ERTH 2920 – Environmental Policy of the Chesapeake Watershed
Instructor: Professor Jeremy Mathis
Summer Institute Program, Georgetown University
Summer 2025

Course Overview
This 5-week course delves into the environmental policies shaping the Chesapeake Bay watershed, focusing on the challenges of pollution, habitat loss, climate change, and environmental justice. Through a mix of lectures, case studies, guest speakers, and field trips, students will gain insight into how various stakeholders—federal, state, and local governments, as well as NGOs—collaborate to protect and restore the bay's ecosystems.

Learning Objectives
By the end of the course, students will be able to:

1. **Identify** the primary environmental issues affecting the Chesapeake Bay (including pollution, climate change, and habitat degradation).
2. **Analyze** policy frameworks at various government levels and their impact on Chesapeake Bay management.
3. **Examine** how climate change and environmental justice intersect with watershed policy and community well-being.
4. **Evaluate** ongoing restoration projects and propose new policy solutions for future challenges.

Course Structure

- **Week 1:** Introduction to the Chesapeake Watershed and Governance
- **Week 2:** Water Quality, Pollution, and Restoration Policies
- **Week 3:** Climate Change and Its Impact on the Chesapeake Bay
- **Week 4:** Habitat Conservation and Fisheries Management
- **Week 5:** Environmental Justice, Stakeholder Engagement, and Future Directions

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Week 1: Introduction to the Chesapeake Watershed and Governance
Topics

- Physical geography, biodiversity, and socio-economic importance of the Chesapeake Bay
- The role of federal, state, and local governments in watershed management
- The historical context of Chesapeake Bay policies and the Chesapeake Bay Program

Required Readings

1. Chesapeake Bay Program. *2022 State of the Bay Report*.
2. Environmental Protection Agency (EPA). *Total Maximum Daily Load (TMDL) for the Chesapeake Bay*.
3. Chesapeake Bay Foundation. *Saving the Chesapeake Bay: A Comprehensive Overview*.
4. National Research Council. *Nonnative Oysters in the Chesapeake Bay*. (2004)
5. Maryland Department of Natural Resources. "Chesapeake Bay History and Governance Timeline."
6. Phillips, S.W. *The Changing Chesapeake: Then and Now*. U.S. Geological Survey.

7. Boesch, D.F. *Scientific Synthesis of Chesapeake Bay Restoration Progress*. University of Maryland Center for Environmental Science.

Guiding Questions

1. What historical milestones and policy decisions led to the creation of the modern Chesapeake Bay Program?
2. How do federal, state, and local agencies coordinate, and where do challenges arise in this multi-tier governance structure?
3. In what ways have cultural and economic factors shaped environmental priorities in the Chesapeake watershed over time?

Week 2: Water Quality, Pollution, and Restoration Policies
Topics

- Nutrient runoff from agriculture and urban development
- Federal and state regulations for point and non-point source pollution
- The Clean Water Act and TMDL as tools for improving water quality
- Field Trip: Visit to a water treatment facility or agricultural site practicing nutrient runoff reduction

Key Readings

1. EPA. *Clean Water Act: An Overview*.
2. World Resources Institute. *Chesapeake Bay Nutrient Trading: An Innovative Approach to Water Quality*.
3. Chesapeake Bay Program. *Reducing Agricultural Runoff: Best Management Practices*.
4. U.S. EPA. *Chesapeake Bay TMDL Midpoint Assessment Report*.
5. Kleinman, P.J.A., et al. "Managing Agricultural Phosphorus for Water Quality Protection: Principles and Practices." *Journal of Soil and Water Conservation*.
6. Keiser, D.A. & Shapiro, J.S. "Consequences of the Clean Water Act and the Demand for Water Quality." *The Quarterly Journal of Economics*.
7. Chesapeake Bay Commission. *Nutrient Reduction Strategies: Policy Options and Outcomes*.
8. Center for Watershed Protection. *Handbook of Urban Runoff Management*.

Guiding Questions

1. Which regulatory mechanisms are most effective in limiting nutrient runoff, and how do they differ across federal and state levels?
2. What economic incentives or market-based tools (e.g., nutrient trading) show promise or pose challenges in improving water quality?
3. How do stakeholders such as farmers and municipal governments perceive and adapt to these water quality regulations?

Week 3: Climate Change and Its Impact on the Chesapeake Bay
Topics

- Sea-level rise, increased storm intensity, and temperature shifts in the Chesapeake region

- Policy strategies for climate adaptation and mitigation in coastal and watershed communities
- Case Study: Sea-level rise impacts on Maryland's Eastern Shore

Key Readings

1. Chesapeake Bay Program. *Climate Change and the Chesapeake Bay*.
2. Maryland Department of the Environment. *Maryland's Climate Action Plan*.
3. Boesch, D.F. (Ed.). *Global Warming and the Free State: Comprehensive Assessment of Climate Change Impacts in Maryland*.
4. Najjar, R.G., et al. "Potential Climate-Change Impacts on the Chesapeake Bay." *Estuarine, Coastal and Shelf Science*.
5. U.S. Global Change Research Program. *Impacts of Climate Change on the U.S. Coastal Regions*.
6. National Oceanic and Atmospheric Administration (NOAA). *Preparing for Sea-Level Rise in Maryland's Coastal Communities*.
7. Abler, D. "Economics of Climate Adaptation in Coastal Watersheds." *Marine Policy*.
8. Maryland Sea Grant. *Chesapeake Futures: Climate Forecasts and Policy Pathways*.

