Your Creek
Love Creek on Rehoboth Bay
The Love Creek Report looks at these important *environmental indicators*:

*specific species and conditions that are measured over time to determine how the Bays are changing and how much progress has been made toward restoration goals.

- Land use
- Septic systems
- Nutrient loads
- Nutrient concentrations
- Dissolved oxygen
- Fecal bacteria
- Bay grasses
**LAND USE:** The Love Creek watershed is changing

Increased population

Drives residential and commercial development

Bringing increased traffic

And creating a need for additional infrastructure

These changes put Love Creek at risk for water quality degradation and declining overall watershed health.
LAND USE: Development is increasing

The 2008 recession slowed development for a time, but many projects that were put on hold are now underway...

Loss of forests and marshes along the shorelines of the creek and its tributaries could have a significant impact on the health of the creek.
LAND USE: Development is increasing

Patterns of land use change around Love Creek
LAND USE: Changes in land use around Love Creek

Developed land increasing - upland forest and agricultural land decreasing

Changes in Landuse of the Love Creek Watershed from 1992 to 2012

- Developed: 2.91
- Open Water: 0.08
- Wetlands: 0.06
- Other: -0.04
- Upland Forest: -1.15
- Agriculture: -1.87
Land use is changing around the Inland Bays...
Septic systems can be a significant source of nutrient pollution to creeks.

Switching to central sewer leads to better sewage treatment and helps prevent nutrient pollution.
SEPTIC SYSTEMS:
Love Creek watershed has a high number and density of septic systems compared to other creek watershed around the Inland Bays.

According to Sussex County, the Love Creek area is next in line to get public sewer. Funding has been secured and the design is almost complete.
Nutrients are important for the growth of beneficial grasses and algae in tidal creeks. However, too many nutrients can cause an excess of algae, low oxygen levels, and cloudy water. **Nitrogen is the major pollutant in Love Creek.**

Red dotted line marks the goal for Nitrogen reduction in Love Creek. **We are not meeting the goal.**
Nutrient pollution is the major problem facing the Inland Bays.
DISSOLVED OXYGEN: Levels are too low

Dissolved oxygen supports healthy and diverse populations of aquatic life.

In the past, upstream portions of the creek have had low and very fluctuating oxygen levels... not healthy for aquatic life.

Delaware has a minimum standard of 4 mg/L for tidal creeks to be considered healthy.
Water quality in Love Creek is worsening due to increased levels of harmful bacteria. Love Creek water exceeds the safe standard roughly 20% of the time (during the swimming season). The overall trend shows this is getting worse. Identifying and removing sources of harmful bacteria needs to be a priority.
BACTERIA POLLUTION: Levels are too high

- Average fecal bacteria levels from June – September exceed the safe swimming standard in Love Creek.
- DNREC ordered a portion of Love Creek closed to all commercial and recreational shellfish harvesting due to increased bacteria levels.
Much of the shoreline on the upper creek is still forested.

While many other area creeks have banks that are taken over by invasive Phragmites… on Love Creek there are still forested banks with a diversity of trees, and shrubs and wildflowers in the marshes.

In summer and early autumn, the marsh on upper Love Creek is ablaze with flowers, including some that are rare in Delaware.
More good news...

Bay Grass: A good sign

While bay grasses have seen drastic declines throughout the Inland Bays...

Love Creek hosts the only large meadows of bay grass known in the Inland Bays

The presence of bay grasses, like Horned Pondweed, is a good sign for the health of Love Creek!
The Love Creek Report
Data the community can use to monitor changes that could threaten the health and beauty of Love Creek
We can help Love Creek!

Recommendations for the Love Creek watershed

In your lawn and garden...

- Garden for the Bays!
- Fertilize less...and at the right time
- Plant native plants
- Create a Backyard Habitat
We can help Love Creek!

Recommendations for the Love Creek watershed

Encourage your community to adopt best practices to reduce their impact on the Creek

- Manage stormwater
- Use Delaware *Liveable Lawn* recommendations
- Pick up pet waste
We can help Love Creek!

Recommendations for the Love Creek watershed

Forested buffers along Love Creek and its tributaries should be protected
We can help Love Creek!
Recommendations for the Love Creek watershed

Additional water quality monitoring should be done to get a clearer picture of trends.
We can help Love Creek!

Recommendations for the Love Creek watershed

Additional tracking studies should be done to determine the main sources of bacteria.
We can help Love Creek!
Recommendations for the Love Creek watershed

Stand up for your Creek!

