the opportunity to share their ideas with a partner, give and receive feedback and adjust designs if necessary.

Third, students begin making their super marine predator or prey by selecting from a variety of art materials. Students may draw, paint, create multimedia artwork or attempt a 3D project.

Fourth, students prepare an exhibit and presentation of their super creations. They should include the name of their animal, an explanation of animal adaptations and the predator or prey they are equipped to overcome.

Wrap Up
Ask students to vote on the two most impressive hunters, or predators, and escape artists, or prey. Divide the class into two groups. Each group is assigned one of the winning animals and each must defend how their creation is better adapted for different situations provided by the teacher.

- For example: if both animals were swimming in an area with limited light, who would find food faster?
- Which animal would be more successful at protecting their young?
- Students may pose additional questions regarding different situations.
- The teacher determines the winner of each debate and the winning animals are named the most impressive predator or prey!

ADAPTATION EXAMPLES:
Shark Multiple rows of teeth
Seal Can hold breath up to 30 min in length
Sea lion Can dive nearly 274 m underwater
Barracuda Sleek bodies allow for speed up to 40 kmh
Sea Anenome Uses venomous tentacles to paralyze passing prey
Moray Eel Two sets of jaws to grab prey and eat larger aquatic animals
Toadfish Camouflages into the sea floor to hide from prey

Additional Resources

Websites
- http://animals.nationalgeographic.com/animals/mammals/bottlenose-dolphin/
- http://www.gtopp.org/
- http://www.tunaresearch.org/
While animals have amazing adaptations that help them survive in the wild, we as humans have the unique role on our planet of making sure we protect wildlife and wild places when they need help. Animals can also benefit when scientists conduct research to learn new things about them and when they educate others about the lives and needs of wildlife.

Warm Up
Pose the following questions to discuss as a class:
• Do you ever wonder what it would be like to have a career in caring for wildlife on the land or in the ocean?
• What are some jobs in the field of animal protection and care? (List on the board).
• What are the goals of these jobs?
• What would it be like to spend a day in their boots… or flippers?

First, add the jobs from the list below to the jobs already listed on the board. Ask students to continue to brainstorm about the main responsibilities each person has in caring for animals.
• **Veterinarian:** care for sick and injured animals, both domestic and wild
• **Aquarist:** care for aquarium animals, their display habitats and teach others how to protect them in their natural habitats
• **Field researcher:** learn more about animals and how we can protect them
• **Educator:** teach others about the importance of conservation and connecting with nature
• **Coast Guard:** protect marine animals and habitats

Second, discuss how the people in these and other careers are dedicated to caring for the ocean. Explain how this type of commitment is very important for creatures that live in and around the ocean. Ocean habitats face real threats such as pollution, overharvesting of fish, rising sea levels and coastline development. Without dedicated individuals who care about nature, oceans and the animals that live within them could be taken for granted and destroyed.

Get Started
STEP 1: Provide students with Activity Sheet 1 and ask them to take notes of the following as they watch short videos about specific marine careers:

**DISCOVER MARINE CAREERS**
- **Marine Biologist:** https://www.youtube.com/watch?v=EAZvuxkW8kY
- **Oceanographer:** https://www.youtube.com/watch?v=kxb-Kje0ZBc
- **Animal Curator & Herpetologist:** https://www.youtube.com/watch?v=UZFqgztUYSs
- **Wildlife Biologist:** https://www.youtube.com/watch?v=MmCCrV1Rl9Y
- **Federal Wildlife Officer:** https://www.youtube.com/watch?v=Uok3GhQ8N90
• Job titles
• Job responsibilities
• Job challenges
• Questions about each career

Suggest students write notes down for each career or take notes following each video as a class. Take some time to investigate students’ questions about each career. Based on what they learned from the series of short video clips, students will choose a career that they think they would enjoy the most.

**STEP 2:** Students select a career and create a shield. Provide students a copy of Activity Sheet 2 and have them fill out each section of the shield. Once completed, explain to students that throughout history, people have worn or displayed signs, such as badges, shields or crests of arms, to show their commitment to their family, important causes or jobs. These signs have often included names, titles, slogans, mottos or symbols related to a field of work.

**Wrap Up**

Give students the opportunity to present their shields to the class. Then display all of the shields on a bulletin board with the title, “Mr./Miss./Mrs./Dr. _______ class defends animals!”

