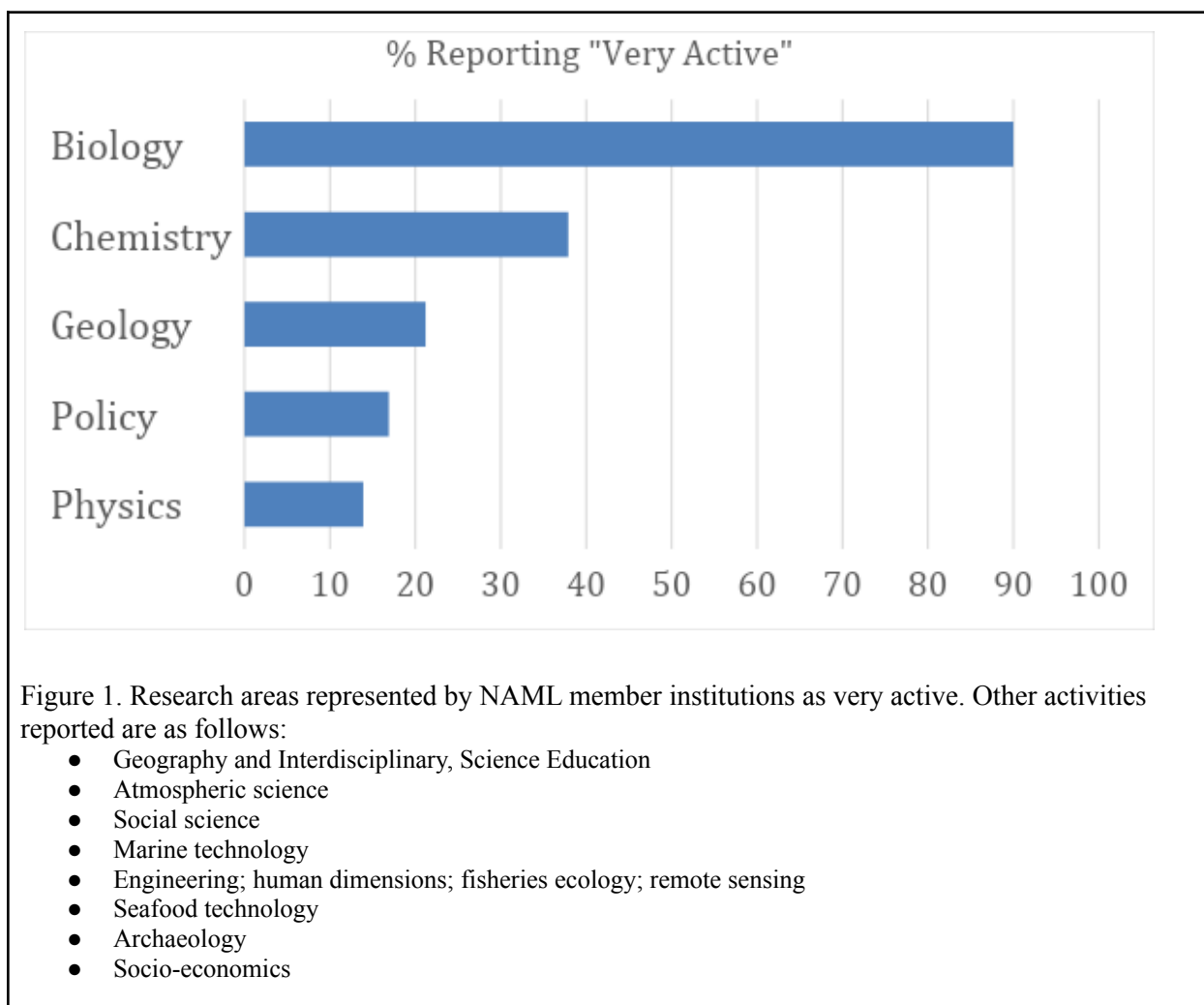
Table 9. Supported activities for K-12 students and adults.

