



Summary Report of 2021 Apple Snails Removal

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Job No: J21-008

Project Title: Invasive Species Removal of Apple Snails

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1.0 Introduction

In 2019, the Mobile Bay National Estuary Program (MBNEP) published the Three Mile Creek Watershed Invasive Species Control Plan with the purpose of removing or controlling invasive plant and animal species within the Three Mile Creek Watershed. This Watershed drains an area of 30.1 square miles and stretches approximately 14 miles from west of the University of South Alabama east across northern Mobile and portions of the City of Prichard to its confluence with the Mobile River.

The Island Apple Snail is thought to have been introduced to the lakes at Langan/Municipal Park (LMP) in the early 2000s as an inadvertent aquarium release. The preponderance of pink snail eggs inundating emergent vegetation and infrastructure around the lakes was noticed around 2003. The Alabama Department of Conservation and Natural Resources, Wildlife and Freshwater Fisheries Division initiated concerted chemical eradication/control efforts with copper sulfate, trapping, and sporadic volunteer snail removal efforts in 2008.

In 2020, MBNEP hired Osprey Initiative, LLC to mechanically remove Apple Snails from LMP. While snail numbers were reduced over time, they were not able to achieve eradication. After a partial success in 2020, a new plan for 2021 was developed combining chemical removal with mechanical removal.

1.1 Purpose

This report provides a summary the 2021 efforts of the chemical and manual removal efforts to significantly reduce the Apple Snail population in the Three Mile Creek watershed, particularly Langan/Municipal Lake (LMP).

2.0 Invasive Species Removal

This project required the manual removal of Apple Snails by Osprey Initiative twice a week for the 8-month project period in 2021 from April 1st through November 30th. Additionally, American Sport Fish performed 2 trips per month to Langan Lake for the same 8-month period for herbicide, Clipper (Flumioxazin), and molluscicide, Earthtec QZ, application. Data from the manual clean-ups was used to focus chemical treatments in more high-density areas. Data was tracked based on eggs and snails (live snails, recently dead snails, and long-time dead snails). The lake was broken out into 12 sections where this data was tracked shown in Map 1 and Figure 2. Initially, 63 hot spot zones were identified based upon an egg density of 5 or more within a 3-foot radius of one another. As the 2021 efforts continued, 3 more hot spot zones were added based on the same criteria. The zones that tended to yield the most snail and egg numbers were those of man-made hard substrate around the lakes (spill ways, bulkheads, damns). This data is shown in Figure 3.

2.1 Langan Lake

Site Description – Langan Park, also known as Municipal Park, is a 720-acre municipal park in the Spring Hill neighborhood of Mobile, Alabama, USA. The Park opened in 1957 and is home to a wide array of biodiversity. Three Mile Creek and 12 Mile Creek flow into Langan Lake which is all part of the Three Mile Creek Watershed making it an asset to protect.

Site Discussion –

This site yields the most snail activity throughout the Three Mile Creek Watershed due to its unique habitat characteristics including: shallow waters, slow water flow, high SAV concentrations, and hard substrate to lay eggs on. We saw a significant decrease in snail and egg numbers this year in comparison to the 2020 manual removal efforts. We believe the significant manual removal efforts from last year coupled now with the chemical applications added in this year have greatly decreased the Apple Snail population located within the lake. We hope to continue to see this falling population trend in 2022.

2.2 Three Mile Creek Watershed Exploration

Site Description – Three Mile Creek drains a total of 30.1 square miles. The primary channel flows through about 14 miles of Mobile and dumps into Mobile River before reaching Mobile Bay. It has a wide diversity of substrate, water flows, as well as vegetation.

Site Discussion –

The watershed has a few additional hot spots of apple snail activity located south of Langan Lake, particularly One Mile Creek area. We did most of our exploration near the end of the year which is when apple snail activity tends to die down. Given the knowledge gathered this year, the One Mile Creek area will be a focus going into 2022 to chemically treat and manually remove snails and eggs weekly.

