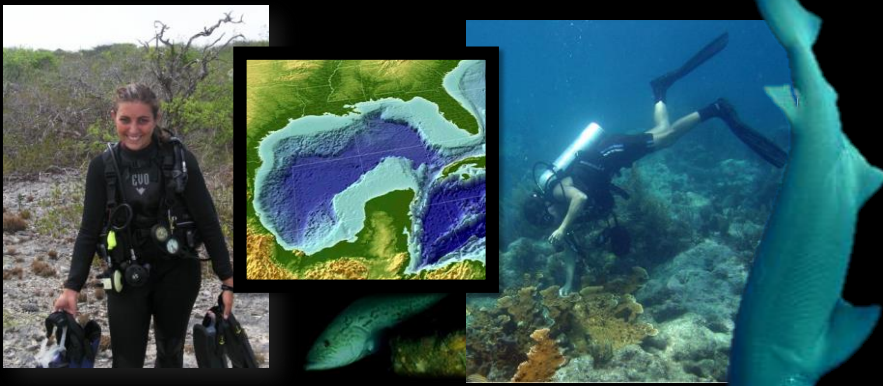


The SAML Academic Diving Programs



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Scientific Diving

Overview

- Purpose
- History of scientific diving
- American Academy of Underwater Sciences
 - Reciprocity
 - Scientific Diver Certification
 - Diving Safety Officer (DSO)
- Who needs science diving training?
- Course content, format
- Discussion

Scientific Diving

Purpose

- Diving is a tool...that requires specialized risk management



Scientific Diving

History of Scientific Diving

1844: Henri Milne-Edwards (25 ft.)

1949: C. Limbaugh and A. Rechnitzer start using Aqualungs at UCLA

1951: Initial SIO diving safety courses taught by C. Limbaugh

1954: Limbaugh and others publish University of California diving safety rules and regulations

1970s: Emergence of self-regulating programs and standards



AAUS Scientific Diver

History Scientific Diving

1975: United Brotherhood of Carpenters & Joiners of America & AFL-CIO petition OSHA for professional diving operation standards

1977-79: OSHA establishes Commercial Diving Regs.

- scientific diving community included, realizes the immediate effect on dive ops
- SDC cites ruling as too restrictive
- SDC provides data on exemplary exposure-incident statistics and self-regulating standards.

1985: OSHA final rule:
Scientific diving gets exemption



Scientific Diving

History of Scientific Diving

Section 1910.402 Definitions

“Scientific diving is diving performed solely as a necessary part of a scientific, research, or educational activity by employees whose sole purpose for diving is to perform scientific research tasks.”

Scientific Diving

History of Scientific Diving

Section 1910.401: Scope and application

“However, this standard does not apply to any diving operation:

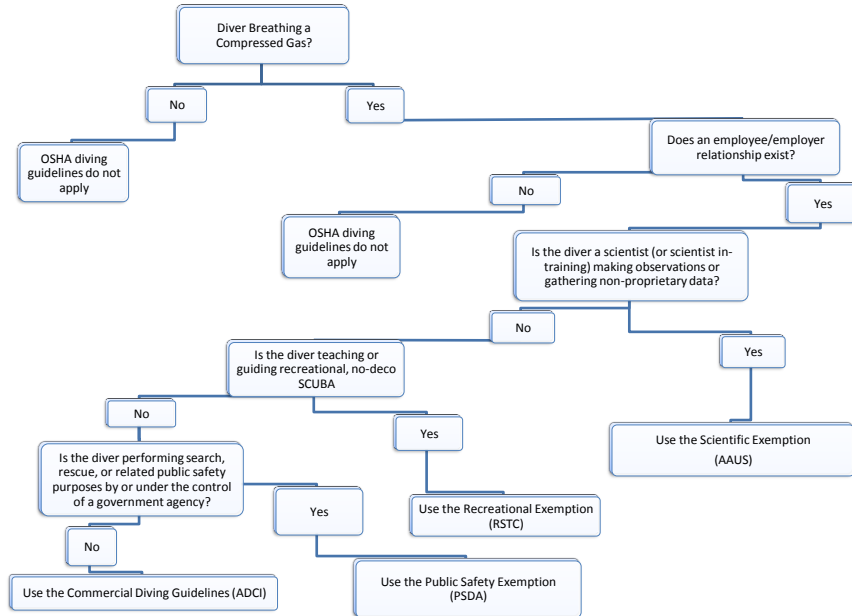
(iv) Defined as scientific diving and which is under the direction and control of a diving program containing at least the following elements:”