**Websites**

• NOAA’s OceanAGE Careers site with career profiles and other useful information: http://oceanexplorer.noaa.gov/edu/oceanage/welcome.html
• Monterey Bay Aquarium information on science careers: http://www.montereybayaquarium.org/education/science-careers
• 10 Things You Can Do to Save the Ocean: http://ocean.nationalgeographic.com/ocean/take-action/10-things-you-can-do-to-save-the-ocean
• Animal Care: https://seaworldparks.com/en/seaworld-sandiego/Animals/Animal-Care/
• Caring Together For Animals: http://www.georgiaaquarium.org/conserve/caring-for-animals

© 2016 Disney/Pixar
DIVE INTO DATA! Use this data sheet to collect interesting information about how people care for animals.

Name and Grade
Design Your Own Crest

Fill in each numbered section of the crest with the pictures or words as described below.

1. Write: Your Name & Job Title
2. Write: TO PROTECT then draw a picture and write the name of the species
3. Write: THAT LIVES IN then write or draw the type of habitat
4. Write: BY then write a conservation action
5. Draw yourself in your career, doing your job and protecting animals.
6. Write a slogan on the scroll below the shield.

Colour Symbolism
Colours have certain meanings in different cultures. Using this chart, consider the meaning of the colours you use in your crest.

Green=HOPE  Purple=JUSTICE  Blue=LOYALTY
Silver=PEACE  Yellow=GENEROSITY  Red=SINCERITY
The marine sciences include a number of diverse career choices that involve people and jobs that help protect oceans and their inhabitants. We see a few of these careers represented in Disney•Pixar’s Finding Dory, but there are many more!

**Warm Up**

Students view a series of videos that showcase different disciplines in the marine career field. As students watch each video focused on a different career, ask them to identify and write down the central figure’s main responsibilities. They should be prepared to discuss what parts of the job they think contribute to caring for and protecting marine animals.

**Video 1: Marine Biologist** – Ask students to speculate about what it would be like to be a marine biologist for a day. View an 8-minute video of a student, Ayana Johnson, who takes viewers through a day that involves her field work, research and studies. [http://science360.gov/obj/video/9fcb0d53-2352-437c-8702-f6d408467e39/profiles-scientists-engineers-marine-biologist](http://science360.gov/obj/video/9fcb0d53-2352-437c-8702-f6d408467e39/profiles-scientists-engineers-marine-biologist)

**Video 2: Aquarist** – Ask students what they think an aquarist does on a daily basis. What does the job title tell them? What type of responsibilities might be expected? Would students be prepared to do chores that range from mopping the floor to preparing aquatic food? As part of their research, students will view an 11-minute video of Jonathan Blue’s visit to the New England Aquarium as a volunteer aquarist for a day. They will learn what it takes to care for thousands of fish in dozens of exhibits, including the massive 757,000 litres Giant Ocean Tank. [https://www.youtube.com/watch?v=ebcGriBu0A](https://www.youtube.com/watch?v=ebcGriBu0A)

**Video 3: Chemist** – Ask students why it would be important for a chemist to work with marine animals. How does lab work, field work and mentoring graduate students contribute to Jon Wilker’s career as a chemist? [http://science360.gov/obj/video/18fd5c84-e871-4525-8e4e-be577fed5874/profiles-scientists-engineers-chemist](http://science360.gov/obj/video/18fd5c84-e871-4525-8e4e-be577fed5874/profiles-scientists-engineers-chemist)

**Get Started**

**STEP 1:** Students will choose one marine science career to research. First, divide the class into groups of 9. Distribute Activity Sheet 1 and ask students to carefully cut out each of the marine career trading cards for all three sets. Blank cards can be used to assist with group size or to write in a different career that is not provided. Once the cards have been cut out, have each student select one of the marine careers to explore. Each card provides students with a broad overview of the career they chose with online links for further exploration.

**STEP 2:** Have students visit relevant websites to become experts on their career in the marine sciences, taking notes about the following topics...

- What are the job responsibilities of your selected career?
- What would you need to study in school and for how long? What type of schooling and training would you receive?
- What were key factors in your career decision?
- How does your job directly or indirectly take care of ocean life?

