The Health of Streams Flowing into Lake Miltona

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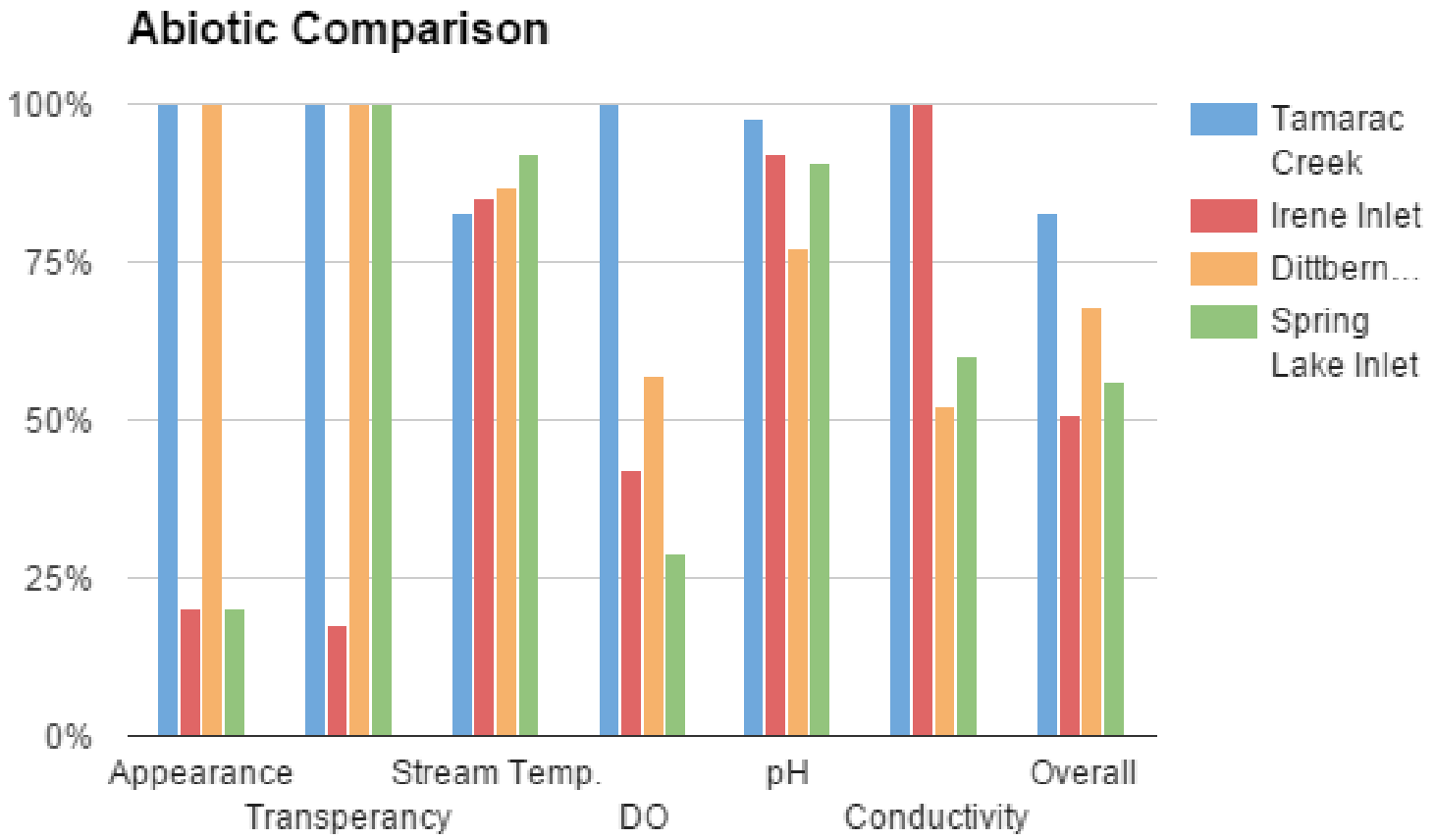
Data and Data Analysis


Abiotic Comparison
100%
75%
50%
25%
0%
Appearance
Transperancy
Stream Temp.
DO
pH
Conductivity
Overall
Tamarac Creek
Irene Inlet
Dittbern...
Spring Lake Inlet

Appearance and Recreation Suitability

The appearance and visibility of Tamarac Creek, Dittberner's Creek, and Spring Lake Inlet were all good. The appearance and visibility of the Irene inlet was very bad.

