

Scientific facts through fiction

Meghan E Brown, Ph.D.



Assignment:

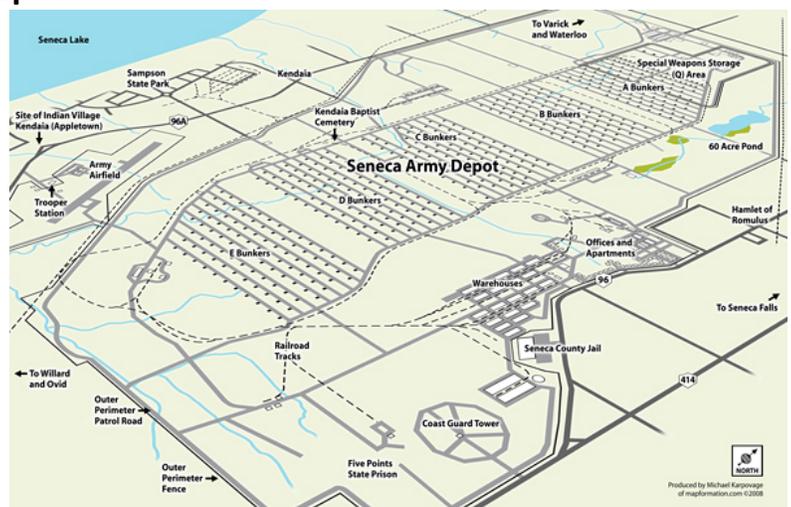
Effective communication in science requires explanatory prose, effective figures and tables, context within the field of study, and inspiration for future research. The most successful scientific writing is pleasurable to read and creative; this is true for traditional journal submissions, newspaper articles, novels, and scripts for documentaries. An example of clever scientific writing is *The Collapse of Western Civilization* (Oreskes and Conway, 2013), which takes a current scientific and social problem, climate change, and uses fiction to creatively communicate its causes and consequences. With this example in mind, you will be communicating about another hot bottom issue, biological invasions, through science fiction or historical fiction. To do so, you will apply the knowledge from the scientific literature we have read and discussed this semester, *without* the constraints of the present biological world.

Your assignment is to write a piece of *fiction* set in the Seneca Army Depot that demonstrates ecological or evolutionary ideas that are central to invasion science. You must stay true to the science of the hypotheses you are communicating about, but you have autonomy of the time, the plot, and the biological characters. Possible themes to include: extinction-based saturation vs. colonization-based saturation, allele effect and propagule pressure, the fluctuating resources hypothesis and disturbance, biological resistance through competitive exclusion, enemy-release, and/or obligate symbionts. You will be demonstrating your understanding of these foundational concepts through your own fictional word.

Background on the Seneca Army Depot:

The 11,000-acre Seneca Army Depot (Romulus, NY) closed in 2000. The Army stored and disposed of military explosives at the facility, beginning in the early 1940s. The US government acquired the land, including the village of Kendadia, for ammunition storage. Prior to the late-1700s, Seneca Indians lived and worked this land; their villages were destroyed during the Revolutionary War.

The Depot land is returning to private ownership, and now hosts detention facilities (a maximum-security prison and residential-treatment facility for juveniles), a document storage company, and a conservation preserve. Since 2016, Seneca White Deer Inc. has operated over 7,000 acres as a conservation area to protect the natural resources on the property,



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particularly the white deer herd, and preserve the military history of the land. The former Depot has the largest concentration of white deer (>200 individuals) in the world, which were artificially selected by hunting protection and fencing. The white deer is not albino; a recessive gene for no pigmentation in the fur causes its white color. The white deer is a rare phenotype of the white-tailed deer.

Most recently, Circular enerG has proposed developing a trash incinerator for energy generation on an 88-acre piece of land. This would be the largest incinerator in the state, burning 2,640 tons of garbage each day. This proposal is under review with the Town of Romulus Planning Board. There is much concern about the pollutants that would be emitted (e.g., lead, dioxins, and mercury) through the fly ash and in the waste left after burning the trash.

A portion of the Depot is a Superfund Site, the EPA's designation of the nation's worst toxic waste sites. It is currently undergoing remediation where solid waste and incinerator ash were disposed and where explosives and related wastes have been burned and detonated. The groundwater and soil is contaminated with volatile organic compounds and heavy metals.

Resources:

Example of science fiction to communicate scientific fact--

Oreskes N, Conway EM (2013) *The Collapse of Western Civilization*, 978-0-231-16954-7

On the white deer—

<http://www.senecawhitedeer.org/> (also good for history of the depot)

http://www.youtube.com/watch?v=Z_TvkB1-XeE&mode=related&search

<http://www.cbsnews.com/stories/2006/12/16/eveningnews/main2274463.shtml>

<http://www.dec.ny.gov/animals/6965.html>

On the debate between development and conservation—

<http://blogs.fingerlakes1.com/behind-the-local-news/calling-judge-judy-white-deer-vs-jobs/>

<http://forums.fingerlakes1.com/ubbthreads.php?ubb=showflat&Number=530325&page=1>

<http://www.nytimes.com/2007/03/13/nyregion/13deer.html?em&ex=1173931200&en=5ad68b778c54746d&ei=5087%0A>

