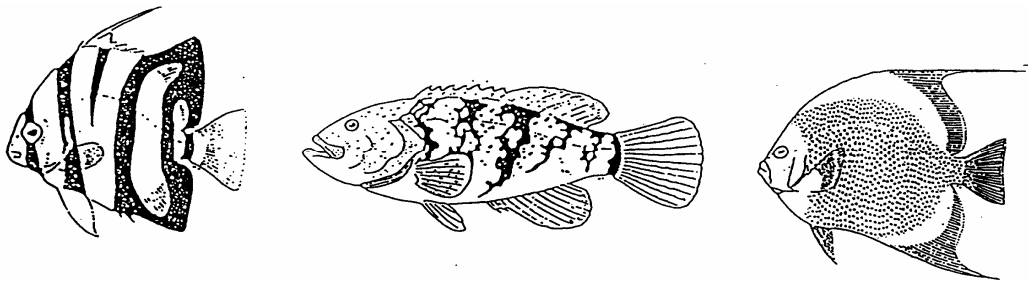


# **MAST ACADEMY OUTREACH**

## **MARINE SKILLS PROGRAM**

### **Miami Seaquarium**

#### **Post-site Package**



**MAST Academy**

**Maritime and Science Technology High School**

**Miami-Dade County Public Schools**

**Miami, Florida**

**MAST ACADEMY OUTREACH**

**MIAMI SEAQUARIUM**

**POST-SITE PACKAGE**

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## Teacher Instructions

1. Make copies of post-site activities for each student. Omit answer key.
2. One activity in Additional Post-Site Activities requires needles, thread, straws, and cut-outs of an Orca whale and its food.
3. Have students complete the lessons.
4. Grade the post-site activities and total points.
5. Combine pre-, on- and post-site scores to compute a total grade for all the activities.

## Animal Related Careers at the Miami Seaquarium

**Read the following descriptions for animal related careers at the Seaquarium. Complete the activity on page 5.**

<b>Career</b>	<b>Description</b>	<b>Responsibilities</b>	<b>Qualifications</b>
Educator	Responsible for quality instruction and interpretation of animal and conservation information for children and adults.	Lead guided tours, instructional field trips, sleepovers, outreaches, summer camp classes, scout programs and educational special events; greet education groups; staff exhibits, interact with guests; perform educational narrations.	Degree seeking or bachelor's degree in a related subject; excellent communication and public speaking skills; interest in environmental education and zoology; CPR, First Aid and SCUBA desirable.
Manatee Husbandry Assistant	Responsible for the diet, care, health and supervision of injured, orphaned and resident manatees.	Manatee presentations and guest interaction at manatee exhibit; assisting veterinarian with medical procedures, distribution of manatee diet (cutting and preparing vegetables); administering medicine.	Degree seeking or a bachelor's degree in a related subject; CPR, First Aid and SCUBA certification desirable; former experience preferred.
Special Exhibits Assistant	Responsible for preparation, maintenance, care and diet of reptile, bird and aquaria exhibits as well as area watches; guest interaction and animal presentations	Animal handling, diet preparation, cleaning and sanitizing work and food preparation areas as well as extensive record keeping.	Degree seeking or a bachelor's degree in a related field; former animal care experience and excellent communication skills; CPR, First Aid and SCUBA certification desired.
Apprentice Animal Trainer	Responsible for acquiring basic knowledge of animal histories, behavior principles and animal husbandry; maintain safe and sanitary animal environments; perform daily husbandry tasks; perform supportive roles in education.	Food preparation, disinfection procedures, vitamin administration, record keeping and animal observations; assist in maintaining animal behavior; assist in animal restraint and transport.	Degree seeking or a bachelor's degree in a related field; excellent communication skills and public speaking skills; former experience working with animals; mandatory swim test; CPR, First Aid and SCUBA certification desirable.
Marine Mammal Trainer	Responsible for major care and training of animals, perform shows for park guests.	Feeding of animals; monitoring behavior and health of animals; teach marine mammals to perform "husbandry behaviors" such as presenting flukes to obtain blood samples.	Associates or bachelor's degree in a related subject such as zoology, biology, education, psychology, etc.; previous work with animals; excellent communication and public speaking skills; strong swimming skills; CPR, First Aid and SCUBA certification desirable

## One Day as the Miami Seaquarium Manager

Pretend you are the manager of the Miami Seaquarium. It is your job to assign various tasks to the appropriate personnel. Use the chart on the previous 2 pages to decide who should perform the following tasks. Remember, you must choose from one of the following careers: educator, manatee husbandry assistant, special exhibits assistant, apprentice animal trainer or marine mammal trainer. (You may use more than one.)

