

Salt Hay

Advertising an Extraordinary Product

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www.cumauricriver.org

1 Objectives:

Students will be able to:

- describe the variety of uses for salt hay, both historically and at present;
- identify and describe the characteristics of the *spartina* grasses;
- describe the method utilized for salt hay harvesting, both historically and at present.

CORRELATION TO NJCCCS:

The correlations in this publication were done prior to 2002 utilizing the older standards from 1994.

ART: 1.3 (1), 1.4 (1)

SOCIAL STUDIES:

6.4 (1), 6.5 (4), 6.6 (5), 6.9 (1, 2, 3)

SCIENCE: 5.12 (2, 4, 5)

Subject Areas

Art, Language Art, Science, History, Social Studies

Duration

One or two class periods.

Setting

Classroom.

Charting the Course

The historical harvest and uses for salt hay have had a significant impact and influence on Barnegat Bay's shore region. Many of the salt marshes were disliked and transformed. This practice caused alterations in the natural flow of tidal water, as well as the dominant plant and animal communities that resulted. Salt hay harvesting was an integral part of the Barnegat Bay tradition and region.

Skills

Comparing, interpreting, designing, summarizing.

Vocabulary

Salt hay, advertisement, fodder, insulation, harvest, haycock.

2

Materials

- A variety of magazines for investigation into advertising technique and examples.
- Copy of Salt Hay Fact Sheet (one per group of four students) (with graphics).
- Photographs/sketches of salt hay harvesting
- A variety of art supplies for designing and creating advertisements

3

Making Connections

Perhaps the most common natural landscape and habitat associated with the southern bay shore of New Jersey, and indeed the entire Mid-Atlantic estuarine environment, is the salt marsh. The salt marshes of southern New Jersey are vast meadows that stretch across the entire bay shore region. These wetlands fringe the brackish influx of water as it meanders and moves with the tides up the adjacent shoreline. As you move up the rivers and tributaries, the salt marshes gradually give way to fresh water marshes as the salinity decreases. Salt marshes are a significant natural feature of the landscape of Southern New Jersey, and play a significant role in the development of the region.



4

Background

Reprinted from *Barnegat Bay Decoy and Bayman's Museum Fact Sheet*, "Salt Hay Harvesting," by Terry O' Leary.

Gathering salt hay has been a traditional resource-based occupation along the Jersey Coast since colonial times. The arduous task of cutting, raking, baling and transporting salt hay from the wet, muddy and insect infested salt marshes of South Jersey was offset by the fact that literally tons of salt hay could be harvested annually without cultivation. In addition, the wide variety of uses for salt hay made it a valuable crop for the early settlers and the salt hay industry continued to thrive until just a few years ago.

Salt hay is virtually impervious to rot and it contains no weed seeds like other types of hay. The fine wiry salt hay has been used as insulation material in preventing frost damage for tender agricultural crops such as strawberries, and for insulating freshly poured concrete. Salt marshes have also been used in the past as pastureland. Many of the barrier islands, once virtually uninhabited, were used as pasture by free ranging cattle. The best producing salt meadows yielded up to three tons of salt hay per acre and could be harvested twice during the growing season.

Four types of salt hay generally harvested from the salt meadows are:

SALT HAY GRASS (*Spartina patens*), which is perennial spreading grass. It often forms cowlicked mats in the high salt marsh.

SALT MARSH CORD GRASS (*Spartina alterniflora*), which grows in the regularly tidal flooded low salt marsh. This grass was utilized to some extent, but was difficult to harvest.