<http://www.rochestercitynewspaper.com/news/articles/DEVELOPMENT:+The+deer+dilemma+a+t+the+Seneca+Army+Depot/>

<http://www.watertowndailytimes.com/article/20080610/NEWS03/94863441/->

<http://www.all-creatures.org/cash/cc2008-wi-1.html>

<http://www.all-creatures.org/cash/cc2008-wi-1.html>

http://www.empiregreenbiofuels.com/news/pdf/News_Article_42607.pdf

On the Superfund status—

http://www.atsdr.cdc.gov/hac/pha/seneca/sad_toc.html

http://www.scorecard.org/env-releases/land/site.tcl?epa_id=NY021382083

Photo credit: Seneca White Deer, Inc., Map credit: <https://www.senecacountyida.org/site/maps>

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Grading Rubric:

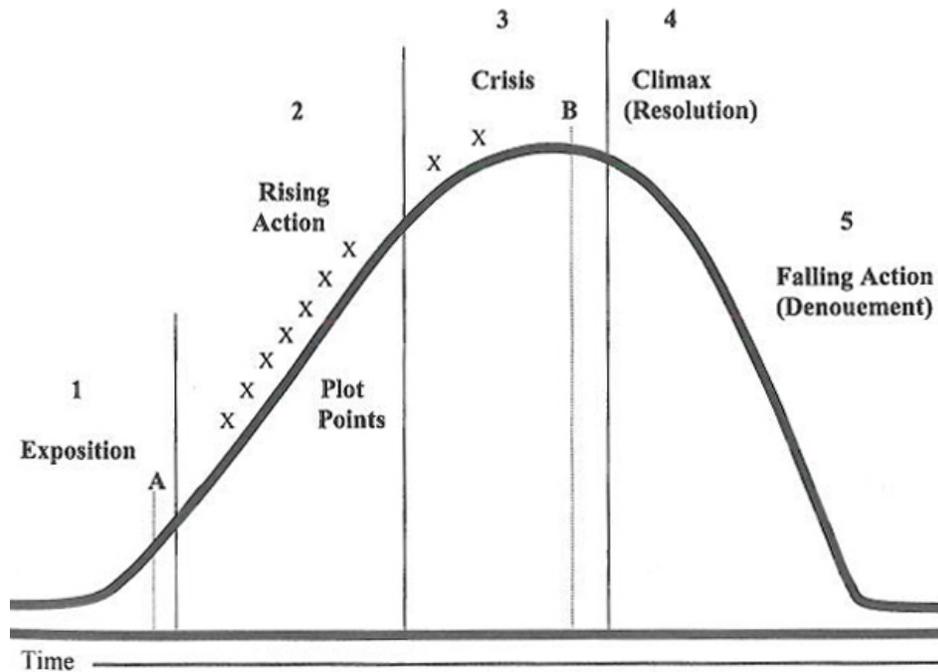
	Exceptional	Acceptable	Unacceptable
Scientific content and development 7 points	Material relates to two themes in invasion sciences; points are clearly made within the context of the story; evidence supports detailed knowledge of the science	Sufficient information relates to two themes in invasions science; many good points made, but there is an uneven balance, poor integration with the story, or limited detailed evidence	Information that is not clearly connected to the two themes in invasion science and/or to the narrative; themes in invasions science is not clear; information included that does not support the themes
Fictional characterization and ideas 5 points	Establishes a strong plot with a rich setting and complex characters that are integrated within the science; ideas are clearly developed with a range of relevant details	Establishes plot/setting/characters; integration within the science should be stronger; relevant ideas are developed clearly	Some elements of story structure; little blending of narrative with the science; uses incomplete or undeveloped ideas
Coherence and organization 5 points	Story follows the arc of a good narrative (exposition, raising action, climax, and falling action); story focus is clear; shows control; flows together well; good transitions; succinct and well organized	Most information presented in the arc sequence; generally well organized but limited transitions between ideas or occasional places where the story requires more focus	Concepts and ideas are loosely connected; lacks clear focus or transitions; flow and organization are choppy
Creativity and material 5 points	Original presentation of material (story, text, graphics, title); uses the unexpected to full advantage; captures audience's attention with creative language and other means; well-varied sentence structure	Some originality apparent; uses concrete language and other means for sensory detail; effective word choice; good sentence structure and variety	Little or no variation; material presented with little originality or interpretation; mechanical and unaware of audience
Writing conventions 3 points	Professional presentation with fluid writing, and correct spelling, punctuation, and grammar. Journal articles, texts, and websites are properly cited to credit others ideas	Organized presentation with conventions of grammar, spelling, and word usage followed; errors do not interfere with communication. Journal articles, texts, and websites are properly cited	Issues with presentation or writing conventions. Citations are missing, incompletely, or inconsistent in formatting

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Planning Activity:

The architecture of your story (Hart, 2011)



Jack Hart (2011) Storycraft: The complete guide to writing narrative nonfiction. University of Chicago Press (Chicago, USA)

Working Title:

Purpose of the piece:

Invasion science hypothesis/theories:

Citations:

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Exposition

Rising Action (plot points)

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Climax (resolution)

Falling action