Natural Resources Management Department
2725 Judge Fran Jamieson Way
Building A, Room 219
Viera, Florida 32940

BOARD OF COUNTY COMMISSIONERS

Inter-Office Memo

TO: Frank B. Abbate, County Manager

THRU: John Denninghoff, Assistant County Manager

FROM: Virginia Barker, Director, Natural Resources Management

SUBJ: Citizen Efficiency and Effectiveness Recommendation (CEER) #2024034

DATE: 04/01/2024

CEER #2024034 was received by the County from Sandra Sullivan.

Citizen Statement:

HERBICIDES AND SAVING THE LAGOON - COUNTY INCREASED HERBICIDES BY 2.5 TIMES COST IN 2021. That year the Lagoon report card went from an F++ to an F-- WHILE THE 2 COUNTIES WHICH STOPPED THEIR USE OF GLYPHOSATE, their IRL portions improved . That was the last year of the report card.

Given the priority of voters in Brevard concerned about the decline of the Indian River Lagoon, I would ask that the County reevaluate the decision in 2021 to increase the spraying of herbicides from $85,370 annually (Aquatic Vegetation Management Services) for past 3 years to 2 and half times for 2 additional districts, to $221,454.19. I believe this decision to increase this budget will cost the counties millions to the harm these chemicals cause the IRL.

In 2008, the sea grass looked better than 1943. Since 2010, we have lost 98% of sea grass bio-mass (58% lost compounded with thinning). Even where nutrient loading is good, seagrass is dying suggesting another factor at play.

Since 2011, we have lost almost all the seagrass in the lagoon. What changed in 2011? The muck didn't change. The septic didn't change. The sewage plants didn't change. In fact, FDEP wrote a report in which they said the decline was due to something else other than nutrient loading.
https://drive.google.com/file/d/1hl_3niUl2LQ4mzrk_26WK92vn0ECDKSS/view?usp=sharing

MRC's data also shows that even in areas of good water quality, seagrass continued it's decline suggesting something else other than nutirient loading. "The most critical thing for us to focus on besides what we are dong is the toxins, pesticides, herbicide and PFAS..."
https://www.facebook.com/MarineResourcesCouncil/videos/377019180614824/

What was identified by MRC scientist is the state switched to broadcast spraying of herbicides from mechanical harvesting. The state laid off 1300 workers in 2010 and switched to spraying chemicals instead of mechanically removing aquatic weeds. Aquatic weeds are the most

effective way to removing nutrient loading - killing them releases the uptake back to the water. While this is corelation to the die off of seagrass, the science is premliminary on glyphosate having an impact on seagrass.

Earlier in 2021, Duane DeFreese also wrote Virginia Barker at the County about his concerns with herbicides but again no change to the lagoon plan to address: https://www.facebook.com/groups/wavesaction/posts/3039719476358583/

Citizen Recommendation:

The recommendation is for a Moratorium for 2 years on the spraying of glyphosate in any area near the IRL or that drains to the IRL to evaluate the impact.

Unfortunately, currently Florida Statute 487.051(2) preempts cities and counties from enacting any regulations restricting the use of pesticides including herbicide. But Brevard County can at least decrease the use of gylphosate (like other areas of lagoon on that are seeing improvements).

And it is possible that this action may be an cost-effective way to help save the lagoon.

We know the lagoon is resilient - given the 90's lagoon recovery due to the F.S. 403.086 which required Wastewater treatment conversion (deepe injection wells) to AWT preventing raw sewage from going in lagoon regularly. By not using herbicides we could see an equally strong recovery.

This proposal would have the additional cost of aquatic weed control to be funded via the SOIRL Tax, as well as funding FIT (who has testing lab for glyphosate) to measure levels in water near these locations (baseline) in subsequent years of lagoon tax until 2026 to be able to have scientific data to evaluate the impact of the tax use.

Given the CCMP (EPA approved Lagoon Plan) includes pollution and specifically Glyphoshate monitoring, this recommendation would be consistent with the IRL Council agreement and Lagoon Ordinance 16-15 to implement the CCMP. Therefore, it is recommended that baseline measurements be obtained under SOIRL throughout the lagoon for glyphosate.

Staff Analysis:

The Citizen Recommendation statement above includes three requests:

1. Adopt a 2-yr moratorium on County use of glyphosate in any area near the Indian River Lagoon;
2. Fund aquatic weed control with the Save Our Indian River Lagoon (SOIRL) Tax; and
3. Measure glyphosate levels in the IRL to establish baseline conditions and evaluate the impact of a moratorium.