	K-12	Adult Education	Total Respondents
Onsite field trips	51	32	53
Outreach to schools	53	12	53
Camps (e.g., summer camps)	28	3	28
Residential programs onsite	14	7	18
Early childhood programs	3	1	4
Partnerships with schools (formal & informal)	45	13	45
Virtual programs	28	23	34
Research	30	20	37

### 3. Research Activities

#### Research Areas

The scientists working at NAML labs cover a diversity of research fields (Fig. 1), but the biological sciences dominate NAML membership, with 97% of our members reporting that they are active (9%) or very active (90%) in the field of biology (*Q24 – Research Areas*). Chemistry is the second most common activity with a total of 71% reporting that they are active (33.3%) or very active (37.9%). Next is geology with 39.4% active (18.1%) or very active (21.2%), followed by policy with 44.6% active (27.7%) or very active (16.9%), and then geology with 37% active (23.9%) or very active (13.9%). While this breakdown indicates the most population research areas lie within the biological sciences, many labs are active across multiple areas. Out of 67 responses, 27 members had activity in all five areas, 20 members had activity in four areas, and 14 had activity in three areas.



#### Funding Sources and Levels

Extramural research grants support significant numbers of research scientists at NAML institutions (*Q25 – Scientists Supported by Grant Funding*). Support of 15 or more scientists accounts for 28.4% of respondents (n = 67), followed by 5-10 scientists (23.8 %), 1-4 scientists (20.9 %), 10-15 scientists (19.4%), and zero scientists (7.5%).

Among 65 responding institutions, on average 29.2% receive greater than \$5 million in extramural support (*Q26 – Level of Extramural Support*). 30.8% receive between \$1 – 5 million, 12.3% receive between \$1 and 0.5 million, 15.4% receive between \$100,000-500,000, 7.7% receive between \$50,000-100,000, and 4.6% receive less than \$50,000 per year (Table 10).

Table 10. Average total level of extramural support received by NAML member institutions per year.

ANSWER CHOICES	RESPONSES	
<\$50,000	4.62%	3
\$50,000 to \$100,000	7.69%	5
\$100,000 to \$500,000	15.38%	10
\$500,000 to \$1,000,000	12.31%	8
\$1,000,000 to \$5,000,000	30.77%	20
>\$5,000,000	29.23%	19
Total Respondents: 65		

The sources of funding vary among 67 respondents (*Q27 – Funding Sources*) (Table 11). The most significant sources are NOAA (91%), NSF (82.1%), state agencies (82.1%), Sea Grant (73.1%), foundations (67.2%), and the U.S. EPA (52.2%). Under the NSF Field Stations and Marine Laboratories (FSML) infrastructure improvement program (*Q28 – FSML Grants*), 58 respondents indicated that they had applied for and received funding during the last 15 years. A breakdown of what the funding was for (*Q29 – FSML Support Area*) is as follows: building improvements, including instrumentation (67.7%), seawater delivery support (20.6%), other various projects (20.6%), planning grants (14.7%), climate change simulations (11.8%), and vessel modifications (2.9%).

Table 11. Funding sources of NAML member institutions.

ANSWER CHOICES	RESPONSES	
National Science Foundation	82.09%	55
National Oceanic and Atmospheric Administration	91.04%	61
Environmental Protection Agency	52.24%	35
Dept. of Energy	25.37%	17
Bureau of Ocean and Energy Management	20.90%	14
National Fish and Wildlife Foundation	46.27%	31
National Academy of Science, Engineering and Medicine	13.43%	9
Sea Grant	73.13%	49
Foundation	67.16%	45
State Agency	82.09%	55
Other (please specify)	35.82%	24
Total Respondents: 67		

A useful but unasked question is what percentage of a member's operating budget comes from external sources as compared to institutional support in the case where the lab is supported by a larger campus.