	Appearance	Recr. Suit
Tamarac Creek	1A	1
Irene Inlet	5	5
Dittberner's Creek	1A	1
Spring Lake Inlet	1A	5
Ideal	1A/1B	1

Tamarac Creek and Dittberner's Creek were both well suited for recreation. Irene Inlet was not well suited for recreation, due to visibility levels, and the dangerous nature of the sediment that comprises the bottom. Spring Lake Inlet was not well suited for recreation.

Rainfall, Stream Stage, Temperature and Dissolved Oxygen

The dissolved oxygen level of Tamarac Creek was healthy. The dissolved oxygen levels of the Irene and Spring Lake inlets were both lower than healthy levels. The dissolved oxygen level at Dittberner's Creek was higher than healthy levels.

All streams had recently had rainfall and the water levels were low. The temperatures were all healthy levels and were similar to last years temperatures.

	Stream Temp.	Dissolved Oxygen
Tamarac Creek	49.4 f	7 mg/L
Irene Inlet	50.2 f	3 mg/L
Dittberner's Creek	51.08 f	10 mg/L
Spring Lake Inlet	54.14 f	2 mg/L
Ideal	41-77 f	6 - 8mg/L

pH Level and Conductivity

The pH levels of Tamarac Creek, Irene Inlet, and Spring Lake Inlet were all healthy. The pH level at Dittberner's Creek was lower than healthy levels.

The conductivity levels of Tamarac Creek and Irene Inlet were both healthy levels. The conductivity levels of Dittberner's Creek and Spring Lake Inlet were both higher than normal levels.

	pH	Conductivity
Tamarac Creek	7.17	246.6 umhos/cm
Irene Inlet	6.77	246.5 umhos/cm
Dittberner's Creek	5.63	742 umhos/cm
Spring Lake Inlet	6.67	703 umhos/cm
Ideal	6.5-8.2	150-500 umhos/cm

Velocity

We were unable to compare our stream velocity data with data from previous years because the previously collected data did not include units.

	Water velocity	Volumetric Flow
Tamarac Creek	.012 ft/s	0.46490 f^3/s
Irene Inlet	.012 ft/s	0.55678 f^3/s
Dittberner's Creek	0.902 ft/s	0.77561 f^3/s
Spring Lake Inlet	0.02 ft/s	0.28679 f^3/s

Biotic Index

The biotic indexes of Irene and Tamarac Creek were both poor. We didn't have data for Spring Lake Inlet and Dittberner's Creek

Irene to Miltona Inlet-

- Caddisfly
- Snails: Orb or Gilled
- Leech
- Pouch Snail

Index score: 1.4-poor

Tamarac Creek flow into Miltona-

- Caddisfly
- Dragonfly Larva
- Snails: Orb or Gilled
- Black Fly Larva
- Pouch Snail
- Bloodworm Midge Larva

Index score: 2-poor

Score Your Shore

Overall, the shores that had more natural habitats scored the best.

Score Your Shore

Overall, the shores that lacked trees and were unnaturally changed (adding rocks, forming a beach, etc.) scored the worst.

Claims

We Claim That:

Tamarac Creek is healthy.

Irene Inlet is unhealthy due to its low transparency levels and low dissolved oxygen levels, which may indicate high levels of phosphates and nitrates.

Dittberner's Creek is moderately healthy, the primary fault being high conductivity.

Spring Lake Inlet is moderately unhealthy due to low dissolved oxygen levels and high conductivity.

Lake Miltona is moderately healthy, judging by the health of the streams flowing into it.

Evidence and Justification

Claim: Tamarac Creek is healthy.

Evidence:

	Ideal Levels	Levels in Tamarac Creek
Transparency	41-60cm	100+ cm
Dissolved Oxygen	6-8 mg/L	7 mg/L
pH	6.5-8.2	7.7
Temperature	41-77 F	49.4 F
Conductivity	150-500 umhos/cm	246.6 umhos/cm

Justification

Claim Support: All of Tamarac Creek's measurements are healthy levels, which means that Tamarac Creek is healthy.

Scientific Explanation: All conditions must be favorable.