1. The manatees are hungry. Who would feed them? \_\_\_\_\_
  
2. A new dolphin's training must begin. Who would train the dolphin?  
\_\_\_\_\_
  
3. All the animals need their vitamins. Who would do this?  
\_\_\_\_\_
  
4. A lecture series on marine mammals will be offered to the public. Who would organize and coordinate this? \_\_\_\_\_
  
5. A seal must be moved to another location. Who would assist in this job?  
\_\_\_\_\_
  
6. Recordkeeping of animal diet and behavior must be improved. Who would be involved in this? \_\_\_\_\_
  
7. Registration for summer camp is beginning. Who would handle this?  
\_\_\_\_\_
  
8. The whales must learn "husbandry behaviors." Who would do this?  
\_\_\_\_\_
  
9. New exhibits are being planned for the future. Who will care for and maintain these exhibits? \_\_\_\_\_
  
10. Who would research basic knowledge of animal histories and behavior principles? \_\_\_\_\_
  
11. A new dolphin show is being planned. Who would "perform" the show?  
\_\_\_\_\_

## Careers in Marine Mammal Science

**Read the following information and then complete the lesson on the next two pages.**

### **What is marine mammal science?**

There are about 100 species of aquatic or marine mammals that depend on fresh water or the ocean for part of all of their life needs. These species include pinnipeds, which are seals, sea lions, fur seals, and walruses; cetaceans, which are whales; ocean and river dolphins, and porpoises; sirenians, which are manatees and dugongs; and some carnivores, such as sea otters and polar bears. Marine mammal scientists try to understand these animals' genetic, systematic, and evolutionary relationships; population structure; community dynamics; anatomy and physiology; behavior and sensory abilities; diseases; geographic distributions and ecology.

### **How difficult is it to pursue a career in marine mammal science?**

Working with marine mammals is appealing because the work is personally rewarding. However, competition for positions is keen. Marine mammal scientists are hired because of their skills as scientists, not because they like or want to work with marine mammals.

A strong academic background in basic sciences, such as biology, chemistry, and physics, coupled with good training in mathematics and computers, is the best way to prepare for this career. Persistence and diverse experiences make the most qualified individuals. Often developing a specialized scientific skill, such as acoustics analysis, biostatistics, genetic analysis or biomolecular techniques, provides a competitive edge.

### **What are typical salaries in marine mammal careers?**

Marine mammal scientists enter this field for the satisfaction of the work, not for the money-making potential of the career. Salaries vary greatly with governmental and industry jobs having the highest pay. Salary levels will increase with years of experiences and graduate degrees, but generally remain low considering the amount of experience and education needed. High competition in this field most likely will keep salaries at a modest level.

A recent (1990) survey of 1,234 mammalogists conducted by the American society of mammalogists indicated that 42.7% of the respondents earned \$40,000/year. The salary range that included the most respondents (21.2%) was the \$30,000-\$40,000 range.

### **What types of jobs involve marine mammals?**

Most jobs are not as exciting or glamorous as popular television programs make them seem. Marine mammal studies often involve long, hard, soggy, sunburned days at sea, countless hours in a laboratory, extensive work on computers, hard labor such as hauling buckets of fish to feed animals, followed by hours of cleanup, writing numerous reports, and preparing tedious grant applications.

Examples of marine mammal jobs include researcher, field biologist, fishery vessel observer, laboratory technician, animal trainer, animal care specialist, veterinarian, whale watch guide, naturalist, educators at all levels, and government or private agency positions in legislative, management, conservation, and animal welfare issues. Many marine mammal scientists work with museum displays and collections as a curator, an artist or an illustrator, or a photographer or a film maker.

### **Who employs marine mammal scientists?**

A variety of international, federal, state, and local government agencies employ marine mammal scientists for positions in research, education, management, and legal/policy development. When oceanic operations, such as oil and gas exploration, production, and transportation, affect marine mammals, industry often hires marine mammal experts. Because commercial fishing operations can conflict with marine mammal conservation, some fishing organizations hire marine mammal scientists. Many environmental organizations, zoos, and museums hire marine mammal scientists.

### **What education is necessary to become a marine mammal scientist?**

In high school, a broad education is essential. Courses such as biology, chemistry, physics, mathematics, computer science, and language will provide a good educational base.

Most entry level jobs require a B.S. degree, with a major in biology, chemistry, physics, geology, or psychology. A minor in any science, computer science, mathematics, statistics, or engineering also can be helpful. Good language and technical writing skills are essential. Because marine mammals are worldwide, foreign language training is often helpful.

Generally, undergraduate students will concentrate on a basic science curriculum and rarely have an opportunity to take courses related to marine mammal science. Specialization generally comes later through practical work experience or while working toward an advanced degree. The master's degree is usually the first opportunity college students have to specialize in marine mammal science.

