Canal Current

A wave of information for Cape Coral's Canalwatch volunteers

Newsletter: 1st Quarter 2022

Environmental News

Vertical Oyster Gardens

Eastern oysters (*Crassostrea virg*inica) are a keystone species of bivalves found along eastern North America coast from New England and Canada to the Southeast including the Gulf of Mexico. Oysters can thrive in a wide variety of water depths that range from 3 to 40 feet and provide several ecological services.

Adult oysters are sensile, once they settle, they attach and often develop into clusters. Because of this, oysters are considered environmental engineers, building the foundations for many of the barrier islands found along the Gulf Coast. These oyster reefs not only provide habitat for many estuarine and marine species to live, find refuge from predators and raise young, they also collect floating red mangrove tree seeds, known as propagules. When the propagules become affixed and grow, an island is established. Once created, oyster reef islands reduce erosion by dissipating wave action during storms surges and floods, thus lessening the damage from these events on other coastal areas.

Oysters are adapted to a wide range of salinities and because of their filter feeding abilities are a filtration system for our rivers, bays, and estuaries. A single oyster can filter between 30-50 gallons a day. When they feed, they filter microscopic algae, plankton, sediment, and other small particulates. This action increases water clarity by decreasing these light blocking attributes in the water column and enhances the ability for seagrass (another essential marine habitat) to utilize sunlight for photosynthesis.

Oysters are edible and a valuable food source for fish, invertebrates such as crabs, snails, brittle stars, birds, and humans. Some of the ecological benefits of oyster reefs can be useful for private docks or similar structures located in ideal oyster habitat. Vertical Oyster Gardens (VOG) are made from rope or wire and recycled shell from local restaurants. They are suspended/hung from docks and seawalls to create a habitat for young oysters (spat) to attach and grow. Oyster spat are naturally attracted to other oysters when they are drifting to a place to settle and grow. Vertical Oyster Gardens will provide habitat in an otherwise unsuitable area, attracting fish, crabs, barnacles, and other marine organisms to utilize and create an ideal ecological community.

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Inside This Issue:

Questions? Comments? Let us know!

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Left
Oysters are collected from local restaurants to be “upcycled” for the Vertical Oyster Gardens.

