Adopt a Bog

Students learn about the features of a successful bog and use that information to adopt a bog.

What are some key factors that contribute to a successful cranberry bog?

Lesson Overview

In this lesson, which requires two to three class sessions, student pairs assume the role of prospective cranberry growers and select, from three different options, a bog to adopt. Later, in **Challenges Await You**, students will attempt to manage their chosen bogs successfully, making decisions about how to respond to events that come up during a typical twelve-month growing cycle.

In the process of their bog selection, students will be introduced to some key factors that help determine the success of a bog: the local site of the bog, climate and weather in the area, and various resources available to the bog owner. For each of these factors, guiding principles for selecting a promising site are provided by a bog "expert". In addition, specific detail about each of the three bog options is provided. At the end of the lesson, students receive feedback on their choices in the form of an "assessor's report" and are given the opportunity to change their bog selection, based on that report.

A student graphic organizer initially serves as a record so that student pairs can document the information they learn about each bog. The graphic organizer will later be used to help students assess the relative strength and weakness of each site. In addition to completing their personal graphic organizers, students will contribute to a class record, where they weigh the pros and cons of each bog site. Finally, students will formally make their bog selections. To support that choice, students will complete a written assignment (Bog Blog) and provide rationales for their decisions.

Background

There are many characteristics of a well functioning, productive cranberry bog. In this lesson, three main features are highlighted: the locale of the bog; the climate and weather of the bog region; and the available resources that contribute to the well-being of the bog.

Bog locale: An excellent site for a cranberry bog is an open area, although one surrounded by a grove of relatively innocuous plants, such as pines, is also acceptable. On the other hand, a bog situated near a large swath of maples trees is

disadvantageous. Trying to remove emerging maple saplings could destroy the cranberry vines as they grow. A bog requires an adequate and readily available water supply. Similarly, a natural deposit of gravel and sand on site is a great advantage in that the grower does not need to pay for purchase and delivery of these necessary materials. Finally, a regular, rectangular shape provides maximum benefit. Machinery can maneuver about the bog unimpeded by odd corners. Permanent equipment, such as sprinkler systems, can be installed more efficiently than in an irregularly shaped bog.

Climate and weather: Many people know that cranberries are harvested in the fall, but they may not realize that all the seasons play an important role in the life cycle of the cranberry plant. The chilly autumn temperatures in Massachusetts are responsible for the cranberry's deep red color, which is highly prized. Bogs located further south tend to yield a less vibrant color. During the cold, the cranberry plant enters a crucial period of dormancy. Warmer weather towards the middle of March triggers the plant to emerge from its winter dormancy and the growing season begins. However, the young buds—and therefore the entire year's harvest—are very vulnerable to damage by early spring frosts. During the summertime the buds turn to flowers, and the flowers begin to produce fruit. An appropriately wet summer season providing adequate water to the bog is critical. In summer, cranberries require 1½ inches of rain a week; without adequate rainfall, the grower must irrigate the bogs.

Resources: As with any enterprise, support systems are imperative for successful cranberry farming. Cranberry growers are dependent on the assured availability of a local water source to support the bog's needs during times when the local rainfall is insufficient—if not via their own water source, then through deeded rights or purchase from an alternative source (such as a neighboring land owner). The need for water resources continues throughout the year, including the wintertime when harsh conditions can damage the dormant vines, and in the spring, when growers spray their vines with water to protect the plant from spring frost damage. It is essential, therefore, that the grower has a reliable reservoir of water on site for ready use.

State of the art technology enhances productivity. Such technology includes remote controls, as well as automated frost alarms and sprinkler systems; fertilizing, weeding, and harvesting equipment; and real time weather data and other information technology. These provide cranberry growers with tools that help them on a daily basis to grow more and better cranberries.

Cranberry agriculture is benefited by a community that is knowledgeable and supportive of its cranberry neighbor. Such a community might support open space initiatives aimed at protecting the upland regions of the bog wetlands and ensuring adequate buffer zones between farms and land used for other purposes. The bogs, after all, exist within a wetland habitat. Their health depends on a healthy ecosystem—including a wide assortment of plants and animals. The wetland system recharges the local aquifer and provides flood control and storm water drainage. Just as growers benefit from local communities who are committed to open space conservation and wetland habitat protection, communities have a valuable partner in the cranberry grower.

Students have access to the information above via the interactive Web Resource, **Give Me the Information.** You will find that in the case of average rainfall, one year and one hundred year historical data are provided. While cranberry growers investigating a new site would not focus on rainfall information over such a wide time span, we include this data to help students better analyze typical rainfall amounts in a region.

Materials

Chart paper

Exploring Cranberries Web Resources:

Give Me the Information Student Page

Student Worksheet, Student Graphic Organizer, page 1- Listening to the Experts, page 2 – Evaluating the Bogs

