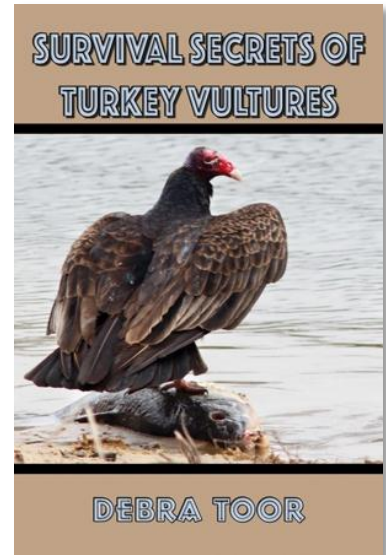


**A Common Core State Standards & Next Generation Science
Standards Aligned Educator's Activity Guide for**

Survival Secrets of Turkey Vultures

Guide Created for Grades 4 - 6



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Science by leading North American Biologists

**Photos by a Team of North American Nature
Photographers**

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Guide Created by Debbie Gonzales

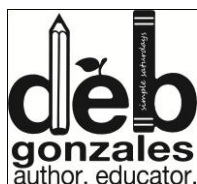


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Turkey Vulture Survival Secrets Bingo

Objective: To integrate information presented in *Survival Secrets of Turkey Vultures* in a game-like format, ultimately developing a coherent understanding of a topic.

Materials:

- *Survival Secrets of Turkey Vultures*
- Cardstock
- Scissors
- Turkey Vulture Survival Secrets Bingo Board (Guide, pg. 4)
- Turkey Vulture Survival Secrets Game Cards (Guide, pg. 5-7)
- Turkey Vulture Survival Secrets Bingo Answer Sheet (Guide, pg. 8)
- 25 game pieces (pennies, buttons, beans, etc.) per player

Procedure:

- Depending on how many players will be competing, print 2 to 4 Turkey Vulture Survival Secrets Bingo Boards (Guide, pg. 4) on cardstock.
- Print double copies of Turkey Vulture Survival Secrets Game Cards (Guide, pg. 5-7).
- Use scissors to trim around the borders of the game board and the cards.
- To play the game, mix up game cards and stack them, face down.
- Each player manages their own game board and collection of game pieces. Players are also free to refer to *Survival Secrets of Turkey Vultures* for fact clarification.
- A player begins by choosing a card from the top of the stack. If the card matches a space on their board, they may mark the match with a game piece.
- Note that the center space on the game board is a Free Space.
- The game card is placed near the face down stack.
- As the game continues, a player loses a turn if they choose a card that has already been covered on their board.
- The winner has either blocked out 5 spaces in a row or covered all of the spaces, depending how the players decide they'd like to play.
- Definitions and description can be verified using the Turkey Vulture Survival Secrets Bingo Answer Sheet (Guide, pg. 8).



Turkey Vulture Survival Secrets Bingo Board

Bald	Dark on the top edge, lighter (appears silvery gray) at the bottom	soar	Poses with outstretched wings	head
plumage	<i>Odour molecule released by an animal upon death</i>	Stomach acids	<i>ecosystems</i>	Cathartes aura
<i>Slotted wing tips</i>	Cooling effect		Strong sense of smell	raptor
dead	<i>Weak jaw muscles</i>	carrion	Dull talons & weak foot muscles	silent
nares	vomits	circle	habitat	sharp, hooked beak tip

Turkey Vulture Survival Secrets Game Cards

turkey vultures react
in this way to deter
predators or to lighten
their load
(after eating) to flee

turkey vultures eat
prey in this state rather
than kill their own

the reason
turkey vultures
pee or poop
on their legs

unable to
grab, stab,
or carry prey

unable to
crush prey

destroys
most disease
carrying bacteria

rather than flap wings

feathers that
help turkey vultures
maneuver on
the wind

color of
underside of
wings

turkey vultures
lack a syrinx,
the vocal organ
of birds

can detect the
scent of
dead animals

the turkey vulture's
scientific name

brownish black

drying feathers
in the warm sun

a bird's nostrils

small enough
to reach into
the carcass to
access flesh

open woodland,
farmland, forests,
rangeland, cliffs, etc.

