

2010 Weather at the Arboretum

Bob Famiglietti

As in 2008 and 2009, above average rainfall continued in 2010. Moisture combined with warm temperatures and plentiful sunshine created optimum growing conditions for the Arboretum's plant collection.

JANUARY produced less than 6 inches of snow and was relatively mild. The average temperature was almost 5°F warmer than the previous January. A January thaw occurred on the 24th through the 28th, reaching the monthly high temperature of 57°F on the 26th. It dropped to single digits on only three nights, a rare occurrence, reaching a low of 5°F each time. The first Arctic cold front of the year passed through on the 29th with wind gusts up to around 50 mph. The 6-inch snowpack dwindled to a trace by month's end.

FEBRUARY was mild and had 4.74 inches of precipitation, much of it falling as rain. The 24th, 25th, and 26th produced strong east winds and 3.88 inches of rain. A low of 13°F was recorded on the 7th, one of the highest lows ever recorded for February. The remainder of the month was unseasonably warm and a high of 49°F was reached on the 21st. Snowfall was light with only 5 inches recorded from two storms. A minimal snowpack created optimum ground conditions, enabling our horticulture staff to perform vital winter pruning of the Arboretum's plants. There was only a trace of snow on the ground by the end of the month.

MARCH continued the 2010 pattern of mild temperatures. There was only 0.4 inch of snow for the month. Spring appeared to be on a very early track and, as good gardeners, we hoped for the arrival of abundant spring rains. By month's end—and nearly 18 inches of rain later—we regretted what we had wished for. March started mild with strong winds, rain, and a trace of snow. Temperatures raced into the 50s for five days by mid-month. A three-day Nor'easter produced 3.94 inches of rain on the 14th, 3.74 inches on the 15th, and 1.27 inches on the 16th. A total of 9.43 inches of rain had fallen by mid-month. The rain continued: another 1.51 inches on the 23rd, 0.85 inches on the 24th, with smaller amounts from the 26th through the 29th. The third large storm of the month arrived on the 30th, dropping 3.15 inches that day and 2.15 inches on the 31st, ending the month with an amazing 17.44 inches of precipitation. This was about 13 inches above normal. There were 16 days with measurable precipitation in our rain gauge. March became the wettest month measured at the Arboretum since the weather station was established at the Dana Greenhouses in 1962. (By comparison, the wettest month ever recorded for Boston's official weather site was 17.09 inches in August 1955.)

All the rain caused numerous problems throughout the Arboretum: ponds overflowed their banks and flooded adjoining roads and collections, the linden



March 15th—Heavy rainfall caused Bussey Brook to overflow, leading to serious erosion in several locations including this spot at the base of Hemlock Hill near the South Street Gate. (MATT CONNELLY)



Visitors walked along a narrow dry strip on Forest Hills Road on March 16th, with an overflowing Dawson Pond in the background. (KEVIN B. SCHOFIELD)



Arboretum horticultural technologist Kit Ganshaw measures water depth in Rehder Pond on March 25th after yet more rain fell on the previous two days. (NANCY ROSE)

(*Tilia*) collection looked like a large lake, and Bussey and Goldsmith Brooks overflowed their banks, causing severe erosion. Our secondary road system was severely eroded—90% of it had to be regraded and resurfaced, and additional water mitigation channels had to be installed. In early April a sinkhole was discovered in the road surface over Goldsmith Brook at the Arboretum's main entrance, likely caused when March floodwaters deteriorated the underlying culvert. The entrance was closed to vehicle traffic for nearly a year but re-opened on April 1, 2011.

APRIL started warm, reaching 78°F on the 3rd. It reached 90°F on the 7th, breaking a record as the earliest 90°F day in April. A low of 32°F occurred on the 28th. It was the only freezing temperature recorded for the month—a rare event—and the last frost date for the season. April ended on the dry side with no snow and only 2.13 inches of rain. This gave our nurseries a chance to dry out so our spring transplanting season could begin.

MAY was warm, dry, and sunny. A high of 94°F on the 26th and one of the sunniest Mays on record helped push the average high temperature over 4°F above normal, ranking it the 5th warmest on record. The first five months of 2010 averaged over 3°F above normal. Precipitation was below normal at 2.92 inches. Lilac Sunday on May 9th was partly sunny but cool and very windy.

