

Loxahatchee River District

Water Reclamation | Environmental Education | River Restoration

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D. Albrey Arrington, Ph.D., Executive Director

MEMORANDUM

TO: Albrey Arrington, Ph.D., Executive Director
 FROM: Bud Howard, Director of Information Services
 DATE: May 18, 2016
 SUBJECT: Monthly Governing Board Update for April 2016

WildPine Ecological Laboratory

Riverkeeper Project

In April, LRD and Town of Jupiter staff sampled 35 water quality monitoring sites. Similar to last month, seventy percent of the stations showed safe levels of microorganisms. There were no stations that exceeded DEP/EPA's Numeric Nutrient Criteria (NNC) for nitrogen and phosphorus. Water quality in general has been getting better as the weeks progress through the dry season. For example, the Jones/Sims Creek stations showed reductions of 40% in bacteria when compared to March.

Our Weekly Bacteria Program is getting more attention as we continue efforts to inform the public about water quality conditions in the recreational portions of the river. We picked 10 sites that are well known as wakeboard, paddleboard, snorkeling and swimming areas and monitor them for enterococci bacteria, an organism that *may* be associated with human illness. The water quality classification, from EPA's recommended criteria for enterococci, is Poor when there is more than 71 colonies/100 mL of marine water. We publish an interactive map and recently added a stoplight summary table like the one below containing our data on our website at: <http://tiny.cc/lrecd-bacteria>. Conditions were generally good throughout April following the very poor results following the heavy rains in late March.

Summary of Water Quality Testing for Enterococcus Bacteria in the Loxahatchee River										
Sampling conducted by the Loxahatchee River District's WildPine Laboratory										
Contact the WildPine Laboratory at (561) 747-5700 x122 or by email at: wildpine@lrecd.org										
www.loxahatcheeriver.org/wqresults.php										
GOOD = 0 to 70 cfu Enterococcus/100 ml river water										
POOR = 71 or more cfu Enterococcus/100 ml river water										
Date	20	30	51	62	Dub	ICM	RDP	SCE	SCW	TBR
5/12/2016	10	11	56	30	122	13	26	28	35	43
5/4/2016	23	28	58	20	30	4	66	22	12	28
4/27/2016	6	6	22	47	14	3	8	19	47	15
4/20/2016	13	18	4	20	9	1	68	39	12	8
4/13/2016	32	13	21	63	54	4	348	62	49	14
4/6/2016	48	24	21	162	43	3	100	42	76	33
3/30/2016	244	196	308	468	1092	152	5712	480	5760	196

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Hydrologic and Datasonde Monitoring

April 2016 was unusually dry having only 1.0” of rain measured at LRD. The 25 year mean for April is 3.4”. This brings the cumulative rainfall for the year up to 19.6”; approaching normal rainfall values but still above average for the year. The little rainfall for the month of April was distributed throughout the month with the largest daily total of 0.5” occurring on April 24.

Lower than normal rainfall resulted in decreased river flows compared to March, but higher than usual flows for April. Flow over Lainhart Dam at the beginning of the month

was 225 cfs and gradually decreased throughout the month before ending with mean daily flow of ~50 cfs. Likewise, flow measured through the S-46 structure at the beginning of the month was 286 cfs and by the end of the first week had reduced to 0 cfs. These flows may have been associated with the construction of the downstream weir.

April had generally lower than average salinities throughout the river. The Inlet experienced the most substantial difference with a monthly average of 29.7 ppt compared to the historical monthly average of 35 ppt. This drop in salinity is driven in part by 1.3” of rain in the last three days of March which drastically reduced salinity for the first 3-5 days of April. The river is warming at the usual pace with an average monthly temperature of 25.5°C.

Oyster Recruitment Monitoring

Oyster spawning monitoring for the period of April 6 to May 5 showed that spring recruitment has begun. Oyster settlement was observed at all four sites within the Northwest Southwest Forks. The highest oyster settlement density occurred in the NWF where a mean density of 3,080 oysters m⁻² was observed, with the highest mean density at the downstream site (3,528 m⁻²). Oyster density in the SWF was lower with a mean density of 1,215 m⁻² and the highest density was also observed at the downstream site (1,520 m⁻²).