**STEP 3:** Students will write a career report to share with the class. Reports can take
many formats including speaking from the point of view of a scientist in the field; pretending to be at a news conference about “your” latest discovery and answering questions from “reporters”; creating a trifold poster about your career, etc.

**STEP 4: Solving Ocean Problems**

Now that students have become experts in various marine careers, ask them to recall different problems faced by the career they studied. In their research, did they come across other professionals who would collaborate with them? To illustrate how various marine careers work together, show students a short video clip showcasing a real life situation where members representing many marine careers came together to solve a problem facing sea turtles. [https://www.youtube.com/watch?v=tmZGdDBizo8&feature=youtu.be](https://www.youtube.com/watch?v=tmZGdDBizo8&feature=youtu.be). After viewing, ask students to list all of the careers represented in the video. How did everyone work together to solve the problem?

**STEP 5:** Ask students to sit in a circle and explain that they will now take on the perspectives of the professionals they researched. Using a ball of yarn, toss the ball to a student who can explain a responsibility of the career they researched. After they have stated their responsibility, ask other students in the circle which of their careers might connect to the student with the ball of yarn, and ask them to explain why. If the connection is correct, the student will toss the ball of yarn while holding the end of the thread to the connected career. Follow this process until all students are connected and have made a web. Discuss how the web of yarn illustrates how marine careers can connect in powerful ways that lead to solutions.

**STEP 6:** Divide students into five groups to collaborate on solving challenges that pose threats to specific species seen in Disney•Pixar’s *Finding Dory*. Each student should represent the career they researched and each group should have multiple careers represented. The focus species can include any of the following.

- Sharks & Rays
- Coral Reefs
- Sea Turtles
- Whales
- Migratory Birds

**STEP 7:** The group will research and hypothesize a threat to one of the listed species and collaborate on a possible solution. Students will conduct online research to find answers to the following questions.

1) What is the threat?
2) What is known about the causes and outcomes of the threat?
3) What does each person know from an area of expertise to identify a solution?
4) Determine an action plan and steps your group might take to initiate the action.

**Wrap Up**

Ask each group to present their species and action plan they created. After each group has presented, ask the class to describe the ways in which their careers worked together. Did any of the solutions they thought of have every career working together? Ask students to think of other issues facing the planet that could be solved with multiple careers working together.

**Additional Resources**

**Websites**

- Information on careers in marine science from OceanLink: [http://oceanlink.info/career/career2.html](http://oceanlink.info/career/career2.html)
Marine Biologist

Scientists in this field study the behaviour and ecology of plants and animals that live in the ocean and their roles in the marine food chain. They also study the effects of pollution on the marine environment.

Learn more and read a profile: http://www.marinecareers.net/shannon-atkinson

Oceanographer

GEOLOGICAL oceanographers study evolution of the ocean floor and the minerals found there.
CHEMICAL oceanographers study ocean chemicals and chemical compounds.
PHYSICAL oceanographers study ocean motion, from gentle currents to powerful tidal waves.

Learn more and read a profile: http://www.marinecareers.net/keil-schmid

Ocean Engineer

Ocean engineers design and build the instruments, equipment, vehicles and structures used in the marine environment. Environmental engineers work to avoid or lessen any harmful impacts humans have on the marine and other environments.

Learn more and read a profile: http://www.marinecareers.net/chad-w-scott

Marine Archaeologist

Underwater archaeologists record shipwrecks, harbours, maritime artifacts and any other type of maritime culture. Their goal is preservation and maintenance of maritime cultural heritage.

Learn more and read a profile: http://www.marinecareers.net/caitlin-zant
Outdoor & Experiential Educator

Outdoor & experiential educators develop programs to engage the public with nature in fun and innovative ways. Educators develop new ways to involve people in conservation and science from developing new technology to sharing stories.

Learn more and read a profile:
http://www.marinecareers.net/anna-switzer

Research Microbiologist

Ocean microbiologists grow bacteria and fungi from the marine environment. They take the DNA out of a sample of bacteria or fungi, and use sequencing to look for different microbes that might be living in those samples.

Learn more and read a profile:
http://oceanexplorer.noaa.gov/edu/oceanage/13kellogg/media/kellogg1.html

Aquatic Veterinarian

Aquatic veterinarians look over the basic health of aquatic animals by conducting physical exams, diagnosing illnesses, taking samples of blood, distributing prescription medications, evaluating behaviour, performing surgical procedures and working with a team of veterinary technicians.