Importance: These results are important to the lake because they improve of the overall health of the lake, since it flows into it. Organisms can thrive in a healthy habitat. It is important to humans because we like to recreate in clean lakes and the water may eventually leach into our groundwater supply.

Claim: Irene Inlet is unhealthy due to its low transparency level and low dissolved oxygen level, which may indicate high levels of phosphates and nitrates.

Evidence:

	Ideal Levels	Levels in Irene Inlet
Transparency	41-60cm	17.5 cm
Dissolved Oxygen	6-8 mg/L	3 mg/L
pH	6.5-8.2	6.77
Temperature	41-77 F	50.2 F
Conductivity	150-500 umhos/cm	246.5 umhos/cm

Justification

Claim Support: Healthy transparency levels are at least 41 cm. Irene Inlet's average transparency was 10.5 cm, which is unhealthy. Healthy dissolved oxygen levels are 6-8 mg/L. Irene Inlet's dissolved oxygen level was 3 mg/L, which is unhealthy.

Scientific Explanation: The low transparency level and high levels of phosphates and nitrates may both be due to erosion adding sediment, along with phosphates and nitrates, to the water. Lower amounts of dissolved oxygen cause more phosphorus to be released into the water from the bottom of the lake.

Importance: These results are important to the lake because without enough oxygen, organisms can't survive. This can negatively affect the lake's ecosystem. It is important to humans because we don't like to recreate in unclear water. This could also affect real estate because people don't like to buy lots next to unclear water.

Claim: Dittberner's Creek is moderately healthy, the primary fault being high conductivity.

Evidence:

	Ideal Levels	Levels in Dittberners Creek
Transparency	41-60cm	100 cm
Dissolved Oxygen	6-8 mg/L	10 mg/L
pH	6.5-8.2	5.63
Temperature	41-77 F	51.08 F
Conductivity	150-500 umhos/cm	742 umhos/cm

Justification

Claim Support: Healthy conductivity levels are 150-500 umhos/cm. The conductivity of Dittberner's Creek was 742 umhos/cm, which is unhealthy.

Scientific Explanation: The high conductivity level may be caused by failing sewage systems, fertilizer run-off, or reactive bedrocks.

Importance: These results are important to the lake because not all organisms can survive in water with high conductivity. This can negatively affect the entire ecosystem. This can also affect fishing.

Claim: Spring Lake Inlet is moderately unhealthy due to low dissolved oxygen levels and high conductivity.

Evidence:

	Ideal Levels	Levels in Spring lake Inlet
Transparency	41-60cm	100 cm
Dissolved Oxygen	6-8 mg/L	2 mg/L
pH	6.5-8.2	6.67
Temperature	41-77 F	54.14 F
Conductivity	150-500 umhos/cm	703 umhos/cm

Justification

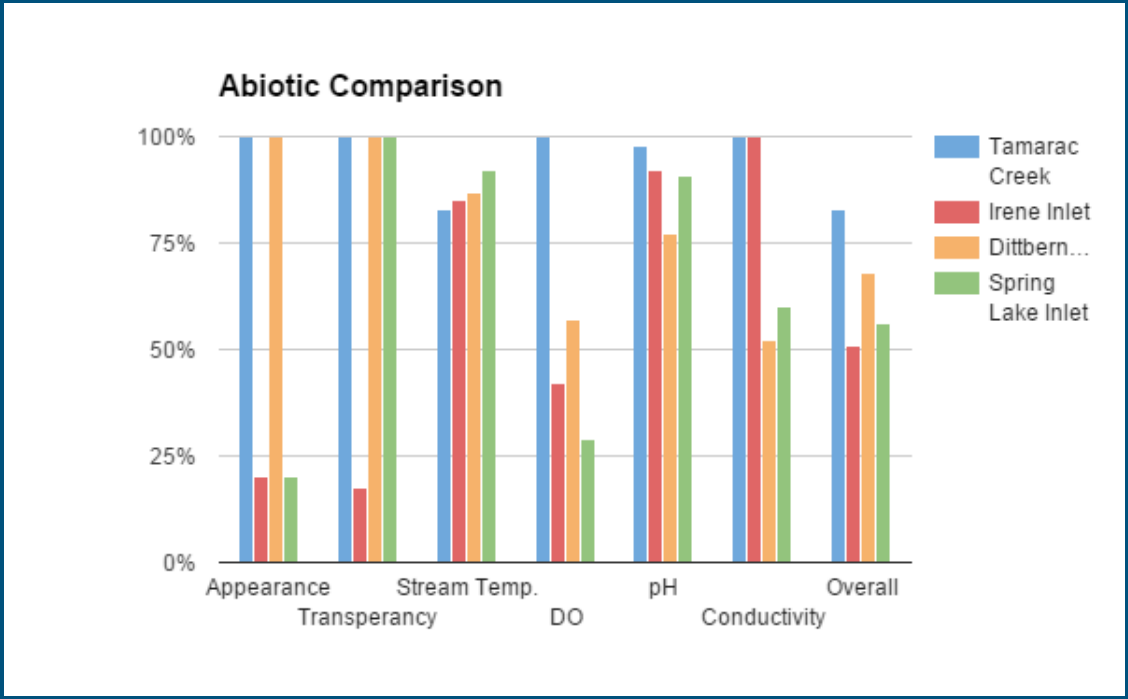
Claim Support: Healthy levels of dissolved oxygen are 6-8 mg/L. The dissolved oxygen level of Spring Lake Inlet was 2 mg/L, which is unhealthy. Healthy conductivity levels are 150-500 umhos/cm. The conductivity of Spring Lake Creek was 703 umhos/cm, which is unhealthy.

