

# STEWARDSHIP

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# CASCO BAY PLAN

*Stewardship by all  
is vital if Casco  
Bay is to be  
protected for our  
use and  
enjoyment. The  
Management  
Committee  
established the  
following goal and  
objectives:*

**GOAL:**

*All members of  
the Casco Bay  
community act as  
responsible  
stewards to  
protect Casco Bay  
and its watershed.*

**OBJECTIVES:**

- *Change  
individual  
behaviors that  
are detrimental  
to the bay.*
- *Raise awareness  
about the  
importance of  
protecting  
Casco Bay and  
its watershed.*

# STEWARDSHIP

## Introduction

"Each of us has a stewardship somewhere in the great social system," an English minister wrote in 1862. For those of us living in 1996 along the coast of Maine, one of our stewardship responsibilities is to ensure the health of Casco Bay.

*This tremendous resource touches the lives of many Maine citizens, as one of every eight Maine residents lives in communities along the bay, and one of every four residents lives within its watershed.*

The need for improved stewardship is evident in these findings:

- Thirty-seven percent of the clam flats in Casco Bay are closed to harvesting (May 1995).
- Rivers and streams flowing into Casco Bay carry stormwater runoff with toxic contaminants from roadways, suburban development, agricultural fields, and other sources.
- Mussels, an indicator of toxic pollution, in the Fore and Presumpscot rivers have registered high levels of toxic chemicals.



*photo by Cyndy Martin*

- The composition of the bottom-dwelling animal community in Fore River and Back Cove has been drastically altered by stormwater runoff and discharges from combined sewer overflows.
- Terns are disappearing from Casco Bay.

Past generations may have thought that large bodies of water like Casco Bay could tolerate human impacts indefinitely. We no longer have the luxury of this naiveté. In recent decades, we have witnessed the degradation of other estuaries like Chesapeake Bay, where striped bass have been devastated by pollution, and Long Island Sound, where severe oxygen depletion has impacted the ecosystem. We are beginning to understand the consequences of contaminated runoff, toxic discharges, and habitat destruction, and we have started to develop measures needed to prevent such damage.

But who is responsible for the fate of Casco Bay? Is it governments — local, state, and federal? Business? Residents? Developers? Farmers? Ultimately, the responsibility rests with each of us who resides in the Casco Bay watershed. As voters who elect local, state, and federal officials, we help determine the government. Working in offices, stores, and industries around the bay, we represent the businesses. And in our homes and yards, we take actions every day that affect the health of the estuary.

*Responsible stewardship depends on residents cultivating an awareness of Casco Bay that permeates all their everyday actions — making purchases, running errands, casting ballots, serving on town boards, tending gardens and lawns, maintaining cars, and building houses. Only by becoming stewards of Casco Bay, caring for it consistently and managing its resources responsibly, can we preserve it for generations to come.*

## Stewardship Roles

### Individuals

Each of us in the watershed is intimately connected to the bay's ecosystem — from the tap water we drink to the wastewater we flush. Sometimes the consequences of our actions are apparent, such as when a boater spills oil or fuel into the bay; other times, they are less visible, as when someone flushes toxic household products down a drain that leads eventually into the bay.

An action that may seem minor when done by one person can have devastating environmental impacts when multiplied by the 270,000 people in the Casco Bay watershed.

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While the careless actions of ordinary citizens can have a terrible collective impact, constructive actions taken by individuals can have an equally great positive impact. Some of the most beneficial actions include:

- *Become educated* about Casco Bay and its watershed. This is an essential first step. The Casco Bay Estuary Project has brochures and reports available (many of which are in local libraries) and a library of reference materials. See Appendix A for a list of reports prepared for the Casco Bay Estuary Project.
- *Landscape with care.* Maintain vegetated areas along the banks of streams and water bodies to absorb stormwater pollution. Minimize lawn size and eliminate use of fertilizers and pesticides on lawns and gardens. If everyone simply took these two actions, pollution in Casco Bay would be reduced.
- *Carefully dispose of oil and household chemicals.* Take used motor oil back to a service station for proper disposal. Pouring it down a storm drain is like dumping it straight into Casco Bay, and pouring it on the ground can pollute both surface water and groundwater. Likewise, minimize use of toxic products like solvents, cleaners, and batteries, and dispose of these items carefully. The Casco Bay Estuary Project office can provide further information on non-toxic alternatives and recommended disposal methods.
- *Get involved.* Join with others to help protect the bay. There are many groups involved — from your local conservation commission, planning board, or town council to nonprofit organizations working to protect the bay and other regional water bodies.