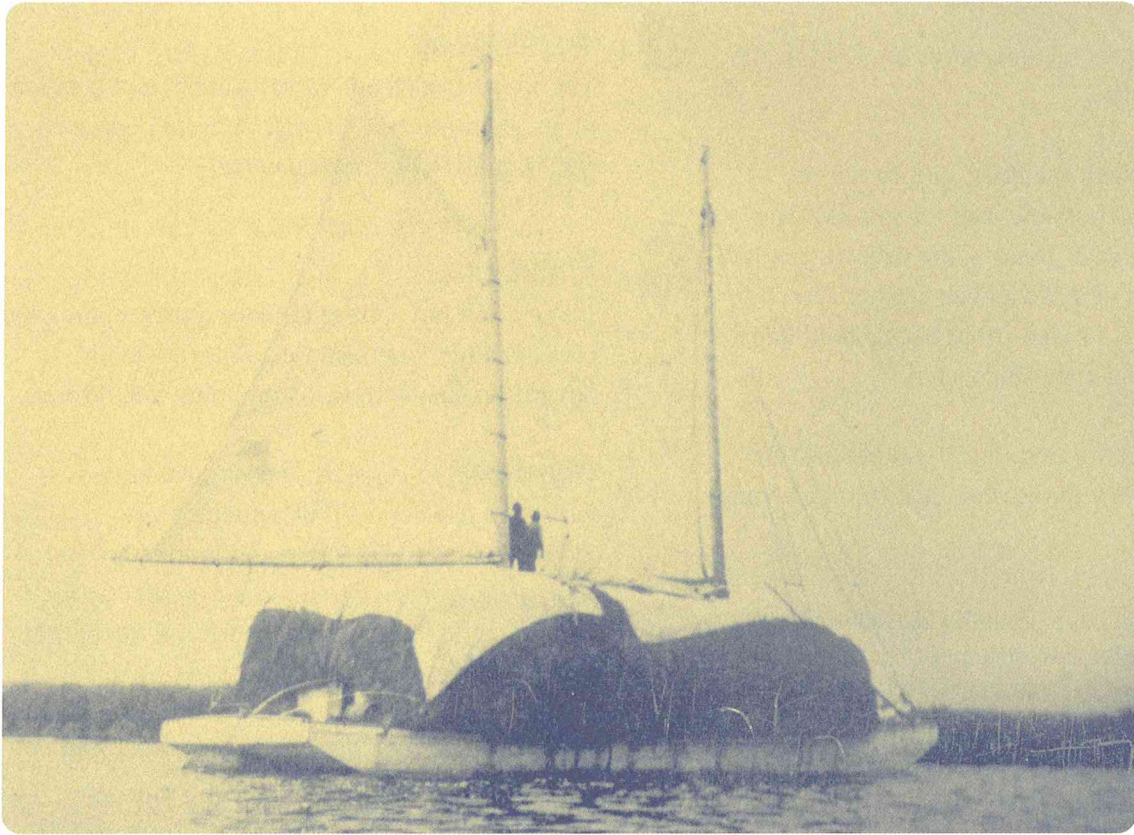
BLACK GRASS (*Juncus gerardii*), which is found at the upper edges of salt marshes, was favored as silage to feed cattle during the winter.

THREE SQUARE GRASS (*Scirpus olneyi*), which has a vigorous root system. As it grows, it slowly adds to the elevation of the salt marsh and actually helps to provide conditions favorable for the growth of the more useful Salt Hay Grass.

Salt hay was used to prevent erosion on construction sites. Builders have used salt hay over concrete work and masonry to prevent freezing. It is used for drainage in drywell construction and around septic tanks. Bulkheaders have used salt hay around docks and behind bulkheads. It was used as bedding in stables. After being used and mixed with manure, although it was slow to decompose, it did ultimately produce an excellent compost. Nurseries and farmers used salt hay as a mulch in gardening, seeding lawns, and landscaping.

It was a packing material for bricks, glassware and pottery, and was the chief insulation material for old time icehouses. Salt hay was placed on sugar sand roads to provide traction.

It was also the chief raw material in the once



Bringin' in the hay!"

PHOTO: Courtesy Tuckerton Seaport archives



prosperous industry at Harrisville to make brown butcher paper and heavy grade wrapping paper, with one mill there turning out nearly a ton of paper a day. Years ago, market gunners packed barrels of ducks and geese with layers of salt hay and shipped the waterfowl by train to fine restaurants in New York and Philadelphia.