This event marks the first time since adopting the travertine tile monitoring method that a high density of settled oysters was observed. From this dataset, some interesting observations were made. Most surprising is that a high proportion of oyster spat had settled on the *top* of the tiles compared to the *bottom* of the tiles. Traditional monitoring using oyster shells only investigated the bottom of the shell. At both upstream and downstream sites of the Northwest Fork and the upstream site of the Southwest Fork, the proportion of settled spat observed on top was 73%, 64%, and 72% respectively. At the downstream site in the SWF, this proportion was reversed with the top of the tile accounting for only 28% of settled spat.

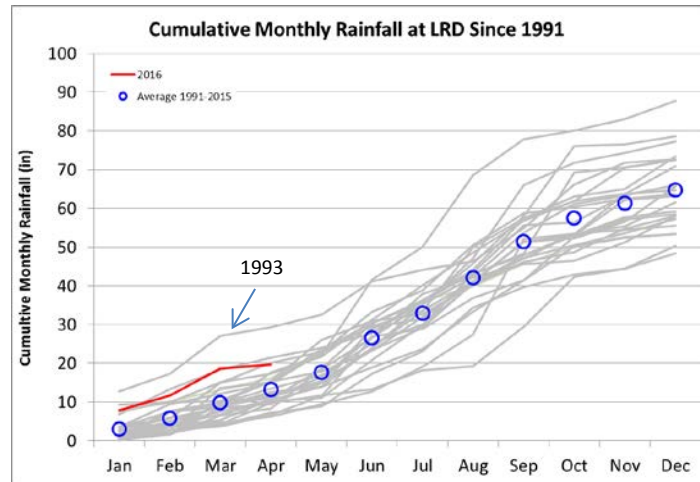




Image of the purple striped barnacle (*Belanus amphrite*) and the ivory barnacle (*B. ebuneus*) shown side by side on the travertine tile.

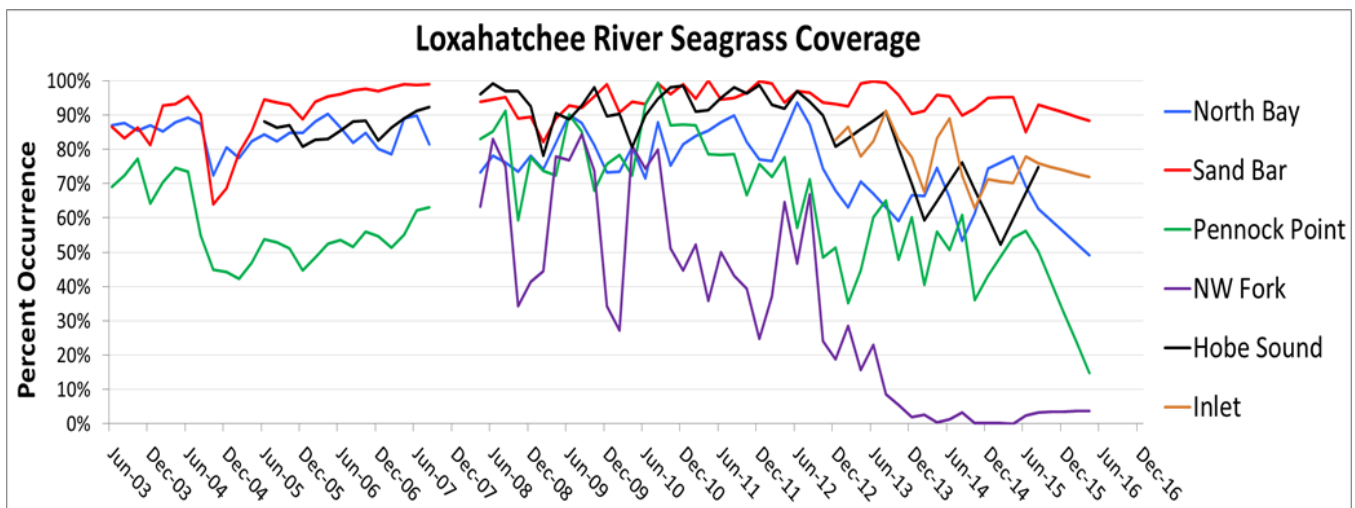
Data collected on other organisms that are found on these tiles suggest these oyster settlement patterns may be due to a much lower percent cover of barnacles on the bottom side of the tiles at this site. This new data suggests that traditional methods using oyster shell may be underestimating oyster settlement activity.