### **Volunteer Groups**

In recent decades, many concerned citizens have joined together to work for a healthier environment in the Casco Bay watershed. Some of these conservation groups are local (*e.g.*, Presumpscot River Watch, Friends of the Royal River, and Sebago Lake Association); some regional (*e.g.*, Friends of Casco Bay and Conservation Law Foundation); some statewide (*e.g.*, Maine Audubon Society and the Natural Resources Council of Maine); and some are national. They have undertaken a wide range of actions, including water quality monitoring, coastal cleanups, land conservation advocacy, and public education.

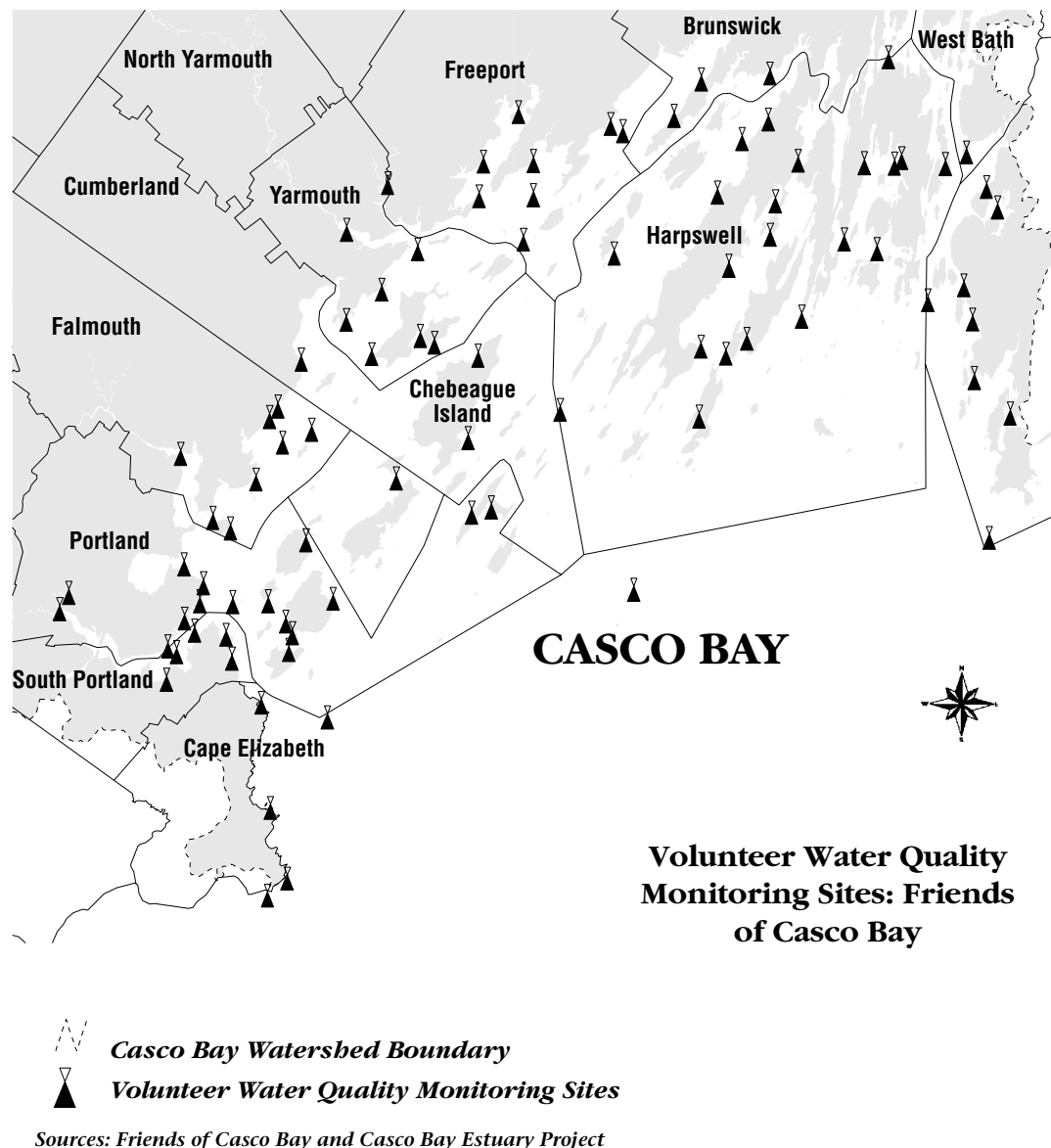
- *Collecting water quality samples.* Systematic water quality sampling provides an “early warning system” for the bay and watershed, revealing the source and location of problems and trends over time.