#### ***Undergraduate Research Programs***

The provision of research opportunities for undergraduate students by NAML members over a 3-5 year period include those that were not funded, those funded by various sources, and those by the NSF Research Experience for Undergraduates (REU) program (*Q43 – Undergraduate Research*). Notably, REU programs account for relatively few students (average = 8 and total 279, n = 34 institutions) compared to those funded by other means (average = 30 and total 1,565, n = 52 institutions).

#### ***Monitoring Activities***

An overwhelming number of NAML institutions collect and/or store physical and biological data on a long-term basis (92.8% of 69 respondents (*Q32 - Monitoring Networks*)). These and other data may be shared through various networks that include NOAA (65%), individual NSF grants (24.5%), Sea Grant (22.5%), NSF-LTER (12.2%), or through institutional support (38.8%) or other (44.9%) mechanisms (Table 12).

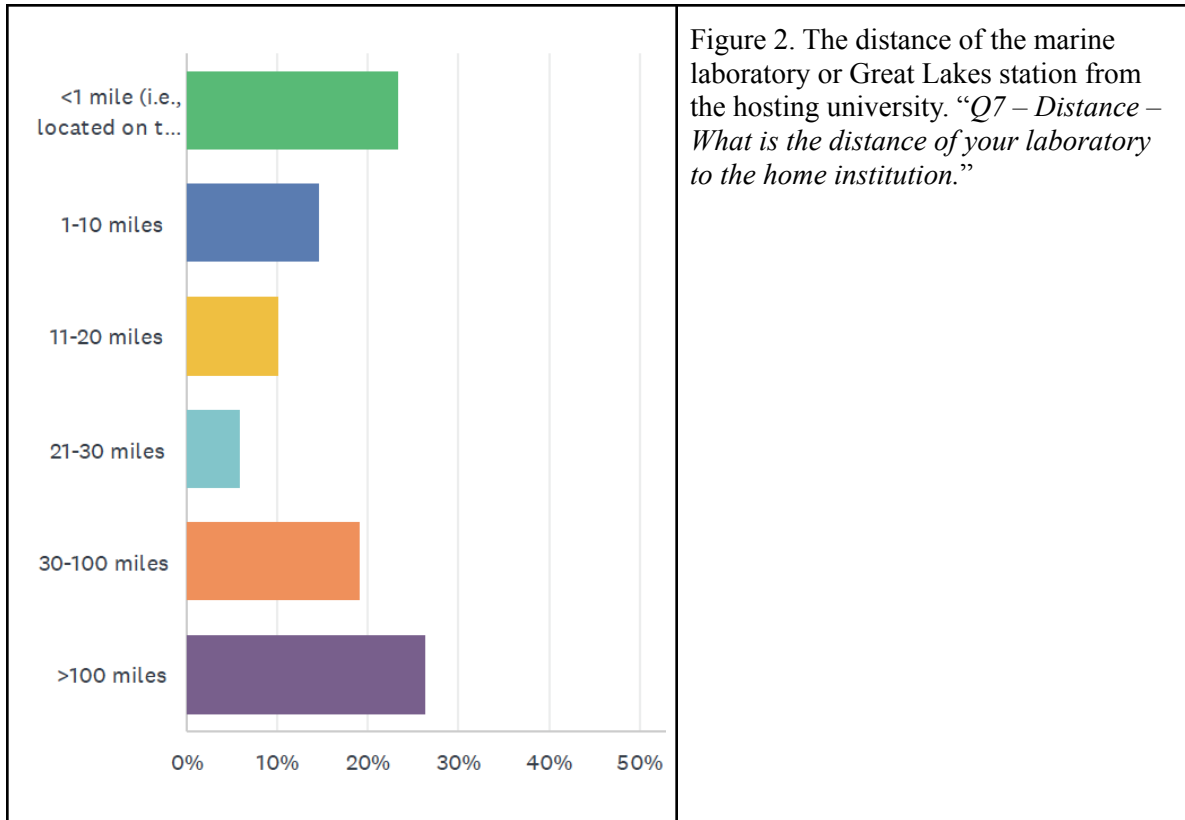
Table 12. NAML member institutions as a part of formal or informal monitoring networks.

