Lakes Environmental Association
2020 Water Testing Report

Chapter 3 - High-resolution Temperature Monitoring

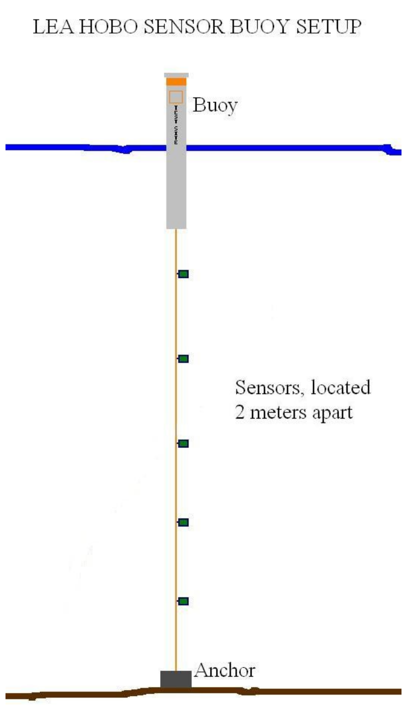
A Note About Redistribution and Use

Introduction to High-resolution Temperature Monitoring

LEA began using in-lake data loggers to acquire high resolution temperature measurements in 2013. The loggers, which are also interchangeably referred to as HOBO sensors, temperature sensors, or thermistors, are used to provide a detailed record of temperature fluctuations within lakes and ponds in our service area. This information allows for a better understanding of the thermal structure, water quality, and extent and impact of climate change and weather patterns on the waterbody tested.

Each year, we attempt to capture the entire stratified period within the temperature record, from when stratification begins to form in the spring to when the lake mixes in the fall. Stratification refers to the separation of lake waters into distinct layers and is a natural phenomenon that has important consequences for water quality and lake ecology. See Chapter 1, page 7 of the Water Testing Report for more information about stratification.

Water temperature is critical to the biological function of lakes, as well as the regulation of chemical processes. Lake temperature and stratification are greatly influenced by the weather. Air temperature, precipitation, and wind speed and direction can all affect water temperature and stratification patterns from year to year. Lake size, depth, and shape also greatly impact stratification timing and strength. The larger the difference in temperature between the top and bottom layers of the lake, the stronger the stratification is.



With funding and support from local lake associations, LEA has deployed temperature sensors at sixteen sites on thirteen lakes and ponds. Sensors are attached to a floating line held in place by a regulatory-style buoy and an anchor. The sensors are attached at 2-meter intervals, beginning one meter from the bottom and ending approximately one meter from the top. Each buoy apparatus is deployed at the deepest point of the basin it monitors. The setup results in the sensors being located at odd numbered depths throughout the water column (the shallowest sensor is approximately 1 meter deep, the next is 3 meters, etc.).

Temperature sensors are programmed to record temperature readings every 15 minutes. LEA has for many years used a handheld YSI meter to collect water temperature data.

However, this method is time consuming, resulting in only eight temperature profiles per year. While temperature sensors require an initial time investment, once deployed, the sensors record over 15,000 profiles before they are removed in the fall. This wealth of data provides much greater detail and clarity than the traditional method ever could. Daily temperature fluctuations, brief mixing events caused by storms, the date and time of stratification set up and breakdown, and the timing of seasonal high temperatures are all valuable and informative events that traditional sampling can't accurately measure.

2020 Monitoring Season

This year, water temperatures increased greatly in late June and stayed high through mid-August. The highest recorded temperatures across all lakes were between July 28th and August 14th. This is inconsistent with the usual timing of the peak in temperature, which is typically in late July. Temperatures gradually cooled throughout late summer and fall. The timing of mixing depended greatly on lake depth, size and shape.

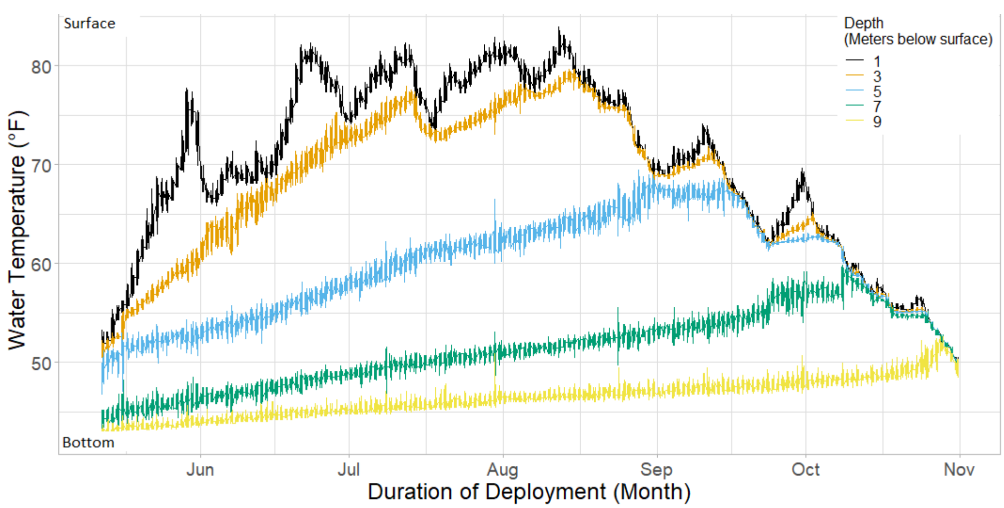
Lack of significant summer rainfall, coupled with high temperatures, led to very low lake levels throughout much of the summer season. Water levels did not recover until fall. This is noteworthy because fluctuations in water levels affect the relative depth of the temperature sensors.

A HOBO temperature sensor

High-resolution Temperature Monitoring: How to Read the Graphs

Temperature monitoring summaries on the following pages include a graph for each lake, displaying all the data collected in the 2020 season. These graphs can be tricky to understand, so here are a few pointers:

- Each colored line represents the temperature over time at a specific depth in the water. The topmost lines represent water near the top of the lake, with a difference of 2 meters (approx. 6 feet) in depth between each line.
- The graph shows temperature change over time: the horizontal axis (left to right) shows the date, while the vertical axis (up and down) shows the temperature (in degrees Fahrenheit).
- Generally, the lines are close together on the left side of the graph because temperature is fairly uniform throughout the water column (late April/early May), then widen out (June-August), then come back together on the right side of the graph when temperature is again uniform (September-November). The top few lines may stay close to each other when the graph widens out, indicating these depths are within the epilimnion (see below). Then, there is often a gap in the middle, indicating the rough position of the thermocline. Most of the time, the bottom lines stay relatively flat, indicating that they are within the hypolimnion.
- Large gaps between lines means there is a large temperature difference between depths.
- The pattern in temperature displayed by the top line (the sensor nearest to the lake's surface) is strongly influenced by air temperature.
- During stratification, the epilimnion does not easily mix with the hypolimnion (hence, these lines do not touch each other). It is only when the temperature of the upper water cools down that the lake can fully mix. You can see this process happening on each graph: the temperatures near the surface get cooler and the deeper waters get warmer as the barrier between the two layers weakens and the waters begin to mix. The lines converge one by one until the temperature is the same at each depth. This is known as lake turnover or de-stratification.