ethyl mercaptan

communities of
organisms that
turkey vultures protect
from
harmful bacteria

decaying flesh
of a dead animal

another name
for a “bird of prey”

used for tearing flesh
into small pieces

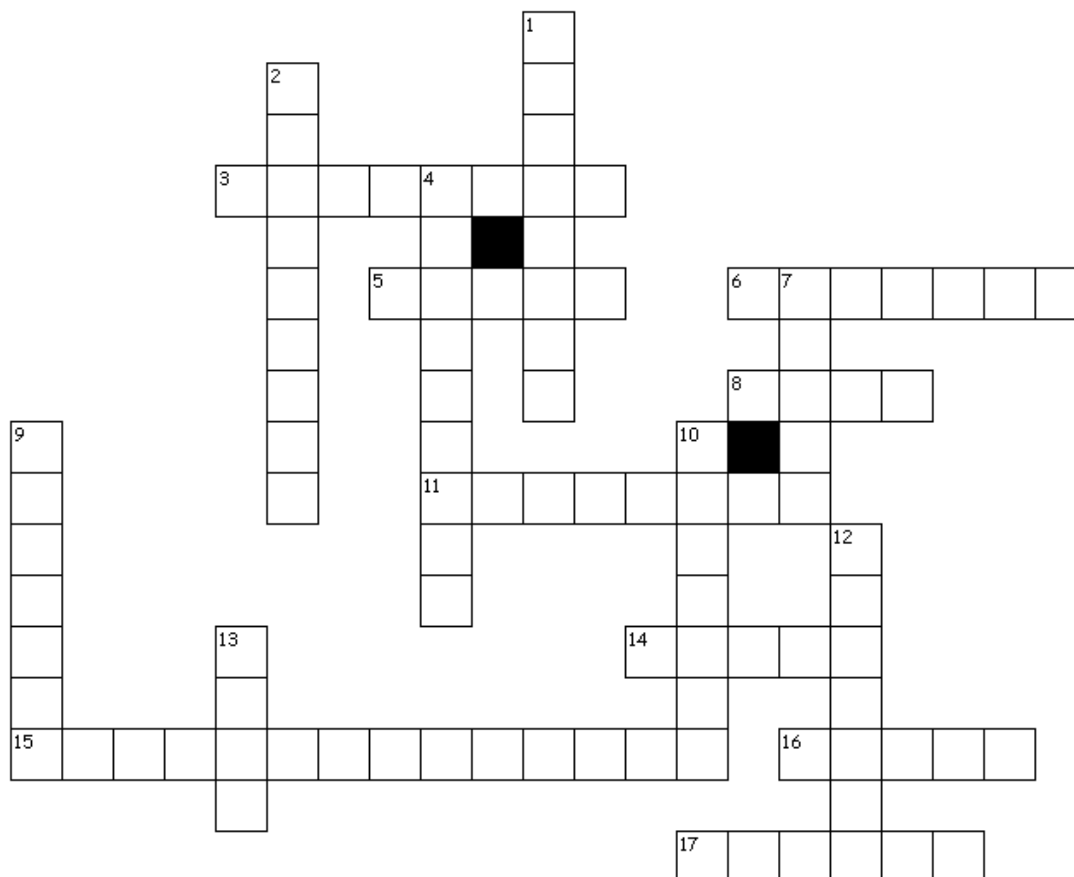
helps to keep blood,
flesh, and parasites
from sticking
to the head

Turkey Vulture Survival Secrets Bingo Answer Sheet

bald	helps to keep blood, flesh, and parasites from sticking to the head
sharp, hooked beak tip	used for tearing flesh into small pieces
carrion	decaying flesh of a dead animal
Cathartes aura	turkey vulture's scientific name
cooling effect	the reason turkey vultures pee or poop on their legs
dead	turkey vultures eat dead prey in this state rather than kill their own
dull talons & weak foot muscles	unable to stab, grab, and carry prey
ecosystems	Communities of organisms that turkey vultures protect from harmful bacteria
habitat	open woodland, farmland, forests, rangeland, cliffs, etc.
head	small enough to reach into a carcass to access flesh
nares	A bird's nostrils
odour molecule released by an animal upon death	ethyl mercaptan
plumage	brownish black
poses with outstretched wings	drying feathers in the warm sun
raptor	Another a name for a "bird of prey"
silent	turkey vultures lack a syrinx, the vocal organ of birds
Dark on the top edge, lighter (appears silvery gray) on the bottom	color of underside of wings
slotted wing tips	feathers that help turkey vultures maneuver on the wind
soar	rather than flap wings
stomach acids	destroys most disease carrying bacteria
strong sense of smell	can detect the scent of dead animals
vomit	turkey vultures react this way to deter predators or to lighten their load (after eating) to flee
weak jaw muscles	unable to crush prey