- A. Diving Safety Manual
- B. Diving Control Board

Scientific Diving

History of Scientific Diving

- The diving control board consists of a majority of active divers and has autonomous and absolute authority over the scientific diving program’s operations.
- The purpose of the project using scientific diving is the advancement of science; therefore, information and data resulting from the project are non-proprietary.
- The tasks of a scientific diver are those of an observer and data gatherer. Construction and trouble-shooting tasks traditionally associated with commercial diving are not included within scientific diving.
- Scientific divers, based on the nature of their activities, must use scientific expertise in studying the underwater environment and, therefore, are scientists or scientists in training.



Scientific Diving

American Academy of Underwater Sciences



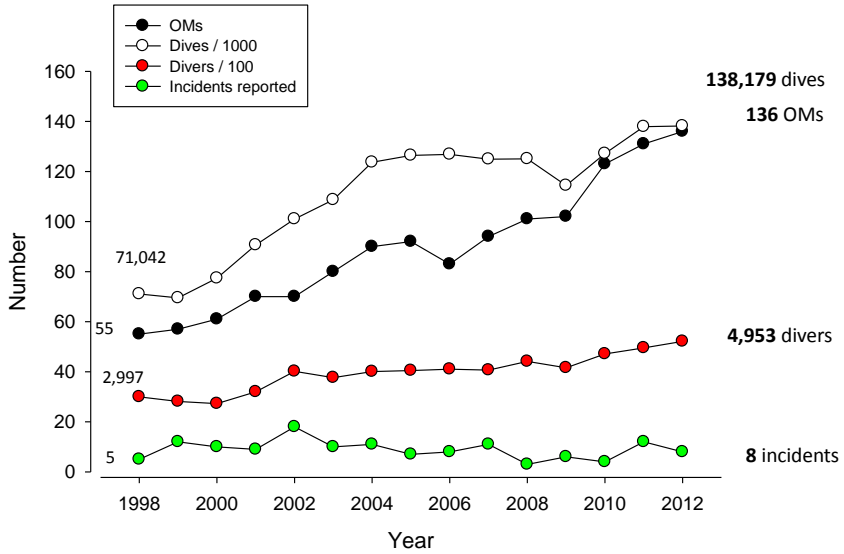
Mission Statement

“to facilitate the development of safe and productive scientific divers through education, research, advocacy, and the advancement of standards for scientific diving practices, certifications and operations.”

www.aaus.org

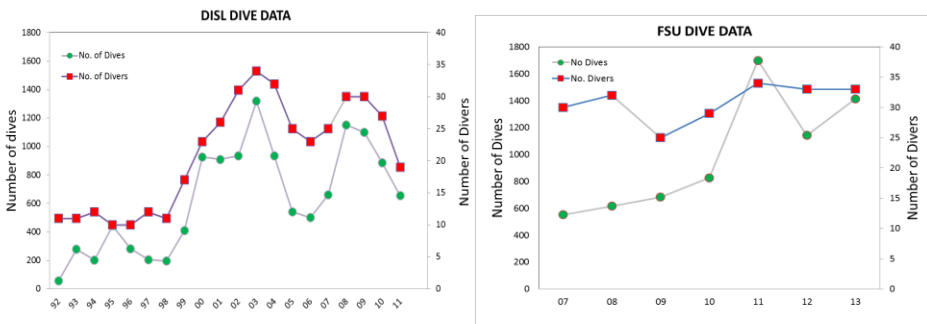
Scientific Diving

Statistics on AAUS members, dives, safety



Scientific Diving

Statistics for DISL, FSU



AAUS Averages

23.7-31.3 average dives/diver/year

38.8-44.5 minutes/dive

AAUS Scientific Diver Standards

Primary contributions

AAUS Standards for Scientific Diving Certification and Operation of Scientific Diving Programs