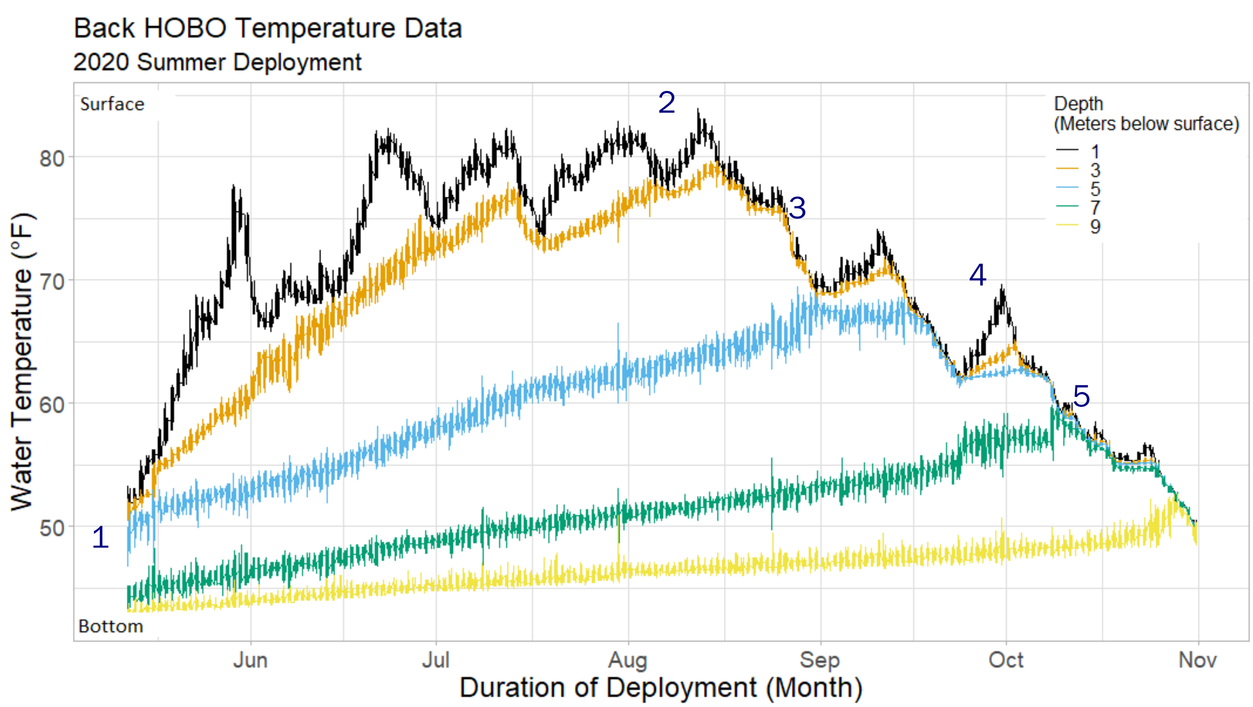
Back Pond

Summary

When sensors were deployed on May 11, Back Pond had already begun to stratify. The wide gaps above and below the 5-meter line indicate that for much of the season this depth was the area of rapidly changing temperature (thermocline). The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As air temperatures began to warm in September, so too did Back Pond's surface waters. As water temperatures began to cool in September, surface waters began to mix throughout September and October, with full mixing occurring in late October.

The following events can be seen in the graph below:

1. Back Pond had already started to stratify when sensors were deployed on May 11.
2. While surface waters were warm from late June through mid-August, the peak in temperature of 83.94 °F occurred on August 12.
3. Cooling air temperatures allowed waters between 1 and 3 meters to mix in mid-August but stratification persisted below 3 meters until mid-September.
4. After a warm spell in late September, waters between 1 and 3 meters briefly re-stratified.
5. Waters between 1 through 7 meters mixed in early October and full mixing occurred on October 28.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/11/2020	83.94	10/28/2020	11/1/2020

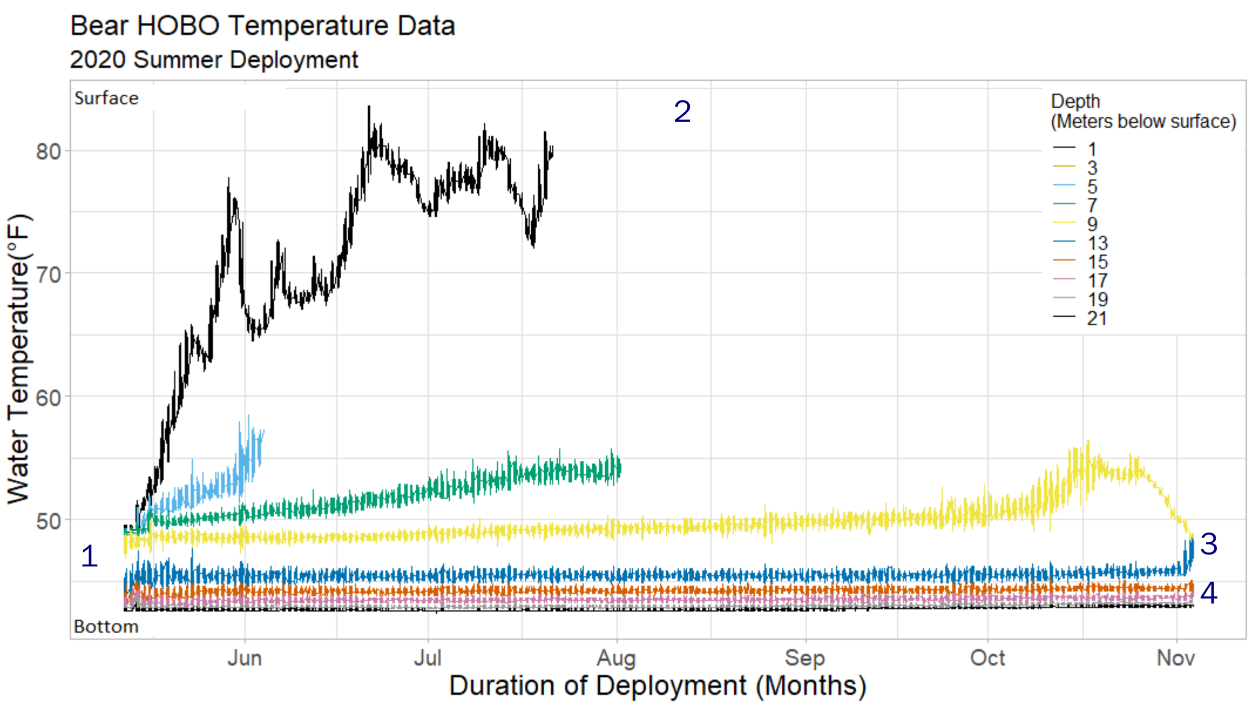
Bear Pond

Summary

Note that sensors at 1 meter, 5 meters, and 7 meters malfunctioned during the season and the sensor at 3 meters was lost. While this is unfortunate, it is unusual for multiple sensors to malfunction simultaneously. We can use temperature data collected during our regular monitoring efforts to help fill in the information gaps left by the broken sensors. The water column of Bear Pond distinctly and strongly divided into layers based on temperature (stratified) by mid-June. The temperature in the upper waters increased dramatically following air temperature increases, but there was little change in temperature over the season in the deepest waters. The large temperature differentials between the surface and bottom waters result in surface waters that are unlikely to mix with deep waters during the summer months, thus reducing the chance that more nutrient-rich deep water could come to the surface and feed algae.

The following events can be seen in the graph below:

1. Bear Pond had begun to stratify when sensors were deployed on May 11.
2. The highest surface water temperature observed during regular monitoring was 80.24 °F on August 13.
3. Bear Pond was not yet fully mixed when the sensors were removed on November 4.
4. There was virtually no change in the water temperature between 13—21 meters throughout the season.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/11/2020	80.24	After retrieval	11/4/2020