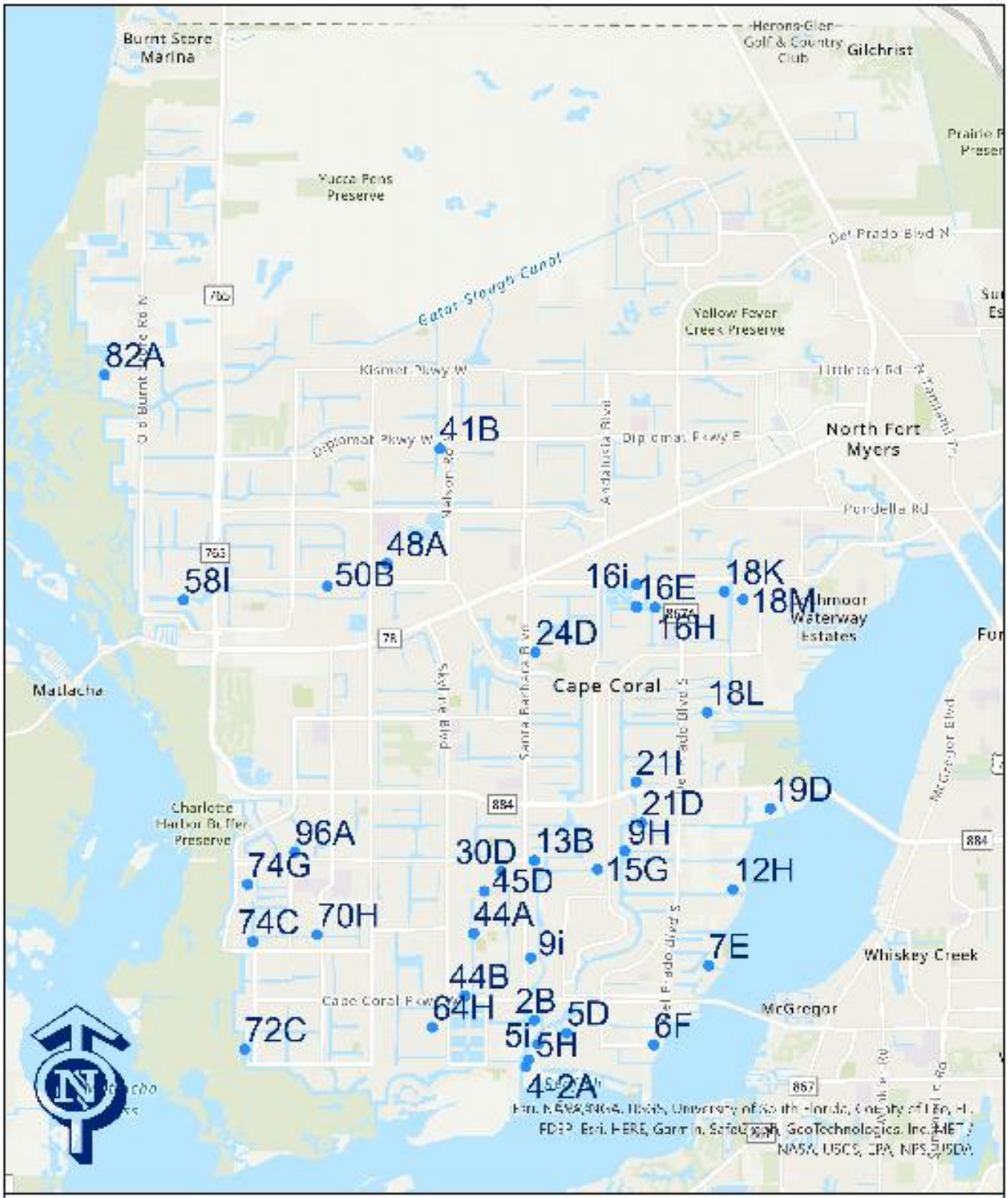
Once a throw-away item, oyster shells have now become a commodity for estuarine environmental restoration projects.

Right
Oysters, cleaned, drilled, and mounted on stainless steal wires.

Vertical Oyster Gardens are a great environmentally friendly alternative to create an artificial reef or habitat, without the use of plastics.

Left
Vertical Oyster Gardens installed on a residential dock. If the salinities are ideal, young oysters, known as spat, will land, and make the oyster shells their new home. Once new oysters become established, they will continue to grow and provide valuable ecological services for many years.

An adult oyster can filter up to 50 gallons of water per day. This will increase water clarity and reduce nitrogen and phosphorous within the water column. It will also provide habitat for other marine organisms.



City of Cape Coral Canalwatch Stations

Coordinated by Katie R. McBride and Harry Phillips
Environmental Resources Division, City of Cape Coral

2022

bd = below detection

benchmark numbers: Marked data are in the highest 20% of values found by Hand et. al, 1988.

