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The Progression of Spring in Southeastern Iowa

By LLOYD W. BAIRD and CARLO M. IGNOFFO

INTRODUCTION

Is this spring earlier or later than usual? When is the best time to plant? If the ground-hog comes out of his hole today will he see his shadow? Questions such as these have stimulated people to look for and record the occurrence of natural events either as hobbies, rules of thumb for farming or as methods of predicting and recording the arrival of spring. Natural events such as general thaw, leafing of trees and shrubs and plant-flowering have been used in the past by Jaques (1924, 1944), Dodd et al. (1934) and Hodson (1951). In many instances one biological event can be correlated with the occurrence of another natural event: the flowering of a plant with the arrival of a migratory bird or the advent of a destructive plant or animal species.

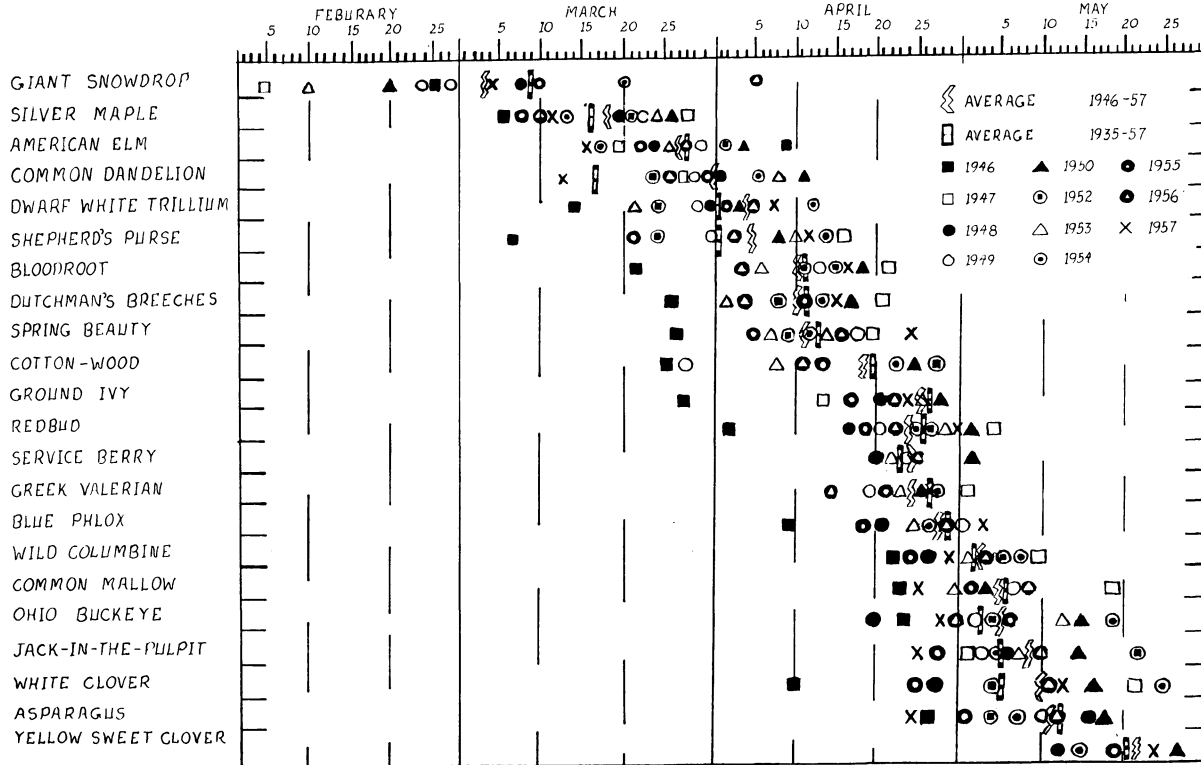
This paper deals with the progression of spring in Henry county of southeastern Iowa. The first-bloom of a flower served as the gauge of seasonal progression. The study covered the period from 1946-1957 and included both native and cultivated plants which have been grown outdoors.

MATERIALS AND METHODS

Flowering records were compiled by botany students in connection with spring flower contests which have been conducted at Iowa Wesleyan College over the last 43 years (Jaques, 1931).¹ Each student was provided with a list of instructions to aid in collecting, determining, and recording the proper scientific name of the species. Botany manuals by Fernald (1950) and Bailey (1943) were the basic references for all final determinations. The shedding of pollen was the ultimate test for deciding whether a flower was or was not in bloom. The first to the fifth bloom was recorded for each flower species within each year. The first-bloom date of each flower as well as averages for the period 1935-1957 and 1946-1957 are listed in Table 1 and illustrated in Figure 1. Flowers used in this study were in bloom from early February to late May. Twenty-two spe-

¹Acknowledgments are due H. E. Jaques and D. D. Millspaugh who directed and supervised the collecting and recording of flowers by botany students for the interval 1915-1947 and 1947-1957 respectively.