1) Brevard County Public Works stopped using glyphosate in ditches within a half-mile of the lagoon more than 3 years ago. At the same time, Natural Resources and Mosquito Control reduced their use of glyphosate county-wide substantially, which is used only for sites posing human health or safety concerns with no feasible alternative for weed control. Municipalities in Brevard have also been reducing their use of glyphosate. A multi-jurisdictional discussion of lessons learned from experience using alternatives to glyphosate was conducted during the July 2023 Citizen Oversight Committee meeting to help inform future management decisions by all local jurisdictions.

   Mosquito Control employs an integrated mosquito management program which utilizes various habitat management (impounded wetland management), biological control (native fish hatchery/ stocking) and cultural control (public education) techniques to protect public health, but US Environmental Protection Agency (EPA)-approved pesticides ultimately are necessary to support the public health mission as well, and invasive aquatic vegetation control is one of those important tools. Local mosquitoes are known to utilize the shelter of aquatic vegetation during their immature (i.e., larval and pupal) life stages; and invasive aquatic plant species have the capacity to provide significant mosquito breeding habitat when given the opportunity to clog waterways and grow out of control. Glyphosate is known to be effective at controlling such aquatic vegetation, so completely removing it from the rotation could negatively impact public health due to potential increases in mosquitoes and associated disease risk. Nevertheless, Mosquito Control has taken steps to reduce glyphosate usage over the last few years, particularly in areas adjacent to the Lagoon.

   Alternative herbicide products and methods are limited, and invasive aquatic vegetation and associated mosquitoes have become more difficult to manage when glyphosate usage has been reduced, so this option has not been more cost-effective thus far.

2) Physical/mechanical removal of vegetation from stormwater ponds and drainage ditches was recognized by the County several years ago as an alternative to aquatic herbicides. Public Works has expanded its fleet of mechanical equipment and added field crews to handle the time-intensive process of mechanical ditch maintenance. Natural Resources has purchased multiple harvesters and added field crews to harvest stormwater ponds.

   Aquatic vegetation harvesting was added to the SOIRL Project Plan in 2020 as a project type eligible for funding. Funds are allocated to demonstrate or purchase capital equipment needed to initiate or expand harvesting programs, not to fund seasonal maintenance. Currently, there are 10 vegetation harvesting projects approved in the SOIRL Plan. Of these, 6 have been completed, 3 are underway, and 1 is being withdrawn by the municipality. Entities (municipalities, other government agencies, homeowner associations, etc.) are encouraged to apply for this funding during the annual application cycle.

3) The Ocean Research & Conservation Association, Inc., (ORCA) conducts water column glyphosate testing four times per year at 26 sites in the IRL and annually at 11 sites in Brevard. They also test for glyphosate in fish tissue collected from the lagoon across four counties (Brevard, Indian River, St. Lucie, and Martin).

   Florida Institute of Technology conducted a study in 2023, funded by the IRL National Estuary Program, to evaluate the impacts of glyphosate on seagrass. *Ruppia maritima* (widgeon grass) and *Halodule wrightii* (shoal grass) were exposed to three different concentrations of glyphosate for several weeks. This experiment found no statistically significant adverse impacts of acute toxicity at 1 part per million (Fox et. al, 2023), which is more than 1,000 times higher than the 0 to 0.73 parts per billion concentrations measured by ORCA in Brevard over the last five years.

Staff Recommended Action:

1) Reject the recommendation to adopt a 2-yr moratorium on the use of glyphosate in any area near the IRL due to its use already being minimized for over 3 years and the County's continuing need for very limited use associated with flood relief and vector control;
2) Reject the recommendation to fund aquatic weed control with the Save Our Indian River Lagoon (SOIRL) Tax due to capital expansions of harvesting programs already being funded by SOIRL and maintenance activities not being an eligible expense for SOIRL; and
3) Reject the recommendation to measure glyphosate levels in the IRL to establish baseline conditions and the impact of the moratorium due to monitoring already being conducted by ORCA and their findings indicating that lagoon concentrations are 1000 times lower than the concentrations found by a Florida Tech experiment to cause acute toxicity for local seagrass species.