Crossword Puzzle



Across

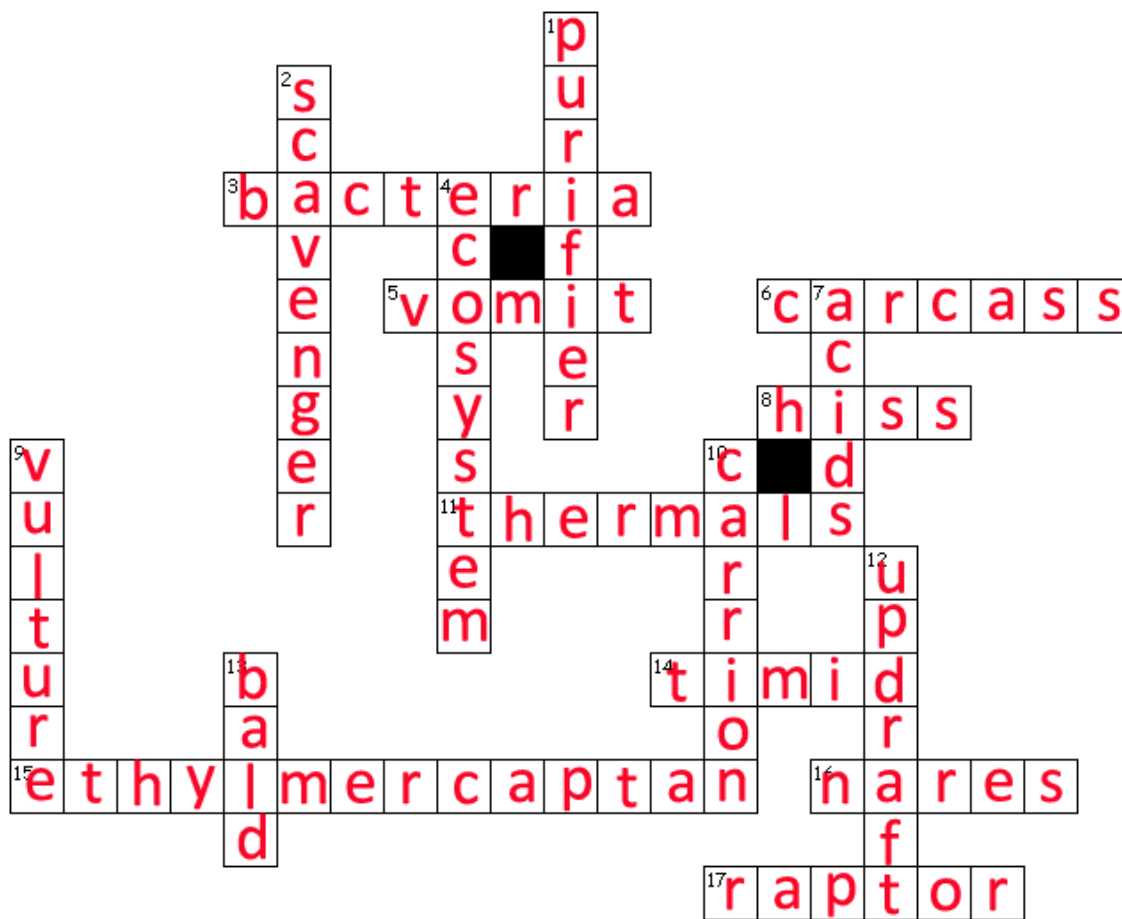
3. Some of these are beneficial, but some can cause sickness and disease
5. A turkey vulture's response to a threat
6. Dead body of an animal
8. A sound a turkey vulture makes
11. Turkey vultures soar on these in the air
15. Smelly gas released by animals upon death
16. A bird's nostrils
17. Birds that hunt and feed on other animals