ANSWER CHOICES	RESPONSES	
NSF-LTER	12.24%	6
NSF Individual Grant	24.49%	12
Sea Grant	22.45%	11
NOAA	65.31%	32
Institutional Support	38.78%	19
Other (please specify)	44.90%	22
Total Respondents: 49		

## 4. Operations

### *Residential Life and Travel to Facilities*

Most NAML member institutions are located off-campus with distances between the two ranging from less than one mile (ca. 23.5%) to over 100 miles (nearly 26 %, Fig. 2) (*Q7 – Distance*). Transportation for students, staff and faculty members to and from their facilities is a necessity, whether provided personally or by the institution. Of 73 responding institutions (*Q8 – Transportation*), 27.4% provide transportation, nearly 48% do not, and the remainder indicated that the question of transportation was not applicable, thus suggesting that the facilities are on campus.



Many NAML member laboratories (45 of 74 responding) provide some form of housing at their institutions (*Q12 – Housing*). Housing may consist of dormitories (84.4%), houses or cabins (48.9%), and apartments (31.1%), although some may provide more than one type of housing. Dormitories are by far the most common type of housing provided. Only about one-third of the 71 NAML members responding provide food services at their institutions (*Q13 – Food Services*).

### *Vessels*

The number and size of vessels varies between NAML institutions but may also be correlated with the size of the laboratory, with larger labs having both larger-sized vessels and a greater number of vessels overall (*Q14 – Number of Vessels*). Average numbers of vessels range from one large vessel greater than 30 ft in length, four between 20-30 ft in length, and three less than 20 ft in length. Unfortunately, no metrics are given for the size range of vessels greater than 30 ft in length, so it is difficult to determine if an institution has a ship or a large boat. But clearly many vessels are operated by NAML members (Table 13).

Table 13. The number of motorized boats/ships operated by NAML member institutions.

ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
<20 ft.	3	175	58
20 ft. and < 30 ft.	4	210	58
>30 ft.	1	66	45
Total Respondents: 67			

Vessel operations often require boat or ship captains but nearly 29% of responding institutions employed no captains at all (*Q15 – Boat Captains*). This result suggests that these institutions have small (less than 20 ft) boats that may be operated by researchers and staff. Institutions with one captain employed account for 23.2% of respondents, with 30.4% having two captains, and 8.7% for three or four or more captains, respectively. Training in small boat operations for staff and students is offered by 79.1% of the 68 responding institutions (*Q16 – Vessel Operation Training*).

### ***SCUBA Programs***

Of 68 institutions responding, a majority (73.5%) offer scuba diving at their facilities (*Q21 – SCUBA Diving, part 1*). A total of 47 NAML members reported diving activity with an average number of 192 dives/year (minimum = 1, maximum = 2,100). Of 45 institutions responding, nearly 87% were members of the American Academy of Underwater Sciences (AAUS) and employed a divemaster (*Q22 – SCUBA Diving, part 2*). Only 57.8 of these institutions offered an AAUS research diving course.

### ***Field Trips***

The logistics of conducting field trips include planning, training (including safety training), and waivers of liability (*Q18 – Field Trips*). Just over 80% of institutions responding (n = 57) file itinerary plans prior to the onset of a trip. Training, however, is provided by just 52.6% of institutions, while liability waivers are required 71.9% of institutions.

Table 14. Field trips are commonly made by students and public groups through marine laboratories. Itineraries, personnel training, and participant liability is considered.