- standard of the scientific diving community
- followed by all AAUS Organizational members
- used throughout US & many foreign countries
- provides reciprocity b/w institutions

Scientific Diving

AAUS Advantages and Disadvantages

Advantages:

- Reciprocity
- Representation in the community
- Recognition of standards as best practices by the community
- Technical review of advances

Disadvantages:

- Reciprocity is more difficult
- Costs for membership, meetings, maintaining records
- Loss of autonomy
- Requirement for 12 dives/yr

Scientific Diving

Benefits of reciprocity

- Provides diving compatibility for collaborative UW research
 - Verifies that divers comparably equipped, trained
 - Minimizes paperwork
 - Indicates active AAUS membership
- Some AAUS OMs require additional steps to grant reciprocity
 - check-out dive
 - DFA on a yearly basis
- MOU can be enacted with non-AAUS orgs
- Promotes addressing workman's comp and liability coverage beforehand
- May reduce exposure to liability

Scientific Diving

Liability (not Workman's Comp)

Diving From:	Employees	Non-employees
Vessel	Maritime Employees Liability and Protection and Indemnity for crew	Protection and Indemnity
Beach	General Liability	General Liability
Dock	Longshoremen and Harbor Workers?	General Liability?

May not be in effect overseas, especially after six wks

Organizational Members Diving Supervision Structure

- Organizational member dive operations are supervised by both the Diving Control Board (DCB) and the Dive Safety Officer (DSO).
- DCB-Establishes diving policies and acts as a board of appeal for scientific divers.
- DSO-Runs the day-to-day-diving operations including training and scientific diving. Serves under the guidance of the DCB.

Scientific Diving Diving Safety Officer

Core Competencies

- **Professional knowledge:** the scientific process, field work, teaching/communication and management
- **Technical/physical** – field and facility: diving systems, mechanical, electrical, boating, swim, skin and scuba and rescue of demonstration quality
- **Field/office managerial:** organizational, budgetary, resource management, classes, field work, office systems, DCB, divers
- **Facility management:** office, classroom, shop, dive locker, vehicles, vessels, trailers, wharf, dock, pool, compressor system(s), dive equipment
- **Communication:** verbal and written
- **Trainer/Instructor/Advisor:** dive course, diving first aid, equipment and vessel training, dive project resource
- **Enforcement:** standards, divers, DCB, incident investigation



Scientific Diving

Diver Certification

The diver must complete theoretical aspects and practical training for a minimum cumulative time of 100 hours

Theoretical

- Theoretical aspects shall include principles and activities appropriate to the intended area of scientific study



Scientific Diving

Diver Certification

Practical

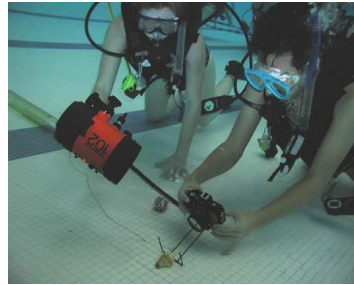
- Must include a checkout dive, with evaluation of skills by the DSO or qualified delegate
- Followed by at least 11 ocean or open-water dives in a variety of dive sites and diving conditions, for a cumulative bottom time of 6 hours
- Training dives following the checkout dive must be approved by the DSO



Scientific Diving

Course format varies among institutions

- 15 week credit course
- 2-3 week intensive workshop
 - advantage: gets researchers into the water faster
 - offered at FSUCML in late spring so undergrad students prepared for Summer Internships
 - offered at FSUCML in late summer so grad students prepared for diving during academic year.

