



Figure 1: Whale Harpoon
 From a Patent Issued to George Hood, British Columbia, Canada, [No. 99,041](#), May 15, 1906.

Gateway Seminar: Environment, Energy, Climate Change

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IMPORTANT DATES

#	Assignment	Date
1	Mini-Essay #1	09/14
2	Key Concept Quiz #1	09/16
3	Mini-Essay #2	09/28
4	Project Pitch	09/30
5	Key Concept Quiz #2	10/14
6	Key Concept Quiz #3	11/04
7	Slide Deck	11/09
8	Memorandum	12/07
9	Personal & Peer Reviews	12/07

COURSE RESOURCES



[Tom's Website](#)



[Online Readings](#)



[Research Tools](#)



[Data Storage](#)



[Energy@Duke](#)

HISTORY 197S

Gateway Seminar: Environment, Energy, Climate Change

Fall 2021

COURSE

Seminar, In-Person Instruction
Tuesdays & Thursdays, 1:45-3:00pm
[Gross Hall 100C](#)

INSTRUCTOR

[Tom J. Cinq-Mars](#)
[Office Hours by Appointment](#)
[Gross Hall 102R](#)

1. PURPOSE

WHALING INDUSTRY.				
	Whale Oil.	Whale Bone.	Total	
	Tons.	Value.	Value.	Value.
1897 \$.	27	\$ 1,330	\$ 241	\$ 1,581
1898 \$.	211	14,439	1,167	15,606
1899 \$.	430	34,694	1,824	36,428
1900 \$.	665½	54,221	13,550	67,771
1901 \$.	1,127½	112,859	12,285	125,144
1902 \$.	2,294	256,372	9,890	266,262

Figure 2: Value of Newfoundland's Whaling Industry, 1897-1902
From the [Evening Herald](#), March 14, 1904, 3.

"The Whale Fishery, which for some years was entirely abandoned," Sir Robert Bond, the Premier of Newfoundland Colony, declared in his Throne Speech of 1902, "is now being vigorously prosecuted by two local companies, and with marked success."¹ Indeed, over the next year alone the colony's whaling industry more than doubled its revenue, generating more than a quarter million Canadian dollars. Whale oil provided a desirable lubricant for fine instruments and so-called whalebone or baleen the filaments for brushes, corsets, as well as other fashion accessories. Yet by 1905, Newfoundland's booming whaling industry started going bust again in a hurry. Dwindling catches and poor market prices – the results of overfishing and novel petroleum products, respectively – forced many new companies to shutter, leaving only a handful in operation by the end of World War I. The remaining enterprises hung on for another five decades, but only by a thread. After two more brief periods of revitalization, Newfoundland whalers recorded their final catch in 1972, seventy-four years after their first.

How did Newfoundland's whaling industry manage to survive for more than a century after petroleum and electricity had rendered its most valuable products all but obsolete? And how did its slaughter of thousands of cetaceans for the sake of their oil and bone alter the surrounding ecosystems? Organized as an environmental history, this course seeks to answer these and related questions by exploring human relationships with the natural world from bygone epochs of muscle-powered machines to fossil- and fissile-fueled modernity. The exploration unfolds in three units. In the first unit, we investigate some principal fuels extracted from *forested* ecosystems like wood, charcoal, and coffee beans. In the second, we look at fuels harvested from *aquatic* ecosystems, including rivers, seas, and even island shores. And in the third, we examine the fuel used within *urban* ecosystems to better understand how natural and built environments overlap. Along the way, we will hone skills in critical thinking, global reading, and persuasive writing with the aim of becoming better citizens of our university, our communities, and ultimately, our entire planet.

¹ Anthony B. Dickinson and Chelsey W. Sanger, [Twentieth Century Shore-Station Whaling in Newfoundland and Labrador](#) (Montreal: McGill-Queen's University Press, 2005), 43n75.

2. OBJECTIVES

By the end of the term, we will meet seven objectives organized according to a modified version of [Bloom's Taxonomy](#) (2001), a widely-accepted framework for categorizing types of knowledge and educational goals.

