



# Rachel Carson's Silent Spring

**GRADE: 4**

**TIME: 1 or 2 Sessions**

Developed by Jenifer Cameron, Art Specialist



<p><b>KIT INCLUDES:</b></p> <ul style="list-style-type: none"> <li>1 lesson plan with plant drawings set (8 ea.)</li> <li>3 three-part process boards</li> <li>1 3-part biography board</li> <li>1 color wheel board</li> <li>1 vocabulary board</li> </ul> <p>Books:</p> <ul style="list-style-type: none"> <li>• <a href="#">Alaska's Wilderness Medicine</a></li> <li>• <a href="#">Listening to Crickets</a></li> <li>• <a href="#">Rachel Carson: Voice for the Earth</a></li> </ul>	<p><b>MATERIALS:</b></p> <ul style="list-style-type: none"> <li>• watercolor paints</li> <li>• small size paint brushes</li> <li>• table salt (1 tsp. per student)</li> <li>• masking tape (3/4" wide)</li> <li>• 5" x 11" watercolor paper or white const. paper</li> <li>• 6" x 12" black construction paper for mounting art</li> <li>• black permanent markers</li> </ul>
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**LESSON DESCRIPTION:**

Students learn about the life of writer, biologist and conservationist, Rachel Carson. Students learn to use complementary colors to show the effects of pollution on their plant. They create a before and after line drawing of an Alaskan plant using watercolor paints for color.

<p><b>VOCABULARY:</b></p> <p>biologist pesticide conservationist complementary colors pollution</p>	<p><b>ART ELEMENTS:</b></p> <p><input checked="" type="checkbox"/> Line <input checked="" type="checkbox"/> Shape/Form <input checked="" type="checkbox"/> Color <input type="checkbox"/> Value <input checked="" type="checkbox"/> Texture <input type="checkbox"/> Space/Perspective</p>	<p><b>ART PRINCIPLES:</b></p> <p><input type="checkbox"/> Pattern <input type="checkbox"/> Rhythm/movement <input checked="" type="checkbox"/> Proportion/Scale <input type="checkbox"/> Balance <input type="checkbox"/> Unity <input type="checkbox"/> Emphasis</p>	<p><b>CONTENT CONNECTIONS:</b></p> <p>Science Social Studies Careers</p> <p><b>THEMES:</b></p> <p>Environment</p>
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**OBJECTIVES AND ASSESSMENT CRITERIA:** Students will:

- learn about the scientist Rachel Carson and be able to talk about why she was famous
- learn about complementary colors and use them in their painting
- predict what will happen when plants are exposed to pesticides
- observe and closely study the shape and texture of plants from a drawing

**PREPARE:**

- Xerox several copies of plant drawings included in lesson plan (students choose one)
- Cut 5" x 11" watercolor paper and cut 6" x 12" black construction paper
- Give each student 3 pieces of 3/4" masking tape (2 long enough for length of paper and 3 short for the height)
- Teacher should try the lesson before teaching for maximum student success.

## ENGAGE AND EXPLORE:

**Tape paper to desks before discussing Rachel Carson. You could also pass out salt in small cups and water so ready to work when done discussing.**

Begin the lesson by asking students what the meaning of the words **Silent Spring** may be. What could the words Silent Spring mean in the context of nature? How different would our lives be if we didn't have springtime? This is the exact question scientist; Rachel Carson asked herself when she began writing her book, Silent Spring.

Rachel Carson was born in Springdale, Pennsylvania, on May 27, 1907. As a girl, she loved to read to her dog Candy, going for walks in the woods, both in the day and night. She asked lots of questions of her mother, who was unable to answer all of them. They would talk of the factories and coal mines in Pittsburgh, and what they were doing to the land, air and water.

When Rachel started school, she was happy to learn more about her world. She always felt very connected to the earth. She wrote stories while she was in elementary school, and even had them published in a magazine, and earned ten dollars. By the time she graduated from high school, Rachel knew she wanted to be a writer.

She went to the Pennsylvania College for Women. Here she discovered the world of biology which gave her the answers to many of the questions she had always asked, such as: why are leaves green, or how do oysters build their shells? She also learned about the web of life, the basis of which all things are related. She wanted to become a scientist instead of a writer, but deep down, she wondered if she could be both. Lucky for us, she did become both a writer and a scientist.

Rachel Carson developed the skill to tell wonderful stories about nature, full of facts, which made nature come alive for her readers. One of the things that Rachel had always wanted to do was to go to the ocean. After she graduated from college, Rachel took a job as a marine biologist at Woods Hole in Cape Cod. She worked there and continued her studies through the depression years.