Arnold Arboretum Weather Station Data • 2010

	Avg. Max. (°F)	Avg. Min. (°F)	Avg. Temp. (°F)	Max. Temp. (°F)	Min. Temp. (°F)	Precipi- tation (inches)	Snow- fall (inches)
JAN	35.2	20.1	27.7	57	5	3.74	5.3
FEB	37.2	24.3	30.8	49	5	4.74	5.0
MAR	50.3	35.2	42.8	72	24	17.44	.4
APR	61.6	42.1	51.9	90	32	2.13	
MAY	73.1	52.0	62.6	94	38	2.92	
JUN	79.6	60.7	70.2	93	49	3.52	
JUL	86.2	68.0	77.1	98	54	2.63	
AUG	81.4	62.7	72.1	92	52	8.05	
SEP	77.2	57.1	67.2	95	45	1.99	
OCT	62.8	44.0	53.4	82	33	5.42	
NOV	51.5	34.0	42.8	65	25	3.75	
DEC	37.5	23.4	30.5	56	12	3.93	16.1

Average Maximum Temperature 61.1°F

Average Minimum Temperature 43.6°F

Average Temperature 52.4°F

Total Precipitation 60.26 inches

Total Snowfall. 26.8 inches

Warmest Temperature 98°F on July 7

Coldest Temperature 5°F on January 5 and
February 1

Last Frost Date 32°F on April 28

First Frost Date 29°F on November 1

Growing Season 186 days

JUNE continued very warm, reaching 93°F on the 24th and 28th. It was the 15th warmest June in Boston's 139 years of weather record keeping. In contrast, June 2009 was the 3rd coldest. There were 17 days of measurable rain but only 3.52 inches fell for the month. Thunder was detected on six days, double the average.

JULY was very hot and somewhat dry. The average high temperature was 86.2°F, making it the 3rd hottest July on record. It reached 100°F at Logan Airport in Boston for the first time since 2002. It hit at least 90°F twelve times this month alone, marking 17 days already for this year, more than the entire annual average for Boston. We had three heat waves (highs of at least 90°F for 3 consecutive days) this month. An Arboretum high of 98°F was reached on the 6th. In contrast, last June–July was the 4th coldest in the 138 years of Boston's weather records. Rain totaled 2.63 inches, in contrast to last July's nearly 8 inches.

AUGUST kept pace with the preceding months as warmer than normal, though not as extreme as July. A high of 92°F occurred on the 9th. This summer (June–August) was the third warmest on record. It was also a wet month as 8.05 inches of rain fell, though rainfall occurred on only eight days. 6.43 inches of rain fell on the 22nd through the 26th. Three 90°F days ended the month as another heat wave began.

SEPTEMBER also was very warm and dry with only 1.99 inches of rain. Our only thunderstorm occurred on the 8th. The month started as August had ended with temperatures in the 90s for the first three days. A high for the month of 95°F was reached on the 2nd. This was the third warmest September on record. Wind gusted to nearly 50 mph on the 30th as Tropical Storm Nicole passed offshore.

OCTOBER was on track with the preceding 9 months as we continued with above average temperatures. A high of 82°F was reached on the 1st, our last reading in the 80s for the year. Decent rainfall occurred with a total of 5.42 inches recorded. Precipitation was recorded on 14 days but the remaining ones were often sunny and glorious. There was no trace of snow this month but a low of 33°F was recorded on the 22nd, bringing just a hint of light frost in the low areas around the Arboretum ponds. This spectacular month of weather made for grand viewing of our fall foliage.

NOVEMBER became our first colder than normal month of 2010. The Arboretum's first freeze occurred the night of the 1st when temperatures dropped to 29°F, ending our growing season. A heavy widespread frost occurred on the 3rd. Rainfall was near normal with 3.75 inches. There was no trace of snow this month, and a high of 65°F was recorded on the 17th. Finally as temperatures cooled we sensed the impending dormant season, a prerequisite to winter storage of our containerized plant material from the Dana Greenhouses.



Glowing orange and gold sugar maple (*Acer saccharum*) foliage framed the Leventritt Shrub and Vine Garden on October 25th.
(MICHAEL DOSMANN)

DECEMBER was snowy and the only month of 2010 with markedly below normal temperatures. A low of 12°F was reached on the 10th and then a high of 56°F was recorded on the 13th, an extreme range of 44°F in three days. Our first snowfall occurred on the 21st, leaving 2 inches on the ground. There was a large, violent Nor'easter on the 26th and 27th. Over a foot of snow was deposited but blizzard-level wind conditions created snowdrifts 3 to 4 feet deep, making it difficult to measure exactly how much snow fell. This fierce storm left some of the Arboretum's plants with structural damage. The year ended with a snow depth of nearly 1 foot, a sign of things to come.

Bob Famiglietti is a Horticultural Technologist at the Arnold Arboretum's Dana Greenhouses.