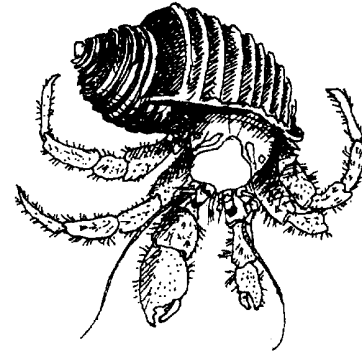


# LIFE WITH PAGOO

FOR SEA: Investigating Marine Science - Grade 5

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### Unit I: Plenty of Plankton

- 1. Pagoo; Chapter 1 Pagoo Might Be A Hermit Crab..... 37**  
 Students are introduced to Pagoo, the hermit crab, as they read Chapter 1 of *Pagoo*, the award winning juvenile book. Ideas are included for creation of a Pagoo Field Guide, with additional information provided as students move through the chapters.
- 2. Getting to Know Plankton..... 57**  
 Classifying plankton pictures, constructing a plankton net for collection, and observing plankton samples introduce students to the world of plankton.
- 3. Design and Construct a Plankter ..... 85**  
 After careful observation of plankton shapes, students construct a plankter that will sink most slowly using a variety of materials.

### Unit 2: Tides

- 1. Pagoo; Chapter 2 Shifting Tides and Changing Hides ..... 91**  
 Students read Chapter 2 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.
- 2. Time and Tides ..... 97**  
 Three activities, “Observing Tidal Changes”, “Tide Tables” and “Comparing Tide Curves”, help students gain familiarity with tidal changes.
- 3. Tide Pools in the Classroom..... 133**  
 Construction of a life-sized, rocky shore tide pool, using papier maché, provides a “home” for the tide pool creatures constructed in subsequent activities.

### Unit 3: Crusty Crustaceans

- 1. Pagoo; Chapter 3 Pagoo Is A Hermit Crab! ..... 139**  
Students read Chapter 3 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.
- 2. Observing Crustaceans..... 141**  
Observation of a living crab (or other crustacean, such as crayfish or lobsters) helps students learn about the structural and behavioral adaptations of crustaceans.
- 3. Who’s Got the Key? ..... 151**  
The concept of identification keys is introduced through practice in using keys and through construction of a simple key.
- 4. Crustacean Key..... 159**  
Students follow a greatly simplified key that focuses on crabs.

### Unit 4: Food Chains and Webs

- 1. Pagoo; Chapter 4 At The Ringside ..... 167**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 4 of *Pagoo*.
- 2. Sea Feasts ..... 169**  
An informational reading on food chains, webs and pyramids.
- 3. As the Plankton Bloom ..... 181**  
Fertilizer is added to two aquarium tanks with fresh or sea water. Daily observations include water temperature, turbidity, and general appearance.
- 4. When the Oxygen is Gone ..... 193**  
Students investigate the responses of fish to exposure to low oxygen levels.

### Unit 5: Tide Pool Adaptations

- 1. Pagoo; Chapter 5 A Ride and a Fall Far, Far From Home ..... 199**  
Students read Chapter 5 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.
- 2. Staying Wet ..... 201**  
After investigation of the adaptations of intertidal animals to keep from drying out, students develop their own strategy for keeping a wet sponge from drying out.

- 3. Wave Withstanders ..... 209**  
Students adapt a “sponge” creature to withstand the force of a wave.
- 4. Papier Maché Tide Pool Creatures ..... 215**  
Instructions are provided for the construction of papier maché tide pool creatures to inhabit the tide pool constructed in Unit 2.

## Unit 6: Barnacles

- 1. Pagoo; Chapter 6 A Starfish, and a Few Barnacles ..... 217**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 6 of *Pagoo*.
- 2. Barnacle Beats ..... 219**  
Students observe live barnacles, including their feeding behavior. An experiment is conducted to explore the relationship of temperature and movement.
- 3. Origami Barnacles ..... 233**  
Instructions for the creation of an origami barnacle are provided as students continue to populate the tide pool constructed in Unit 2.
- 4. Not Just Your Ordinary Research Reports ..... 239**  
A variety of traditional and novel ideas for creative student research reports are included to help students practice effective communication.

## Unit 7: Zonation

- 1. Pagoo; Chapter 7 Room and Board, Travel Included ..... 245**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 7 of *Pagoo*.
- 2. Creating Picture Words and Poems ..... 247**  
Students create picture words and poems. Student examples are included.
- 3. Creating a Rocky Shore ..... 251**  
A paper model of a piling or rocky shore and its inhabitants are created as students examine zonation of animals in response to tidal changes.

## Unit 8: Snails

1. **Pagoo; Chapter 8 Around Snail Cousins' Rock..... 257**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 8 of *Pagoo*.
2. **Snail Tracker ..... 259**  
Students observe and track the movement of snails in an aquarium using measurement skills.

