

## THE IMPORTANCE OF PHENOLOGICAL NOTATIONS DURING INSECT ECOLOGICAL STUDIES

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During the past two years the Dominion Entomological Laboratory at Kamloops has been accompanying its tick and biting fly field observations with brief notes on floral life and development at the particular area under study. The increasingly significant value of this correlation has encouraged the laboratory to pay a still greater attention to the floral distribution and advancement throughout all areas within its scope.

The nature and value of phenological recordings are outlined herein, since it is possible that such studies might also be of aid to phases of work carried out by other British Columbia laboratories and, if this should be so, a co-operative recording from various parts of the province would serve to accumulate a more accurate and comprehensive mass of data than could be collected by any single laboratory.

The value of notes on floral species and their development in a given area under observation may be discussed under two headings.

Firstly, the inaccuracy of dates, and their often misleading significance, has probably been realized by all field entomologists. Due to ever-differing combinations of rainfall, temperature, wind and other climatic factors, it is very seldom that we have two seasons of similar advancement, thus rendering useless the recording of a certain specimen as being taken on July 15th, for example, with hopes of taking more during the following year on the same date. As an instance of this, streams have been noted by the writer to breed consecutively, several distinct species of blackfly throughout a season, and it was his misfortune only last season to miss entirely a certain described early stage, that he had observed in the same locality but a few days later the previous year.

Ticks are very sensitive to weather conditions, and through their united response to certain factors, have been known to cause severe outbreaks of tick paralysis. Owing to the variation in weather conditions, however, their activity at a certain date one year cannot be predicted for a similar calendar date in the following year.

It seems, then, that we need some means of recording the average effect of all the changing weather conditions. Vegetation appears to be the only and, fortunately, the most suitable form of indicator for this purpose. It is believed that by noting the development of a series of some twelve or more common plants, either by leaf, flower or berry,

a series of climatic periods can be established that can be duplicated during any following year; it is very reasonable to expect that these periods will always be accompanied by a similar insect fauna and development in any set locality.

Secondly, it should be possible, through the aid of the delicate responses of plant life to climatic conditions, to establish type areas in which we may reasonably expect to find a certain insect fauna. Such areas, of course, may be micro- or macro-climatic in nature, and may be separated by a few feet or hundreds of miles. Thus, two or more areas that are found to include a common typical set of plants would probably yield a particular species of insect, common only to the certain primary climatic and secondary vegetative factors therein exhibited.

This second phase of study may not be as accurate and of as much value as the first; nevertheless, it bears many interesting speculations and does fit in very nicely with the previously-mentioned phenological recordings.

The system of referring to the floral development as indicators of time and locality is not new and has been used in Canada in connection with the preparation of spray calendars and similar work. Its application to entomology where the insect under study is not directly related to the plant development is however, I believe, still a matter to be given trial, and in consequence is a procedure that is open for criticism and suggestions. Observations of sets of plants common to the district could be recorded on special mimeographed sheets; these notes, in the active spring months, could be made every week, or even more often. In all cases, the greater the number of plants recorded, the more accurate will be the date or area indicated.

In dealing with type areas, discretion should be used in choosing plants or trees that are not too rare, and yet are not of such general distribution that they will overlap on adjoining areas. The species should preferably be familiar to the layman and free from similar or confusing forms.

## Biological Calendar

1937 June	1st-5th	6th-10th	11th-15th	16th-20th	21st-25th	26th-30th
Floral notes :	Rose-bud <sup>-</sup>	bud <sup>+</sup>	blossom	blossom <sup>+</sup>	blossom <sup>++</sup>	petals fallen.
	Black-berry	green	red-green	red <sup>-</sup>	red <sup>+</sup>	ripe <sup>--</sup>
	Thimble-berry	ripe <sup>++</sup>	Salmon-berry	red <sup>+</sup>	ripe	ripe <sup>+</sup>
	Cherries					
Insect notes :	Notes on abundance of various species, economic and otherwise.					
Rainfall since previous date :	Slight showers, high humidity					
Average temp. :	75° F.					
Sunshine :	Cloudy					