

## Stone Soup in the Classroom: Where art and science meet

### STONE SOUP Cartooning and Invasive Species

**Grades:** Adaptable to 4<sup>th</sup> – 12<sup>th</sup> grades

**Length:** Depending on the level and how teachers adapt this lesson, the time needed ranges from 2-3 days to 2 weeks.

**Topics:** science (life science, ecology), language arts, art.

#### Learning Objectives:

- Students will be able to develop and apply science, reading and language arts processes to analyze a comic series.
- Students will be able to use cartooning to express science content.
- Students will be able to demonstrate writing skills in creating their own comic about a local invasive species.

#### Materials:

- Copies of Stone Soup Comics series by Jan Eliot (7/31-8/3 and 9/4- 9/14/2013) separated into two groupings.
- Copies of invasive species primers, guides and resources including videos to build content knowledge on red swamp crayfish and invasive species. (see additional attached suggestions)
- slips of scrap paper
- paper and coloring pencils
- graphic organizer (see example at <http://seagrant.oregonstate.edu/invasive-species/toolkit>)
- tape to hang graphic organizers

#### Engage:

1. Lead a brief group discussion:

- a. Who likes to read comics?
  - b. What are some of the reasons people write comics?
2. Hand out slips of paper to table groups / individuals.
  3. Have students take a minute to jot down 2-3 different comics they like to look at; collect.
  4. Briefly share some of the choices collected, with student participation.
  5. Discuss some of commonalities of structure and content of comics (e.g., 1-8 panels, familiar, odd or endearing characters, irony, presenting and resolving a problem, etc.)

#### Explore:

1. Read the first set of four cartoons from Stone Soup, using these questions to guide a whole class discussion:
  - a. How would you describe the relationship between Alix and her Grandmother? What is your evidence of their relationship?
  - b. What are some possible solutions for the crawdad or crayfish in the tub?
  - c. What is the main idea that is presented in this set of cartoons? What is your evidence that is the main idea?
  - d. In the last slide, the crayfish says, "Look out below! Invasive species in the house!" Talk with your classmate and discuss what you think this means.

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### 2. Describe the Structure Comic Strips:

- a. Explain that the text in the cartoon fit into a word bubble on the top of each frame.
  - b. The text included must be legible and fit in the bubble (not touch the drawings).
  - c. The main character should be drawn consistently in each frame.
  - d. TIP: To encourage the use of technology, and reduce the time needed to format drawings and text so it fits, you can use on-line comic strip builders. See the resource list below for the links.
3. Break into small groups. Explain that you are now going to develop expertise about a crayfish to better analyze the next set of comics. Each member of the team reviews one or more references to gather information to create a graphic organizer that explains the red swamp crayfish and why it is successful as an invasive species.

### Explain:

1. Do a gallery walk to view the graphic organizers.
2. As a group, brainstorm the key characteristics of crayfish that make them successful invasive species.

### Expand:

1. Distribute the second set of Stone Soup comics to small groups or individuals, and have the students read through the strips.

### 2. Discussion questions:

- a. *What is the main idea of this set of comics?*
  - i. What evidence do you have that supports that idea?
- b. *State the author's point of view about what happened in your own words. What evidence do you have to support this?*
- c. *Identify some vocabulary words you learned to understand the other words to know what was being said. How were you able to clarify the meaning of those words?*
- d. *Comparison:* How do the characters' roles change from the first set to the second set of comics?
- e. *Give an example of an illustration that supports the text emphasizing a point or making it easier to understand.*
- f. *Explain:* What method did the students use to survey the population of crayfish? What did the students observe in the stream (e.g., find or not find)?
- g. *What are some examples of how the author uses humor in talking about invasive species?*