ANSWER CHOICES	RESPONSES
An itinerary is filed prior to a field trip to indicate the location(s) of the planned trip.	80.70% 46
Those conducting the field trip are provided training (including safety training).	52.63% 30
Participants sign liability waivers before taking a field trip.	71.93% 41
Total Respondents: 57	

### ***Safety, First Aid and CPR/AED Training***

Training programs at NAML institutions focus upon laboratory safety, first aid training, and training in CPR and AED procedures (*Q17 – Safety and First Aid Training*). Training is spread amongst students, faculty, and staff. Out of 51 responding institutions, annual laboratory safety training has been reported



for 82.4% of students, 76.5% of faculty, and 80.4% of staff (Table 15). Annual training in first aid is less commonly performed. Of 31 responding institutions, 38.7% of students, 41.9% of faculty, and 87.1% of staff receive this training. Similarly, of 30 institutions responding, only 30% of students, 40% of faculty, but 80% of staff receive training in CPR and AED. These numbers might reflect the fact that at the institutions responding, staff may be employed year-round while students and faculty might be in residence for only part of the year.

Table 15. Safety and first aid training at NAML member institutions.

	STUDENTS	FACULTY	STAFF	TOTAL RESPONDENTS
Laboratory safety training is required annually.	82.35% 42	76.47% 39	80.39% 41	51
First Aid training is required annually.	38.71% 12	41.94% 13	87.10% 27	31
CPR or AED training is required annually.	30.00% 9	40.00% 12	80.00% 24	30

### ***Other Safety Training***

NAML member institutions to varying degrees provide training and drills for fire, active shooters, sheltering in place, and adverse weather events (*Q19 – Other Training, Exercises and Protocols*) (Table 16).

Table 16. Other training activities and drills at NAML member institutions.

ANSWER CHOICES	RESPONSES
Fire Drills	62.07% 36
Active Shooter Training/Drills	34.48% 20
Shelter-in-Place Training	25.86% 15
Adverse Weather Event Protocols or Exercises are in place	74.14% 43
Total Respondents: 58	

## 5. Diversity, Equity, and Inclusion (“DEI”)

### *Minority-Serving Institutions*

As reported in Table 1 in the **Demographics** section of this report, 44% (35 out of 75) of the responding laboratories serve at least one minority population with 31% of the 35 serving 2 or more of these groups. In general, many NAML labs are well positioned to increase opportunity and improve DEI efforts through their combined programming that is reaching important dimensions of the DEI community. As reported earlier, many laboratories host undergraduate and graduate courses during the academic semester and/or summer; and have sizable populations conducting student research (undergraduate and graduate, about 12,000 total students/year). As reported in the section on **Educational Activities - Internships**, many NSF REU programs for undergraduates are specifically targeting under-represented minorities, and thus have a “URM” focus. Also significant to increasing DEI at NAML labs, are the total populations experiencing our labs and Great Lakes stations through K-12 school programs: 200,000 students/year; and continuing education: 486,000 seniors/year.

### *Minority Participation in K-12, Undergraduate, and Graduate Programming*

The broad programming offered by NAML institutions offers numerous opportunities to reach new groups and improve DEI, but how are NAML members currently doing as measured by the percentage of all underrepresented minorities in each of five major programming activities? In Table 16, we report that an average of 9% of the entire community of lab users identify with an underrepresented minority group. The 2020 U.S. census reports that 24.2% of the population self-identifies with a race other than white, suggesting that we will need to increase our efforts to reach more minority groups to be representative of the U.S. population.

Missing from our survey is a question relating to first-generation college students. How many of our undergraduate participants come from families whose parents did not attend college? We suspect from our personal experiences that this number could be significant, particularly with the number of REU programs that are specifically targeting this group. But also important, is how many first generation students are taking courses or enrolling in other, non-REU programs at our labs?

One feature of our labs that could improve access by URM and first-generation students is access to free or economical transportation from the supporting camps. Forty five percent of our labs are located at a distance of > 30 miles from the main campus (see Figure 2 and **Section 4. Operations**), yet most do not provide transportation that is either free or subsidized. For students without access to personal vehicles, we see this as a major hurdle to participating in either educational or research programming.