	January 2022						February 2022						March 2022						
	NO2	NO3	NH3	TKN	T-N	T-PO4	NO2	NO3	NH3	TKN	T-N	T-PO4	NO2	NO3	NH3	TKN	T-N	T-PO4	Avg
	<1.0	<1.0	none set		<2.0	<0.46	<1.0	<1.0	none set		<2.0	<0.46	<1.0	<1.0	none set		<2.0	<0.46	TSI
2B	0.05	0.05	0.05	0.8	0.90	0.05							0.05	0.05	0.1	0.6	0.6	0.05	46.02
4-2A	0.05	0.05	0.05	0.6	0.70	0.06													52.87
5D	0.05	0.05	0.05	0.5	0.60	0.05	0.05	0.10	0.2	0.6	0.7	0.05	0.05	0.05	0.1	0.8	0.8	0.10	50.33
5H							0.05	0.10	0.1	0.4	0.5	0.05	0.05	0.05	0.05	0.5	0.5	0.05	48.32
5I	0.05	0.05	0.05	0.6	0.70	0.05							0.05	0.05	0.1	0.7	0.7	0.05	51.56
6F	0.05	0.05	0.05	0.9	0.90	0.05	0.05	0.05	0.2	0.8	0.8	0.10	0.05	0.05	0.05	0.8	0.8	0.05	54.18
7E	0.05	0.05	0.05	0.7	0.81	0.05	0.05	0.10	0.1	0.7	0.8	0.05	0.05	0.05	0.1	0.7	0.7	0.10	48.10
9H	0.05	0.05	0.05	0.8	0.93	0.05	0.05	0.05	0.1	0.7	0.7	0.05	0.05	0.05	0.1	0.8	0.8	0.10	52.63
12H							0.05	0.05	0.1	0.7	0.7	0.10	0.05	0.05	0.1	0.7	0.7	0.10	30.27
13B	0.05	0.05	0.05	0.7	0.83	0.05	0.05	0.10	0.05	0.7	0.8	0.05							55.49
15G							0.05	0.10	0.1	0.6	0.7	0.05							55.97
16E	0.05	0.05	0.05	0.5	0.50	0.05	0.05	0.05	0.1	0.7	0.7	0.05	0.05	0.05	0.1	0.9	0.9	0.10	51.29
16H													0.05	0.05	0.1	0.8	0.8	0.05	52.97
16I	0.05	0.05	0.05	0.7	0.70	0.05							0.05	0.05	0.1	0.8	0.8	0.05	59.11
18K							0.05	0.05	0.1	0.8	0.8	0.05	0.05	0.05	0.05	1.0	1.0	0.10	57.30
18L	0.05	0.22	0.05	0.9	1.12	0.05	0.05	0.10	0.1	0.8	0.9	0.10	0.05	0.05	0.1	0.8	0.8	0.15	53.47
18M	0.05	0.05	0.05	0.8	0.80	0.05	0.05	0.05	0.1	0.6	0.6	0.05	0.05	0.05	0.1	0.9	0.9	0.10	56.15
19D	0.05	0.06	0.05	0.8	0.95	0.05	0.05	0.05	0.05	0.8	0.8	0.10	0.05	0.05	0.1	0.8	0.8	0.10	53.58
21D	0.05	0.05	0.05	0.8	0.92	0.05	0.05	0.05	0.05	0.8	0.8	0.05	0.05	0.05	0.1	0.8	0.8	0.10	52.97
21I	0.05	0.06	0.05	1.0	1.16	0.05	0.05	0.12	0.05	0.6	0.72	0.05	0.05	0.05	0.1	1.0	1.0	0.05	57.33
24D	0.05	0.05	0.05	0.7	0.80	0.05							0.05	0.05	0.1	0.9	0.9	0.10	53.44
30D	0.05	0.05	0.025	0.6	0.60	0.05	0.05	0.10	0.05	0.4	0.5	0.05	0.05	0.05	0.1	0.6	0.6	0.10	48.27