## Hands Across the Bay

The volunteer water quality monitoring program established by Friends of Casco Bay in 1993 with funding from the Casco Bay Estuary Project now provides the most extensive set of water quality data that exists for the bay. **In 1994, 150 dedicated citizen volunteers conducted monitoring at selected sites from Cape Elizabeth to Cape Small, between April and October.** Teams of trained volunteers measured dissolved oxygen, salinity, pH, temperature, and water clarity in surface water, and reported on wildlife observations, such as nesting ospreys and horseshoe crab activity.

The program establishes baseline data against which to measure improvements or declines in water quality over time, and encourages public awareness by training volunteers and teachers in the science of monitoring water quality and the importance of stewardship. Data collected has already been used by the National Oceanic and Atmospheric Administration and the U.S. Fish and Wildlife Service,

Figure 6-1



validating the credibility of using trained volunteers to collect scientific data.

**Government has not pursued widespread and systematic water quality sampling due to the expense, but several nonprofit groups have undertaken the task, relying on volunteer help from interested citizens and students.** Friends of Casco Bay, Presumpscot River Watch, Friends of the Royal River, area school science classes, and Maine Audubon Society are monitoring water

quality in area rivers and the bay. The more volunteers who participate, the more complete a picture will be made of the watershed and bay's health.

- *Sponsoring clean-up days.* Marine debris poses a threat to wildlife as well as an aesthetic blight. Annual clean-up days, such as those sponsored during the National Coastweek celebration each fall and the local "Land-Sea-Land" event in June, help raise public awareness and improve the environment. *By recording data on debris collected, volunteers establish baseline information to help determine the effectiveness of MARPOL (an international treaty ratified in 1988 that prohibits ocean disposal of plastics and requires ports to provide facilities for ship's trash).*
- *Protecting sensitive habitats through voluntary land conservation.* Many productive and sensitive marshes, fields, and woodlands surround Casco Bay, providing essential wildlife habitat. Nonprofit land trusts, other nonprofit conservation groups, and state and federal resource agencies help conserve land through gifts and conservation easements (which provide tax benefits for the donor) and occasional purchases.
- *Advocating stronger environmental policies.* Statewide organizations like the Natural Resources Council of Maine and the Maine Audubon Society have traditionally advocated in the state legislature for the cleanup of Casco Bay, being joined in recent years by members of local and regional Casco Bay organizations.
- *Educating the public.* Members of bay-related nonprofit groups distribute written materials, attend government meetings, speak at community gatherings, and make presentations in schools.
- *Protecting wild islands through voluntary stewardship.* Overuse and/or abuse of islands by recreational visitors can pose a threat to the health and ecological integrity of is-