Down

1. Role of removing carcasses and harmful bacteria from environment
2. Feeds on dead animals and sometimes on plant material present in its habitat
4. A community of living organisms
7. Located in a turkey vulture's stomach, these can destroy most disease-causing bacteria
9. Scavenging bird of prey that (unlike crows, ravens, gulls and eagles) sanitizes ecosystems
10. The decaying flesh of dead animals
12. Wind that strikes a cliff or building and is deflected upward
13. A turkey vulture's head



Crossword Puzzle Answers



Turkey Vulture Research – KWL (Know, Want to Know, Learned)

Objective: To conduct short research projects using several sources to build knowledge through investigation of different aspects of a topic.

Materials:

- Turkey Vulture Research – KWL Guide (Guide, pg. 12)
- *Survival Secrets of the Turkey Vultures* book
- Additional lessons provided on website: www.ecostoriesbydebtoor
- Pencil
- Age-appropriate research materials, primary and secondary sources. See website for quality resource links.

Procedure:

- Explain that the intent of this lesson is to research three aspects of the turkey vulture’s life. The topics are as follows:
 - Tell how turkey vultures protect the health of ecosystems.
 - Describe the turkey vulture’s personal hygiene practices.
 - Explain how the turkey vulture’s physical features help it and other life forms, survive.
- Print 3 copies of the Turkey Vulture Research – KWL Guide (Guide, pg. 12), one for each aspect of the turkey vulture’s life being researched.
- In the upper horizontal block, instruct the students to define their research topic. State that the students will perform three levels of research, one for each aspect listed above.
- In the first vertical column, under the word “Know,” instruct the student to list everything that they already know about that topic.
- In the second vertical column, under the words “Want to Know,” instruct students to list things that they would want to know about the topic.
- In the third vertical column, under the words “Learned,” instruct the students to write things that they learned about their topic while researching it. Quite often, these facts can be quite surprising!
- Using the lower horizontal block, students are required to cite research references. Ideally, students would find information in a variety of ways – through citing references in *Survival Skills of the Turkey Vultures* and other resources located on the website: Lessons, videos, interviews, organization links, and through observation of the animal.
- Instruct the student to save this information to develop important and original key details for a final writing and presentation project.



Turkey Vulture Research – KWL Guide

Topic being researched:

Know

Want to Know

Learned

References:



Turkey Vulture Positive PR Campaign

Objective: To write an opinion piece, supporting a point of view with reasons and information.

Materials:

