

2011 Weather Summary

Bob Famiglietti

2011 continued the trend of warmer than normal temperatures and above average precipitation that started in 2008. Plentiful moisture plus a long growing season allowed the Arboretum's plants to attain optimum growth. Some of our plants suffered damage from storms during the year.

JANUARY began mild, and Arboretum visitors celebrated New Year's Day at 59°F, the high temperature for the month. Only a week earlier, on December 26th, 2010, the Arboretum had experienced a fierce blizzard that brought high winds and heavy snow, which led to considerable plant damage. This mild early January weather helped reduce the blizzard's snow pack to 6 inches and gave our horticulture crew an opportunity to start cleaning up and repairing our living collections. The spring mood was short lived, however, as temperatures dipped and the snows began. Light snowstorms occurred by the second week and a strong, windy northeaster on the 11th and 12th dropped over 15 inches of snow and inflicted even more damage to our plants. Snowstorms occurred from the 17th through the 22nd, depositing another 10 inches. Now 22 inches of snow lay accumulated on the ground. The snow stopped for a couple of days as an Arctic cold front swept through, dropping the night temperature to -4° on the 24th. This was the first below-zero reading in two years. The month finished cold and very snowy with storms dropping another 10 inches from the 24th through 26th, making January's snow total 35 inches and leaving 31 inches of snow accumulation on the ground.

SUE A. PFEIFER



The view from an Arboretum plow truck on January 13, 2011, after another heavy snowfall.

Arnold Arboretum Weather Station Data • 2011

	Avg. Max. (°F)	Avg. Min. (°F)	Avg. Temp. (°F)	Max. Temp. (°F)	Min. Temp. (°F)	Precipi- tation (inches)	Snow- fall (inches)
JAN	33.9	16.0	25.0	59	-4	5.01	35.2
FEB	37.9	17.9	27.9	59	5	4.48	13.0
MAR	46.4	28.9	37.7	71	11	2.88	1.0
APR	58.3	40.5	49.4	76	29	4.59	2.5
MAY	68.8	51.5	60.2	90	37	3.69	
JUN	74.6	57.8	66.2	89	43	5.01	
JUL	85.8	64.4	75.1	101	52	1.66	
AUG	81.2	62.7	72.0	93	54	10.45	
SEP	74.4	57.7	66.1	86	41	6.49	
OCT	62.9	45.0	54.4	82	28	10.75	2.0
NOV	57.6	38.3	48.0	69	26	4.64	
DEC	46.3	29.2	37.8	62	13	4.14	

Average Maximum Temperature 60.7°F

Average Minimum Temperature 42.5°F

Average Temperature 51.6°F

Total Precipitation 63.79 inches

Total Snowfall in 2011 53.7 inches

Snowfall During Winter 2010–2011 67.8 inches

Warmest Temperature 101°F on July 22

Coldest Temperature -4°F on January 24

Last Frost Date 30°F on April 16

First Frost Date 30°F on October 28

Growing Season 194 days

FEBRUARY 1st delivered 7 inches of snow. The snow pack on the ground now measured 38 inches, testing the limits of our snow depth gauge (40 inches maximum). Rain storms occurred on the 2nd and 5th while light snow fell on the 7th and 8th. The snow pack was reduced to 28 inches. A storm-free period occurred from the 9th through the 18th and our low for the month of 5°F occurred on the 10th. Temperatures soared to 59°F on the 17th and 18th, reducing the snow pack to 24 inches. February ended with seasonal temperatures and 3 inches of light snow, leaving the month's total snowfall at 13 inches and the snow pack at 17 inches.

MARCH began with a rainstorm, a rare event for this winter. Temperatures climbed into the low 40s and our accumulated snow from the fading winter season was further reduced to 13 inches. The maximum temperature on the 3rd was well below average at just 28°F and temperatures dipped into the teens and twenties for the first five nights of the month. It felt like winter would never end. Snow and ice were everywhere, making it extremely difficult for anyone to walk in the Arboretum, let alone work on the grounds. Gardeners could hardly wait to walk on bare earth again. Temperatures then jumped to 60°F on the 6th and it remained relatively mild, eventually making it to 71°F on the 18th. This was the high for the winter season and the warmest it had been since October 28th, 2010, nearly five months earlier. A combination of these unseasonably warm temperatures along with the sun's intensity and some rain brought an end, on March 16th, to the continuous snowpack that had started on December 20, 2010—an incredible span of nearly three months. Old Man Winter teased us with a 3 inch snowstorm on the 31st. March ended on the dry side with only 2.88 inches of precipitation, which was 14.56 inches less than March 2010's record-setting 17.44 inches.

APRIL 1st started with remnants of the snowstorm that began on March 31st. The first ten days saw high temperatures rise into the 40s, 50s, and 60s. It dropped to freezing or below on the 6th, 7th, and 8th, the last freezing temperatures for the season. It reached a warm 72°F on the 11th, 76°F on the 24th and 29th, and then hit 81°F on the 27th, the high for the month. Very humid conditions were recorded on the 5th, 26th, and 27th, and wind gusts of over 50 mph from the east occurred during a storm on the 17th. Measurable precipitation occurred on 14 days, totaling 4.59 inches.

MAY had lots of fog and near normal temperatures but its average daily high temperature of 68.8°F was 4.3°F cooler than last May's average daily high of 73.1°F. Rainfall totaled 3.69 inches and precipitation was measured in our rain gauge on ten consecutive days from the 14th through the 23rd. Our highest one day rainfall was only .95 inch on the 18th. A low temperature of 37°F was recorded on the 2nd, the last reading in the 30s for the season. It reached 90°F for the first time this year on May 27th. Last year the first 90°F reading was recorded on April 7th.