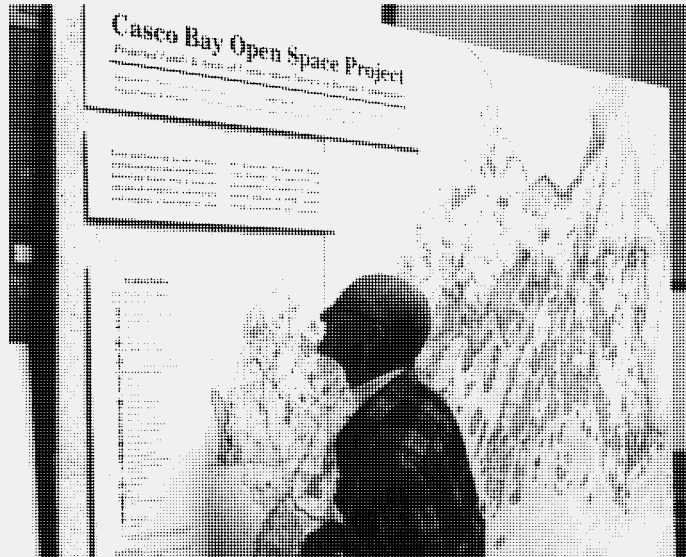


*photo courtesy of Friends of Casco Bay*

lands and their wildlife. Through a user maintenance program carried out by the Maine Island Trail Association, members learn a philosophy of thoughtful use and care for the islands as monitors of island visitor use and condition of islands, and set an example for other

Maine Coast Heritage Trust has completed an open space inventory of conservation lands in the lower Casco Bay watershed. The project produced an 8-foot-square map that depicts a broad range of conservation interests, such as wildlife habitat, wetlands, trail corridors, and scenic views.

The inventory, which involved extensive research in 12 Casco Bay communities, revealed that despite high natural values, less than 5 percent of the land with scenic, cultural, or ecological significance has received any form of permanent protection. **The final map depicts a region with abundant but threatened natural values.** The 1980s brought unprecedented development pressures to these coastal areas. With the recent slowdown in growth, communities now have an opportunity to protect areas of high conservation value. To encourage community groups and municipal governments to take action, Maine Coast Heritage Trust has produced a training manual to use in protecting local open space.



## Local Businesses and Industry

In the past two decades, businesses in Greater Portland have made significant headway in reducing their direct discharge of polluted water into area rivers and the bay. Many businesses continue this progress by taking further actions such as the following:

- *Minimizing use and carefully managing chemicals, oils, and hazardous wastes.* Many businesses must use cleaners, solvents, and other chemicals. If spilled onto paved areas or soils, these materials eventually find their way into Casco Bay or groundwater. Reduced reliance on hazardous chemicals and proper handling of such materials is essential for the region's environmental health.
- *Following "best management practices" for commercial and residential development and natural resource activities.* Responsible practices in site development and maintenance can minimize environmental impacts on the bay. Limiting parking areas and properly managed application of fertilizers and pesticides can reduce polluted stormwater runoff, while maintaining vegetated areas along stream banks can decrease stormwater runoff and erosion.

*"We have  
met the  
enemy and  
he is us."*

— Pogo

**Many non-governmental groups advocate for Casco Bay and its watershed. These groups include:**

Casco Bay Island Development Association  
Congress of Lakes Association  
Friends of Casco Bay  
Friends of the Royal River  
Friends of Presumpscot River  
Gulf of Maine Aquarium  
Gulf of Maine Marine Educators Association  
Highland Lake Association  
Island Institute  
Lakes Environmental Association  
Land Trusts  
League of Women Voters  
Maine Audubon Society  
Maine Coast Heritage Trust  
The Nature Conservancy  
New Meadows River Association  
Portland Harbor Marine Debris Council  
Presumpscot River Watch  
Sebago Lake Association  
Waterfront Alliance

Similarly, natural resource industries (*e.g.*, farming and logging) can employ techniques to minimize impact. The Maine Department of Environmental Protection and the Soil and Water Conservation District provide information and guidance on best management practices for developers, farmers, and loggers to prevent stormwater pollution.

In addition to reducing pollution in-house, many businesses join in advocacy efforts for Casco Bay. One of Maine's key competitive advantages for business is its quality of life; actively promoting the health of Casco Bay helps ensure that asset remains. Business promotes the bay by committing to:

- *Sponsoring Casco Bay events.* These might include clean-up days, conferences, or the printing of educational materials.
- *Joining and contributing to Casco Bay organizations.* This provides credibility and funds for bay groups, while demonstrating the company's environmental commitment and strong spirit of working cooperatively found among Maine's business leaders and volunteer organizations.
- Encouraging research on marine and watershed issues.

### **Municipal Officials**

*As the primary regulators of local land use and development, municipal governments have a strong influence on the future of Casco Bay.* They build and operate sewer systems, manage shellfish flats, plan for their community's future, and maintain conservation and recreation areas. For sound land-management decisions to be made, local officials need technical information and support.