Recommendation #2024034

Recommendation Details

Contact Information

Full Name: Sandra I Sullivan

Email Address: s2sully@gmail.com

Mailing Address: 165 Dorset Lane
Satellite Beach fl 32937

Alt Email Address: sandra@sandrasullivan.com

Phone Number 954-224-8624

Group/Organization WAVESaction LLC

Recommendation Information

Recommendation Title: Moratorium on glyphosate for 2 years - SOIRL funding for Mechanical Control

Areas Affected: Within 500 ft or area that drains to Lagoon

Department: NATURAL RESOURCES MANAGEMENT

Problem Description:

HERBICIDES AND SAVING THE LAGOON - COUNTY INCREASED HERBICIDES BY 2.5 TIMES COST IN 2021. That year the Lagoon report card went from an F++ to an F-- WHILE THE 2 COUNTIES WHICH STOPPED THEIR USE OF GLYPHOSATE, their IRL portions improved . That was the last year of the report card.

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Attachments

No.	Type	Name
1	JPG	duane.JPG
2	JPG	ReportCard2021.jpg

No.	Type	Name
3	JPG	sprayingtruckSR513.jpg

Administrative Action

Evaluation

Recommendation Timeline

User	Status	Date	Remarks
CEER WebUser	Citizen Submitted	Dec 30, 2023	
Karen Conde	Department Assigned	Jan 3, 2024	NATURAL RESOURCES MANAGEMENT Assigned

Awaiting action from department director

2024034 - Links Contained Within Citizen CEER Submission

https://drive.google.com/file/d/1hl_3niUl2LQ4mzrk_26WK92vn0ECDKSS/view?usp=sharing

https://www.facebook.com/MarineResourcesCouncil/videos/377019180614824/

https://www.facebook.com/groups/wavesaction/posts/3039719476358583/

From: Duane De Freese
To: John Fergus; Barker, Virginia H
Cc: Courtney Barker; Thomas Ruppert; Kathy Hill; Daniel Kolodny
Subject: RE: Glyphosate in Brevard County manatees
Date: Monday, March 29, 2021 12:46:47 PM
Attachments: Castro2014ToxicityRoundupRuppiamaritima.pdf
Wang2016GrowthResponsesMarinePhytoplanktonGlyphosate.pdf
Mercurio2014GlyphosatePersistenceSeawater.pdf

John:

Yes. Article causes much concern and many questions.
The issue of glyphosate (and other herbicides used for aquatic weed control) are not being adequately addressed.

With the amount of glyphosate and other herbicides that are being applied in Florida on residential properties, in stormwater ponds, in stormwater conveyances and along IRL tributary shorelines, it's no big surprise to see bioaccumulation.

Several issues need to be better understood: nutrient loading associated with chemical spraying in aquatic systems (treat vegetation and allow to decay in place); acute and chronic toxicity thresholds; and synergistic impacts of multiple stressors. A recent article in Science is a red flag warning that the chemicals we introduce into aquatic systems can have complex trophic interactions and unforeseen consequences. (https://www.sciencemag.org/news/2021/03/after-more-2-decades-searching-scientists-finger-cause-mass-eagle-deaths).

Bioaccumulation of glyphosate in IRL manatees is not surprising considering it's the one of the most commonly and intensively used herbicide to manage aquatic plants along the lagoon. Unfortunately there is a lack of data on glyphosate and the IRL.

From a nutrient management standpoint, chemically treating shoreline vegetation, killing it and letting it decompose in place makes no sense to me. It's no different than throwing grass clippings in the Lagoon.

Three research papers that keep me up at night are attached: 1. Impacts to the seagrass Ruppia; 2. Impacts to microalgae/cyanobacteria growth (lab study): 3. Persistence in seawater.