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- h. *Prediction:* What do you think would happen if they left the crayfish named “Pinchy” in the stream instead of taking it back to school?
- i. *Explain:* Why does the teacher have the letters NOAA on her vest?
- j. *Research:* What crayfish (if any) are native to your region? Are these native crayfish still present in the community you live in? If not, why not? How would you find out? What crayfish native to the Pacific Northwest has become the dominant invasive crayfish in California? How did this crayfish arrive in California? What are some alternatives to releasing unwanted animals from your home or school into the wild?
- k. *Evaluation:* The cartoonist Jan Eliot contacted Oregon Sea Grant to check her facts before completing these strips. Why was that important for her as an artist?
- l. *Summarize:* What are the main themes and lessons from the comic strip series? Who are the main characters and what are their roles? What did Alix and her grandmother learn? What did you learn and how would you share it with others?
- m. *Analysis:* If you had to change some of this set of strips, how would you revise it? Please explain why you would make that change.
- n. *Commentary:* Did you find it interesting to learn from a comic strip? Why?
3. Select one character from the strip and *write a narrative* of what happened in the comic from that character’s point of view. Include the overall theme of the comic in your writing. You can use the background information from your research to add details that weren’t included in the comic.

### Evaluate: Comic Challenge!

**GOAL:** Create a comic that tells the story of the threat of an invasive species.

- Use any species that is currently known to be invasive where you live, and *create a comic* that shows the threat of this invasive species to the local ecosystem(s).
- Components* you need to include in your comic are:
  - A title slide that includes the writer/artist
  - Both common and scientific name of the species
  - The method of transport into the local ecosystem–vector(s)
  - The location(s) where it has been found



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- The characteristics that make it successful as an invasive species
  - The problems it causes by invading the area
  - Identify if anyone is involved in solving this problem
3. *Vocabulary* / terms you might want to include are:
    - Habitat
    - Invasive
    - Introduced
    - Competition
    - Biodiversity
    - Adaptation
    - Vectors
    - Predators
    - Reproduce
    - Ecosystem
  4. Be certain you *develop your characters well*, and have your work edited before turning the final comic in; *show your work* to at least one other person for a critique and suggestions.
  5. Include your *research citations* on a separate page.
- Extension:**
1. Identify other media used to communicate invasive species messages.
  2. Investigate the different skills needed to create a comic strip (writer, researcher, artist, inker, printer, publisher, etc.).
  3. Research and clarify your own ideas about artists having a role in addressing problems in our environment or society.
- Additional resources:**
1. Comics and crayfish.  
<http://blogs.oregonstate.edu/wise/2013/09/03/comics-and-crayfish/>
  2. Invasion of the shelter snatchers: behavioural plasticity in invasive red swamp crayfish, *Procambarus clarkii*.  
<http://onlinelibrary.wiley.com/doi/10.1111/fwb.12002/abstract>
  3. Classroom culprits: Invasive Crayfish Threaten Western Waterways. PBS/Oregon Public Broadcasting  
[http://www.pbs.org/newshour/bb/science/jan-june11/pledge\\_03-10.html](http://www.pbs.org/newshour/bb/science/jan-june11/pledge_03-10.html)
  4. Crayfish ID Guide.  
<http://seagrant.oregonstate.edu/sgps/e-11-013>
  5. Louisiana crawfish released in wild from classrooms across the nation.  
[http://www.nola.com/environment/index.ssf/2012/08/louisiana\\_crawfish\\_released\\_in.html](http://www.nola.com/environment/index.ssf/2012/08/louisiana_crawfish_released_in.html)
  6. Louisiana crawfish wreaking havoc around the world.  
<http://www.dailycomet.com/article/20120818/articles/120819625>
  7. Invasive species could be transmitted by school teachers releasing critters into the wild.  
[http://www.oregonlive.com/environment/index.ssf/2012/08/invasive\\_species\\_could\\_be\\_tran.html](http://www.oregonlive.com/environment/index.ssf/2012/08/invasive_species_could_be_tran.html)
  8. UW Professor leading efforts to eliminate invasive crayfish.  
<http://sammamishreview.com/2013/03/06/uw-professor-leading-effort-to-eliminate-invasive-crayfish-in-pine-lake>
  9. Crayfish turf wars of the Pacific Northwest.  
<http://earthfix.kuow.org/flora-and-fauna/article/crawfish-turf-wars-of-the-northwest/>