She was offered a job writing a radio program for the Department of Fisheries. She was very good at her job and soon wrote a book about the sea. It is called Under the Sea Wind. Her next book, The Sea Around Us, took 3 years to write and tells about the ocean. She became a very successful writer, and built a cottage in West Southport, Maine.

Rachel began writing another book about her life living on the shore. During this time, she heard from a friend that birds and plants were dying from the spraying of pesticides used to kill insects. The pest killer was called **DDT**. Many people thought this was a good thing, protecting crops and trees from being killed by pests. The trouble was that the poison was being spread to other creatures, such as birds. That was a very harmful thing and no one knew where the poisoning would stop. Rachel asked questions such as how much of the environment was already spoiled? Rachel began to research this question and the more she learned, the more she knew she had to do something to stop the spraying of DDT on the environment.

She began writing the book, **Silent Spring** in 1958, and finished it 4 years later. This book had a huge impact--it began the environmental movement in the U.S. and led to the development of the Environmental Protection Agency! Rachel became famous.

Rachel Carson died of cancer on April 14, 1964. She worked hard to make the world a better place to live.

**“These chemicals have the power to kill every insect, the good and the bad, to still the song of the birds and leaping of the fish in the streams, to coat the leaves with a deadly film, and to linger on in the soil. Can anyone believe it is possible to lay down such poisons on the surface of the earth without making it unfit for all life?”** -Rachel Carson

## **CREATE:**

1. Discuss with the students the term **pesticide**. Explain that pesticides kill not only what they were intended for, but other organisms as well. Talk about the effects of pesticides on good and useful organisms in nature. Discuss briefly how pests can be controlled by other means; ladybugs, spiders, etc.
2. Show the lesson sample showing the finished product. Explain to students they will be creating a watercolor painting that will show a **before and after painting, before pesticides, and after**.
3. Have students choose a plant--an Alaskan plant that have uses, such as medicine, food, dye.
4. Students begin by drawing their plant with a pencil in the first square on their paper. In the second square, students will draw their plant again, this time, as it would look after being exposed to pesticides. Some leaves may be missing, plant may be droopy, or some leaves may be curled.
5. Students now **outline** both drawings with a black permanent marker, working carefully from the plant cards. They should include leaf edges, texture, vein lines, and blooms. Do not fill in areas solid with the marker. Try adding textures instead.
6. After students have finished outlining the plants, show students the color wheel and **review** the color families; primary, secondary, warm, and cool. **Introduce** the new color family, the **complementary colors**. These are directly across each other on the color wheel. Students will be choosing **only 1 pair of complementary colors to do their painting**.
7. Students paint their plant using just **one color...no mixing!** This is the “before” painting, showing a healthy plant. Students should make a point on their brush by rolling it back and forth gently in the paint pool, and holding the **brush like a pencil**. The more pressure on the brush, the wider the line, the less pressure, the thinner the line.
8. The next step is to paint the plant again, in the **after** square on the paper. Students will **mix a small amount of the complementary color in with the first color in the paint tray lid**. They should get a shade of brown, gray, or black. Explain to them this is how you mix colors to get the **neutral colors**. Students now paint the “after” plant.
9. The last step is to complete the background. Students will use the **complementary color to paint both backgrounds**. With this pure color, students quickly paint a section of the background, **sprinkling a pinch of salt into the wet paint on the paper**. The salt absorbs the water and paint, leaving a spot of texture. **Be sure the students are using the salt sparingly, and sprinkling into wet paint**. If the paint is dry, the salt won't create the desired texture.
10. After cleanup, students should remove the tape from their paintings. **PULL TAPE AT AN ANGLE AND GO SLOW!** When the tape has been removed, have students sign and date their work with a pencil along the bottom edge. A title can be added. Let paintings dry for a day, then brush salt off and mount on black construction paper.



# Rachel Carson's Silent Spring

Today in art we learned about the marine biologist **Rachel Carson**, (1907-1964) She was a **writer, biologist and ecologist**. She used her skills to bring to the attention of the American public the dangers of using pesticides, especially DDT. She understood that all things are connected in the **balance of nature**. She wrote a book called **Silent Spring**, which warned about the use of DDT. She used her writing skills, scientific training, and observation skills to make this information understandable for everyone.

In our project today, we learned how to use watercolors and painted a picture of a healthy plant with pure color. Then we painted the plant again showing the effects of a pesticide on this healthy plant, changing the plant's shape and color, using complementary colors.

I hope you had fun learning about **Rachel Carson**, and will think about how we need to understand the balance of nature.

Have fun making art!