The harvesting of salt hay was a specialized business – a tribute to the resourcefulness of the baymen. After the salt hay was cut, either by hand with a scythe, or with a horse-powered mowing machine, it was raked into windrows and then pitch forked into haystacks and left to dry for about one week. The salt hay was then hand loaded onto a shallow draft hay scow, heaped into an enormous stack and towed by one or more pole boats or sailing garveys to be shipped to market.

5

Procedure

WARM UP:

In order for students to be able to create an effective advertisement for salt hay, they need to investigate and determine what characteristics and qualities are necessary. Accordingly, the warm up for this activity could be a simple 15 minute group activity, or a full class period accompanied by a homework assignment. The duration is totally dependent on the teacher's preference and the applicability of this activity to their curriculum, needs, and available time.

Begin the discussion by having students flip through and skim magazines for advertisements. This may be done individually or in small groups, or even as a preparatory homework assignment. Advertisements that are eye-catching, persuasive, and well laid out, or could generally be considered a success or effective, should be cut out and glued/taped to a piece of paper. Each student could be responsible for one or two of the best advertisements they can find. For each advertisement, students should determine the qualities and criteria that make it a successful advertisement. This, again, could be done as a small group or individually.

THE ACTIVITY

- Briefly describe the processes involved in the harvest of salt hay.
- Brainstorm with the class, and list on the chalk board, the possible uses for salt hay. See if they can guess what some of the uses for salt hay may have been or still are. The teacher can coax and give hints if needed (from background information, personal knowledge, etc.).
- Distribute to the class the “Uses of Salt Hay” fact sheet. Review the reasons that salt hay is and was harvested.
- Give the following assignment: Using the criteria for an effective advertisement (as determined by Warm-Up activity), design an advertisement for salt hay. Be sure to allow students to be as creative, innovative, and elaborate as time will allow. They can choose one specific use to highlight, or attempt to include all the functions and uses for salt hay.

WRAP UP

- Students share/explain/describe their advertisements to the class.
- The students can be given the criteria (as determined from the warm up) and asked to critique or vote on the best advertisements.
- Students’ advertisements could be displayed on a bulletin board in the classroom and/or in the school building entrance area.

ACTION

- Students can investigate the region and community to look for people or areas that were once part of this significant development in agriculture and the economy.
- Identifying traditional families that were involved and applying the activity “*Saving Local History*” (in the “Discover People and Places in Our Watershed” Section) could be an appropriate way to tie together a sequence of events, topics, and issues.

6

Assessment

The actual completion of assignment and creation of an advertisement, as well as overall participation in the activity’s components.

7

Extensions

Invite a salt hay farmer to make a presentation to class, conduct oral histories, share students’ advertisements with the community and farmers.

QUESTIONS to consider and for further discussions and development of activity:

- There was a higher demand in the past and more people involved/employed in salt hay farming along the Barnegat Bay shore and the entire Mid-Atlantic Coast. Why?
- What items and products have replaced the functions and uses of salt hay? Are they more readily available and economically feasible alternatives? Examples are styrofoam peanuts for packing, bubble wrap, “bagged” mulch, fodder (cultivated, high yielding, grain crops etc..)
- What are some of the environmental impacts of the alternative products?
- What were some of the cultural and environmental impacts of salt hay farming? Compare them.

8

Resources

PSE&G Estuary

Enhancement fact sheets.

Contact Marcia Walton,
Education Coordinator, at (609) 339-7915

From Marsh to Farm: The Landscape

Transformation of Coastal New Jersey, by Kimberly Sebold, National Park Service, available from the NJ Coastal Heritage Trail Office at (609) 447-0103 for \$7 per copy.