## A Day in the Life of a Marine Mammal Scientist

After reading the previous page, use your imagination and creativity to write a description of what it would be like to be a marine mammal scientist for a day. Begin by choosing a specific marine mammal, a specific location in the world and a specific type of organization (i.e. museum, government agency, commercial fishery, etc.) Then follow the format below. Remember, your job may not be 9:00 to 5:00. Taking care of and studying animals takes place 24 hours a day. So, you'll also have to choose the shift(s) you are working.

My employer is \_\_\_\_\_

The marine mammal I am studying is \_\_\_\_\_

The title of my position is \_\_\_\_\_

I work in \_\_\_\_\_

Shifts	Duties and Responsibilities
8:00a.m.-12:00p.m.	
12:00p.m.-4:00p.m.	
4:00p.m.-8:00pm	
8:00-p.m.-12:00a.m.	
12:00a.m.-4:00a.m.	
4:00a.m.-8:00a.m.	



## Is Marine Mammal Science For Me?

**Your answers to the following questions will help you determine if marine mammal science is a career for you.**

1. Are you interested in anatomy, physiology, taxonomy, ecology, genetics, conservation, psychology, or medicine? \_\_\_\_\_

If yes, which one? \_\_\_\_\_

2. What species or group of marine mammals would you be most interested in studying? \_\_\_\_\_

3. Would you like a career that involves field or laboratory work?

\_\_\_\_\_

4. Would you like a career that involves care of animals, teaching, research or legislative/policy matters? \_\_\_\_\_

5. Would you like to work for government, industry, academia, museums, or private organizations, or would you rather be self-employed?

\_\_\_\_\_

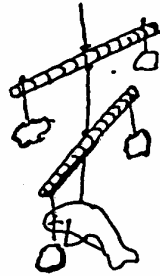
6. In what part of the country would you like to work?

\_\_\_\_\_

7. Do you like being around and in the ocean? \_\_\_\_\_

## Additional Post-Site Activities

1. Prepare a report on one of the fish in the Seaquarium Reef Tank.  
Tell:
  - A. What does it eat? Where does it eat? (surface, midwater, bottom)
  - B. How does it look when it is young? When it is mature? Tell about the color changes and pattern changes.
  - C. What eats it? How does it protect itself?
  - D. Where does it live? Does it spend part of its life in the mangrove swamp?
  - E. Does it travel in schools? How does that help the fish survive?
  - F. What does the caudal tail tell about the fish?
2. Make an ORCA MOBILE like the one below. Include different foods of Orca. Use needle and thread, soda straws, and cut-outs of pictures. Knot threads above and below straws. Get creative!



Build a diorama of a coral reef or a mangrove swamp. Use the pre-site coral reef and mangrove lessons for information.

The School Board of Miami-Dade County, Florida, adheres to a policy of nondiscrimination in employment and educational programs/activities and strives affirmatively to provide equal opportunity for all as required by:

**Title VI of the Civil Rights Act of 1964** - prohibits discrimination on the basis of race, color, religion, or national origin.

**Title VII of the Civil Rights Act of 1964, as amended** - prohibits discrimination in employment on the basis of race, color, religion, gender, or national origin.

**Title IX of the Education Amendments of 1972** - prohibits discrimination on the basis of gender.

**Age Discrimination in Employment Act of 1967 (ADEA), as amended** - prohibits discrimination on the basis of age with respect to individuals who are at least 40.

**The Equal Pay Act of 1963, as amended** - prohibits sex discrimination in payment of wages to women and men performing substantially equal work in the same establishment.

**Section 504 of the Rehabilitation Act of 1973** - prohibits discrimination against the disabled.

**Americans with Disabilities Act of 1990 (ADA)** - prohibits discrimination against individuals with disabilities in employment, public service, public accommodations, and telecommunications.

**The Family and Medical Leave Act of 1993 (FMLA)** - requires covered employers to provide up to 12 weeks of unpaid, job-protected leave to "eligible" employees for certain family and medical reasons.

**The Pregnancy Discrimination Act of 1978** - prohibits discrimination in employment on the basis of pregnancy, childbirth, or related medical conditions.

**Florida Educational Equity Act (FEEA)** - prohibits discrimination on the basis of race, gender, national origin, marital status, or handicap against a student or employee.

**Florida Civil Rights Act of 1992** - secures for all individuals within the state freedom from discrimination because of race, color, religion, sex, national origin, age, handicap, or marital status.

**School Board Rules 6Gx13- 4A-1.01, 6Gx13- 4A-1.32, and 6Gx13- 5D-1.10** - prohibit harassment and/or discrimination against a student or employee on the basis of gender, race, color, religion, ethnic or national origin, political beliefs, marital status, age, sexual orientation, social and family background, linguistic preference, pregnancy, or disability.

*Veterans are provided re-employment rights in accordance with P.L. 93-508 (Federal Law) and Section 295.07 (Florida Statutes), which stipulate categorical preferences for employment.*

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