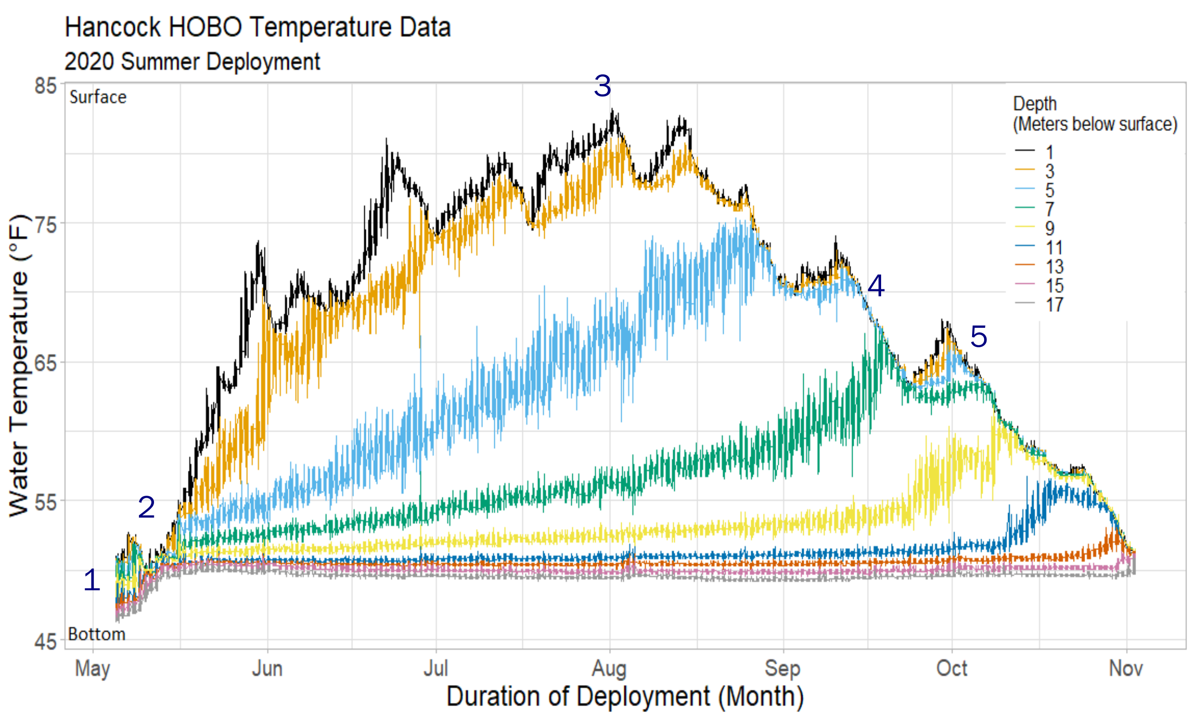
Hancock Pond

Summary

When sensors were deployed on May 11, Hancock Pond had just begun to stratify. The wide gaps above and below the 5-meter line indicate that this depth was the area of rapidly changing temperature (thermocline). The large temperature differences above and below the thermocline prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae. As air temperatures began to cool in September, waters between 1—5 meters began to mix. As water temperature continued to cool throughout the fall, deeper waters began to mix with shallower waters, with full mixing occurring near the date of retrieval on November 3.

The following events can be seen in the graph below:

1. Hancock Pond had just begun to stratify when sensors were deployed May 11.
2. The water column briefly re-mixed in late May before distinctly and strongly stratifying for the duration of the monitoring season.
3. While surface waters were warm from late June through mid-August, the peak in temperature of 83.22 °F occurred on August 1.
4. As surface waters cooled, water temperature between 1—5 meters equilibrated and mixed.
5. After a warm spell in late September, waters between 1—7 meters briefly re-stratified.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/11/2020	83.22	near retrieval date	11/3/2020

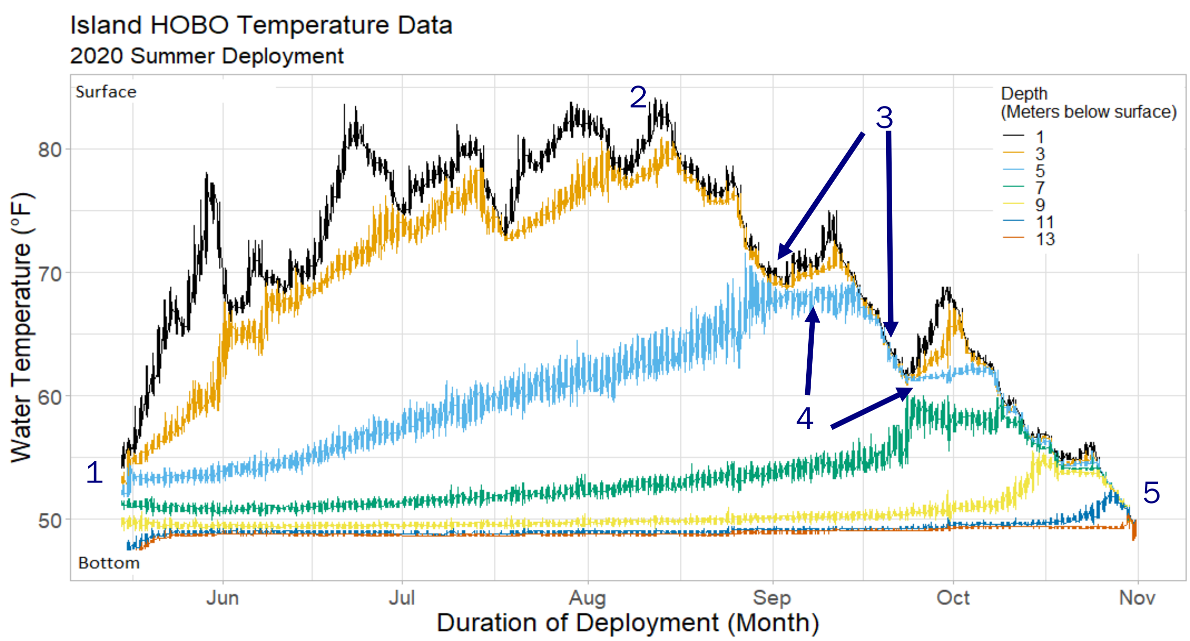
Island Pond

Summary

When sensors were deployed on May 14, Island Pond had already begun to stratify. The wide gaps above and below the 5-meter line indicate that for much of the season this depth was the area of rapidly changing temperature (thermocline). The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As air temperatures began to cool in late August, so too did Island Pond's surface waters. The cooler surface water temperatures enabled waters from meters 5-7 to begin to mix with surface waters in late August. As water temperature began to cool even further in September and October, waters down to 9 meters began to mix with shallower waters. Full mixing occurred near the date of retrieval.

The following events can be seen in the graph below:

1. Island Pond had already begun to stratify when sensors were deployed May 14.
2. While surface waters were warm from late June through mid-August, the peak in temperature of 84.12 °F occurred on August 12.
3. As surface waters cooled, water temperature between 1—3 meters equilibrated and began to mix.
4. After warm spells in late September and early October, waters between 1—3 meters briefly re-stratified.
5. Full mixing occurred near the date of retrieval.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/14/20	84.12	Near retrieval date	11/1/20

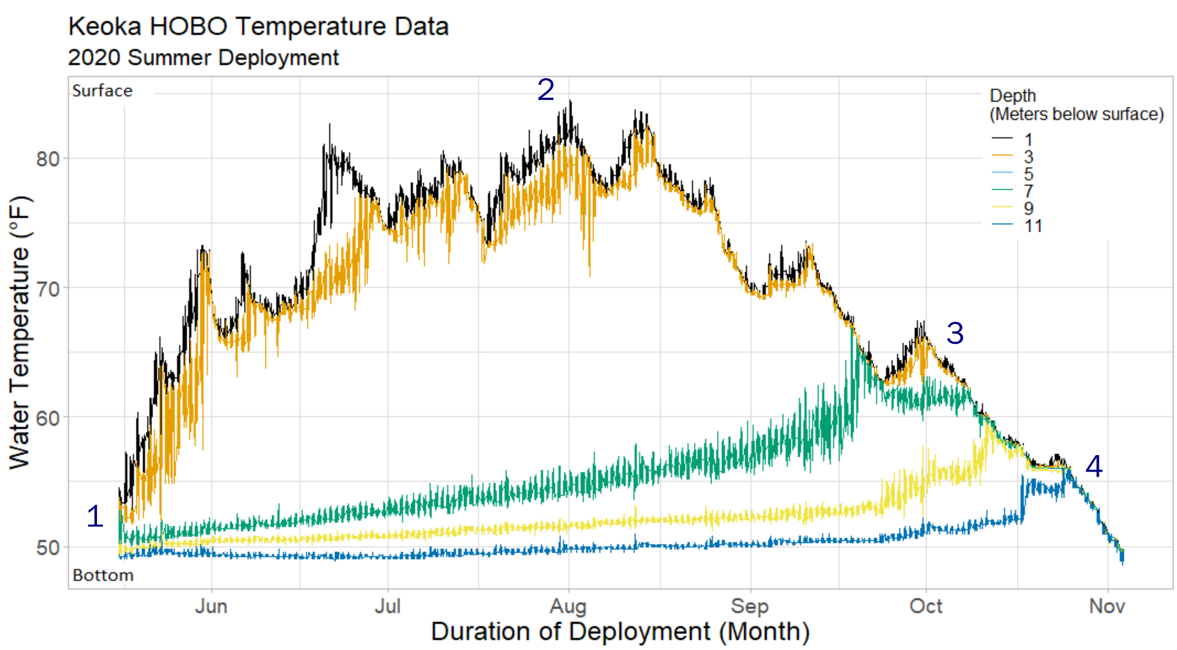
Keoka Lake

Summary

Note that the 5-meter sensor malfunctioned during the season. We can use temperature data collected during our regular monitoring efforts to help fill in the information gaps left by the broken sensor. When sensors were deployed on May 15, the water column of Keoka Lake had begun to divide into layers based on temperature (stratified). Keoka Lake had distinctly and strongly stratified by mid-June. The wide gaps between the 3-meter and 7-meter lines indicate that for much of the season the thermocline was between these depths. The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As water temperature began to cool further in September and October, waters down to 9 meters began to mix with shallower waters. Full mixing occurred on October 25.