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10. Our crayfish are better than yours.  
<http://blogs.seattletimes.com/allyoucaneat/2013/06/13/our-crayfish-are-better-than-yours/>
11. The state of crayfish in the Pacific Northwest.  
[http://www.invasivespecies.wa.gov/documents/Fisheries\\_2011a\\_Cray.pdf](http://www.invasivespecies.wa.gov/documents/Fisheries_2011a_Cray.pdf)
12. Fighting the Bay Area Invasion of Signal Crayfish By JOE EATON Special to the Planet.  
<http://www.berkeleydailyplanet.com/issue/2005-05-17/article/21428>
13. Understanding the invasion ecology of invasive crayfish in California <http://www-csgc.ucsd.edu/BOOKSTORE/documents/Kats-Lafferty.pdf>
14. The Nab the Aquatic Invader website contains learning resources and tools developed for teachers to incorporate invasive species learning into lesson plans. The website also includes a poster with “Don’t Let it Loose” information and an “Adoption Pledge for Classroom Pets.”  
<http://www.iisgcp.org/NabInvader/Atlantic/admin/classroom.html>

### CARTOON GENERATORS:

15. Beliefs Comics includes tips, ideas and additional curriculum for teachers  
<http://www.makebeliefscomix.com/Comix/>
16. Read Write Think offers an easy platform for quick comic making  
<http://www.readwritethink.org/files/resources/interactives/comic/>
17. Make comic strips in seconds with this easy to use resource:  
[http://cambridgeenglishonline.com/Cartoon\\_Maker/](http://cambridgeenglishonline.com/Cartoon_Maker/)

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Stone Soup by Jan Eliot (7/31-8/3 and 9/4- 9/14/2013)



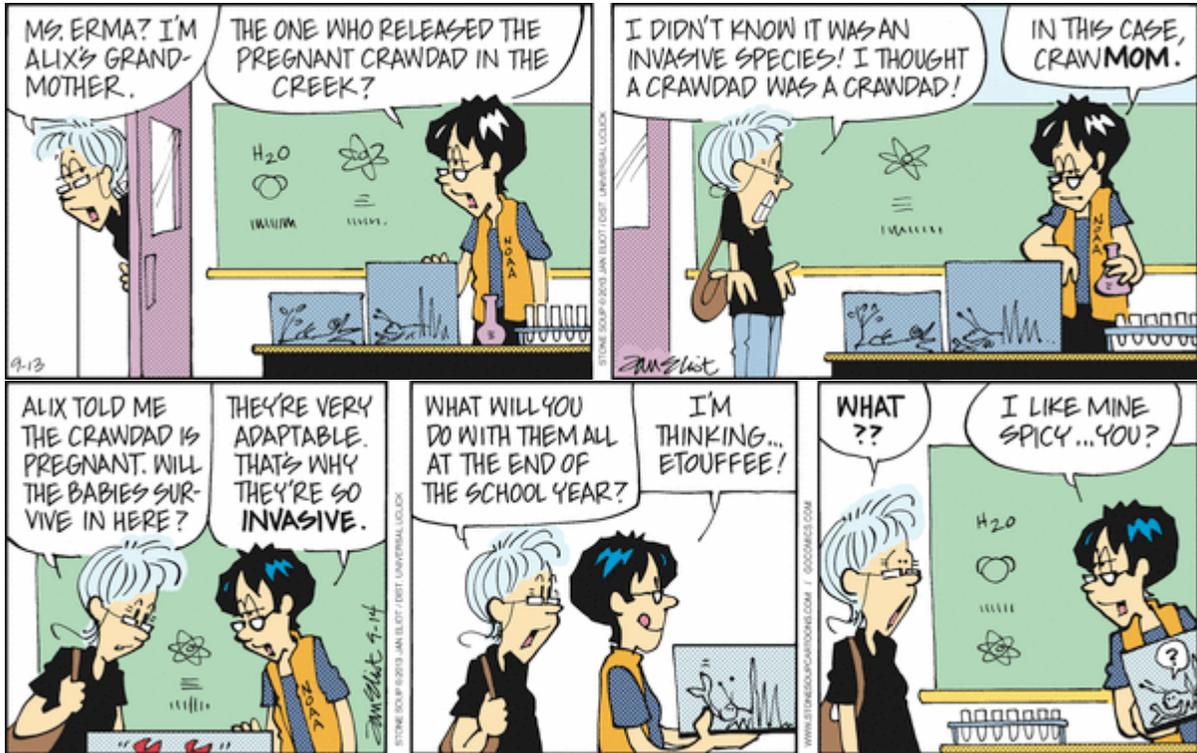
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### Common Core Standards – Comic