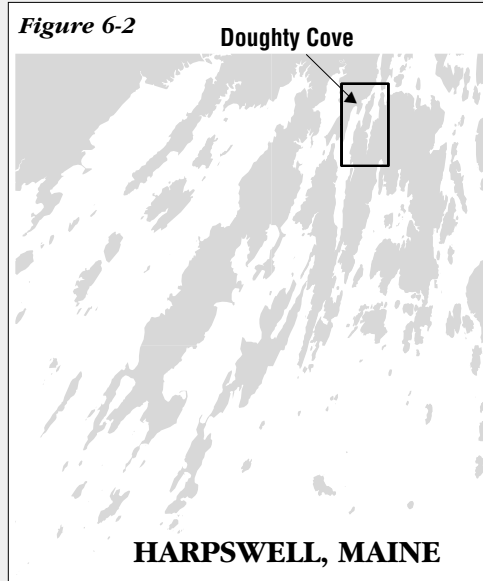
Constrained by limited staff and budgets, municipal officials rarely have the luxury of considering long-term

issues. Yet to ensure the health of Casco Bay, local governments often work with vision and initiative to:

- *Eliminate combined sewer overflows.* These sewer outfalls (which dump raw sewage in the bay when the treatment facilities reach capacity) are major sources of pollution. *Plans have been made to eliminate most of the combined sewer overflows in Portland, South Portland, and Westbrook, but funding remains an obstacle.*



Clam flats are an integral part of Maine's natural and economic history, but many of Casco Bay's flats are closed due to coastal pollution or lack of state resources to monitor the flats. Motivated volunteers on the marine resources committee in Harpswell, working in concert with a marine biologist and landowners next to Doughty Cove, eliminated four potential sources of pollution: a cottage outhouse, a failed septic system, washing machine discharge pipes, and a sewage straight pipe. The town has now reopened 20 acres of productive clam flats.



- *Reduce stormwater pollution through land-use controls.* Development densities, pavement and landscaping, construction practices, and farming methods all affect stormwater pollution. Through the education of local developers, and careful reviews by code enforcement officers and planning boards, these problems can be minimized at little cost (and sometimes a savings) to the applicant.
- *Actively enforce regulations that protect the environment and adopt more stringent regulations when needed.*
- *Monitor, manage, and improve shellfish flats.* For many Casco Bay communities, particularly those in the East Bay, clamming once made a significant contribution to the local economy. Now, 37 percent of the bay's flats are closed, resulting in lost jobs and dollars. *Motivated local governments and volunteers are an invaluable resource when it comes to reopening closed shellfish flats (see box insert).*
- *Encourage recycling and proper waste disposal.* Municipalities in the Casco Bay watershed have made progress recycling paper, glass, and plastics. More needs to be done to help households and businesses dispose of hazardous wastes like oil, household cleaners, pesticides, batteries, and other commonly used chemical products. Since these materials are more expensive to collect and handle, progress has been slower.
- *Involve schools.* School science classes and clubs are a source of people power to take on environmental projects in town, and such involvement gives students firsthand knowledge of watershed issues and responsible stewardship.
- *Use Geographic Information System (GIS) computer-based mapping.* GIS puts a tremendous amount of information about land onto computer maps, where it can be used to support sound decision-making about local land use and develop-

Island ecosystems are among the most fragile and sensitive features of Casco Bay. With the islands experiencing pressure from growing human populations and increased development, their ecological future will be influenced by the young people currently in school.

Through “down-to-earth” field-based learning, more than 100 students from Portland High School helped contribute to a healthy future for Long Island, one of the bay’s larger islands. Portland High School received funding from the Casco Bay Estuary Project to do an ecological characterization of Long Island. Under the guidance of their teachers, students visited the island to take soil and water samples, study geology, collect and analyze marine debris, and interview island residents



*Portland High School students on Long Island.  
photo by Cyndy Martin*

about issues such as waste disposal and the importance of the lobster industry. Students then wrote up an ecological characterization report containing stewardship recommendations.

Biology teacher Cyndy Martin says, “Participants gained a deep sense of personal gratification that results from being a steward, helping to preserve our natural world. And they really got excited about making a contribution to their community.” The Town of Long Island was equally gratified to have the report.