3.0 Apple Snail Data Collection Breakdown

2020 Data vs 2021 Data: Weekly Snail & Egg Mass Collection Counts

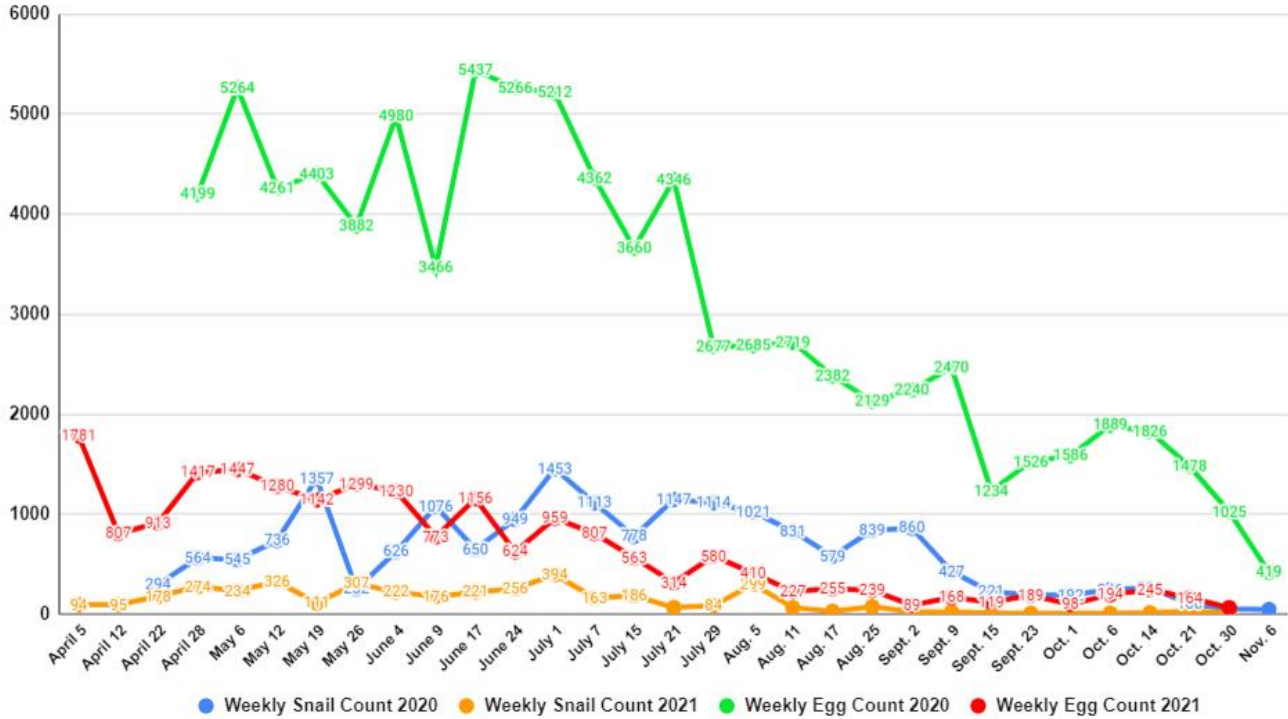


Figure 1: 2020 vs 2021 Data Breakdown, showing collected live snail and smashed egg numbers from 2020 compared to 2021.

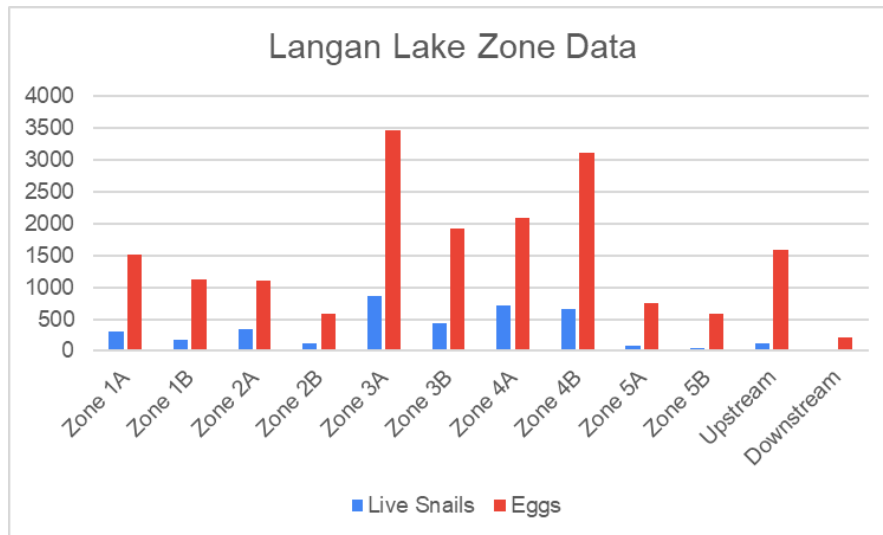


Figure 2: Langan Lake Zone Data Breakdown, showing 2021 Langan Lake zones of live snails and eggs collected during the 2021 season.