Scientific Explanation: The low dissolved oxygen level may be caused by overconsumption of oxygen by organisms in the stream. The high conductivity level may be caused by failing sewage systems, fertilizer run-off, or reactive bedrocks.

Importance: These results are important to the lake because a low dissolved oxygen level and high conductivity can negatively affect the lake's ecosystem. This is important to humans because it would affect fishing.

Claim: Lake Miltona is moderately healthy, judging by the health of the streams flowing into it.

Evidence:



Justification

Claim Support: Our evidence shows that, based on acceptable levels, four of the streams flowing into Lake Miltona have an average rating of 64.5%, 100% having all acceptable levels.

Scientific Explanation: The four streams flow into Lake Miltona. This water mixes with the rest of the water in Lake Miltona, determining the overall health of the lake.

Importance: Our results are important to the lake because a moderately healthy lake has a healthy ecosystem. It is also suited for recreation and has a good appearance.

Changes and Reasoning

Tamarac Creek

Change: The dissolved oxygen level of Tamarac Creek that we measured was healthy. This differs from last year, when it was higher than healthy levels.

Reasoning: The stream may have been becoming anoxic when we collected our data, due to the time of year. When data was collected last year, in the spring, the streams wouldn’t have been anoxic.

Irene Inlet

Change: The dissolved oxygen level of the Irene Inlet that we measured was lower than healthy levels. Last year, Irene's dissolved oxygen level was normal.

Reasoning: The stream may have been becoming anoxic when we collected our data, due to the time of year. When data was collected last year, in the spring, the streams wouldn't have been anoxic.

Dittberner's Creek

Changes: The pH level that we measured at Dittberner's Creek was lower than healthy levels. Last year, the pH was higher than healthy levels. The conductivity level of Dittberner's Creek was higher than normal levels. Last year, the conductivity was normal.

Reasoning: When we collected our data, photosynthesis may have been slowing down, producing carbonic acid. This may have made the water more acidic. When data was collected last year, in the spring, photosynthesis would have increasing. The conductivity may have been higher this year because of failing sewage systems, fertilizer run-off, or reactive bedrocks. The pH may have been higher last year because there may have been more plants and fewer consumers.

Spring Lake Inlet

Changes: The dissolved oxygen level of Spring Lake Inlet that we measured was lower than healthy levels. Last year, Spring Lake's levels were higher than healthy levels. The conductivity level of Spring Lake Inlet that we measured was higher than normal levels. The conductivity was at a normal level last year. The pH that we measured was healthy. Last year, it was higher than healthy levels.

Reasoning: The stream may have been becoming anoxic when we collected our data. When data was collected last year, the streams wouldn't have been anoxic. The conductivity may have been higher this year because of failing sewage systems, fertilizer run-off, or reactive bedrocks. The pH may have been higher last year because there may have been more plants and fewer consumers.