#	Bloom Level	Description	Assessment
1	REMEMBER	Recall the major themes, questions, and research agendas of the discipline of environmental history .	Reading Workshop
2	UNDERSTAND	Explain proxy data and how historians generate them to advance the study of paleoclimatology.	Reading Workshop
3	APPLY	Model the interaction between human culture and the natural environment in terms of ideas, policies, and impacts.	Reading Workshop
4	ANALYZE	Interpret changes to global climate conditions in terms of anthropogenic influences.	Research Boot Camp
5	EVALUATE	Reframe the organization of human societies across space as well as over time in terms of ecology and geography.	Research Boot Camp
6	CREATE	Craft parts of a detailed congressional briefing on the history of a human energy system.	Team Research Project
7	COLLABORATE	Work together peers to conceive, prepare, and present the same congressional briefing above.	Team Research Project

3. ASSESSMENTS

To meet our objectives, we will complete three assessments of several parts each. Rubrics for each assessment will be distributed throughout the term.

#	Name	Share of Final Grade	Occurrences
1	READING WORKSHOP	40%	
	Longhand Notes	15%	15
	In-Class Discussions	15%	∞
	Key Concept Quiz	10%	3
2	RESEARCH BOOT CAMP	30%	
	Mini-Essays	15%	2
	Project Pitch	15%	1
3	TEAM RESEARCH PROJECT	30%	
	Slide Deck	10%	1
	Group Presentation	10%	1
	Memorandum	10%	1

4. GRADING POLICY

- 1. Rubrics:** Concerned with learning first and foremost, Tom grades assignments according to customized rubrics based on a standard, 4.0 [grading scale](#).
- 2. Deadlines:** Tom expects all students to submit all assignments on-time and will not revisit grades after posting them.
- 3. Accommodations:** Tom will also seek to accommodate, within reason, any student who provides advance notice of a need or special request on any assignment.

5. EXTRA CREDIT

Those interested in earning bonus points will have several opportunities to do so.

#	Opportunity	Requirements	Bonus
1	PUNDITRY PRACTICE	<ul style="list-style-type: none"> – Find a written article about a salient energy topic in a credible news outlet like the New York Times, Mother Jones, or BuzzFeed News. – Prepare a five-minute oral presentation with at least three questions connecting the article to a specific course topic. – Notify Tom about your presentation via email <u>at least one hour</u> before the class begins and deliver it to your classmates with gusto. 	One point to the Discussion grade (max three)
2	ENERGY INITIATIVE VIRTUAL EVENTS	<ul style="list-style-type: none"> – Register for an <u>any</u> EI virtual event. – Attend the event for <u>its duration</u>. – Take a <u>photo or screenshot</u> of the event that clearly shows your face . – Write a <u>three-sentence caption</u> that contains your reflections on the event or a quote from a speaker. – Send the photo/screenshot and caption in an email to Tom within <u>six hours</u> of the event's end. 	One point to the final grade (max three)
3	RESEARCH PROJECT COMPETITION	<ul style="list-style-type: none"> – Earn the highest score in the class for your Team's presentation from a panel of three volunteer judges. 	Five points to the final grade

6. EXPECTATIONS

Throughout the term, we all promise to abide by five core policies.

1. Accommodations

- 1.1. Since all students have the [right](#) to have certain accommodations met, it's best to notify Tom about any needs as soon as possible.
- 1.2. Every possible effort will be made to provide the necessary assistance in a timely and confidential manner.
- 1.3. All students requesting accommodations must be registered with Duke's [Disability Management System](#).

2. Academic Integrity

- 2.1. All written tasks must be completed before class time on the due date unless otherwise specified or prior arrangements are made.
- 2.2. All written work must give credit where credit is due, enabling readers to see proper attributions to all sources mentioned, quoted, and discussed.
- 2.3. So that there is no doubt, review the university's resources on [avoiding plagiarism](#) before starting any writing assignment.