*ment. GIS is being used at the town level to advance municipal initiatives and help implement the Casco Bay Plan.*

- **Protect Open Space.** Local municipalities protect open space through numerous means, from zoning areas for resource protection to acquiring land for the use and enjoyment of citizens.

### **Regional Entities**

Unlike some states, Maine does not have a strong governmental entity at the regional level. Instead, it has many smaller regional organizations that tend to specialize in one activity or another. These regional entities provide opportunities for stewardship.

In Casco Bay, three regional organizations in particular play key roles:

- *The Portland Water District* promotes water quality education and protection in the upper bay watershed, working to maintain Sebago Lake as a clean source of drinking water for Greater Portland.

- *The Cumberland County Soil and Water Conservation District* provides technical help to municipalities, farmers, and builders to minimize soil erosion and improve nutrient management and stormwater management.
- *The Greater Portland Council of Governments* has professional planners to assist member municipalities with planning issues, including information on effective stormwater runoff control.

## State Government

State government has jurisdiction over natural resources held in the public trust: subtidal waters below mean low tide and extending 3 miles out to sea; lakes and ponds greater than 10 acres; in area freshwater wetlands, rivers, and streams; and the plants and animals. To ensure stewardship of this public domain, the state regulates large development projects to prevent unreasonable impact and protect rare and valuable habitat. In the marine environment, the state manages subtidal lands, regulates alteration of coastal wetlands and sand dunes, governs the harvesting of fish and shellfish, and regulates the discharge of contaminants.

The Maine Department of Environmental Protection has recently created a Watershed Division, reflecting a growing awareness that effective management of water quality must take watersheds into account.

*"The approach in the past has been to look at projects on the basis of individual impact. But having spent 15 years as a regulator, it has become painfully obvious to me there has to be a better way. Watershed planning allows us to look at the big picture, regardless of regulatory authority, and teach people to better manage natural resources themselves."*

— **Don Witherill**, Director, Division of Watershed Management,  
Maine Department of Environmental Protection

## Federal Government

The federal government also has an important role to play in protecting Casco Bay. In addition to sponsoring the National Estuary Program (which enabled development of this *Casco Bay Plan*), it holds three major roles:

- Regulating direct pollution discharges, dredging, ocean disposal, discharges of dredged and fill material into wetlands and other waters, and fishing
- Conducting studies and providing information on bay pollution, wildlife habitat, and clean-up activities
- Providing grants and technical assistance

## Recommendations

In the final analysis, responsible stewardship depends on an educated and caring citizenry. The first step in assuring sound stewardship, therefore, is widespread public education about the values and needs of the bay. As this chapter demonstrates, that process has already begun. Local and regional volunteer groups, governmental agencies, and schools are actively working to foster a strong stewardship ethic among watershed residents.

The following actions, recommended as part of the *Casco Bay Plan*, would extend the work of existing groups and ensure more widespread commitment to bay stewardship. The title of each action is listed below. Following the title is the action number. The actions are described more fully in Chapter 7.

### ■ Public Education

- Fund high school students' research. (#1)
- Focus post-secondary educational programs on Casco Bay. (#2)
- Conduct a comprehensive campaign to promote sound homeowner practices. (#3)
- Educate boaters about low-impact practices, non-toxic boat products, and the need to protect sensitive habitats. (#4)
- Develop an environmental habitat kit and guide maps to Casco Bay for the general public. (#5)
- Create an educational site demonstrating how vegetation reduces stormwater runoff. (#6)
- Hold "State of the Bay" conferences. (#7)
- Extend the State Planning Office's new "Marine Volunteer Program" to Casco Bay. (#8)

### ■ Technical Assistance

- Establish a reduction and management program for toxic pollutants in Casco Bay communities and small businesses. (#5)

### ■ Regulatory/Enforcement Plan

- Comply with the pumpout law. (#4)
- Improve local enforcement of the Subsurface Wastewater Disposal Rules. (#6)
- Require proof of legal waste disposal upon transfer of property. (#6)

■ **Planning and Assessment**

- Develop municipal programs to protect water resources and clam flats from septic system discharges. (#1)
- Develop a comprehensive management strategy for dredge material. (#2)
- Research the impact of tax codes on habitat conservation. (#4)
- Develop a plan to restore degraded habitats in Casco Bay. (#5)

## NOTES