Table 16. The number of participants in five different kinds of programming activities at NAML institutions, based on the total population (Total) and number of people who belong to underrepresented minorities (URM). The % of URMs based on the total numbers is given in the last column. Note this % ranges between 8 and 16% depending on category. Data were extracted from the responses to *Q33 - Student Categories Served by Programs* and *Q34 - URM Student Categories Served by Programs*.

	Total		URM		% URM
	Average	Total	Average	Total	
K-12	3327	199,592	602	20482	10.26%
Undergraduate	157	9572	19	848	8.86%
Graduate	37	2164	5	207	9.57%
Teachers/Educators	53	2707	15	439	16.22%
Adults/Seniors	9535	486295	1319	40888	8.41%
Total	13109	700330	1960	62864	8.98%

***Minority Faculty***

The survey did not address this important topic. Emphasis was given to URM students. It would be useful to have data on the number of minority faculty members, post-doctoral fellows, research staff members, and staff members at NAML laboratories.

# NAML Board of Directors 2023

The Board of Directors consists of 15 members including the President, the President-Elect, the Past President and twelve (12) other members, four (4) from each regional organization as duly elected by each organization and titled members-at-large. The President, Vice President/President-Elect, and immediate Past President of each regional organization will normally fulfill three of these roles unless otherwise selected by the regional organization. (NAML Bylaws, Article II. Section 1.A)

An individual serving on the Board of Directors must be a Delegate of a regular member institution (NAML Bylaws, Article I. Section 3. B. and Article II. Section 1.A.4).

## **Officers**

Dave Carlon, President 2022-2023

Terry Donaldson, Vice-President/President-Elect 2022-2023

Vacant, Past President 2022-2023

### *Ex Officio*

Quint White, Treasurer, *Ex Officio* (non-voting)

Vacant, Secretary, *Ex Officio* (non-voting)

## **Members-at-Large**

### **Northeastern Association of Marine and Great Lakes Laboratories (NEAMGLL)**

Bob Sterner, NEAMGLL President 2023-2024

Steve Evert, NEAMGLL President-Elect 2023-2024

Mike De Luca, NEAMGLL Past President 2023-2024

Jeanette Schnars, NEAMGLL Member-at-Large 2021-2024

### **Southern Association of Marine Laboratories (SAML)**

Sue Ebanks, SAML President 2022-2023

Clark Alexander, SAML President-Elect 2022-2023

Dave Eggleston, SAML Past President 2022-2023

Eric Milbrandt, SAML Treasurer 2022-2023

### **Western Association of Marine Laboratories (WAML)**

John Heidelberg, WAML President-Elect 2022-2023

Dan Costa, WAML Member-at-Large 2022-2023

Jeff Bowman, WAML Member-at-Large 2022-2024

Vacant

# Regional Organizations, Boards of Directors 2023

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Steve Evert, President-Elect 2023-2024  
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Michael Jacob, Treasurer 2023-2024 (non-voting)  
*Vacant*, Secretary 2023-2024 (non-voting)

## **Members-at-Large**

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Yvonne Vaillancourt, 2023-2025

## ***SAML Board of Directors***

Sue Ebanks, President 2022-2023  
Clark Alexander, President-Elect 2022-2023  
Dave Eggleston, Past President 2022-2023

Eric Milbrandt, Treasurer 2022-2023 (non-voting)  
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## **Members-at-Large**

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Antonietta Quigg, 2022-2024  
Mike Allen, 2023-2025

## ***WAML Board of Directors***

Terry Donaldson, President, 2022-2023  
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Bob Richmond, Treasurer (*ex officio*), 2022-2023  
Janet Dirige, Secretary (*ex officio*), 2022-2023

## **Members-at-Large**

Dan Costa, 2022-2023  
Jeff Bowman, 2022-2024  
*Vacant*, 2023-2025

[LINK to Survey Questions](#)