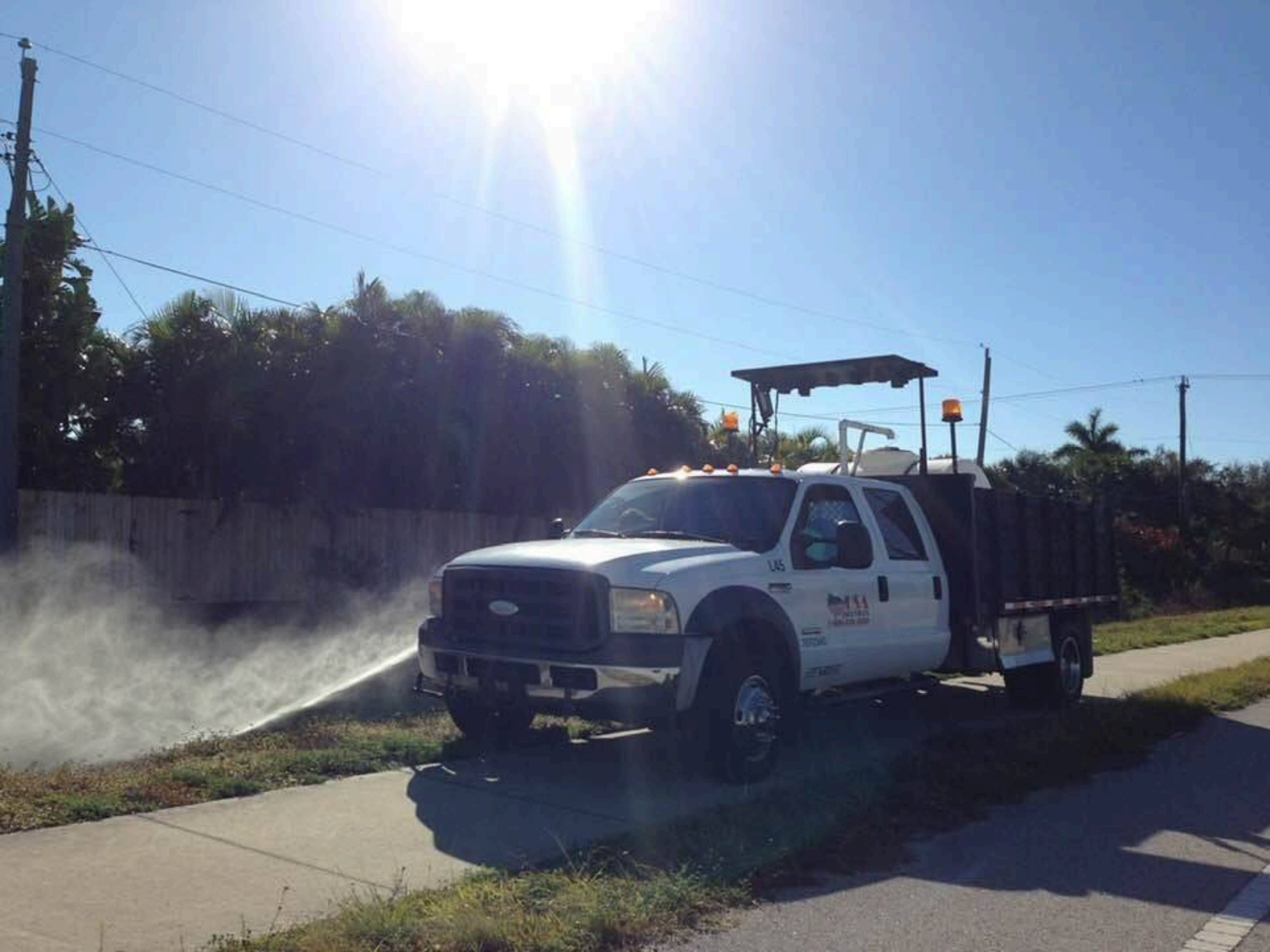
The combination of ecological concerns and documented human health concerns strongly suggest that we need to re-think glyphosate use in the IRL watershed.

Duane

SEAGRASS SCORES

Year	Mosquito Lagoon - Central	Mosquito Lagoon - South	North IRL	Banana River	Central IRL - North	Central IRL - South	South IRL - North	South IRL - Central	South IRL - South
1994	67	70	58	60	70	66	57	54	72
1995	67	70	59	62	68	66	59	*	*
1996	67	86	59	67	72	68	57	53	73
1997	64	80	60	71	73	74	58	52	73
1998	66	84	65	74	75	73	59	52	73
1999	68	84	68	73	74	68	59	49	74
2000	65	80	68	75	73	73	59	36	73
2001	62	80	65	68	75	73	58	51	78
2002	62	82	65	71	69	68	56	53	80
2003	57	84	66	70	69	72	57	52	78
2004	58	94	65	71	73	77	60	53	80
2005	57	82	62	70	73	69	54	52	78
2006	58	81	68	80	78	72	58	55	77
2007	60	86	71	87	82	70	61	56	78
2008	66	98	70	93	84	77	59	53	79
2009	66	86	71	79	76	75	62	53	78
2010	68	99	71	77	79	75	61	55	78
2011	67	93	61	61	56	57	61	61	79
2012	62	80	59	26	9	47	59	59	78
2013	62	78	61	50	37	50	57	62	77
2014	66	79	64	56	50	57	58	55	77
2015	61	78	63	58	50	59	59	56	72
2016	40	74	43	11	37	56	51	0	69
2017	53	74	32	31	29	59	51	0	69
2018	59	75	40	0	21	60	27	0	53
2019	57	75	39	0	30	61	46	4	66
2020	34	75	6	1	7	60	42	3	68
Change in 1 year	-23	0	-33	1	-23	-1	-4	-1	2

OVERALL Habitat Health Score: 33 (F--) Declining.


U5