Figure 1. The month, day, and average first-bloom of some southeastern Iowa flowers.



cies of flowers were selected as best representing this period. There were approximately 250 different species of flowers collected each year. The flowers selected for this study were: Giant Snowdrop, *Galanthus elwesii* Hook.; Silver Maple, *Acer saccharinum* L.; American Elm, *Ulmus americana* L.; Common Dandelion, *Taraxacum officinale* Weber; Dwarf White Trillium, *Trillium nivale* Riddell; Shepherd's Purse, *Capsella bursa-pastoris* (L.); Bloodroot, *Sanguinaria canadensis* L.; Dutchman's Breeches, *Dicentra cucullaria* (L.) Bernh; Spring Beauty, *Claytonia virginica* L.; Cottonwood, *Populus deltoides* Marsh; Ground Ivy, *Nepeta hederaceae* (L.) Trevisan; Redbud, *Cercis canadensis* L.; Service Berry, *Amelanchier canadensis* (L.) Medic; Greek Valerian, *Polemonium reptans* L.; Blue Phlox, *Phlox divaricata* L.; Wild Columbine, *Aquilegia canadensis* L.; Common Mallow, *Malva rotundifolia* L.; Ohio Buckeye, *Aesculus glabra* Willd.; Jack-in-the-Pulpit, *Arisaema triphyllum* (L.) Schott; White Clover, *Trifolium repens* L.; Garden Asparagus, *Asparagus officinalis* L.; and Yellow Sweet Clover, *Melilotus officinalis* (L.) Lam.

RESULTS AND DISCUSSION

The first flowering dates for each species for the period 1946-1957 are depicted in Figure 1. The average dates for each species for the period 1935-1957 and 1946-1957 are also shown. Example: the average date of flowering of Spring Beauty was April 12 for both the 11 and 23 year period. The range of first-bloom (1946-1957) extended from March 28 to April 24, a span of 27 days.

The greatest variation of first-bloom was in those plants which flowered early in the season. As the season progressed this variation diminished. Flowers which bloomed in March averaged 51 days between the first-bloom early date and first-bloom late date. The average was 31 days for April flowers and 24 days for May flowers. The range within each month extended from 27 to 92 days for March, 19 to 37 days for April, and 16 to 46 days for May. The flowers associated with these ranges were: March, American Elm and Common Dandelion; April, Greek Valerian and Service Berry; May, Yellow Sweet Clover and White Clover.

The difference between the 11 and 23 year average was one day or less in 48 per cent of the flowers, 3 days or less in 81 per cent, and 6 days or less in 95 per cent of the flowers. Only one flower (Common Dandelion) of the 22 species had a difference greater than 6 days.

Other deviations in the progression of spring became evident when the first-bloom dates were plotted (Figure 1.) A year which started out as an early or late spring could later shift to the other extreme. The years 1947 and 1948 were examples of this condition.