- Attend public hearings about decisions affecting your creek
- Ask questions—get answers!
We can help Love Creek!
Recommendations for the Love Creek watershed

Join the Love Creek Team!

Contact: Sally Boswell
outreach@inlandbays.org
www.inlandbays.org
Your Creek
Rare Plant Project
Love Creek Team became interested in the plants on Love Creek during the Summer of 2014 when Dr. Steve Britz photographed the marsh community in bloom and shared the photos on the Love Creek blog.

http://inlandbays.org/CIBblog
Lobelia elongata
southern blue lobelia
- Campanulaceae, or Bellflower Family
- Obligate wetland plant; Perennial Broad-leaf Herb
- Lobelia: named for Mathias de L'Obel, 16th century Belgian botanist; elongata: elongated
- Coastal Plain of Sussex in the Inland Bays region
- Species reaches its northern limit in Delaware
- Blooms on the Delmarva from September to October
- Extremely rare in Delaware, known from a single extant occurrence on Love Creek; previously on Guinea Creek, Herring Creek and Dirickson Creek (also rare in Maryland; was in Wicomico and Somerset Counties)
- Fresh to brackish tidal marshes and shores
\textit{L. elongata} is a state rare plant species and is at the northern limit of its natural distribution here in Delaware.

Due to sea-level rise and higher salinity levels, as well as invasion of the European reed (\textit{Phragmites australis} subsp. \textit{australis}), the species has declined in Delaware and is now only known from Love Creek.

Concern that the species could become extirpated in Delaware if conservation efforts are not made. We would not only loose a component of Delaware’s natural heritage, but unique northern genotypes of the species.
In fall of 2014, Bill McAvoy collected seed from the population of *Lobelia elongata* (southern blue lobelia) on Love Creek.

Sent the seed to the Mt. Cuba Center and they have successfully germinated and grew about 350 plants in their greenhouses.

Goal: To identify planting sites on Love Creek and working with Your Creek team members, add plants to the Love Creek population, and introduce plants into other suitable areas within the Inland Bays.
## Potential Restoration Sites

<table>
<thead>
<tr>
<th>Rehoboth Bay</th>
<th>Indian River Bay</th>
<th>Assawoman Bay</th>
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</thead>
<tbody>
<tr>
<td>Arnell Creek</td>
<td>Lingo Creek</td>
<td>Assawoman Bay Wildlife Area</td>
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<tr>
<td>Burton's Prong</td>
<td>Blackwater Creek</td>
<td>Dirickson Creek</td>
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<tr>
<td>Cherry Walk Fen</td>
<td>Fresh Pond</td>
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<tr>
<td>Dorman Branch</td>
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<tr>
<td>Hetty Fisher Glade</td>
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<td>Love Creek</td>
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<td>White Oak Creek</td>
<td>Stump Creek</td>
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<td>Vines Creek</td>
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<td></td>
<td>Wharton Branch</td>
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</tbody>
</table>
PLANTING DATA FOR LOBELIA ELONGATA

Date: ____________  Start Time: ______  End Time: ______  Est. of tide  High____ Ebb____ Low____
Name(s) of Planters:
________________________________________
________________________________________
________________________________________
________________________________________
Site/Creek Name: ________________
Number of Plants Planted: _____________
Brief Site Description:

Substrate Planted on (e.g., hummock, bare soil): ________________________
Associated Plant Species:

Salinity Level- if equipment is available (ppt;): ______
GPS Coordinates (these can be obtained using Google maps on your smart phone) ________________________
Photographs Taken ____
Other Notes:

3/29/16
MONITORING DATA FOR LOBELIA ELONGATA

Date: ________________________________

Start Time: _______  End Time: _______

Name(s) of Monitor: ________________________________

Site/Creek Name: __________________________________

Number of Plants Counted: ____________________________________________

GPS Coordinates of identified plants
_____________________________________________________

Phenology: vegetative - flower - fruit

Condition (e.g., robust, feeble):

Brief Habitat Description:

Associated Plant Species:

Salinity Level- if equipment is available (ppt;): ______

Photographs Taken ____

Other Notes:
Map of the Love Creek Watershed

Love Creek Watershed

Rehoboth
Map of Dirickson Creek Watershed
This would be a high likelihood place for Lobelia elongata
Your Creek

Contact: Sally Boswell
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