JUNE was rather cool. Total rainfall reached 5.01 inches, about 2 inches above normal. There were 14 days with measurable precipitation and thunder was heard on several occasions. High temperatures of 89°F were recorded on the

8th and 9th. It never reached 90°F, very unusual for June but not as cool as June 2009 when the maximum temperature was 83°F and the month turned out to be the third coldest June in Boston's 140 years of weather history (Logan Airport station). A low of 43°F was recorded on the 4th, the last minimum temperature in the 40s.

JULY was very hot and dry. 52°F, our low for the month, occurred on the morning of the 15th. Heat waves (three consecutive days of 90°F or over) were recorded at Boston's weather station (Logan Airport) on several occasions, but the Arboretum's weather station only recorded one. We missed others by just a couple of degrees. Our heat wave occurred from the 20th through the 23rd. July's high temperature was recorded on the 22nd at 101°F, making it the highest temperature reading for the year and our first triple digit reading since July 2002 (104°F). In contrast, our low temperature for the year was -4°F on January 24th, giving an incredible temperature range of 105°F in 2011. We had measurable precipitation on 11 days and the month's total of only 1.66 inches was produced mainly from brief periods of light rain.

AUGUST brought very heavy rainfall, a continuation of July's heat, and Tropical Storm Irene. The month began hot—a reading of 93°F occurred on the 1st, which was the high for the month. Temperatures then moderated to the 70s and 80s and we did not reach 90°F again this year. Some early August rains developed into continuous rainy weather, and by the 10th almost 5 inches had fallen. More rain fell from the 13th through the 21st, leaving another 2.48 inches.



KYLE PORT

Tropical Storm Irene blew through the Arboretum on August 28, 2011. Fortunately, damage was limited, but this shellbark hickory (*Carya laciniosa*, accession 12898-S) lost a large section of its crown.

Tropical Storm Irene arrived in full force on the 28th but (fortunately) didn't live up to expectations. Wind speeds only reached 28 mph at the Arboretum's weather station and rainfall was less than 2 inches. Structural damage to our collection was minimal thanks in large part to the preventive pruning standards used by our arborists and horticulturists. Thunder was heard throughout the month and August ended up with an incredible 10.45 inches of rain, more than making up for July's deficit.

SEPTEMBER was summerlike and continued the trend of warm, wet weather that had been so evident this growing season. Rain, thunder, fog, and mosquitoes were prevalent. A high of 86°F was recorded on the 5th while a low of 41°F occurred on the 19th. It rained for four days from the 5th through the 8th, dropping over 3 inches of precipitation. Rainy conditions continued and the month's total reached 6.49 inches. These warm rains encouraged our plants to remain lush and actively growing, showing no signs of slowing down for the impending fall season.

OCTOBER began as September had ended and the year's trend continued with warm temperatures and more rain. The monthly high temperature of 82°F was reached on the 9th and 10th. Above average temperatures occurred throughout the month and October ended as the 12th warmest in Boston's 140 years of weather records (Logan Airport station). Our first fall freeze finally happened on the morning of the 29th as temperatures dipped to 32°F and a heavy rainstorm was ending, leaving a trace of snow and icy surfaces. This officially ended the Arboretum's long growing season at 194 days. Five heavy rain storms occurred through the month along with lighter periods of rain, leaving 10.75 inches as the month's total. On October 30th, the last storm of the month left 2 inches of wet snow on the ground. Our plant collections suffered some damage since the snow was able to accumulate on the leaves that had not yet fallen, weighing down and breaking branches. The Arboretum was very fortunate to have escaped the devastation that occurred just to the north and west of here where up to 31 inches of snow fell, causing massive damage and statewide power outages that in some cases lasted for weeks

NOVEMBER brought opinions and predictions as to what the imminent winter season would be like as October's snowfall brought back memories of last winter's extremely snowy conditions. Some were sure that the wet, stormy weather pattern that we were in would continue into the winter. Much of Massachusetts now lay under a heavy blanket of snow, but the Arboretum's 2-inch layer melted as temperatures rose into the 60s and the monthly high of 69°F was reached on the 9th. November continued very warm and finished 2nd warmest in 140 years of records at Boston's Logan Airport weather station. Our low for the month was set on the 1st at 26°F. The fall foliage season was somewhat disappointing as the warm temperatures created unfavorable conditions for vivid color. It only dipped below freezing on ten nights in November, and Thanksgiving was a delightful 57°F. At the Dana Greenhouses, as in several recent years, the trend in warm temperatures prevented our containerized plants from going dormant, thus delaying their return to winter cold storage. November ended with 4.64 inches of rain and no snow!



NANCY ROSE

Two inches of heavy, wet snow fell on October 30, 2011. The next day, traces of snow along with fallen leaves remained around this ginkgo (*Ginkgo biloba*, accession 222-97-A).

DECEMBER was very mild, continuing November's warmth. A high of 62°F was recorded on the 5th and it reached 50°F or more on nine occasions. It was the 7th warmest December in Boston's weather record keeping history and the sixth straight month with above average temperatures. December's early warmth brought vivid foliage displays on some individual specimens. A 13°F low for the month—recorded on the morning of the 19th—hastened winter dormancy in our containerized plants, a condition needed for storage. 4.14 inches of precipitation was recorded and no snow fell, an unusual event that marked only the fifth time in Boston's weather records that no snow fell in the November–December period.

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