

**Leadership in Managing Natural Resources for Ecosystem Services and Resilience:
The Case of Estero Bay**

Instructor's Guide

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Keywords:	Natural resources; leadership; climate change
Student Learning Objectives:	<p>Upon completion of this case study students will be able to:</p> <ul style="list-style-type: none"> • <i>Describe</i> the roles of parks/preserves and <i>defend</i> their conservation. • <i>Describe</i> and <i>compare</i> management strategies to improve resilience and resistance of natural resources to natural disasters and climate change. • <i>Critique</i> natural resource management plans and related disaster plans. • <i>Describe</i> leadership frames, <i>evaluate</i> the contributions of leadership frames in natural resource management, and consider how to <i>apply</i> leadership frames in their own careers.
Estimated Time:	Approximately 2 weeks of instructional time, which equates to 6 50-minute class sections plus homework out of class
Background:	<p>Estero Bay Aquatic Preserve, in Lee County Florida, was established in 1966 as Florida’s first aquatic preserve to buffer the Bay from encroaching development. It is bordered by state parks and other recreational sites, including Estero Bay Preserve State Park. The long-term goals of the Florida Coastal Office Aquatic Preserve Program are to protect and enhance ecological integrity, restore areas to their natural condition, encourage sustainable use and stewardship. The hallmark of the Aquatic Preserve Program is issue-based management, allowing for an integrated approach to addressing goals and objectives. The realized and potential impacts of climate change such as rising air and sea surface temperatures, sea level, and hurricane intensity are also cited. Red mangroves are of particular importance in provision of ecosystem services. Hurricane Irma made landfall, approximately 40 miles south of Estero Bay, in Marco Island as a Category 3 on September 10, 2017. In addition to the Estero Bay Aquatic Preserve Management Plan, each park has a Protection Plan that includes “major hurricane.” This Plan includes specific information on preparation, assessment, communication, and resource allocation.</p>
Using this Case Study:	<ul style="list-style-type: none"> • Type of Case Study: Appraisal or Issues – Students will evaluate the role of Leadership Frames in management of the Estero Bay Aquatic Preserve.

	<ul style="list-style-type: none"> • Instructional format: Problem-based learning – students will be asked to think through the role of the Estero Bay Complex, the management effectiveness of the Preserve, and natural disaster preparedness within the context of leadership frames. • This case study could be delivered in a face-to-face setting or an online delivery format. There are multi-media and paper-based versions of the case study. • Multiple videos are posted on the Global Education Lab’s YouTube channel to provide first-hand information about Estero Bay. • With modifications, students can work through the case study individually, in groups, or as a class. • Students will be required to read through a variety of papers and websites to fully understand the case study.
Leadership Frames:	<p>Bolman and Deal (2013) presented a four-frame model for examining leadership situations faced by individuals and organizations. In this case study, all four of the frames should be considered by students.</p> <ul style="list-style-type: none"> • The structural frame focuses on the organizational structure. In this case, students will need to think through how the structure of park management impacts planning and response to natural disasters. • The human resource frame focuses on the competencies needed by individuals. Students will need to think through the training and personal interactions of park and preserve employees. • The political frame focuses on the relationships within and outside the organization. In this case, the relationship with a variety of external stakeholders must be considered. • The symbolic frame focuses on the culture, values, and symbols of the organization. In this case, students must consider the symbolic frames of the various stakeholders.
Suggested Teaching Outline:	<p>Day 1 – 2-hour block Delivery format: Lecture/Video/Class Discussion</p> <ul style="list-style-type: none"> • Topics: <ul style="list-style-type: none"> ○ Overview of the Case Study ○ Leadership frames ○ Parks and resilience/resistance • Discussion – What leadership frames might be important in managing natural resources? What ecosystem services do parks and preserves provide? • Homework – Read Sowcik et al., 2017; Dudley et al., 2011. <p>Day 2 – 1 hour block Delivery Format: Lecture/Video/Class Discussion</p>

	<ul style="list-style-type: none"> • Topics: <ul style="list-style-type: none"> ○ Estero Bay Complex ○ Management Plan • Discussion – What stakeholders may have an interest in the management of the Estero Bay Aquatic Preserve? What leadership frames may be involved in stakeholder relationships? • Homework – Explore park websites <p>Day 3 – 2-hour block Delivery Format: Lecture/Video/Class Discussion</p> <ul style="list-style-type: none"> • Topics: <ul style="list-style-type: none"> ○ Hurricane Irma ○ Estero Bay and Irma • Discussion: What impacts did Hurricane Irma have on South Florida? Was Estero Bay well-prepared for Hurricane Irma? • Homework: National Weather Service websites, Park Manager’s Message video <p>Day 4 – 1 hour block Delivery Format: Class Discussion</p> <ul style="list-style-type: none"> • Topics: <ul style="list-style-type: none"> ○ Synthesis • Discussion: How did each leadership frame contribute to the complex’s success or failure in mitigating the impacts of Hurricane Irma? How might each leadership frame contribute to improving the management of the Estero Bay complex to better respond to future disturbance events?
Assessment:	Students will be assessed based on their participation in discussions, which will be graded using a rubric of the instructor’s choice.
Resources Needed:	Documents: <ul style="list-style-type: none"> • Cangialosi, J.P., A.S. Latta, and R. Berg. 2018. Hurricane Irma. National Hurricane Center Tropical Cyclone Report. AL 112017. 111 pp. https://www.nhc.noaa.gov/data/tcr/AL112017_Irma.pdf • Dudley, N., L. Higgins-Zogib, M. Hockings, K. MacKinnon, T. Sandwith, and S. Stolton. 2011. National parks with benefits: How protecting the planet’s biodiversity also provides ecosystem services. <i>Solutions for a Sustainable and Desirable Future</i> 2(6): 87-95. https://www.thesolutionsjournal.com/article/national-parks-with-benefits-how-protecting-the-planets-biodiversity-also-provides-ecosystem-services/ • Florida Department of Environmental Protection. 2015. Estero Bay Aquatic Preserve Management Plan. 218 pp.

<https://floridadep.gov/rcp/aquatic-preserve/locations/estero-bay-aquatic-preserve>

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https://www.weather.gov/media/mfl/news/HurcnWeb_2019.pdf
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- The National Weather Service, Hurricane Irma Local Report/Summary <https://www.weather.gov/mfl/hurricaneirma>
- West, J.M., S.H. Julius, P. Kareiva, C. Enquist, J.J. Lawler, B. Petersen, A.E. Johnson, and M.R. Shaw. 2009. U.S. Natural Resources and Climate Change: Concepts and Approaches for Management Adaptation. *Environmental Management* **44**: 1001-1021.

Websites:

- Estero Bay Aquatic Preserve <https://floridadep.gov/rcp/aquatic-preserve/locations/estero-bay-aquatic-preserve>
- Estero Bay Preserve State Park <https://www.floridastateparks.org/parks-and-trails/estero-bay-preserve-state-park>
- Koreshan State Park <https://www.floridastateparks.org/parks-and-trails/koreshan-state-park>
- “Manager’s Message” and “People Make the Park,” Estero Bay Preserve State Park <https://www.floridastateparks.org/parks-and-trails/estero-bay-preserve-state-park>

Videos:

- https://youtu.be/kT_MnbygQRM
- https://youtu.be/qX7TU_kKxTc
- <https://youtu.be/Q6CKHot-O9Q>