## Unit 9: Tide Pool Fish

1. **Pagoo; Chapter 9 In, Out, Up With Traveling Towers ..... 269**  
Students read Chapter 9 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.
2. **Fish Forms ..... 271**  
An informational reading to help students “read” fish clues. These clues can provide information about a fish’s habitat.
3. **Gyotaku - Japanese Fish Printing ..... 283**  
Fish printing provides a hands-on opportunity for students to learn about fish anatomy.
4. **Camouflaging Fish Cookies ..... 295**  
Students discuss body characteristics that make fish camouflaged in their habitats and then develop protective camouflage for a fish cookie.
5. **Sculpting Sculpins ..... 299**  
Students create sculpins using a wire frame covered with papier maché.
6. **Weave a Fish..... 307**  
Students use construction paper and wrapping paper to weave a fish.

## Unit 10: Sea Urchins

1. **Pagoo; Chapter 10 Houses Are Scarce in Tide-Pool Town..... 309**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 10 of *Pagoo*.
2. **Constructing Sea Urchins ..... 311**  
Construction ideas for sea urchin models using marshmallows or a Styrofoam ball are provided as students continue to populate the tide pool constructed in Unit 2.

- 3. Name That Tune ..... 313**  
Students write a song using a familiar single tune using water-related words and themes.

### Unit 11: Tube Snails

- 1. Pagoo; Chapter 11 A Concrete Tile Can Crawl Both Ways ..... 315**  
Students read Chapter 11 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.

### Unit 12: Chitons and Cucumbers

- 1. Pagoo; Chapter 12 Hermit House From An Ancient Jungle ..... 317**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 12 of *Pagoo*.
- 2. Marinated Riddles and Rhymes ..... 319**  
Marine science concepts are reinforced as students create rhyming riddles and fractured nursery rhymes.

### Unit 13: Sea Anemones

- 1. Pagoo; Chapter 13 The Grotto of Eating Trees ..... 321**  
Students read Chapter 13 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.
- 2. Make an Anemone ..... 323**  
Instructions for construction of a sea anemone using construction paper and a cardboard tube are provided as students continue to populate the tide pool constructed in Unit 2.

### Unit 14: Crabs

- 1. Pagoo; Chapter 14 Among the Crabs, A Shy Masked Lady ..... 327**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 14 of *Pagoo*.
- 2. Inflatable Tide Pool ..... 329**  
An inflatable tide pool into which students can crawl is constructed from clear plastic sheeting. Paintings and creatures suspended inside complete the habitat.
- 3. Make a Decorator Crab ..... 335**  
Using small squares of tissue paper dipped into a glue mixture and formed into small balls, students fill the shape of a decorator crab.

**Unit 15: If The Shell Fits**

- 1. Pagoo; Chapter 15 Pagoo Takes a Shell- Keeps It, Too..... 339**  
Students read Chapter 15 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.

**Unit 16: Salinity Counts**

- 1. Pagoo; Chapter 16 Death Trap! ..... 341**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 16 of *Pagoo*.
- 2. Now You See It, Now You Don't ..... 343**  
Students attempt to float an egg in both fresh and salt water.

**Unit 17: On the Beach**

- 1. Pagoo; Chapter 17 A Fright, A Frolic, and a Farewell..... 353**  
Students read Chapter 17 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.
- 2. There's No Place Like Home ..... 355**  
Safety issues are addressed and conservation practices are stressed in this important prelude to any trip to the tide pools.
- 3. It's All Happening At the Beach ..... 367**  
Guidelines for a class trip to the beach are presented along with a collection of interdisciplinary activities that have been successful with groups of students.
- 4. No Ordinary Sandy Beach ..... 377**  
Students examine sand samples from assorted beaches and use the observable characteristics they note to draw inferences about the origin of the sand samples.

**Unit 18: What Lurks in the Depths?**

- 1. Pagoo; Chapter 18 Down to the Depths of Deep Hole..... 389**  
Students continue work on creation of a Pagoo Field Guide as they read Chapter 18 of *Pagoo*.

**Unit 19: Octopus**

- 1. Pagoo; Chapter 19 Can This Be the End of Pagoo? ..... 391**  
Students read Chapter 19 of *Pagoo* as they continue work on creation of a Pagoo Field Guide.

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- 2. Octopus Escape ..... 393**  
Balloon octopuses are constructed and propelled on a room length string in response to a challenge to create an octopus that can travel the fastest and farthest.
  - 3. Octopus Marionette ..... 399**  
Directions are provided to construct an octopus marionette puppet.
  - 4. Marinated Language Murals ..... 403**  
Students brainstorm a list of “marinated” words and concepts, then create a mural to teach others about the concept, issue or habitat.

## Unit 20: The Cycle Continues

- 1. Pagoo; Chapter 20 Endless Rhythm of an Old, Old Sea ..... 405**  
Students complete work on creation of a Pagoo Field Guide as they read the final chapter, Chapter 20, of *Pagoo*.
- 2. Octo-Puzzle ..... 407**  
Each student receives a piece of an octopus pattern which is to be scaled up and redrawn on a larger sheet of paper. When all of the individual redrawn pieces are put together, a giant Pacific Octopus appears!