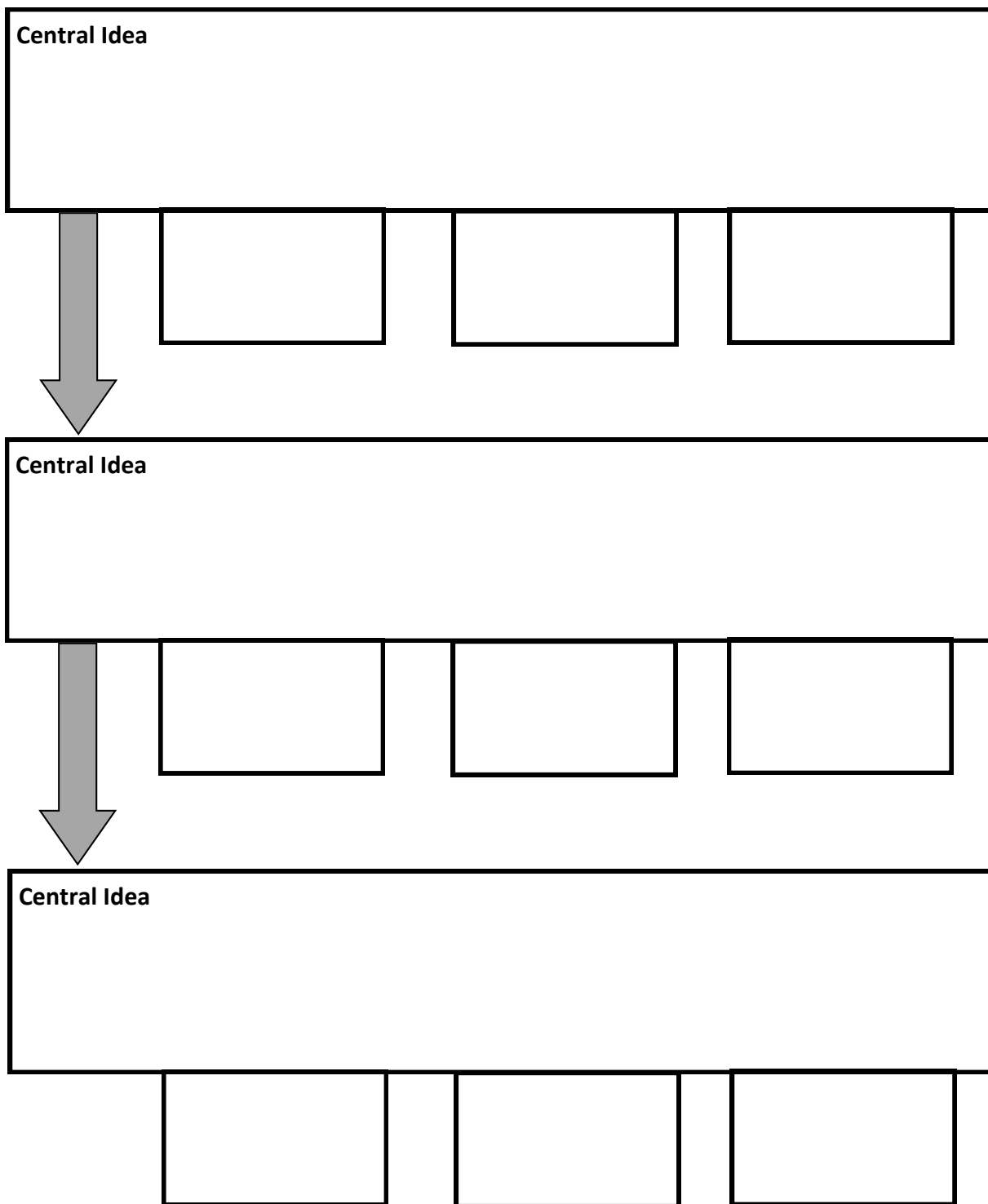
- Completed Turkey Vulture Research – KWL Guides (Guide, pg. 12)
- Central Idea Development Graphic Organizer (Guide, pg. 14)
- *Survival Secrets of Turkey Vultures* book, www.ecostoriesbydebtoor online articles on the history of vulture persecutions, vulture-awareness festivals, International Vulture Awareness Day, additional online resources on school-wide and community awareness campaigns.
- Paper
- Pencil

Procedure:

- Students are assigned to write a persuasive essay with the intent to convince the reader that, though the general consensus regarding the turkey vulture’s social standing is less than appealing, they are simply misunderstood animals. Instead, the turkey vulture is a valued creature who serves the earth in important ways. Students will use the materials and research gathered as elements of this guide to support their position.
- Print a copy of the Central Idea Development Graphic Organizer (Guide, pg. 14).
- Using the Central Idea Development Graphic Organizer for reference, instruct students to consider three turkey vulture adaptations/traits as Central Ideas.
- Develop each Central Idea with three facts supporting each central idea.
- Instruct students to formulate a solid opinion founded on their chosen Central Ideas and Supporting Facts, proving to the reader that the turkey vulture is a valuable contributor to the natural world. Explore the importance of the turkey vulture’s effect on the environment. Ask the questions, “What would life be like without the turkey vulture?”
 - In the paper, students will introduce their position clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support their point of view.
 - Students will provide reasons for their opinions that are supported by facts and details.
 - Students will provide a concluding statement related to the opinion presented.
- Share work by reading aloud to the group or by speaking extemporaneously to the class.



Central Idea Development Graphic Organizer



Common Core State Standards Alignment

English Language Arts Standards » Reading: Informational Text		Bingo Game	Puzzle	KWL Research	paper
CCSS.ELA-Literacy.RI.4.1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	x	x	x	x
CCSS.ELA-Literacy.RI.4.3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.			x	x
CCSS.ELA-Literacy.RI.4.4	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a <i>grade 4 topic or subject area</i> .	x	x		
CCSS.ELA-Literacy.RI.4.7	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.			x	x
CCSS.ELA-Literacy.RI.4.10	By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	x	x	x	x
CCSS.ELA-Literacy.RI.5.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 5 topic or subject area</i> .	x	x		
CCSS.ELA-Literacy.RI.5.7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.			x	x
CCSS.ELA-Literacy.RI.5.9	Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.			x	x
CCSS.ELA-Literacy.RI.5.10	By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently.	x	x	x	x
CCSS.ELA-Literacy.RI.6.1	Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.			x	x



English Language Arts Standards » Reading:
Informational Text (cont.)