3. Attendance

- 3.1. Attendance in every class along with active and respectful engagement in all class discussions are required.
- 3.2. Excessive tardiness, including arrival more than five minutes after class begins without prior notification, counts as an absence.
- 3.3. Notify Tom of any absences, especially [absences for health reasons](#), beforehand whenever possible.

4. Electronics

- 4.1. Because studies like [this one](#) and [this one](#) and [this one](#) show that students benefit more from taking notes by hand, the use of laptops or tablets during class is generally prohibited unless accommodations are needed. (See #1.)
- 4.2. Students are required to print paper copies of the readings before classtime and bring those readings with them to each class.
- 4.3. However, the use of electronics will be permitted at regular intervals during specific research activities.

5. Syllabus Changes

- 5.1. Given the state of the world at the moment, Tom reserves the right to modify any part of this syllabus at any time for any reason.
- 5.2. Substantial changes will be kept to a minimum.
- 5.3. Students will be notified of any changes as soon as possible.

7. RESEARCH & WRITING RESOURCES

In addition to the objectives listed above, this course provides training in historical research and writing methods. Therefore, we all may find the following to be helpful references throughout the term.

- [Duke Libraries' Environmental Sciences Research Guide](#)
- [Thompson Writing Program Writing Studio](#)
- [Energy Researchers at Duke](#)

8. ORGANIZATION & CALENDAR

This course is divided into three units of about eight classes each. To prepare for most classes, we will take careful notes in longhand on a pair of texts including one piece of academic literature and one [primary source](#). On the calendars below, the academic literature is marked with an asterisk (*) and the primary source material with a dagger (†). Everyone is encouraged to read these materials in the order in which they are listed, i.e. starting with the *academic literature*. In the classroom, we will use these readings as entry points into wide-ranging discussions of fuels and closely related theoretical concepts drawn from the disciplines of ecology, geography, and economics, among others. The fuel/concept pairings appear listed in the table below and in the calendars' **Topics** columns.

Unit #	Class #	Century	Fuel	Concept
I	3	1 BCE	Wood	Energy Budgets
	4	16th CE	Charcoal	Rebound Effect
	5	17th CE	Sugar	Agricultural Revolution
	6	19th CE	Coffee	Resource Complementarity
II	9	17th CE	Fish	Regime Shift
	10	19th CE	Guano	Gas Fluxes
	13	19th-20th CE	Whale Oil	"The Last Gasp"
	14	20th CE	Water	Ecosystem Valuation
	15	20th CE	Petroleum	Oil Reserves & Peak Oil
III	17	19th CE	Hay	Coevolution
	18	19th CE	Coal	Urban Ecology
	19	20th CE	Town Gas	Externality
	20	20th CE	Gasoline	Energy Intensity
	21	20th-21st CE	Plutonium	Compartment Models

9. UNIT 1: FORESTED ECOSYSTEMS

#	Date	Topics	Readings	Assignment
1	Tues., 08/24	Rules of the Game	Syllabus Assignment Guide #1: Longhand Notes	
2	Thurs., 08/26	Approaches	<p><u>Team Reading (One of Three)</u></p> <p>1) Carolyn Merchant, "Chapter 1: Ecology and History," in <i>Ecological Revolutions: Nature, Gender, and Science in New England</i>, 2nd ed. (Chapel Hill, N.C.: University of North Carolina Press, 2010), 1–28.</p> <p>2) Timothy Mitchell, "Chapter 1: Can the Mosquito Speak?," in <i>Rule of Experts: Egypt, Techno-Politics, Modernity</i> (Berkeley, Calif.: University of California Press, 2002), 1–27.</p> <p>3) James C. Scott, "Chapter 1: Nature and Space," in <i>Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed</i> (New Haven, Conn.: Yale University Press, 1999), 11-52.</p>	Longhand Notes #1
3	Tues., 08/31	Wood	<p>* Michael Williams, "Chapter 2: Fire and Foragers," in <i>Deforesting the Earth: From Prehistory to Global Crisis, An Abridgment</i> (Chicago: University of Chicago Press, 2006), 12–34.</p> <p>† James Cook, "Chapter VII," in <i>A Voyage Towards the South Pole, and Round the World. Performed in His Majesty's Ships the Resolution and Adventure, in the Years, 1772, 1773, and 1775</i>, vol. 1, 2 vols. (London: W. Strahan & T. Cadell, 1977), 107–20</p> <p>Assignment Guide #2: Key Concept Quiz</p>	Longhand Notes #2