The following events can be seen in the graph below:

1. Keoka Lake had started to stratify when sensors were deployed on May 15.
2. While surface waters were warm from late June through mid-August, the peak in temperature of 84.47 °F occurred on August 1.
3. After a warm spell in early October, waters between 1—7 meters briefly re-stratified.
4. Full mixing occurred on October 25.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/15/2020	84.47	10/25/2020	11/4/2020

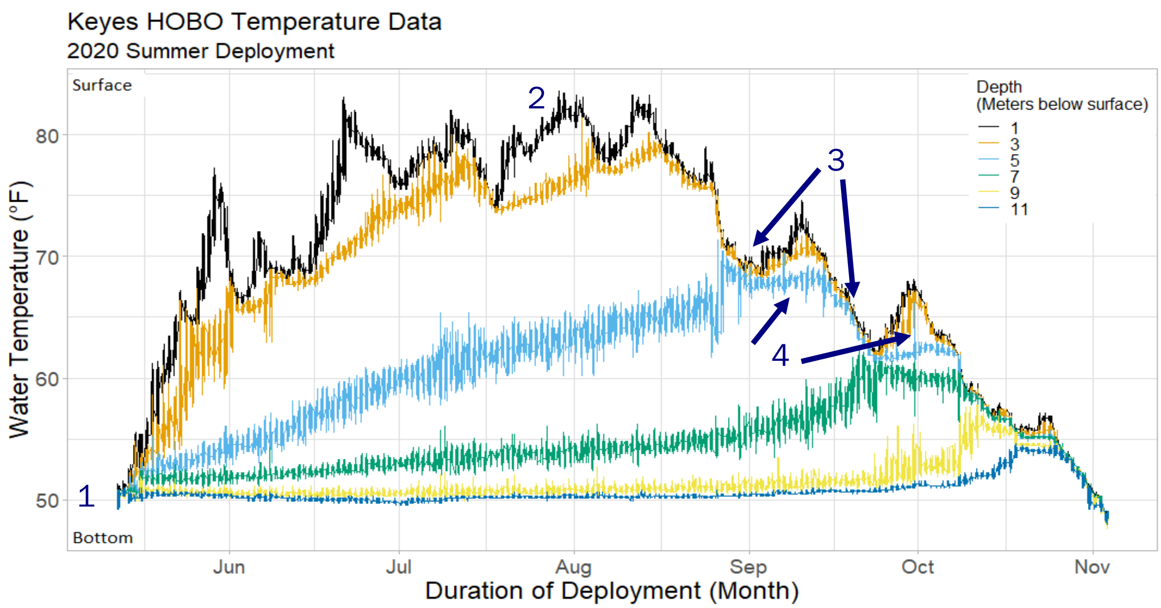
Keyes Pond

Summary

When sensors were deployed on May 11, Keyes Pond had not yet stratified. However, Keyes Pond had distinctly and strongly stratified by mid-June. The wide gaps above and below the 5-meter line indicate that for much of the season this depth was the area of rapidly changing temperature (thermocline). The water temperatures above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As air temperatures began to cool in late August, so too did Keyes Pond's surface waters. Cooler surface water temperatures enabled waters from meter 5 to begin to mix with shallower waters in late August. In September and October, waters down to 9 meters began to mix with shallower waters, with full mixing occurring in late October.

The following events can be seen in the graph below:

1. Keyes Pond had not yet started to stratify when sensors were deployed on May 11.
2. While surface waters were warm from late June through mid-August, the peak temperature of 83.58 °F occurred on July 29.
3. As surface waters cooled, water temperature between 1—5 meters equilibrated and began to mix.
4. After warm spells in late September and early October, waters between 1—5 meters briefly re-stratified.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/11/2020	83.58	10/26/20	11/4/20

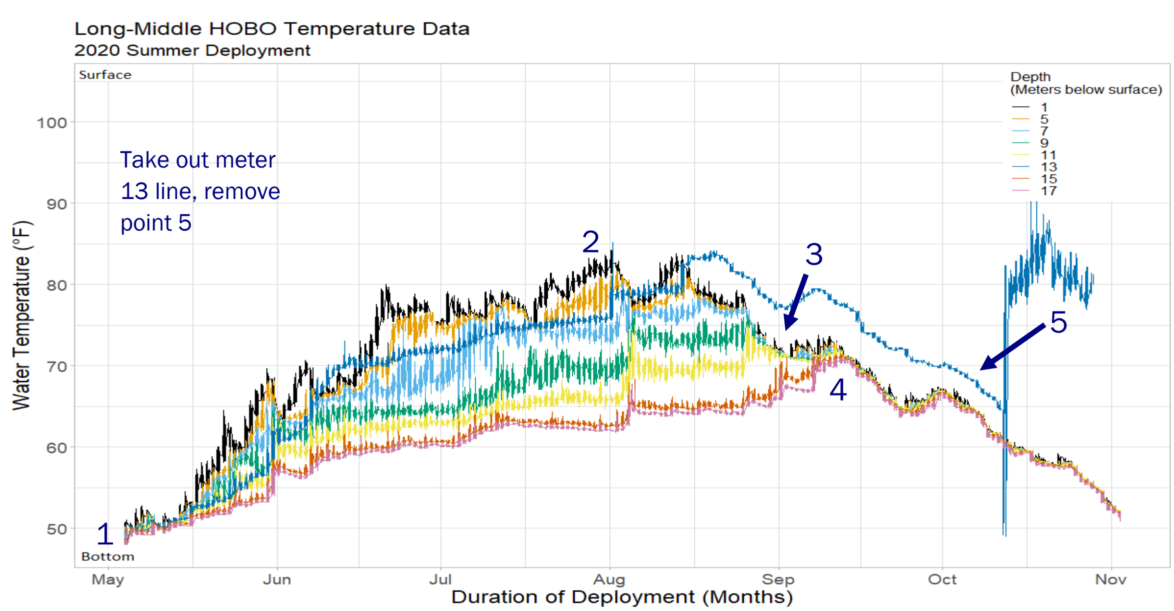
Long Lake (middle basin)

Summary

Note that the 13-meter sensor malfunctioned during the season. We can use temperature data collected during our regular monitoring efforts to help fill in the information gaps left by the broken sensor. When sensors were deployed on May 3, the water column of Long Lake's middle basin had not yet stratified. Long Lake's middle basin had stratified by mid-June. The temperature of deep waters (11—15 meters) in the middle basin of Long Lake continually increased all season long. This type of consistent temperature increase results in a relatively weak stratification, meaning that the temperature difference between surface waters (1-3 meters) and deep waters (11-15 meters) isn't as large as other lakes with similar depths. The middle basin's weak stratification is likely the result of the lake's long length, which runs parallel to the most dominant north-west wind direction and the basin's central location.