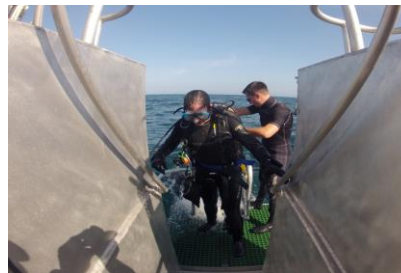


Diving Aboard the R/V Apalachee

State of the art research vessel

Excellent Dive Platform

- catamaran hull
extremely stable
- custom dive platform
- onboard compressor



Scientific Diving

Diver Certification

- Training goes with the student but the employee/employer relationship may or may not
- Awarded by OM DCB
- Includes faculty, post docs, students and staff
- Used throughout US and in many foreign countries



Scientific Diving

Discussion

AAUS Membership

- About half of SAML members; not counting government agencies
- One of seven SAML government agencies
- Two former members
- One exploring application

SAML AAUS Members

ALABAMA -Dauphin Island Sea Lab (DISL)

FLORIDA

- Florida Atlantic University
- Florida Institute of Technology
- Florida International University
- Florida State University (FSML)
- Nova SE University Oceanographic Center
- University of Florida (Whitney)
- University of South Florida
- University of Miami/RSMAS

GEORGIA - The University System of Georgia x 2

LOUISIANA - Louisiana Universities Marine Consortium (LUMCON)

MARYLAND

- University of Maryland Center for Environmental Science x2
- University of Maryland College Park

MISSISSIPPI - University of Mississippi (NIUST)

NORTH CAROLINA

- Duke University Marine Laboratory
- East Carolina University
- University of North Carolina at Wilmington

SOUTH CAROLINA - Coastal Carolina University

TEXAS

- Texas A&M University - Corpus Christi
- The University of Texas at Austin (MSI)

VIRGINIA –

- Virginia Institute of Marine Science

• STATE AGENCIES

- FWC/Fish and Wildlife Research Institute

PRIVATE INSTITUTIONS

- Bermuda Institute of Ocean Sciences (BIOS)
- Mote Marine Laboratory x 2
- Smithsonian Institution X 3

Non-AAUS Programs

How do they differ?

- University of West Florida (UWF)
 - Has a Diving Safety Officer
 - Closely follow AAUS training requirements & diving manual
 - Reciprocity not mentioned
 - “The Dive Safety Program is to ensure that all scientific diving under the auspices of the UWF & the Marine Services Center (MSC) is conducted in a manner that will maximize the protection of scientific divers from accidental injury &/or illness. “

Scientific Diving

Summary

- Diving is a tool...that requires specialized risk management



Scientific Diving

Thank you...

QUESTIONS and DISCUSSION?



Scientific Diving

Summary

- SAML
 - DCBs and Safety Manuals?
 - Teach science diving?
 - DSOs?
 - Reciprocity?
 - Liability (Does Risk Management know?)

SAML but not AAUS Members

- Center for Marine and Wetland Studies
- College of Charleston Grice Marine Laboratory
- Environmental Protection Agency Gulf Ecology Division
- Florida Gulf Coast University Vester Field Station
- Florida Institute of Oceanography Keys Marine Laboratory
- Hampton University Dept. of Marine and Environmental Science
- Jacksonville University Marine Science Research Institute
- Lamar University Center for Coastal and Marine Studies
- Louisiana Dept. of Wildlife and Fisheries Grand Isle Marine Lab
- Medical University of South Carolina Marine Biomedicine and Environmental Sciences
- Morgan State University Patuxent Environmental and Aquatic Research Center
- New College of Florida Pritzker Marine Laboratory
- NOAA-NMFS Galveston Laboratory
- NOAA-NOS Coastal Center for Environmental Health and Biomolecular Research
- NOAA-NOS NOAA Coastal Services Center
- NOAA-NOS NOAA-NOS, Beaufort Lab
- NOAA-NOS NOAA-NOS Oxford Lab
- North Carolina State University Center for Marine Sciences and Technology
- Perry Institute for Marine Science
- Sanibel-Captiva Conservation Foundation
- SC Sea Grant Consortium
- South Carolina Department of Natural Resources Marine Resources Research Institute
- Texas A&M University Geochemical and Environmental Research Group
- University of South Carolina Belle W. Baruch Institute
- University of Southern Mississippi Gulf Coast Research Center
- University of Texas, Pan American Coastal Studies Laboratory