9. UNIT I: FORESTED ECOSYSTEMS, CONTINUED

#	Date	Topics	Readings	Assignment
4	Thurs., 09/02	Charcoal	<p>* Daviken Studnicki-Gizbert and David Schechter, "The Environmental Dynamics of a Colonial Fuel-Rush: Silver Mining and Deforestation in New Spain, 1522 to 1810," <i>Environmental History</i> 15, no. 1 (January 2010): 94–119.</p> <p>Primary Source Team Reading (One of Two)</p> <p>1) "Ordinances of Mines, Art. 45-59, March 18, 1563," in <i>A Collection of Mining Laws of Spain and Mexico</i> edited by H. W. Halleck (San Francisco, Cal.: O'Meara & Painter, 1859), 40–48.</p> <p>2) "On the Working of the Mines of Stone-Coal... August 15, 1780," in <i>A Collection of Mining Laws of Spain and Mexico</i> (1859), 181–86.</p>	Longhand Notes #3
5	Tues., 09/07	Sugar	<p>* John J. McCusker and Russell R. Menard, "The Sugar Industry in the Seventeenth Century A New Perspective on the Barbadian 'Sugar Revolution,'" in <i>Tropical Babylons...</i>, ed. Stuart B. Schwartz (University of North Carolina Press, 2004), 290–310.</p> <p>† William Cleland, <i>The Present State of the Sugar Plantations Consider'd; but More Especially That of the Island of Barbadoes</i> (London: John Morphew, 1714).</p>	Longhand Notes #4
6	Thurs., 09/09	Coffee	<p>* Stefania Gallini, "A Maya Mam Agro-ecosystem in Guatemala's Coffee Revolution: Costa Cuca, 1830s-1880s," in <i>Territories, Commodities and Knowledges...</i>, ed. Christian Brannstrom (London: Institute for the Study of the Americas, 2004), 23–49.</p> <p>† J. W. Boddam-Whetham, "Chapter VII," in <i>Across Central America</i> (London: Hurst and Blackett, 1877), 71–82.</p>	Longhand Notes #5

9. UNIT I: FORESTED ECOSYSTEMS, CONTINUED

#	Date	Topics	Readings	Assignment
7	Tues., 09/14	Historical Research Questions	Wayne C. Booth et al., " Chapter 3: From Topics to Questions ," in <i>The Craft of Research</i> , 4th ed. (Chicago, Ill.: University of Chicago Press, 2016), 33–48. Benjamin K. Sovacool, " What Are We Doing Here? Analyzing Fifteen Years of Energy Scholarship and Proposing a Social Science Research Agenda ," <i>Energy Research & Social Science</i> 1 (March 1, 2014): 1–29. Assignment Guide #3: Mini Essay	Mini-Essay #1
8	Thurs., 09/16	Unit I Review	N/A	Key Concept Quiz #1

10. UNIT II: AQUACTIC ECOSYSTEMS

#	Date	Topics	Readings	Assignment
9	Tues., 09/21	Fish	<p>* Daniel Vickers, "Those Dammed Shad: Would the River Fisheries of New England Have Survived in the Absence of Industrialization?," <i>The William and Mary Quarterly</i> 61, no. 4 (2004): 685–712.</p> <p>† Henry Hilliard Earl, Fall River and Its Manufactories, 1803-1884, 9th ed. (Fall River, Mass.: Benjamin Earl, 1884), 5-25.</p> <p>Assignment Guide #4: Project Pitch</p>	Longhand Notes #6
10	Thurs., 09/23	Guano	<p>* Gregory T. Cushman, "Introduction," in <i>Guano and the Opening of the Pacific World: A Global Ecological History</i> (New York: Cambridge University Press, 2013), 1–22.</p> <p>† A. J. Duffield, "Chapter III," in <i>Peru in the Guano Age</i> (London: R. Bentley and Son, 1877), 71–101.</p>	Longhand Notes #7
11	Tues., 09/28	Historical Research Arguments	<p>Wayne C. Booth et al., "Making Good Arguments: An Overview," in <i>The Craft of Research</i>, 4th ed. (Chicago, Ill.: University of Chicago Press, 2016), 110–21.</p> <p>Chris Anderson, "How to Give a Killer Presentation," <i>Harvard Business Review</i> 91, no. 6 (June 2013): 121–25.</p>	Mini-Essay #2
12	Thurs. 09/30	Pitch Day	N/A	Project Pitch