The following events can be seen in the graph below:

1. Long Lake's main basin had not yet started to stratify when sensors were deployed on May 3.
2. While surface waters were warm from late June through mid-August, the peak temperature of 84.30 °F occurred on August 1.
3. As surface waters cooled, water temperature between 1—11 meters equilibrated and mixed.
4. Full mixing occurred on September 13.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/3/2020	84.30	9/13/2020	11/3/2020

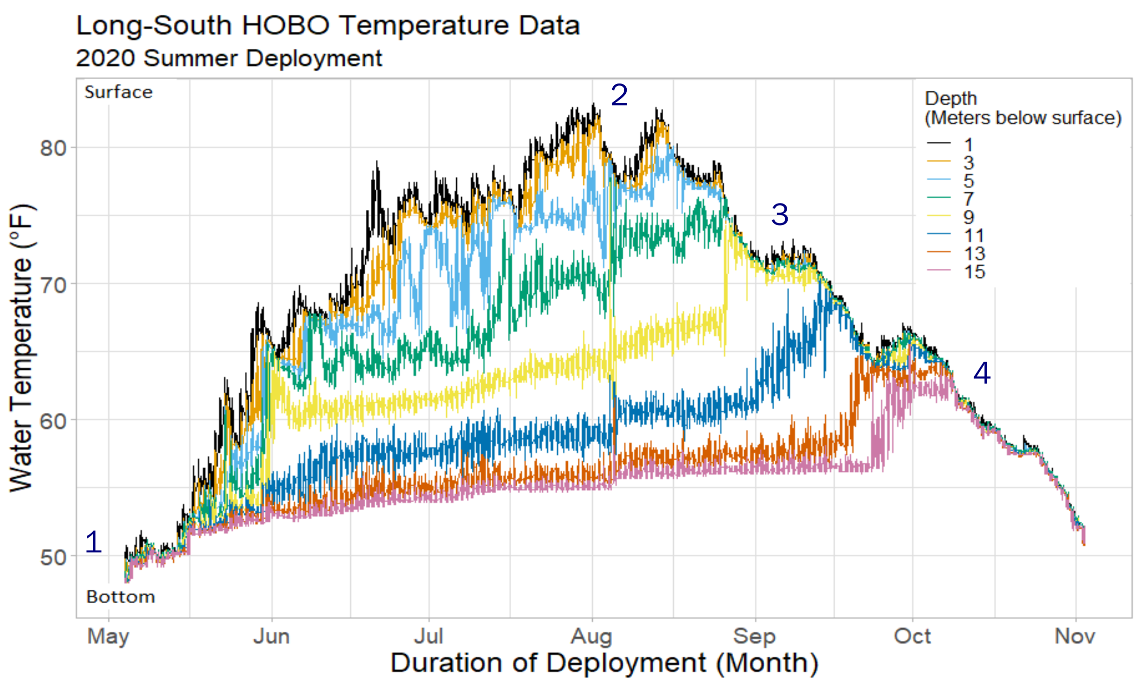
Long Lake (south basin)

Summary

When sensors were deployed on May 3, the water column of Long Lake's south basin had not begun to divide into layers based on temperature (stratify). Long Lake's south basin had stratified by mid-June. The temperature of deep waters (11—15 meters) in the south basin of Long Lake gradually increased all season long but not as dramatically as in the middle basin. The gaps above and below the 9-meter line indicate that for part of the season this depth was the area of rapidly changing temperature (thermocline). The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations.

The following events can be seen in the graph below:

1. Long Lake's south basin had not yet started to stratify when sensors were deployed on May 3.
2. While surface waters were warm from late June through mid-August, the peak temperature of 83.22 °F occurred on August 1.
3. As surface waters cooled, water temperature between 1—9 meters equilibrated and mixed in mid-September.
4. Full mixing occurred on October 8.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/3/2020	83.22	10/8/2020	11/3/2020

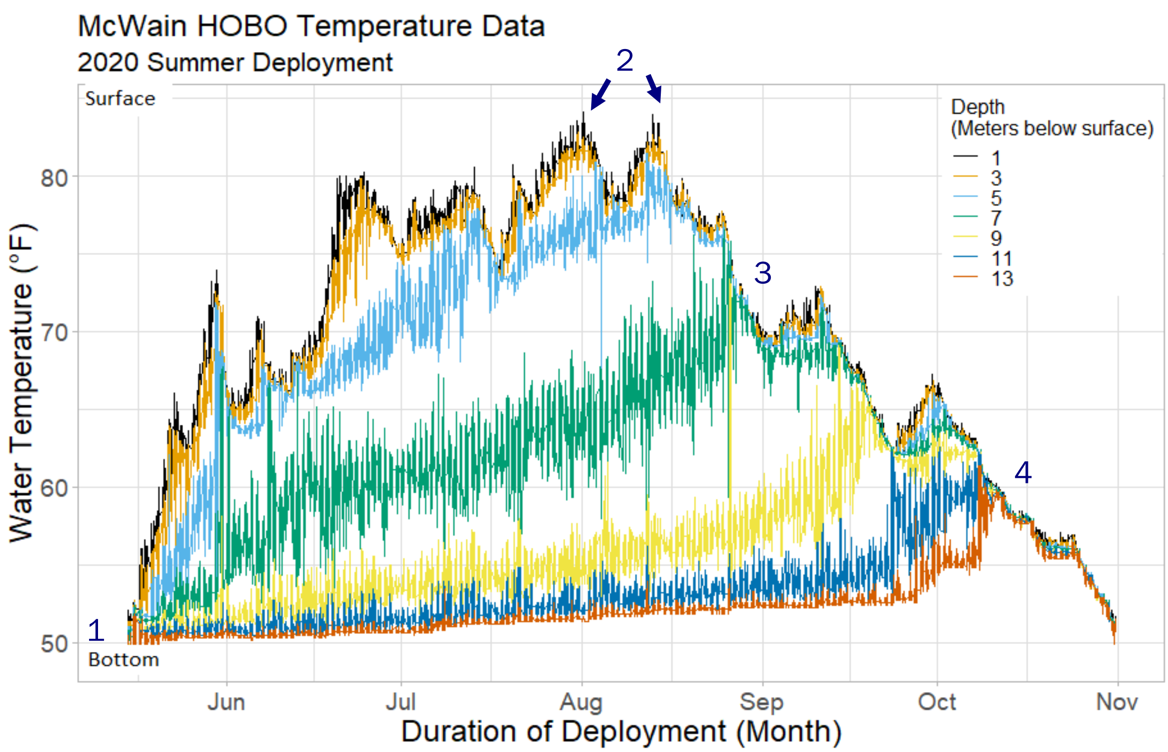
McWain Pond

Summary

When sensors were deployed on May 14, McWain Pond had not yet stratified. However, McWain Pond distinctly stratified by July. The wide gaps above and below the 7-meter line indicate that for much of the season this depth was the area of rapidly changing temperature (thermocline). The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As air temperatures began to cool in late August, so too did McWain Pond's surface waters. Cooler surface water temperatures enabled waters from meter 7 to begin to mix with shallower waters in late August. In September and October, waters down to 9 meters began to mix with shallower waters, with full mixing occurring on October 11.

The following events can be seen in the graph below:

1. McWain Pond had not yet started to stratify when sensors were deployed on May 14.
2. While surface waters were warm from late June through mid-August, the peak temperature of 84.12 °F occurred on August 1, followed closely by a temp of 83.92 °F on August 13.
3. As surface waters cooled, water temperature between 1—7 meters equilibrated and mixed in late August.
4. Full mixing occurred on October 11.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/14/2020	84.12	10/11/2020	11/1/2020