Daily average water temperatures were modestly warmer than last month with a mean range of between 26.2°C (79.2°F) and 26.4°C (79.5°F) and peak temperature ranges between 29.5°C (85.1°F) and 30.5°C (86.9°F), which historically corresponds with high settlement activity.

Generally, an increase in oyster spawning is observed when the average water temperature reaches about 28.0°C (82.4°F).

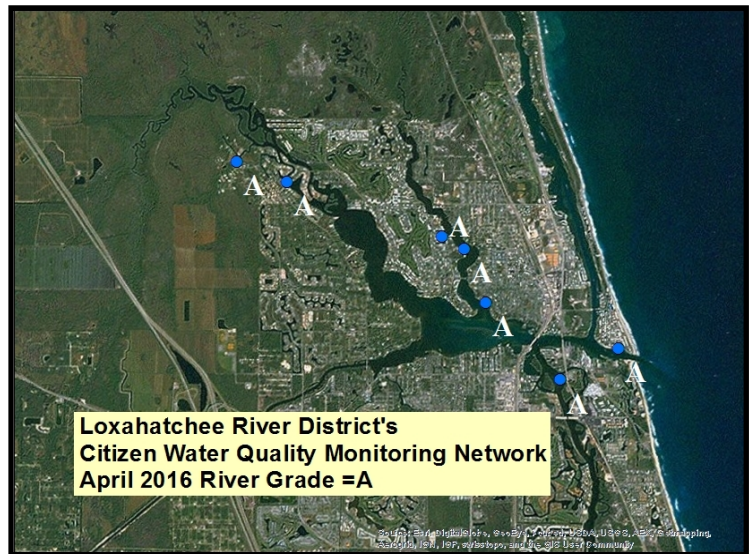
Annual Seagrass Monitoring

The first seagrass monitoring event of 2016 was conducted in April. All five sites along the salinity gradient of the Loxahatchee River were assessed. Seagrass was present across all sites, though two sites, North Bay and Pennock Point, had the lowest percent occurrence of total seagrass in the twelve year period of record (49.1% and 14.8% respectively, see Figure below). Seagrass at the Northwest Fork site is showing a gradual increase of total occurrence (3.8%). This comes after a sharp decline in seagrass occurrence following Tropical Storm Isaac in fall 2012 which resulted in less than 1% occurrence for over a two year period.



Volunteer Water Quality Monitoring

The water quality in the Loxahatchee watershed improved substantially in March. The grade at each station was an “A”, which gave the entire watershed an “A” grade for the month. Little rainfall and reduced the flow tannin stained freshwater into the system. In general, all of the parameters scored in the “Good” to “Fair” ranges, with water clarity readings leading the good scores with either “Fair” or “Clear to bottom”.



Information Technology

New Server Backup Appliance

In April, Joe installed and configured our new server backup appliance. This new system is remarkable in its ability to efficiently perform and organize hourly, daily, weekly, monthly and annual backups of all of our data on all servers. Our next step with this project is to implement the offsite (data center) storage feature of the system for disaster recovery, in addition the primary and secondary copies we have on our property.

Customer Service

Payment Processing

In April the Customer Service staff sent the 2nd Quarter Billing and processed the flood of nearly 10,600 payments totaling over \$1.5M from our quick paying customers. Our efforts to encourage our customers to pay through some digital means (their bank’s online bill pay or on our website) continue to streamline our payment processing and nearly eliminate backlog. In April, 47% of the payments were processed with our digital payments tool. Interestingly, it appears we may have “peaked” at about 1,500 payments through the LRD website (blue line) for the month we send the bills. The numbers of phone payments (purple line) continues to decline.