#### Reading standards for informational text

##### Key Ideas and Details

##### 6<sup>th</sup> grade

- Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

##### 7<sup>th</sup> grade

- Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.

##### 8<sup>th</sup> grade

- Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.

##### 9<sup>th</sup>-10<sup>th</sup> grade

- Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

##### 11<sup>th</sup> – 12<sup>th</sup> grade

- Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.
- Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.

#### Craft and Structure:

##### 4<sup>th</sup> grade

- Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

##### 5<sup>th</sup> grade

- Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.

##### 6<sup>th</sup> grade

- Explain how an author develops the point of view of the narrator or speaker in a text.

##### 7<sup>th</sup> grade

- Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.

##### 8<sup>th</sup> grade

- Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.

#### Reading standards for informational text

##### 6<sup>th</sup> grade

- Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.

##### 7<sup>th</sup> grade

- Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.

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6. Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.

8<sup>th</sup> grade

1. Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
6. Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.

Integration of knowledge and Ideas

4<sup>th</sup> grade

7. Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

5<sup>th</sup> grade

9. Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

6<sup>th</sup> grade

7. Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

8<sup>th</sup> grade

7. Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.

### Writing Standards

Text types and purpose

4<sup>th</sup> /5<sup>th</sup> grades

3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
  - a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.
  - b. Use dialogue and description to develop experiences and events or show the responses of characters to situations.
  - e. Provide a conclusion that follows from the narrated experiences or events.

6<sup>th</sup> – 8<sup>th</sup> grades

3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
  - a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.
  - b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.
  - e. Provide a conclusion that follows from and reflects on the narrated experiences or events.

9<sup>th</sup> – 12<sup>th</sup> grades

3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.



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- a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.
- c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).
- e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

### Production and distribution of writing

#### 4<sup>th</sup> and 5<sup>th</sup> grades

- 5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of language standards 1-3 up to and including grade 4 -5.)

#### 6<sup>th</sup> – 8<sup>th</sup> grades

- 5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 6 - 8.)

#### 9<sup>th</sup> – 12<sup>th</sup> grades

- 5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing conventions should demonstrate command of language standards 1 – 3 up to and including grades 9 – 12.)

### Research to Build Knowledge

#### 4<sup>th</sup> and 5<sup>th</sup> grade

- 7. Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

#### 6<sup>th</sup> - 8<sup>th</sup> grades

- 7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

#### 9<sup>th</sup> – 12<sup>th</sup> grades

- 7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

### Speaking and Listening Skills

#### 4<sup>th</sup> grade

- 2. Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

#### 5<sup>th</sup> grade

- 2. Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

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### Reading standards for literacy in science and technical subjects

Key ideas and Details

6<sup>th</sup> – 8<sup>th</sup> grades

2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

9<sup>th</sup> – 10<sup>th</sup> grades

2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

### Next Generation Science Standards

**MS-**

**ESS3-3.** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment

**MS-**

**LS2-5.** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

**HS-**

**LS2-6.** Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

**HS-**

**LS2-7.** Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity

**HS-**

**ESS3-4.** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.