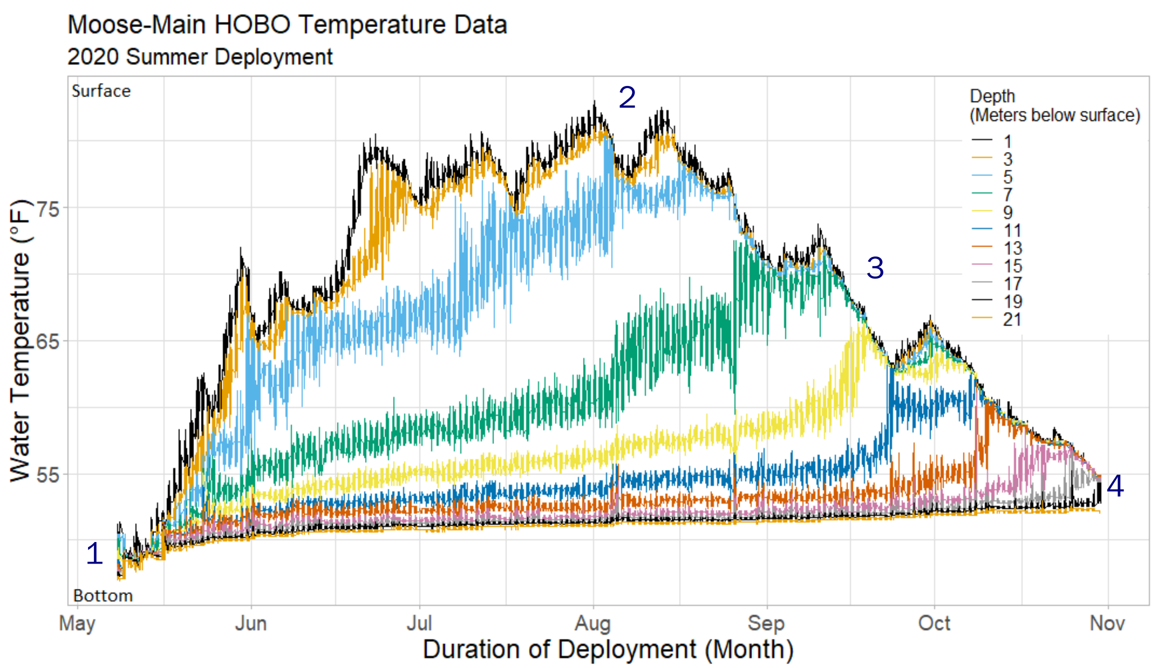
Moose Pond (middle basin)

Summary

When sensors were deployed on May 7, Moose Pond's main basin had not yet stratified. Moose Pond's main basin had distinctly stratified by late June. The wide gaps above and below the 7-meter line indicate that for much of the season this was the area of rapidly changing temperature (thermocline). The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. Cooler surface water temperatures enabled waters from meters 5 and 7 to begin to mix with surface waters in mid-September. Full mixing occurred after sensors were retrieved on November 1.

The following events can be seen in the graph below:

1. Moose Pond's main basin had not yet stratified when sensors were deployed on May 7.
2. While surface waters were warm from late June through mid-August, the peak temperature of 83.04 °F occurred on August 1, followed closely by 82.50 °F on August 13.
3. As surface waters cooled, water temperature between 1—11 meters equilibrated and mixed in late August.
4. Full mixing occurred after sensors were retrieved on November 1.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/7/2020	83.04	After retrieval	11/1/2020

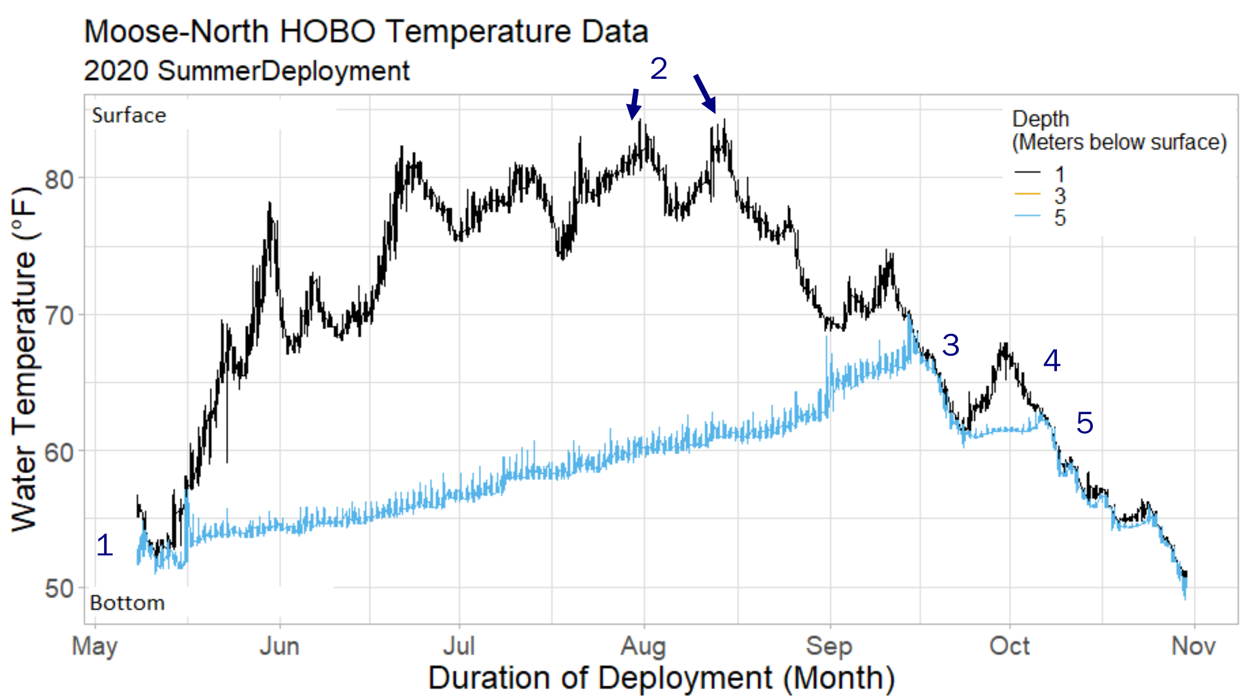
Moose Pond (north basin)

Summary

Note that the 3-meter sensor malfunctioned during the season, leaving a data gap at this depth. We can use temperature data collected during our regular monitoring efforts to help fill in the information gaps left by the broken sensor. When sensors were deployed on May 7, Moose Pond's north basin had not yet stratified. The temperature of deep waters (5 meters) in the north basin of Moose Pond continually increased all season. This type of consistent temperature increase results in a relatively weak stratification, meaning that the temperature difference between surface waters (1-3 meters) and deeper waters (5 meters) isn't as large as other lakes with similar depths. As air temperatures began to cool in late August, so too did Moose Pond's surface waters. Cooler surface water temperatures enabled waters from meter 5 to begin to mix with surface waters in mid-September. Full mixing occurred on October 6.

The following events can be seen in the graph below:

1. Moose Pond's north basin had not started to stratify when sensors were deployed on May 7.
2. While surface waters were warm from late June through mid-August, the peak temperature of 84.30 °F occurred on July 31 and August 14 .
3. As surface waters cooled, water temperature between 1—5 meters equilibrated and mixed.
4. After warm spells in late September and early October, waters between 1—5 meters briefly re-stratified.
5. Full mixing occurred on October 6.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/7/2020	84.30	10/6/2020	11/1/2020

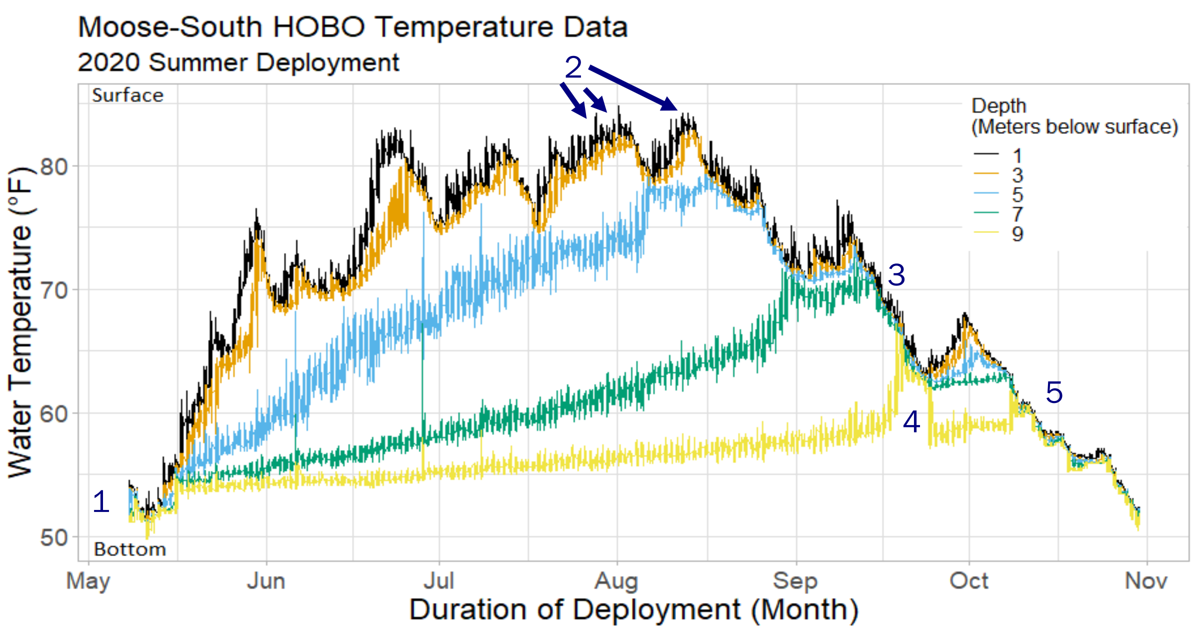
Moose Pond (south basin)