Learn more and read a profile:
http://animalcareers.about.com/od/Health/a/Aquatic-Veterinarian.htm

Public Affairs Specialist

Public affairs specialists are responsible for writing articles, press releases and online content to communicate information to the public for awareness. This individual is often in charge of social media platforms and creates a communications plan to build a relationship with the public through mass media.

Learn more and read a profile:
http://oceanservice.noaa.gov/profiles/oct10/ewald.html
Legislative Specialist

A legislative, or “policy” specialist works with local, state and federal government officials to enact bills and laws that help protect marine species and areas. This individual will often meet with members of a community to educate and build support to enact policy.

Learn more and read a profile:
http://oceanservice.noaa.gov/profiles/nov09/chae.html

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Job Title: ____________________________

Job Description: ____________________________

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Job Title: ____________________________

Job Description: ____________________________

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Job Title: ____________________________

Job Description: ____________________________

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Job Title: ____________________________

Job Description: ____________________________
**Abiotic**: related to physical not living.

**Archaeologist**: a specialist in the study of people and their culture through the investigation of artifacts, inscriptions and monuments.

**Bar graph**: a graph or chart that uses horizontal or vertical columns to visually represent amounts or quantities.

**Biologist**: a scientist who studies living things such as plants and animals.

**Biotic**: relating to living organisms.

**Camouflage**: a physical adaptation that helps an organism blend in with its environment.

**Commercial diver**: a professional who is paid to work below the surface of the water using scuba gear.

**Commercial fisherman**: a professional who fishes in large quantities for profit.

**Consumer**: an organism that does not make its own food and needs to eat other organisms for energy.

**Decomposer**: a living organism at the base of the food web that breaks down dead animals and plants.

**Echolocation**: the process by which animals such as beluga whales locate objects by emitting sounds and hearing the echos as the sound bounces back.

**Ecosystem**: the interaction of all living and nonliving components found within a given area.

**Engineer**: a professional trained to plan, design and construct complicated products, such as machines, systems or structures.

**Filter feeding**: when an animal obtains food by filtering organic matter or microscopic organisms from a current of water as it passes through a part of their body.

**Fragmentation**: the process by which a continuous section of one type habitat is broken up into smaller sections and separated by human-made barriers.

**Global positioning satellite (GPS)**: a system of navigational satellites that can provide accurate data on an object's location.

**Geologist**: a scientist who studies the origin, history and composition of the earth.

**Habitat**: a place where plants and animals have everything they need to survive.

**Latitude**: imaginary lines used to measure the distance North or South from the equator.

**Longitude**: imaginary lines used to measure the distance East or West from the prime meridian.

**Marine**: pertaining to the sea and the plants and animals that live there.

**Microbiologist**: a scientist who studies microscopic organisms.

**Migration**: to move from one place to another in search of the climate or resources (food, water, shelter) needed to survive.

**Oceanographer**: a scientist who studies the ocean.

**Outdoor & experiential educator**: a specialist who uses the natural world as their classroom to teach through direct experiences, focusing on developing skills and increasing knowledge.

**Patterns**: a regular and repeated way in which something happens or appears.

**Photosynthesis**: the process by which a plant uses water, carbon dioxide and sunlight to create their own food.

**Predator**: an organism that captures and eats other organisms to gain energy.

**Prey**: an organism that is captured and eaten by another organism.

**Producer**: an organism that is able to make its own food (i.e. plants, algae).

**Route**: a specific course, way or road for passage or travel.

**Schooling**: when fish swim together in a coordinated group.

**Shoals**: an area of shallow water, such as a sandbar.

**Symbiosis**: a frequent interaction between two different kinds of organisms in which the organisms rely on the behaviour of the other.

**Telemetry**: to take measurements of an animal’s movement using special equipment and send them by radio transmitter to a receiver or by sonic means.

**Tracking**: to monitor the path of an animal’s movement throughout its habitat by using different practices and tools such as recognizing footprints or using GPS.

**Warning colouration**: distinctive colouring, usually bright, that warns predators that an animal tastes bad or is poisonous or venomous.

**Sources**:
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