USES OF SALT HAY Fact Sheet

Salt hay harvested from the salt marshes along the Barnegat Bay shore was truly an “extraordinary” product based on the ingenuity of the people who realized its value and abundance. It was extremely versatile and had a wide array of uses which included:

Insulation for sensitive crops (e.g., strawberries)

Fodder (feed) for cattle and other livestock
(as pasture land for grazing)

Mulch (seeds cannot adapt to upland conditions,
so it is virtually weedless)

Packing material- glassware, pottery, etc.

Raw material for paper

Thatch for barn roofs

Stable bedding for horses and cattle

Traction on roads

Protection on newly poured concrete

Rope (used to help form cast-iron pipe)

Stuffing for coffin mattresses

Reprinted from: From Marsh to Farm: The Landscape Transformation of Coastal New Jersey,
U.S Department of the Interior, National Park Service, New Jersey Coastal Heritage Trail, 1992, by
Kimberly R. Sebold pages 54-56.

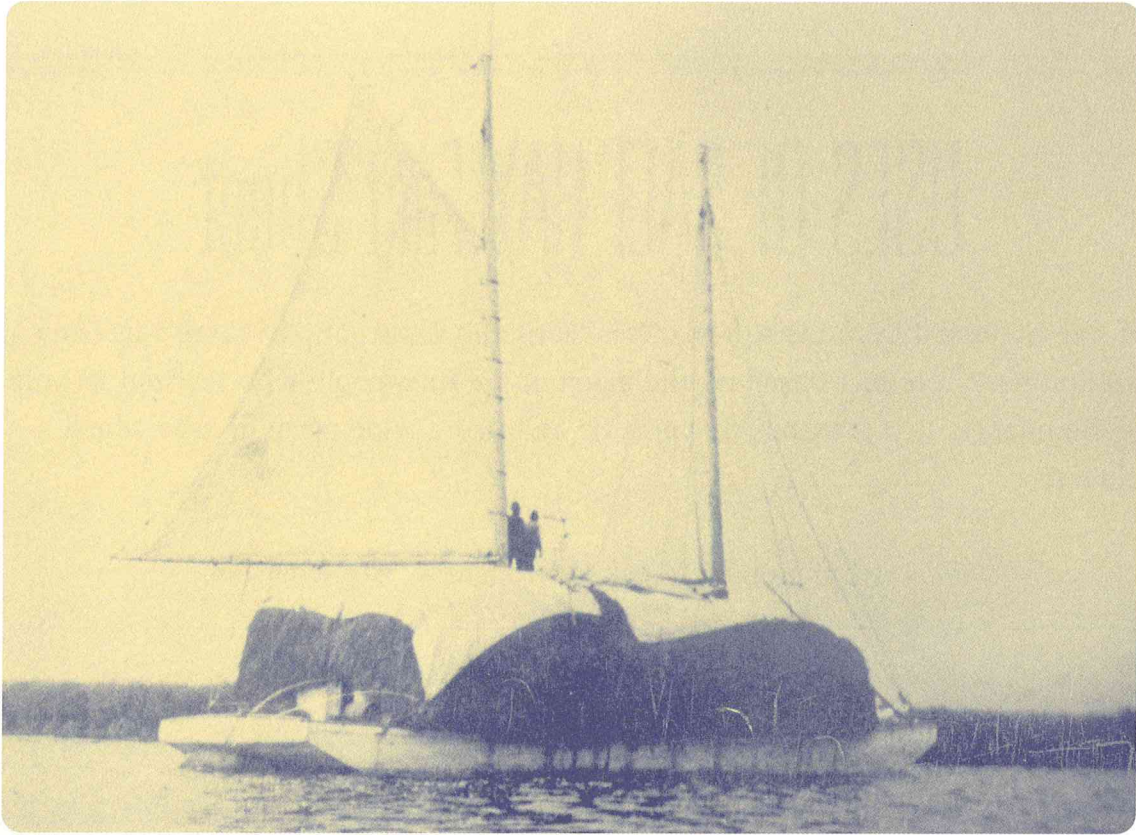


PHOTO: Courtesy Tuckerton Seaport archives

SALT MARSHES

The salt marsh is a habitat unique to the estuarine and coastal zone. Barnegat Bay's shorelines are characteristically lined with these highly productive ecosystems. Many acres of saltmarsh have been destroyed and filled in as residential developments. Fortunately, numerous expanses of saltmarsh still exist and have been preserved from future development. In New Jersey, the salt marsh is characterized by a few plant species including salt marsh cordgrass (*Spartina alterniflora*.) This plant is extremely successful, probably due to the lack of competition from other plants in this environment that is characterized by twin stresses of flooding and salt. Salt marsh salinity varies from nearly fresh to very salty, depending on the amount of rainfall and freshwater inflow. In New Jersey, the salt marsh is inundated with brackish bay water twice daily (diurnal tides.) A salt marsh is one of the most highly productive ecosystems and rivals even the cultivated and farmed field, as well as the tropical rainforest. Salt marshes are an exciting place to visit at any time of the year. Beware of mosquitoes, green heads and black flies in the spring and throughout the summer.

Reflections on the Salt Marsh

By Christine Raabe and Rich King

Large expanses of saltmarsh and wetlands engulf the back bay. They create a system of nutrient flow that feeds the entire estuary ecosystem. Everything that sur-

vives here must be able to withstand constant changes in temperature, salinity, and oxygen levels. Consequently, all the organisms of the salt marsh are truly the "super heroes" of adaptation. But as important as any of these species are, one is so uniquely successful, that it rarely leaves your view and is included in most images

included in this program. It is *Spartina alterniflora*, commonly known as cordgrass, and it accounts for most of the productivity of the salt marsh.