Summary

When sensors were deployed on May 7, Moose Pond's south basin had not yet stratified. Moose Pond's south basin had strongly and distinctly stratified by late June. The wide gaps above and below the 5-meter line indicate that for much of the season this was the area of rapidly changing temperature (thermocline) for the first half of the testing season. In the second half of the testing season, the gaps move down to above and below the 7-meter line, indicating that the thermocline shifted down to between 6-8 meters. The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. Cooler surface water temperatures enabled waters from meters 5 and 7 to begin to mix with surface waters in mid-September. Full mixing occurred on October 10.

The following events can be seen in the graph below:

1. Moose Pond's south basin had not yet stratified when sensors were deployed on May 7.
2. The peak temperature of 84.83 °F occurred on August 1, followed closely by a temperature of 83.30 °F on both July 28 and August 13.
3. As surface waters cooled, water temperature between 1—7 meters mixed in late September.
4. On September 24 water testers discovered the temp buoy had been moved away from the deep spot to a shallower location close to shore. Our sensors indicate waters at this shallower depth were mixed. Water testers moved the buoy back to the deep spot where the water column had re-stratified after a warm spell.
5. Full mixing occurred on October 10.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/7/2020	84.83	10/10/2020	11/1/2020

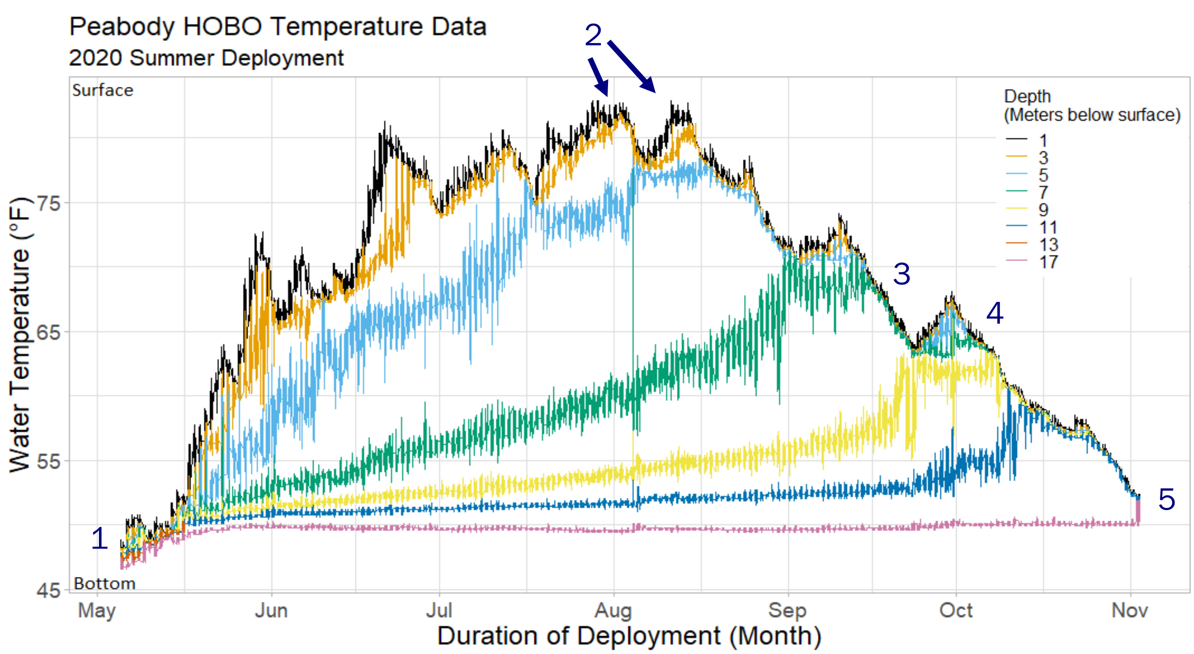
Peabody Pond

Summary

Note that the 13-meter sensor malfunctioned during the season. We can use temperature data collected during our regular monitoring efforts to help fill in the information gaps left by the broken sensor. Peabody Pond had strongly and distinctly stratified by mid-June. The wide gaps above and below the 7-meter line indicate that for much of the season this was the area of rapidly changing temperature (thermocline) for most of the testing season. The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As air temperatures began to cool in mid-August waters between 1–5 meters began to mix. By mid-October, waters from 1-11 meters had mixed, with full mixing occurring near November 3.

The following events can be seen in the graph below:

1. Peabody Pond had not yet stratified when sensors were deployed on May 4.
2. While surface waters were warm from late June through mid-August, the peak temperature of 82.86 °F occurred on July 28, July 29, and August 11.
3. As surface waters cooled, water temperature between 1—7 meters equilibrated and mixed.
4. After a warm spell in late September, waters between 1—7 meters briefly re-stratified.
5. Full mixing occurred near the date of retrieval on November 3.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/4/2020	82.86	Near retrieval date	11/3/2020

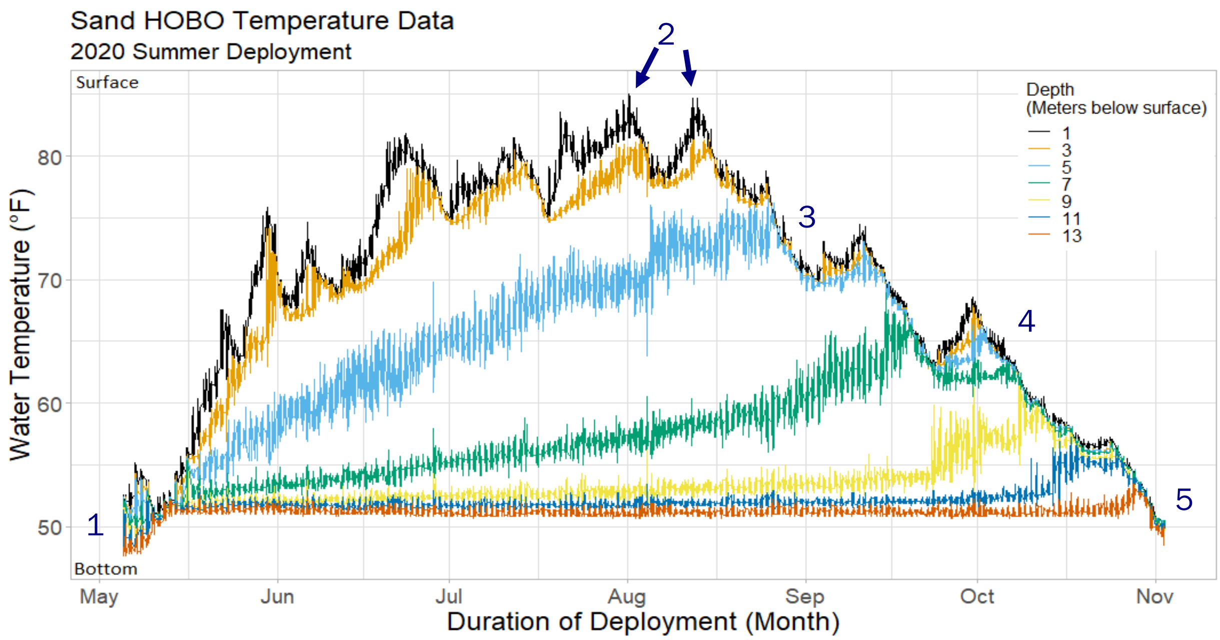
Sand Pond

Summary

Sand Pond had not yet stratified when sensors were deployed on May 4 but had strongly and distinctly stratified by mid-June. The wide gaps above and below the 5-meter line indicate that for much of the season this was the area of rapidly changing temperature (thermocline). The depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As air temperatures began to cool in late August, waters between 1–5 meters began to mix. By late September, waters from 1-7 meters had mixed, with full mixing occurring on October 29.