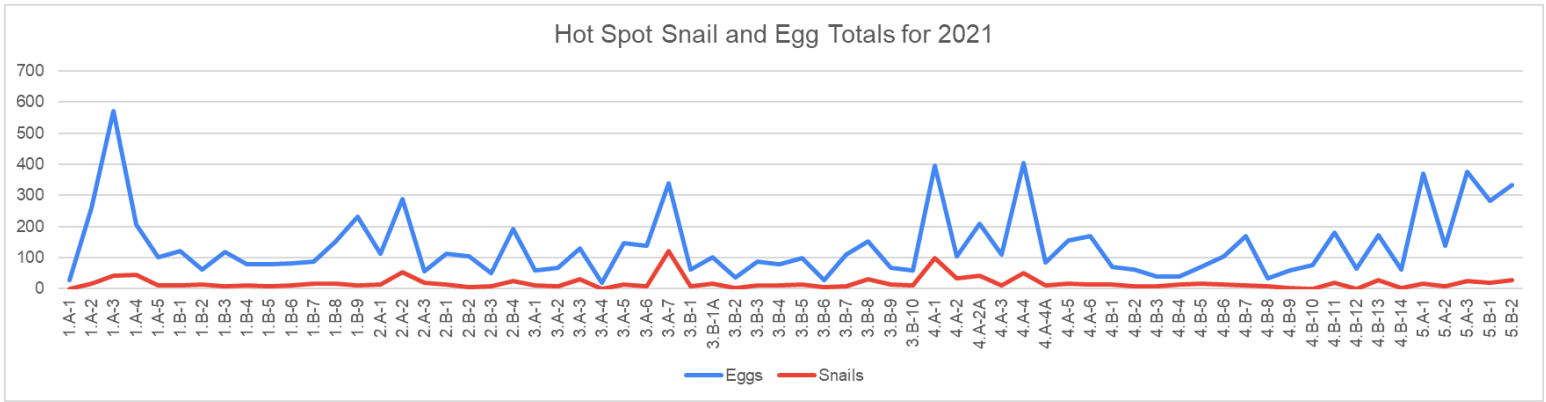


Figure 3: Hot Spot Zone Snail and Eggs Totals for 202, showing live snails and eggs collected in the 66 identified hot spots throughout Langan Lake.