		Bingo Game	Puzzle	KWL Research	paper
CCSS.ELA-Literacy.RI.6.7	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.			x	x
CCSS.ELA-Literacy.RI.6.8	Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.			x	x

English Language Arts Standards » Writing

CCSS.ELA-Literacy.W.4.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.			x	x
CCSS.ELA-Literacy.W.4.1.a	Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.			x	x
CCSS.ELA-Literacy.W.4.1.b	Provide reasons that are supported by facts and details.			x	x
CCSS.ELA-Literacy.W.4.1.d	Provide a concluding statement or section related to the opinion presented.			x	x
CCSS.ELA-Literacy.W.4.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.			x	x
CCSS.ELA-Literacy.W.4.7	Conduct short research projects that build knowledge through investigation of different aspects of a topic.			x	x
CCSS.ELA-Literacy.W.4.8	Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.			x	x
CCSS.ELA-Literacy.W.4.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.			x	x



English Language Arts Standards » Writing (cont.)

		Bingo Game	Puzzle	KWL Research	paper
CCSS.ELA-Literacy.W.5.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.			x	x
CCSS.ELA-Literacy.W.5.1.a	Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose.			x	x
CCSS.ELA-Literacy.W.5.1.b	Provide logically ordered reasons that are supported by facts and details.			x	x
CCSS.ELA-Literacy.W.5.1.d	Provide a concluding statement or section related to the opinion presented.			x	x
CCSS.ELA-Literacy.W.5.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.			x	x
CCSS.ELA-Literacy.W.5.7	Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.			x	x
CCSS.ELA-Literacy.W.6.1	Write arguments to support claims with clear reasons and relevant evidence.			x	x
CCSS.ELA-Literacy.W.6.1.a	Introduce claim(s) and organize the reasons and evidence clearly.			x	x
CCSS.ELA-Literacy.W.6.1.b	Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.			x	x
CCSS.ELA-Literacy.W.6.1.e	Provide a concluding statement or section that follows from the argument presented.			x	x
CCSS.ELA-Literacy.W.6.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.			x	x
CCSS.ELA-Literacy.W.6.7	Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.			x	x



English Language Arts Standards » Speaking & Listening

		Bingo Game	Puzzle	KWL Research	paper
CCSS.ELA-Literacy.SL.4.4	Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace			x	x
CCSS.ELA-Literacy.SL.5.4	Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.			x	x
CCSS.ELA-Literacy.SL.6.4	Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.			x	x

English Language Arts Standards » Science & Technical Subjects

CCSS.ELA-Literacy.RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.			x	x
CCSS.ELA-Literacy.RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.			x	x

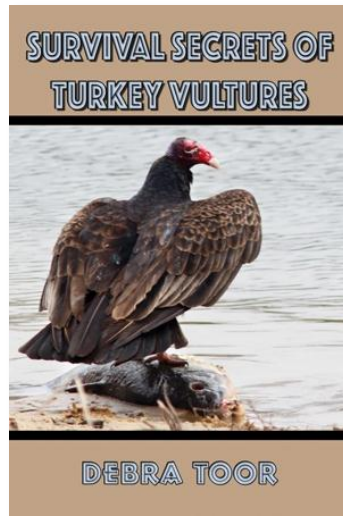
Next Generation Science Standards

3-LS4-3	Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.			x	x
3-LS4-4	Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.			x	x

Next Generation Science Standards (cont.)		Bingo Game	Puzzle	KWL Research	paper
LS2.6	Engaging in argument from evidence in 9–12 builds on K–8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current scientific or historical episodes in science.			x	x
LS2.C	Ecosystem Dynamics, Functioning, and Resilience: Ecosystems are dynamic in nature; their characteristics fluctuate over time, depending on changes in the environment and in the populations of various species.			x	x
LS4.C	Adaptation: For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.	x	x	x	x
LS4.C	Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).			x	x



Acknowledgments



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