The following events can be seen in the graph below:

1. Sand Pond had not yet stratified when sensors were deployed on May 4.
2. While surface waters were warm from late June through mid-August, the peak temperature of 85.01 °F occurred on August 1 followed closely by 84.65 °F on August 12.
3. As surface waters cooled, water temperature between 1—5 meters equilibrated and mixed.
4. After a warm spell in late September, waters between 1—7 meters briefly re-stratified.
5. Full mixing occurred on October 29.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/4/2020	85.01	10/29	11/3/2020

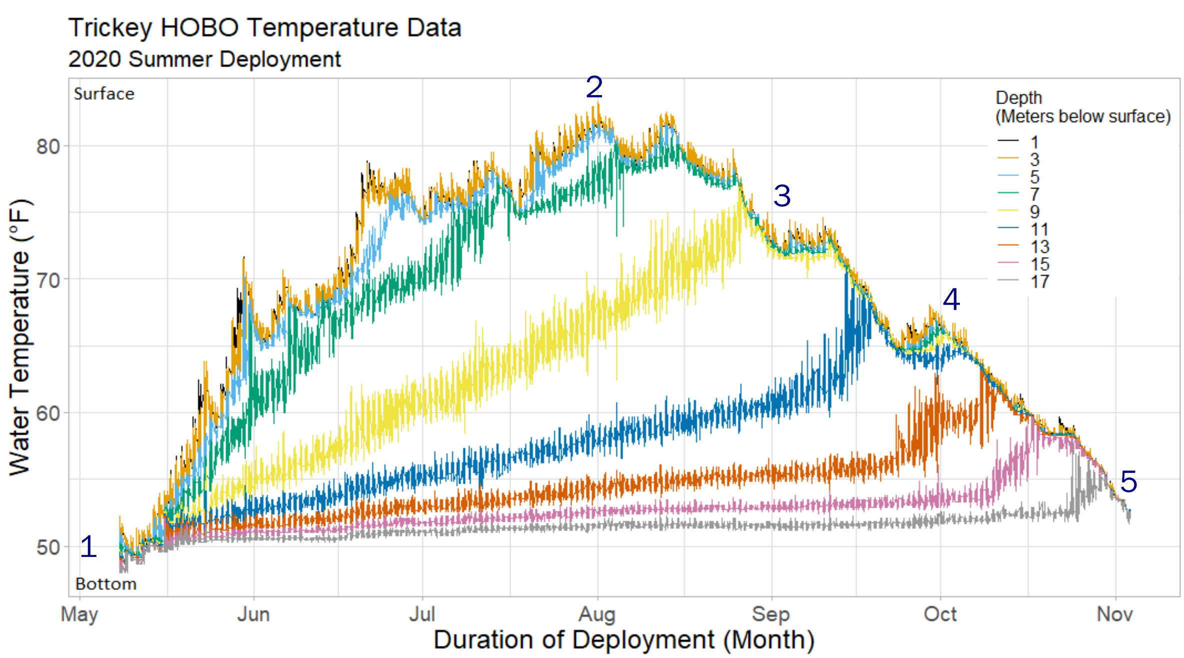
Trickey Pond

Summary

Trickey Pond had not yet stratified when sensors were deployed on May 7 but had strongly stratified by mid-June. The wide gaps above and below the 9-meter line indicate that for much of the season this was the area of rapidly changing temperature (thermocline). The water temperature at depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As air temperatures began to cool in late August, waters between 1-9 meters began to mix. By late September, waters from 1-11 meters had mixed, with full mixing occurring on October 30.

The following events can be seen in the graph below:

1. Trickey Pond had not yet stratified when sensors were deployed on May 7.
2. While surface waters were warm from late June through mid-August, the peak temperature of 83.22 °F occurred on August 1.
3. As surface waters cooled, water temperature between 1—9 meters equilibrated and mixed.
4. After a warm spell in late September, waters between 1—11 meters briefly re-stratified.
5. Full mixing occurred on October 30.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/7/2020	83.22	10/30/2020	11/4/2020

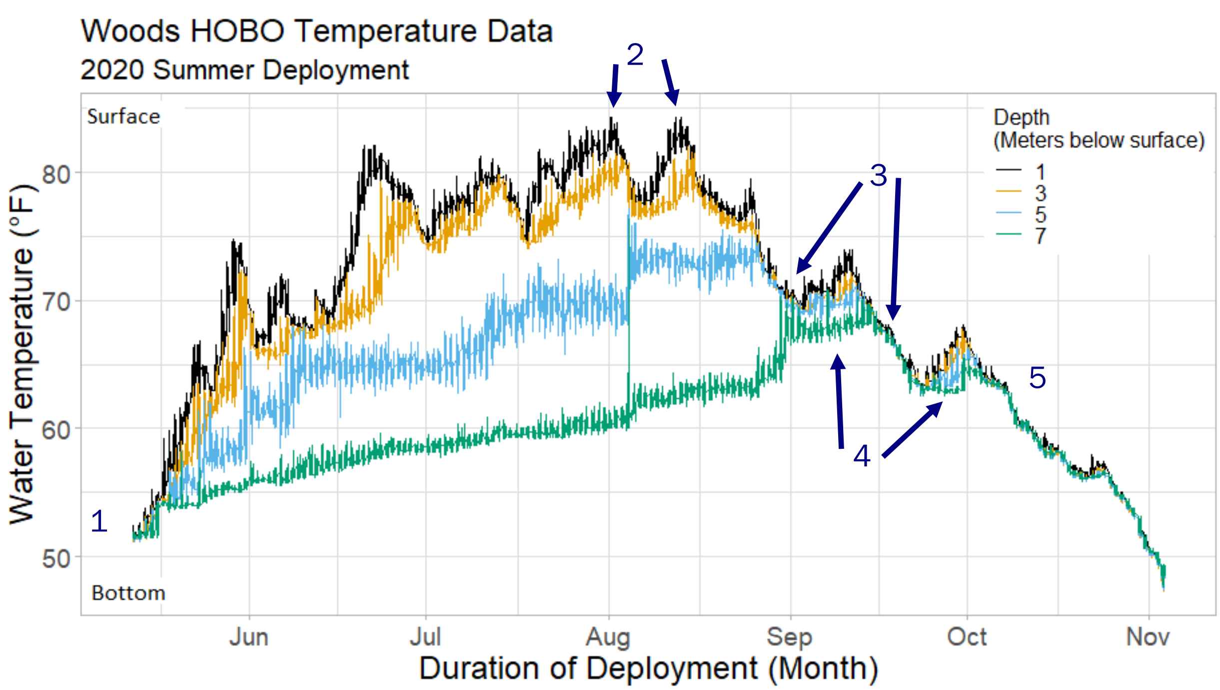
Woods Pond

Summary

Woods Pond had not yet stratified when sensors were deployed on May 11 but had strongly stratified by mid-June. The wide gaps above and below the 5-meter line indicate that for much of the season this was the area of rapidly changing temperature (thermocline). The water temperature at depths above and below the thermocline are markedly different. Temperature differences like this prevent colder, deeper waters from mixing with warmer, shallower waters, thus reducing the chance that nutrient-rich deep waters could mix with the surface waters and feed algae populations. As air temperatures began to cool in late August, waters between 1–5 meters began to mix. In September, waters from 1-5 meters temporarily re-stratified, with full mixing occurring for the season on October 4.

The following events can be seen in the graph below:

1. Woods Pond had not yet started to stratify when sensors were deployed on May 11.
2. While surface waters were warm from late June through mid-August, the peak temperature of 84.30 °F occurred on August 1, August 12, and August 13.
3. As surface waters cooled, water temperature between 1—5 meters began to mix.
4. After warm spells in September and October, waters between 1—5 meters briefly re-stratified.
5. Full and sustained mixing occurred on October 4.



Deployment Date	Peak Temperature (°F)	Full Mixing	Retrieval Date
5/11/2020	84.30	10/4/2020	11/4/2020