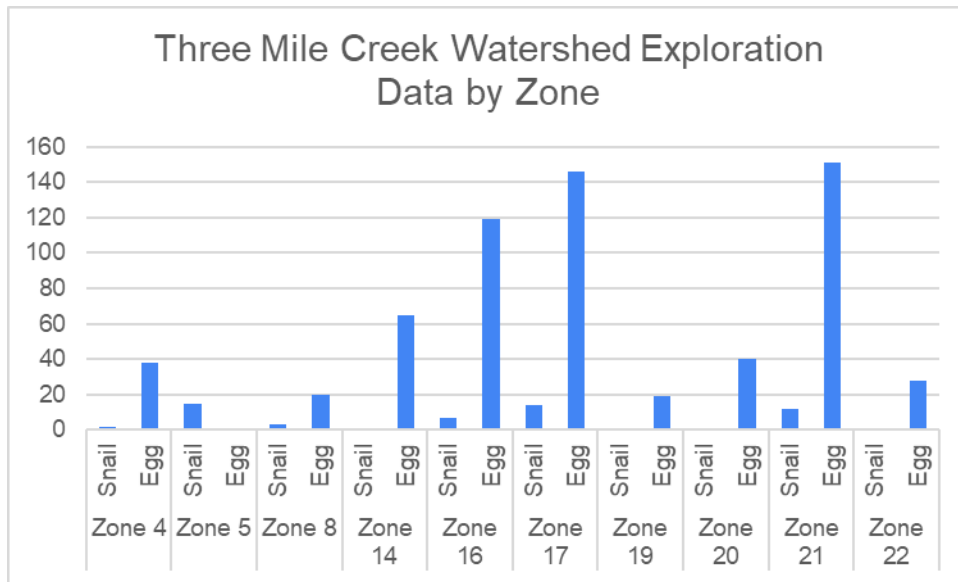
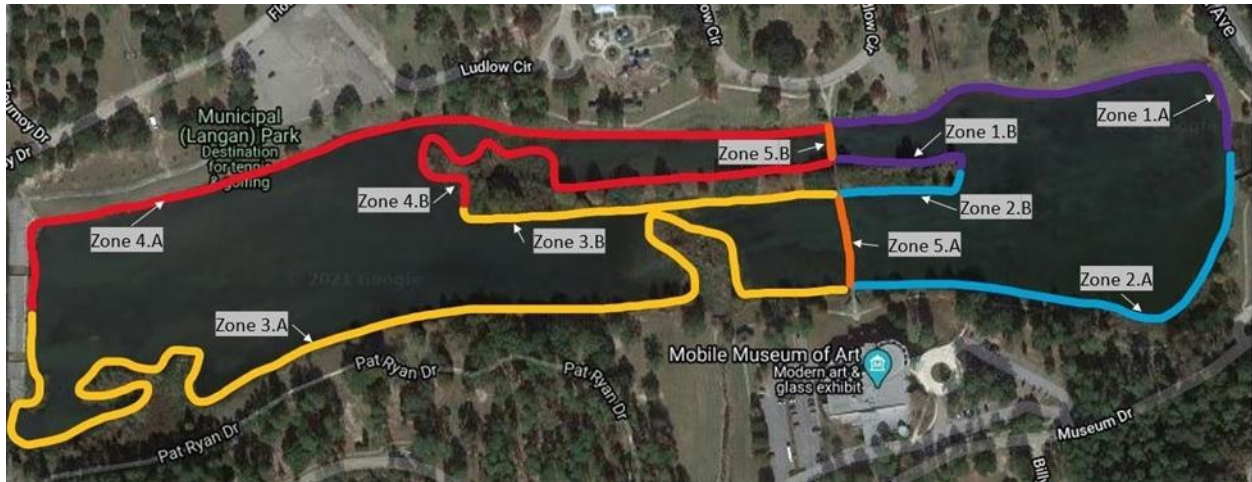
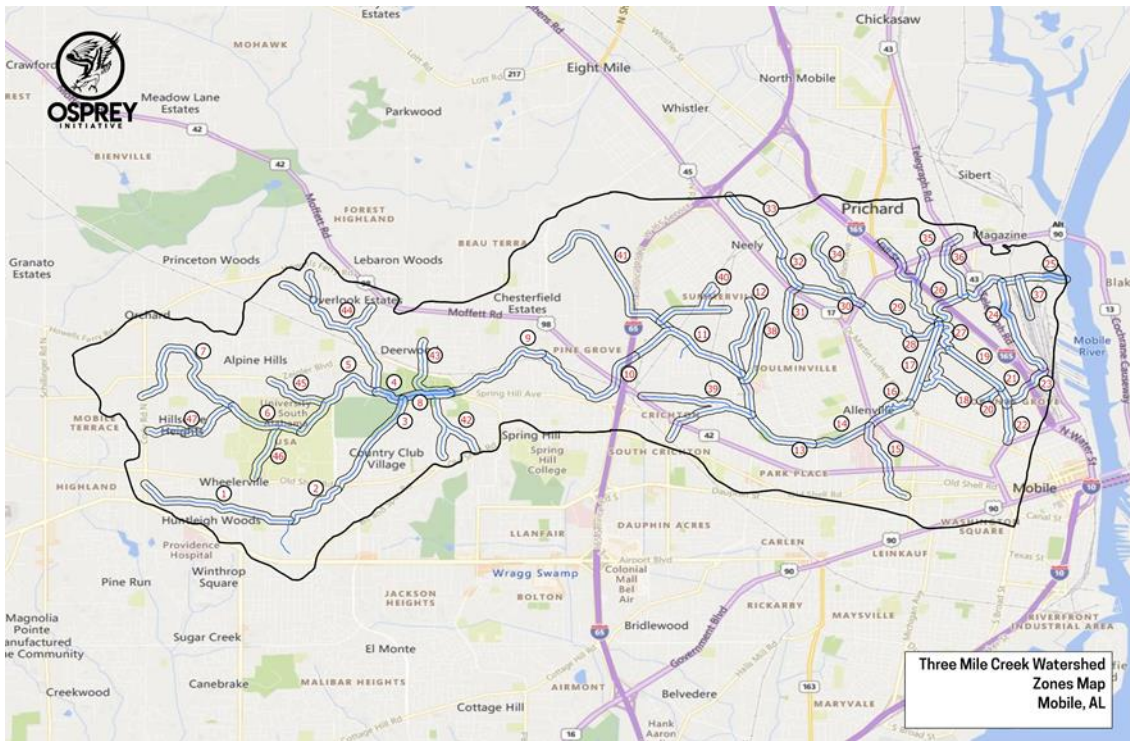


Figure 4: Three Mile Creek Watershed Exploration Live Snail and Egg Data by Zone (zones shown in map below).