Table 1

The Month, Day and Average First-bloom of Some Southeastern Iowa Flowers

| Common Name | 1946 | 1947 | 1948 | 1949 | 1950 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | Ave. '46-57 | Ave. '35-57 |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|-------------|-------------|
| Giant Snowdrop | 2/24 | 2/5 | 3/8 | 2/24 | 2/20 | 2/27 | 2/10 | 3/20 | 3/10 | 4/5 | 3/4 | 3/4 | 3/9 |
| Silver Maple | 3/4 | 3/28 | 3/20 | 3/23 | 3/24 | 3/21 | 3/24 | 3/11 | 3/10 | 3/6 | 3/11 | 3/18 | 3/16 |
| American Elm | 3/19 | 4/9 | 3/24 | 3/28 | 4/3 | 4/1 | 3/26 | 3/17 | 3/22 | 3/28 | 3/15 | 3/27 | 3/28 |
| Common Dandelion | 2/19 | 3/28 | 3/30 | 3/28 | 4/12 | 3/24 | 4/7 | 4/6 | 3/30 | 3/26 | 3/11 | 3/30 | 3/17 |
| Dwarf White Trillium | 3/15 | | 3/30 | 3/29 | 4/3 | 4/7 | 3/21 | 4/12 | 4/2 | 4/2 | 4/8 | 4/2 | 3/31 |
| Shepherd's Purse | 3/8 | 4/15 | | 3/31 | 4/12 | 3/24 | 4/11 | 4/14 | 3/21 | 4/3 | 4/11 | 4/5 | 3/31 |
| Bloodroot | 3/21 | 4/21 | | 4/11 | 4/18 | 4/15 | 3/29 | 4/12 | 4/6 | 4/4 | 4/17 | 4/12 | 4/11 |
| Dutchman's Breeches | 3/27 | 4/21 | | 4/11 | 4/17 | 4/8 | 4/3 | 4/12 | 4/12 | 4/4 | 4/16 | 4/12 | 4/11 |
| Spring Beauty | 3/28 | 4/14 | | 4/11 | 4/13 | 4/8 | 4/8 | 4/12 | 4/6 | 4/16 | 4/24 | 4/12 | 4/12 |
| Cottonwood | 3/25 | | | 3/28 | 4/24 | 4/28 | 4/7 | 4/23 | 4/13 | 4/11 | | 4/15 | |
| Ground Ivy | 3/28 | 4/14 | 4/21 | | 4/24 | | 4/27 | | 4/16 | 4/23 | 4/24 | 4/22 | 4/20 |
| Redbud | 4/2 | 5/3 | 4/19 | 4/27 | 5/2 | 4/25 | 4/29 | 4/23 | 4/18 | 4/23 | 4/23 | 4/25 | 4/25 |
| Service Berry | | | 4/18 | 4/21 | 5/2 | | 4/23 | | | 4/24 | | 4/25 | 4/22 |
| Greek Valerian | | 5/1 | | 4/20 | 4/27 | | 4/24 | 4/26 | 4/21 | 4/16 | 4/25 | 4/25 | 4/23 |
| Blue Phlox | 4/10 | | 4/20 | 4/27 | 4/24 | | | 4/26 | 4/18 | 4/29 | 5/3 | 4/25 | 4/26 |
| Wild Columbine | 4/23 | 5/8 | 4/26 | | 5/8 | 5/5 | 5/2 | 5/6 | 4/25 | 5/3 | 4/30 | 5/3 | 5/3 |
| Common Mallow | 4/24 | 5/19 | | 5/10 | 5/3 | | 5/1 | | 5/2 | 5/9 | 4/26 | 5/5 | 5/5 |
| Ohio Buckeye | 4/23 | | 4/20 | 5/4 | 5/15 | 5/6 | 5/14 | 5/19 | 5/7 | 4/30 | 4/27 | 5/6 | 5/3 |
| Jack-In-The-Pulpit | | 5/7 | 5/6 | 5/4 | 5/15 | 5/22 | 5/8 | 5/4 | 4/28 | 5/10 | 4/25 | 5/8 | 5/5 |
| White Clover | 4/9 | 5/22 | 4/27 | | 5/16 | 5/5 | | 5/25 | 4/25 | 5/12 | 5/13 | 5/11 | 5/5 |
| Asparagus | 4/25 | | 5/15 | 5/10 | 5/16 | 5/5 | | 5/18 | 5/1 | 5/12 | | 5/11 | 5/12 |
| Yellow Sw. Clover | | | 5/13 | | 5/28 | | | 5/14 | 5/19 | | 5/23 | 5/21 | 5/20 |

Some years remained as early or late springs throughout most of the season (1946), (1950). Most years seemed to fluctuate back and forth across the average as the season progressed. The 1956 season was the closest parallel to the average and was the only spring which could in any way be termed a "normal spring".

In conclusion, the accumulation of information of this type can aid in recording the advance of a particular season in relation to other seasons. Consequently the biologist has at his disposal a tool more adequate than calendar dates to record and predict the occurrence of a particular event as well as general seasonal progression.

SUMMARY

The flowering of spring plants was used as a gauge in measuring the progression of seasons in southeastern Iowa.

Twenty-two flowers were selected from approximately 250 species to best represent the spring flowering season. The study covers an eleven year period (1946-1957).

The greatest variation in first bloom occurred in those plants which flowered early in the season. This variation diminished as the season progressed.

The difference between the 11 and 23 year averages for first bloom was less than 6 days in 95 per cent of the flowers.

Example of seasons which shifted from early to late, or vice-versa, were 1947 and 1948; springs which remained early or late throughout most of the season, 1946 and 1950; closest approach to a "normal spring", 1956.

Techniques such as the one employed in this study may aid the biologist in predicting the occurrence of a specific event as well as the progression of a particular spring.

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