# 4-H
# Marine Biology Proficiency

## OVERVIEW

The 4-H Marine Biology Proficiency program helps you learn what you need to know about your 4-H project. Your project leader will assist you in setting and achieving your goals. Through your project, you will acquire an understanding of the principles of ocean and the ocean creatures.

There are many resources to help you learn more about your project:

◊ The University of California Davis has free resources available online by visiting: http://anrcatalog.ucdavis.edu/4HYouthDevelopment/. This site lists a variety of project materials and resources recommended for use in your project.

◊ The Del Norte County 4-H Resources and Lending Library at our county 4-H Office includes other books, dvds, and reference materials that can be checked out be members and leaders.

◊ Check to see if there are organizations in your community that conduct educational activities and shows. Local groups can be an excellent source of help and information.

There are five levels in the Project Proficiency Program. You may choose how many levels you wish to complete:

- Level I - "Explorer", you begin to learn about many different aspects of the marine environment.
- Level II - "Producer", you learn about protecting and how we benefit from the marine environment.
- Level III - "Consumer", you will learn about the different occupations and what they use to catch their prey.
- Level IV - "Leader", allows you to show your own leadership potential.
- Level V - "Researcher", you carry out a demonstration or experiment about the marine environment, and prepare a paper or portfolio.

As you work through the proficiency program, your leader will date each skill item as you complete it. When all items in a proficiency level are completed, your leader will sign the Certificate of Achievement.

# MARINE BIOLOGY
## Level I - Explorer

Date Completed

Name: _____

_____ 1. Explain seven beach safety tips and practice them at the beach.

_____ 2. Identify five species of marine mammals and describe where they can be found.

_____ 3. Describe the marine food web.

_____ 4. Identify the parts of a wave and describe how waves affect sea life.

_____ 5. Define the following terms:

| | | |
|---|---|---|
| a. phytoplankton | f. crustacean | k. red tide |
| b. zooplankton | g. invertebrate | l. scavenger |
| c. estuary | h. mammal | m. herbarium |
| d. wetlands | i. mollusk | |
| e. algae | j. ecology | |

_____ 6. Explain the influence of the moon and the sun on tides.

_____ 7. Collect and identify ten seashells and explain how a seashell is formed.

_____ 8. Identify five intertidal animals and three intertidal plants.

_____ 9. Describe the regulations which protect marine plants and animals that live in the ocean, intertidal zone, wetlands, estuaries, dunes and marshes.

_____ 10. Complete an art project using some aspect of your project such as shell collage, sand painting, beach casting, fish print or rubbing, etc.

_____ 11. Identify seven marine birds and describe the differences in their bills, feet and wings. Record when and where each was sighted. Share this information with other members.

_____ 12. Find six examples of pollution in marine areas. Explain how each could be prevented.

_____ 13. Collect samples of and explain the differences between sand particles found on two different beaches.

_____ 14. Identify five wildflowers found in sand dunes and five wildflowers found in salt marshes. Record when and where each was sighted. Share this information with other project members. Attach you report.

# MARINE BIOLOGY
## Level I - Explorer

Date Completed

Project: _____

_____ 15. Identify the parts of a fish from a diagram or live example and explain the functions of the fins and the scales.

_____ 16. Define hypothermia and demonstrate the H.E.L.P. and Huddle positions.

Member Name: _____ Date: _____

Project Leader's Signature: _____ Date: _____

# MARINE BIOLOGY
## Level II - Producer

Date Completed

Name: _____

_____ 1. Describe ten ways we can help keep our oceans, beaches, rivers and land as close to natural as possible.

_____ 2. Explain the importance of estuaries to marine life.

_____ 3. Name and describe four dangerous marine animals and explain why they may be dangerous.

_____ 4. Assemble a beach safety kit.

_____ 5. Visit an established operation or expert in the field (such as a commercial fishing vessel, cannery, biologist, etc.) and learn what they do and how they do it.

_____ 6. Describe the function of dunes.

Using your local news media, identify a policy issue related to your project and explain its significance to another person.

_____ 7. Explain El Nino and describe how it affects the seafood industry.

_____ 8. Participate in a project related clean-up activity.

List five causes of boating accidents and explain how they can be avoided.

_____ 9. Explain upwelling and its effect on climate and marine life.

_____ 10. Collect and identify three different phytoplankton and three different zooplankton and explain how they are different.

_____ 11. Make a collage of photographs or drawings illustrating man's use of the marine environment and display it at a local fair, county 4-H event or similar public event.

_____ 12. Prepare one food dish from fresh fish and one food dish from marine algae.

_____ 13. Name five types of fresh fish and/or shellfish produced by aquaculture.

_____ 14. Identify and describe three different types of fishing vessels and three different types of fish harvesting gear. Explain which vessel uses which gear to harvest which fish.