Guiding Questions

1. What are the most pressing climate-driven threats to the Chesapeake Bay, and how do they compound existing environmental problems?
2. Which climate adaptation policies are in place, and what lessons can be drawn from other coastal or estuarine regions?
3. How might local industries (e.g., fisheries, tourism) adapt to or be reshaped by climate change in the bay?

Week 4: Habitat Conservation and Fisheries Management
Topics

- Policy frameworks for conserving wetlands, forests, and vital aquatic habitats
- The significance of biodiversity for watershed health
- Balancing fisheries conservation with sustainable resource use
- Guest Speaker: NOAA or USGS representative on sustainable fisheries and habitat conservation

Key Readings (7–10)

1. NOAA. *The Chesapeake Bay Blue Crab: Sustainability Challenges*.
2. Chesapeake Conservancy. *Chesapeake Bay Conservation and Restoration Plan*.
3. Rothschild, B.J., et al. "Decline of the Chesapeake Bay Oyster Population: A Century of Habitat Destruction." *Marine Ecology Progress Series*.
4. NAS (National Academies of Sciences). *Fisheries Management and Conservation in Coastal Waters*.
5. Beck, M.W., et al. "The Role of Nearshore Ecosystems as Fish and Shellfish Nurseries." *Issues in Ecology*.
6. Chesapeake Bay Program. *Protecting and Restoring Habitat: Wetlands and Forest Buffers*.

7. Atlantic States Marine Fisheries Commission. *Interstate Fisheries Management Program for Atlantic Species*.
8. Environmental Law Institute. *Legal Tools for Habitat Conservation in the Chesapeake Bay Watershed*.

Guiding Questions

1. Which habitat types are most threatened in the Chesapeake Bay, and what policy measures have proven most effective for their protection?
2. How do fisheries management practices address both ecological health and the economic needs of local communities?
3. In what ways can habitat restoration projects incorporate local stakeholder knowledge and priorities to ensure long-term success?

Week 5: Environmental Justice, Stakeholder Engagement, and Future Directions
Topics

- Environmental justice concerns within the Chesapeake Bay watershed
- Strategies for inclusive policy development and enforcement
- Forward-looking analysis of current restoration projects and innovation in policy
- Final Project Presentations: Students present policy proposals for a Chesapeake Bay environmental challenge

Key Readings (7–10)

1. Environmental Law Institute. *Environmental Justice and the Chesapeake Bay*.
2. National Academy of Public Administration. *Collaborative Policy in the Chesapeake Bay*.
3. Bullard, R.D. "Environmental Justice in the 21st Century." *Energy Justice Journal*.
4. Chesapeake Bay Foundation. *State of the Blueprint: Progress Toward Restoring the Bay*.
5. United Nations Environment Programme. *Inclusive Governance for Sustainable Coastal Management*.
6. EPA. *Environmental Justice 2025 Roadmap*.
7. Chesapeake Bay Program. *Community Engagement Strategies for Equity in Restoration Projects*.
8. Maryland Commission on Environmental Justice and Sustainable Communities. *Annual Report on Environmental Justice in Maryland*.
9. Taylor, D.E. "The Rise of the Environmental Justice Paradigm." *American Behavioral Scientist*.

Guiding Questions

1. How do marginalized communities within the Chesapeake watershed disproportionately bear the brunt of pollution and habitat degradation?
2. What mechanisms can policymakers use to ensure that community voices are integral to environmental decision-making?
3. Which innovative policies or pilot projects show potential for scaling up to address large-scale environmental justice and restoration challenges?

Course Assignments and Evaluation

- **Class Participation (20%)**
  Active involvement in discussions, activities, and field trips.
- **Policy Analysis Paper (30%)**
  A short paper (5–7 pages) critically analyzing a specific environmental policy relevant to the Chesapeake Bay. Students should assess its effectiveness, challenges, and possible improvements.
- **Final Project (50%)**
  Students develop a policy brief or proposal addressing a current environmental challenge in the Chesapeake Bay, culminating in an in-class presentation. They must integrate insights from readings, lectures, and field research.

Required Texts

- **Chesapeake Bay Foundation.** *Saving the Chesapeake Bay: A Comprehensive Overview*.
- **Ruhl, J.B., Kraft, S.E., & Lant, C.L.** *The Law and Policy of Ecosystem Services*.

Additional scholarly articles, government reports, and case studies will be posted on the course website or made available through the library's e-reserve system.

Course Policies

1. **Attendance:** Regular attendance is expected for all lectures and field trips. If you must miss a class for an excused reason, notify the instructor in advance.
2. **Office Hours:** Professor Mathis will hold weekly office hours by appointment. Students are encouraged to discuss assignments, readings, or any questions about the course.
3. **Academic Integrity:** Students must adhere to Georgetown University's Honor Code. Plagiarism or academic dishonesty will result in disciplinary action.
4. **Late Submissions:** Assignments turned in after the due date will be penalized unless previously arranged with the instructor.
5. **Accommodations:** Students requiring special accommodations should contact the Academic Resource Center and inform the instructor within the first week of class.