10. UNIT II: INDUSTRIALIZING SOCIETY, CONTINUED

#	Date	Topics	Readings	Assignment
13	Tues. 10/05	Whale Oil	<p>* Anthony B. Dickinson and Chesley W. Sanger, "Renewal and Revitalization in Newfoundland and Labrador, 1918-51," in <i>Twentieth-Century Shore-Station Whaling...</i> (Montreal: McGill-Queen's University Press, 2005), 114–30.</p> <p>Primary Source Team Reading (One of Two)</p> <p>F. W. Field, Report on the Trade, Industries and Resources of Newfoundland for 1925 (London: Department of Overseas Trade, 1926).</p> <p>H. F. Gurney, Economic Conditions in Newfoundland, March, 1935 (London: Department of Overseas Trade, 1935).</p>	Longhand Notes #8
14	Thurs. 10/07	Water	<p>* Christopher J. Manganiello, "Hitching the New South to 'White Coal': Water and Power, 1890–1933," <i>The Journal of Southern History</i> 78, no. 2 (2012): 255–92.</p> <p>† Rupert Bayless Vance, "Chapter XII: The Piedmont Crescent of Industry," in <i>Human Geography of the South: A Study in Regional Resources and Human Adequacy</i> (Chapel Hill, N.C.: The University of North Carolina, 1932), 275–315.</p>	Longhand Notes #9
15	Tues. 10/12	Petroleum	<p>* Tyler Priest, "Chapter 2: Testing the Waters," in <i>The Offshore Imperative: Shell Oil's Search for Petroleum in Postwar America</i> (College Station, Tex.: Texas A&M University Press, 2007), 29–72.</p> <p>† Richard J. Howe, "The Evolution of Offshore Mobile Drilling Units," <i>Ocean Industry</i> 1, no. 1 (April 1966): 11–32.</p>	Longhand Notes #10
16	Thurs. 10/14	Unit II Review	N/A	Key Concept Quiz #2

11. UNIT III: URBAN ECOSYSTEMS

#	Date	Topics	Readings	Assignment
17	Tues. 10/19	Hay	<p>* Clay McShane and Joel Tarr, "Markets: The Urban Horse as a Commodity," in <i>Horse in the City: Living Machines in the Nineteenth Century</i> (Baltimore, Md.: Johns Hopkins University Press, 2007), 18–35.</p> <p>† H. B. McClure, Market Hay, Farmers' Bulletin 508 (Washington, D.C.: U.S. Dept. of Agriculture, 1912).</p>	Longhand Notes #11
18	Thurs. 10/21	Coal	<p>* Mark Fiege and William Cronon, "Iron Horses: Nature and the Building of the First U.S. Transcontinental Railroad," in <i>The Republic of Nature: An Environmental History of the United States</i> (Seattle, Wash.: University of Washington Press, 2012), 228–80.</p> <p>† A. A. Humphreys and G. K. Warren, "Reports of Explorations for Railroad Routes from the Mississippi to the Pacific, Chapter I," in <i>Reports of Explorations and Surveys, to Ascertain the Most Practicable and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean</i>, vol. 1 (Washington, D.C.: Beverley Tucker, 1855), 39–55.</p>	Longhand Notes #12
19	Tues. 10/26	Town Gas	<p>* Joel A. Tarr, "Toxic Legacy: The Environmental Impact of the Manufactured Gas Industry in the United States," <i>Technology and Culture</i> 55, no. 1 (2014): 107–47.</p> <p>† William Hosgood Young Webber, "Chapter IV: Gas Lights & Lighting," in <i>Town Gas and Its Uses for the Production of Light, Heat, and Motive Power</i> (New York: D. Van Nostrand Company, 1907), 98–121.</p>	Longhand Notes #13