Through an amazing, one of a kind, adaptation to the harsh changes of daily tides, *Spartina Alterniflora* invades even the lowest areas of tidal influence. There is little competition from other plants, abundant sunshine (no trees to shade and block photosynthesis), and high nutrient availability due to the dumping of nutrients and minerals into the estuary from the rivers and streams.

The roots and stems of *Spartina*, by the sheer mass of their success, are now well adapted to trap and store these nutrients in the marsh so they will be available for future growth.

Spartina patens, also known as salt hay, is found in the higher marsh areas where it can survive occasional high tides (twice each month during the new and full moons; and during storm events). Few species can survive the stress and harsh conditions here, but *Spartina* grasses have found their niche. Called halophytes, they have adapted to be able to pull nearly fresh water from the salty water that surrounds them. They are able to do this through special glands that excrete salt through the shoots and leaves. These grasses thrive in the brackish waters of our bay where most plants would die and have the ability to utilize the abundance of nutrients found here. In fact, in the lower areas of tidal influence up and down most of our coast, it is the only vascular plant that does survive.

Very few animals feed directly on the *Spartina* grass. Despite few direct feeders, the grass does provide the nutrients and energy that feeds the entire estuarine system.

Though often overlooked or viewed with disdain, large expanses of *Spartina* grasses cover the saltmarsh and create an ecosystem considered one of the most pro-

ductive in the world. The grasses, while filtering and cleaning the water of the estuary through its roots, also stabilizes the sediments found here. As the grass photosynthesizes, it creates a food source that provides energy to a number of wildlife species. Estuaries produce more food per acre than the richest farmland due to the mixing of nutrients from land and sea.

As the grass dies, it is decomposed by fungi and bacteria and becomes detritus (the compost of the bay). It is not very appealing and, when totally decomposed, might even be called muck. This is the cause of the typical “rotten egg smell” often associated with bays. The anaerobic (without oxygen) decomposition of such huge quantities of organic materials produces hydrogen sulfide gas. Nevertheless, it is food—huge amounts of food that is spread throughout the estuary by tides and currents. Here, it feeds the multitude of organisms, called primary consumers, which depend on its nutrition and, either directly or indirectly, move its energy up the food chain. All of the wildlife that exists in and around the bay depend on this abundant food source to fuel the system.