_____ 15.

# MARINE BIOLOGY
## Level II - Producer

Project: _____

Date Completed

Identify three types of ropes and five knots used in the industry. Compare their relative strengths and where/how each might be used.

Determine the age of three fish samples by collecting and analyzing their scales.

Collect, press and mount three different algae and describe their physical characteristics.

Member Name: _____ Date: _____

Project Leader's Signature: _____ Date: _____

# MARINE BIOLOGY
## Level III - Consumer

Date Completed

Name: _____

| | |
|---|---|
| _____ 1. | Design, construct, rig and use one item for this project, such as a seine net, plankton net, poke pole, crayfish pot, etc. |
| _____ 2. | Explain how seafood gets from the sea to the dinner table. Explain the career options in the various marketing channels. |
| _____ 3. | Explain fishing license regulations. |
| _____ 4. | Describe two commercial uses of marine algae. |
| _____ 5. | Describe the quality characteristics you would look for when purchasing fresh or frozen seafood. |
| _____ 6. | Name and describe five marine careers and required qualifications. |
| _____ 7. | Identify five potential ocean related summer jobs. |
| _____ 8. | Contact local, state or national association related to your project and determine what this association has to offer its membership. |
| _____ 9. | Invite a commercial fisherman or industry representative to discuss local policy issue with your project group or club. Introduce the speaker to your group. |
| _____ 10. | Give three examples of Native American historical use of marine resources and explain how they collected and prepared each item. |
| _____ 11. | Compare the food habits of two species of fish by analyzing their stomach contents. |
| _____ 12. | Demonstrate how to preserve fish utilizing two different methods. |
| _____ 13. | Diagram the major currents of the North Pacific Ocean. |
| _____ 14. | Record and analyze the distribution of one organism across the intertidal zone. |
| _____ 15. | Describe the life cycle/history of one marine mammal. |
| _____ 16. | Keep a personal reference library of literature that will be helpful in your project. |

# MARINE BIOLOGY
## Level III - Consumer

Date Completed

Project: _____

_____ 17. Assist with marine habitat improvement project.

_____ 18. Prepare a marine educational display for a local or county event.

Member Name: _____ Date: _____

Project Leader's Signature: _____ Date: _____

# MARINE BIOLOGY
## Level IV - Leader

Date Completed

Name: _____

_____ 1. Explore and sample one recreational use of the marine land such as sailing, scuba diving, sand castle building, wind surfing, boating, fishing, etc.

_____ 2. Select one species of marine life such as whale, shark, crab, etc. Name and describe ten varieties of that species and describe habitat, migratory habits and reproductive habits of the species. Attach the list.

_____ 3. Serve as a Junior or Teen leader in this project for one year.

_____ 4. Assist young members in designing and constructing needed equipment.

_____ 5. Prepare teaching materials for use at a project meeting.

_____ 6. Develop and put on a demonstration or judging event or train a junior team for an event.

_____ 7. Speak on a project-based subject before an organization other than your 4-H group.

_____ 8. Assist younger members in actually learning a specific topic in the project.

_____ 9. Organize or participate in a public forum discussion/debate on a local, state, national or global issue related to your project.

Member Name: _____ Date: _____

Project Leader's Signature: _____ Date: _____

# MARINE BIOLOGY
## Level V - Researcher

Date Completed

Project: _____

_____ 1. Develop your own special project related activity. Chart your progress, plan the activities, analyze successes and problems, and report on findings.

_____ 2. Assist a local organization with a marine research project.

_____ 3. Report on the results of a demonstration comparing measurable differences in some aspect of your project.

_____ 4. Prepare a paper of 300 words or more on one of the following topics:

A. Commercial markets and methods of marketing
B. Global fishing policies and problems
C. The effects of temperature and light on marine organisms
D. Ocean currents
E. Marine mammals
F. Aquaculture
G. History of the whaling industry
H. Endangered marine species
I. Wetland species
J. Local marine land pollution
K. Other

_____ 5. Prepare a speech or illustrated talk to orally summarize your findings and present at a club, project meeting or educational event.

Member Name: _____ Date: _____

Project Leader's Signature: _____ Date: _____

# Certificate of Achievement

*This certifies that*

_____

*has completed the Marine Biology Proficiency*

*in Del Norte County.*

| *Explorer* | *Producer* | *Consumer* | *Leader* | *Researcher* |
|---|---|---|---|---|
| _____ | _____ | _____ | _____ | _____ |
| *Date* | *Date* | *Date* | *Date* | *Date* |
| _____ | _____ | _____ | _____ | _____ |
| *Initials* | *Initials* | *Initials* | *Initials* | *Initials* |