Bog Blog

Blue Sky Bog Assessor's

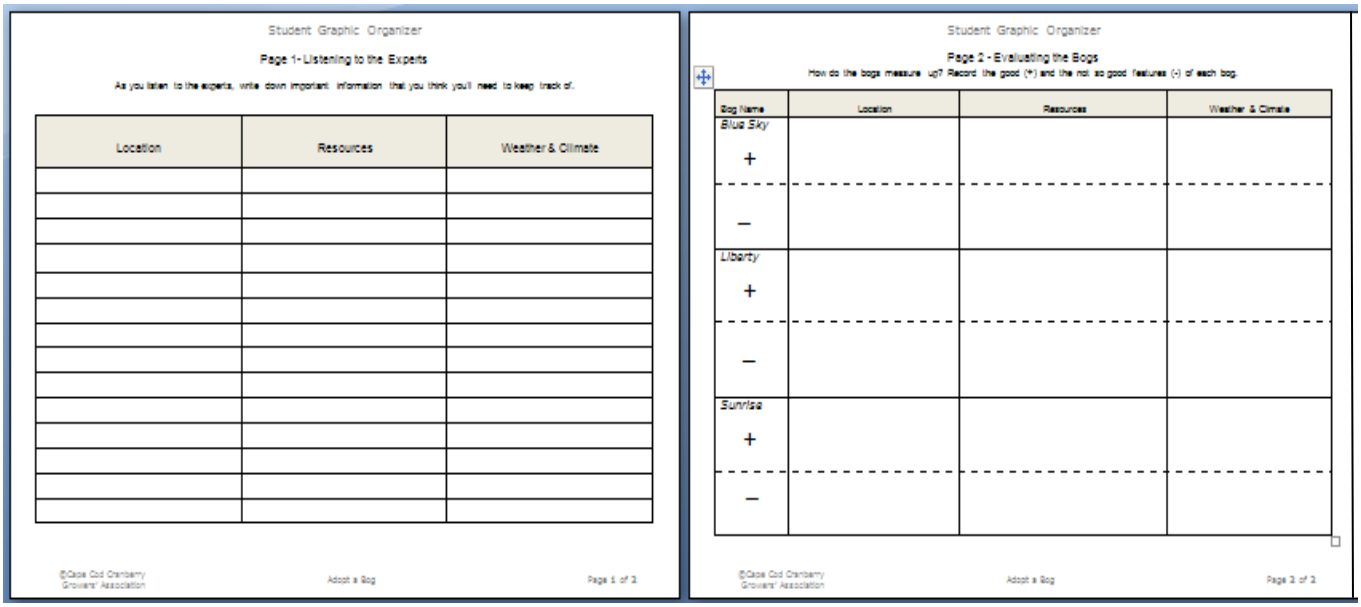
Liberty Bog Assessor's

Sunrise Bog Assessor's Report

Preparation

1. Arrange to have pairs of students work at computer workstations for the duration of this lesson (2-3 sessions).

2. Print out the Student Graphic Organizer (one per pair).



Student Graphic Organizer

Page 1 - Listening to the Experts

As you listen to the experts, write down important information that you think you'll need to keep track of.

Location	Resources	Weather & Climate

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Student Graphic Organizer

Page 2 - Evaluating the Bogs

How do the bogs measure up? Record the good (+) and the not so good features (-) of each bog.

Bog Name	Location	Resources	Weather & Climate
Blue Sky +			
–			
Liberty +			
–			
Sunrise +			
–			

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3. You might review the student resources, **Give Me the Information**, and the assessor's reports so that you will be able to guide students' questions.

Lesson

1. Orient students to their task, resources, and handouts (depending on your grade level, this may take the better part of your first session):

    - Tell students that they will be working in pairs to adopt a bog. Their task will be to select a bog from 3 choices (Blue Sky, Liberty, or Sunrise).

    - Present the idea that in order to make a good decision, there are certain types of information that students will need to collect. Conduct a class discussion about the types of information they think might be useful.

    - Direct the students to the interactive table, **Give Me the Information**.

- Students will first use this interactive table to hear valuable advice regarding the ideal location for a bog, important resources a bog needs, and the type of climate and weather necessary for cranberry plants to thrive. Make sure students understand that they should use the title and header of the table to access the experts.

- Introduce page 1 of the Student Graphic Organizer (SGO), Listening to the Experts. Students use this worksheet to record important points the experts make.

- Tell students that after listening to the experts, they will collect specific information about each bog.

- Introduce page 2 of the SGO, Evaluating the Bogs. Stress to the students the importance of recording all information they learn about each bog. They will use this SGO as a tool for helping them track and evaluate information about each bog they encounter. Point out where to document positive and negative features of each bog.

- Distribute pages 1 and 2 of the SGO to each team. Point out that each column title indicates the types of information they will collect for each bog (location, resources, weather & climate). Encourage students to try out the interactive components by clicking on the links. Allow for ample exploration time.

2. As a whole class, address whether there are any questions or confusions with the **Give Me the Information** table or the SGO. Check to make sure all pairs understand where they can access different types of information and how they will use the SGO.

3. Have students begin to gather and record the information from the interactive, **Give Me the Information**. As they work, and at the end of each session, check in with students, and help them make connections between the expert opinions and the specific bog features.

4. Conduct group discussions at the end of the first and second sessions for the whole class to hear ideas that are emerging. Begin keeping a class documentation chart, where students can publicly record their thinking about the positive and negative aspects of each bog. This public forum can elicit good student discussion and critical thinking.

5. As student pairs complete their information gathering on the SGO, instruct them to come to a preliminary decision about which bog to adopt and to record that decision at the bottom of their SGO.

6. Have student pairs access and review the assessor's report for the bog they decided to adopt.

   Note: Based on the overall data presented to the students, the only viable bog adoptions are Blue Sky and Sunrise. Liberty bog is not a suitable selection because of warm winter temperatures and insufficient water resources. The assessor's reports do not expressly approve or reject a specific bog to allow for student reflection, conversation, and critical thinking.

7. When student pairs have made their final adoption selection, direct them to the Bog Blog, where each student will compose a persuasive article, defending his or her bog decision.