**EXCERPT FROM “THE DYNAMICS OF OUR ESTUARY”
SLIDE PROGRAM SCRIPT.**

This slide program is available to borrow from the Ocean County AVA Commission through most school media centers. It is a wonderful introduction to the abundant life that depends on Barnegat Bay and our estuary. It also contains beautiful photographs taken right on Barnegat Bay.

A wonderful resource for those who want to know more about the function and dynamics of the salt marsh ecosystem is the book entitled “Life and Death of a Salt Marsh” by John and Mildred Teal (Audubon Ballantine Books).

SALT HAY HARVESTING

Gathering salt hay has been a traditional resource-based occupation along the Jersey coast since colonial times. The arduous task of cutting, raking, baling and transporting salt hay from the wet, muddy and insect infested salt marshes of South Jersey was offset by the fact that literally tons of salt hay could be harvested annually without cultivation. In addition, the wide variety of uses for Salt hay made it a valuable crop for the early settlers and the salt hay industry continued to thrive until just a few years ago.

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Four types of salt hay generally harvested from the salt meadows are:

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Salt Marsh Cordgrass (*Spartina alterniflora*) which grows in the regularly tidal flooded low salt marsh. This grass was utilized to some extent but was difficult to harvest.

Black Grass (*Juncus gerardii*) which is found at upper edges of salt marshes, was favored as a silage to feed cattle during the winter.

Three Square Grass (*Scirpus olneyi*) which has a vigorous root system. As it grows it slowly adds to the elevation of the salt marsh and actually helps to provide conditions favorable for the growth of the more useful salt hay Grass.

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The harvesting of salt hay was a specialized business, a tribute to the resourcefulness of the Baymen. After the salt hay was cut either with a scythe or with a horse powered mowing machine, it was raked into windrows and then pitch forked into haystacks and left to dry for about a week. The salt hay was then hand loaded onto a shallow draft hay scow heaped into an enormous stack and towed by one or more pile boats or sailing garveys to be shipped to market.

In some areas that were accessible to hay wagons, teams of horses or oxen were used to haul salt hay. The oxen were harnessed and wore specially made collars but were seldom shod.

When horses were used on the meadows their hind feet were shod with enlarged mud

boots crafted from either leather, wood or iron to keep the horses from being mired in the mud. Years ago in Tuckerton, a specialized mud-shoe developed by salt hay farmer Charles Mott was made by local blacksmiths Bob Webster and George Bishop. They took ordinary horseshoes and added heavy iron loops of wire to the outside curve of the horseshoes and bent the loops upward to make an innovative and effective mud shoe.

Due to the voracious appetites of the salt marsh mosquito and greenhead flies, the heads of the horses were covered with sacks with eye and ear holes cut in them. They also blanketed the horses with burlap aprons.

During harvesting many of the salt hay men stayed on the edge of the meadows or in an elevated island of trees in the salt marsh called a "Hummock". They stayed overnight in a shack or temporary shelter known as "Harvest Quarters". The name of the town of Harvey Cedars is derived from the original name "Harvest Cedars" from the thickly forested elevated hummock found there.

At around the turn of the century, salt hay was marketed for \$5 per ton as compared to \$3 per ton in 1835. The industry has declined markedly over the years, even though as recently as 1955 the market value for salt hay was between \$16 and \$25 per ton.

Those who harvested salt hay were a tough breed, as the salt marshes can be a harsh and unforgiving environment, because of mud, extreme heat, strong winds and extreme cold, not to mention the swarms of greenheads and mosquitoes. According to Emilie Weber Brown, the daughter of legendary salt hayman, Charlie Weber of Wading River, "It is a known that a Jersey mosquito will not bother a real Bayman from downshore--his hide is too tough!"

Reprinted from *Barnegat Bay Decoy and Bayman's Museum Fact Sheet*, by Terry O' Leary.