Map 1: 2021 Collection Zones of Langan Lake.



Map 2: Three Mile Creek Watershed Zone Map.

4.0 Conclusion

The 2021 efforts to remove apple snails via mechanical and chemical methods saw a significant decrease in the overall numbers of both snails and eggs within LMP. With the two-year data set of apple snail removal, the downward trend shows that the combined effort of mechanically removing the snails and eggs along with the chemical treatment of the breeding ground provides a conducive approach to removing the invasive species from the environment. The scouting of One Mile Creek provided insight into future steps needed to be taken to further reduce the impact of the snails throughout the Three Mile Creek watershed. With adding more of the Three Mile Creek watershed into the mechanical and chemical treatment, the population of the apple snails will hopefully continue to decrease.

2021 Apple Snail Collection Data

Week	Date	Personnel/Organization	Eggs	Weekly egg counts	Snails	Weekly snail counts
Week 1	4/5/21	Osprey Initiative	1136	1781	41	94
	4/8/21	Osprey Initiative	645		53	
Week 2	4/12/21	Osprey Initiative	433	807	90	95
	4/16/21	Osprey Initiative/ USA	374		5	
Week 3	4/19/2021	Osprey Initiative	323	913	99	178
	4/22/2021	Osprey Initiative/USA	590		79	
Week 4	4/26/2021	Osprey Initiative	441	1417	109	274
	4/29/2021	Osprey Initiative	976		165	
Week 5	5/3/2021	Osprey Initiative	888	1447	120	234
	5/6/2021	Osprey Initiative	559		114	
Week 6	5/11/2021	Osprey Initiative	805	1280	51	326
	5/13/2020	Osprey Initiative	475		275	
Week 7	5/17/2021	Osprey Initiative	664	1142	86	111
	5/20/2021	Osprey Initiative	478		25	
Week 8	5/24/2021	Osprey Initiative	630	1299	168	307
	5/28/21	Osprey Initiative	669		139	
Week 9	6/1/2021	Osprey Initiative	788	1230	92	222
	6/4/21	Osprey Initiative	442		130	
Week 10	6/7/2021	Osprey Initiative	215	773	64	176
	6/10/21	Osprey Initiative	558		112	
Week 11	6/14/21	Osprey Initiative	505	1156	108	221
	6/17/21	Osprey Initiative	651		113	
Week 12	6/21/21	Osprey Initiative	405	405	99	99
Week 13	6/28/21	Osprey Initiative	433	959	115	394
	7/1/21	Osprey Initiative	526		279	
Week 14	7/6/21	Osprey Initiative	368	807	17	163
	7/9/21	Osprey Initiative	439		146	
Week 15	7/12/21		318	563	116	186
	7/15/2021		245		70	
Week 16	7/19/21		117	314	39	66
	7/23/21		197		27	

	7/26/21		382		50	
Week 17	7/29/21		198	580	34	84
	8/2/21		212		79	
Week 18	8/5/21		198	410	220	299
	8/9/21		113		17	
Week 19	8/13/21		114	227	48	65
	8/16/21		105		14	
Week 20	8/19/21		150	255	16	30
	8/24/21		126		46	
Week 21	8/26/21		113	239	29	75
	9/1/21		39		7	
Week 22	9/3/21		50	89	19	26
	9/7/21		86		11	
Week 23	9/10/21		82	168	12	23
	9/14/21		71		10	
Week 24	9/17/21		48	119	3	13
	9/21/21		98		4	
Week 25	9/24/21		91	189	5	9
	9/28/21		52		12	
Week 26	10/1/21		46	98	0	12
	10/5/21		121		7	
Week 27	10/8/21		73	194	2	9
	10/12/21		94		5	
Week 28	10/15/21		151	245	9	14
	10/19/21		45		4	
Week 29	10/22/21		119	164	24	28
	10/26/21		21		9	
Week 30	10/29/21		44	65	1	10
	11/2/21		9		0	
Week 31	11/4/21		0	9	2	2
	11/9/21		2		4	
Week 32	11/12/21		21	23	1	5
	11/16/21		0		2	
Week 33	11/19/21		7	7	1	3
	11/23/21		4		0	
Week 34				4		0

Totals:			19378		3853
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