41B	0.05	0.05	0.025	1.0	1.00	0.05	0.05	0.05	0.1	0.9	0.9	0.05	0.05	0.05	0.1	1.3	1.3	0.10	57.85
44A	0.05	0.05	0.05	0.6	0.60	0.05	0.05	0.10	0.1	0.5	0.6	0.05	0.05	0.05	0.1	0.6	0.6	0.05	50.28
45D	0.05	0.05	0.025	0.7	0.70	0.05	0.05	0.05	0.05	0.6	0.6	0.05	0.05	0.05	0.1	0.7	0.7	0.05	51.54
48A							0.05	0.05	0.1	0.5	0.5	0.05	0.05	0.05	0.1	0.7	0.7	0.05	52.78
58I	0.05	0.05	0.025	0.6	0.60	0.05	0.05	0.05	0.1	0.4	0.4	0.05	0.05	0.05	0.1	0.5	0.5	0.05	46.11
64H	0.05	0.05	0.025	0.4	0.4	0.05	0.05	0.05	0.1	0.4	0.4	0.05	0.05	0.05	0.1	0.5	0.5	0.10	39.33
72C	0.05	0.05	0.025	0.7	0.7	0.05	0.05	0.05	0.05	0.4	0.4	0.10	0.05	0.05	0.1	0.7	0.7	0.10	44.66
74C	0.05	0.05	0.025	0.6	0.6	0.05	0.05	0.05	0.1	0.5	0.5	0.10	0.05	0.05	0.1	0.8	0.8	0.10	45.68
82A	0.05	0.05	0.025	0.5	0.5	0.05	0.05	0.05	0.3	0.6	0.6	0.05	0.05	0.05	0.1	0.7	0.7	0.05	54.23
96A	0.05	0.05	0.025	0.6	0.6	0.05	0.05	0.05	0.05	0.7	0.7	0.05	0.05	0.05	0.2	0.6	0.6	0.05	54.93
Median		**0.05**	**0.05**	**0.70**	**0.70**	**0.05**		**0.05**	**0.10**	**0.60**	**0.70**	**0.05**		**0.05**	**0.10**	**0.80**	**0.80**	**0.10**	**52.83**
Max		**0.22**	**0.05**	**1.00**	**1.16**	**0.06**		**0.12**	**0.30**	**0.90**	**0.90**	**0.10**		**0.05**	**0.20**	**1.30**	**1.30**	**0.15**	**59.11**

NO2 = Nitrite (inorganic)	TKN = Total Kjeldahl Nitrogen (organic + NH4)
NO3 = Nitrate (inorganic)	TN = Total Nitrogen (inorganic + organic)
NH3 = Ammonia (inorganic)	TPO4 = Total Phosphate

High levels of nutrients in our canals can indicate the presence of fertilizer runoff or effluent from wastewater or septic systems. Excessive nutrients can lead to nuisance plant growth and algal blooms.

All nutrient concentrations shown in mg/L

TSI = Trophic State Index, a quick indicator of canal health. 32 sites this quarter scored as GOOD (<60). Zero site scored FAIR (60-70), and zero scored POOR (>70).
Very little rainfall reported for 1st quarty 2022 and this has been demostrated by many of the freshwater canals becoming depleted due to irrigation water use. However, with so few rain events, water clarity has been exceptional.

For up-to-date City of Cape Environmental Resources Division water quality date visit
https://www.capecoral.net/department/public_works/quarterly_water_quality_reports.php

Native Plant Profile **Sea Lavender *Heliotropium gnaphalodes***

Sea lavender is native to the southeast Atlantic coast and throughout central and south Florida including the Florida Keys where it is prevalent. Due to coastal development Sea lavender is on Florida's endangered species and is protected wherever it is found naturally. Sea lavender also occurs in the Caribbean islands, Mexico's Yucatan Peninsula, the Gulf of Mexico and Caribbean Sea coasts of Central and South America.

Sea lavender is evergreen, and can grow to 6 to 10 feet tall, but sprawls to about double that taking on a mounded shape as it matures. Sea lavender is important in establishing dunes on the beach scape, where the lower branches trap sand to create and stabilize dunes and buffering sea breezes for other important dune plants to become established.

Sea lavender has a pale green appearance, much like the color of sage, with small, pinkish white flowers. In the home landscape, the sea lavender can be used as a screening hedge, or a specimen plant for a unique tropical appearance against the darker greens of other plants. Since sea lavender is adapted to dry sandy conditions and full sun, overwatering, rich organic soils, and shade are the typical concerns for its performance in home landscapes.
When in bloom, sea lavender is also an excellent nectar source for pollinators such as bees and butterflies.

Images by Shirley Denton, Florida Native Plant Society. FNPS.org

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