11. UNIT III: URBAN ECOSYSTEMS, CONTINUED

#	Date	Topics	Readings	Assignment
20	Thurs. 10/28	Gasoline	<p>* Christopher W. Wells, "Chapter Four: Motor-Age Geography," in <i>Car Country: An Environmental History</i> (Seattle, Wash.: University of Washington Press, 2013), 125–71.</p> <p>† Miller McClintock, "Chapter III: Vehicular Traffic Volumes," in <i>Report on San Francisco Citywide Traffic Survey</i>, W.P.A. Project 6108–5863 (San Francisco, Cal.: Works Progress Administration, 1937), 52–82.</p>	Longhand Notes #14
21	Tues. 11/02	Plutonium	<p>* Ian Stacy, "Roads to Ruin on the Atomic Frontier: Environmental Decision Making at the Hanford Nuclear Reservation, 1942–1952," <i>Environmental History</i> 15, no. 3 (2010): 415–48.</p> <p>† U.S. Energy Research and Development Administration, "Yesterday at Hanford: January 1943-December 1974," in <i>Hanford: Yesterday, Today, and Tomorrow</i>, 2nd ed. (Richland, Wash.: Richland Operations Office, 1975), 1–18.</p>	Longhand Notes #15
22	Thurs. 11/04	Unit III Review	N/A	Key Concept Quiz #3
23	Tues. 11/09	Symposium I	N/A	Slide Deck
24	Thurs. 11/11	Symposium II	N/A	

Nota Bene: Research Memoranda and Personal & Peer Reviews due by Tues., 12/07 at 11:59pm!

12. FURTHER READING

- Andrews, Thomas G. [*Killing for Coal: America's Deadliest Labor War*](#). Cambridge, Mass.: Harvard University Press, 2008.
- Brown, Kate. *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters*. New York: Oxford University Press, 2013.
- Browning, Judkin, and Timothy Silver. [*An Environmental History of the Civil War*](#). Chapel Hill, N.C.: University of North Carolina Press, 2020.
- Demuth, Bathsheba. [*Floating Coast: An Environmental History of the Bering Strait*](#). New York: W.W. Norton & Company, 2019.
- Elverskog, Johan. [*The Buddha's Footprint: An Environmental History of Asia*](#). Philadelphia, Pa.: University of Pennsylvania Press, 2020.
- Federico, Giovanni. [*Feeding the World: An Economic History of Agriculture, 1800-2000*](#). 2nd ed. Princeton Economic History of the Western World. Princeton, N.J.: Princeton University Press, 2009.
- Isenberg, Andrew C. [*The Oxford Handbook of Environmental History*](#). *The Oxford Handbook of Environmental History*. New York: Oxford University Press, 2014.
- Josephson, Paul, Nicolai Dronin, Ruben Mnatsakanian, Aleh Cherp, Dmitry Efremenko, and Vladislav Larin. [*An Environmental History of Russia*](#). New York: Cambridge University Press, 2013.
- Klinge, Matthew. [*Emerald City: An Environmental History of Seattle*](#). New Haven, Conn.: Yale University Press, 2007.
- Moran, Emilio F. [*People and Nature: An Introduction to Human Ecological Relations*](#). 2nd ed. Chichester, UK: John Wiley Blackwell, 2017.
- Penna, Anthony N. [*The Human Footprint: A Global Environmental History*](#). 2nd ed. Malden, Mass.: John Wiley & Sons, 2014.
- Uekotter, Frank, ed. [*The Turning Points of Environmental History*](#). Pittsburgh, Pa.: University of Pittsburgh Press, 2010.β