

23 days until May 25 when she hatched the entire clutch. During the first week after hatching, the hen and her brood remained within 25 yards of the nest. Gradually the home range of the family group expanded to include an adjacent corn field and hay field. When her brood was four weeks old the hen was again recaptured and fitted with her seventh transmitter.

During the summer months, Hen No. 1 and her brood occupied a home range of about 60 acres. Numerous attempts were made to obtain a visual observation of the family group. On June 19, Hen No. 1 was flushed with six chicks. On August 11, she was again recaptured to replace a failing transmitter, and three chicks were flushed with her at that time.

Then on August 30, 1969, 509 days after initial radio-equipping and eight transmitters later, radio contact with Hen No. 1 was lost. Twelve days later the transmitter was found along the road shoulder near her last recorded radio location. The evidence strongly indicated that she had been killed by a car and then scavenged by a mammalian predator. Numerous toothmarks were evident on the transmitter harness. Only a few feathers remained from the bird.

This history of Hen No. 1 during the 1½ years she was radio-equipped exemplifies advances made in pheasant research with the use of radio telemetry. To fully understand and manage a population of pheasants, it is first necessary to learn how various environmental influences affect the individuals of that population. One important factor affecting Wisconsin pheasants is a high annual rate of mortality—75 per cent per year on the average. By studying representative individuals of the population, the relative importance of the various causes of death can eventually be determined. The life and times of Hen No. 1 is only one example of how radio-telemetry is furnishing much-needed information on this highly complex subject.

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Fall Foods for Wildlife

Food is relatively plentiful this time of year. But a great deal is required, since wildlife populations are near a peak and animals need to fatten up in preparation for leaner days ahead.

Autumn and the harvest season are one. Though harvest actually begins in June and frost-covered pumpkins now are more a matter of folklore than reality, we still happily pay this tribute to fall.

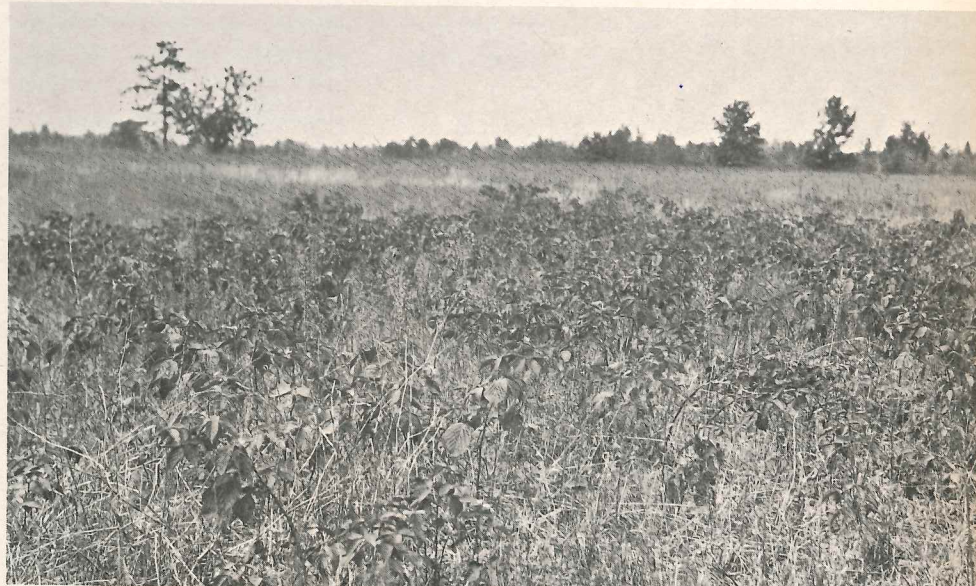
It is perhaps not quite accurate to state that this is the time when nature reaches its peak of abundance. Animals have been partaking of this bounty since the middle of June when the first wild strawberries appeared. Some fruits, June berries and cherries, have already been stripped from trees or are litter on the ground beneath them.

We may regard fall, with its beauty and abundance, as the culmination of all that is good in a cycle now returning to the point of beginning. But for our wild animals it is a period of harsh reality.

The populations, if not at their seasonal peak, are nearly so. Where there were two rabbits in spring, there may be 10. Where there were no chipmunks, there may be a dozen. Birds born in the far north are pouring into the state. All animals now must build up their food reserves, whether they tough out the northern winter, sleep it away, or settle the whole business by heading into the sunny south.

The purpose of all flowers, whether they be grass or gentian, plum or pine, is to form a seed. At any time of year some animal, be it bug or bird, coyote or cottontail, will partake of it, either through choice or necessity. It is perhaps impossible and inaccurate to single out any types as being most important. The fine

Blackberries grow in the open, competing well with most grasses but not with trees.



thing about fall is that some of nature's foods are more striking because of their obvious beauty, if not their utility.

There is something pleasantly opulent, one might say autumnal, for example, about a stand of dogwood with pearl-white fruit gleaming in the sun of a September day. The same can hardly be said about the seeds of our marsh sedge, *Carex stricta*, practically invisible in the litter of the marsh floor or persisting in their little dried husks on the dying stem of the plant. The point is that the latter are not noticed by humans, but marsh birds and mammals are very much aware of their presence.

It might best be stated that all plants add up to that time of year we call autumn, but for us at least, some of them are more so.

High bush cranberry is not a cranberry, but a viburnum, and is related to the honeysuckles. By any name it is a valuable shrub. The panicles that formed almost solid banks of white along our streams have long faded, but the fruit is there now, standing out against the maple-like leaves, shades of purple, of blue and of red. This is where the birds gather; this is where the action is, a fact well known to the grouse hunter and all those who wish to see our northern fall in one of its peaks of perfection.

Then there are the hollies, which we tend to associate with other areas, but Wisconsin has two species, as true as any that form a holiday wreath. Their flower is inconspicuous, and throughout summer the shrubs are anonymous in the wall of green that forms our swamp borders. Now what was lost in mass stands out in startling contrast, a shrub covered with scarlet berries that, as the leaves fall, will become almost livid against a sombre backdrop. The fruit will persist into winter, to startle the observer and furnish food for our native birds and particularly migrants that move in from the north after the season closes in.

And dogwoods—we are blessed

with a complex of them. Red osier covering wetlands, grey dogwood forming solid borders along forest edges and drier stream banks. There are dogwoods that are silky, that are either rough-leaved or round-leaved, paniced or alternate-leaved. All of them have one thing in common: they grow fruit—white, purple or blue—in profusion, a bounty for almost all the creatures that live in our wetlands and forests.

Beyond this, dogwoods are beautiful shrubs. The red stems of red osier color wetland even in the depths of our winter. The leaves, deeply veined, have a regular, almost classic pattern, and if this is not sufficient, some of them flower into the fall. It is possible to find a shrub with the fruit in all stages of maturing and the flower also. No one searching for fall flowers should neglect the dogwoods. The same goes for bright winter colors.

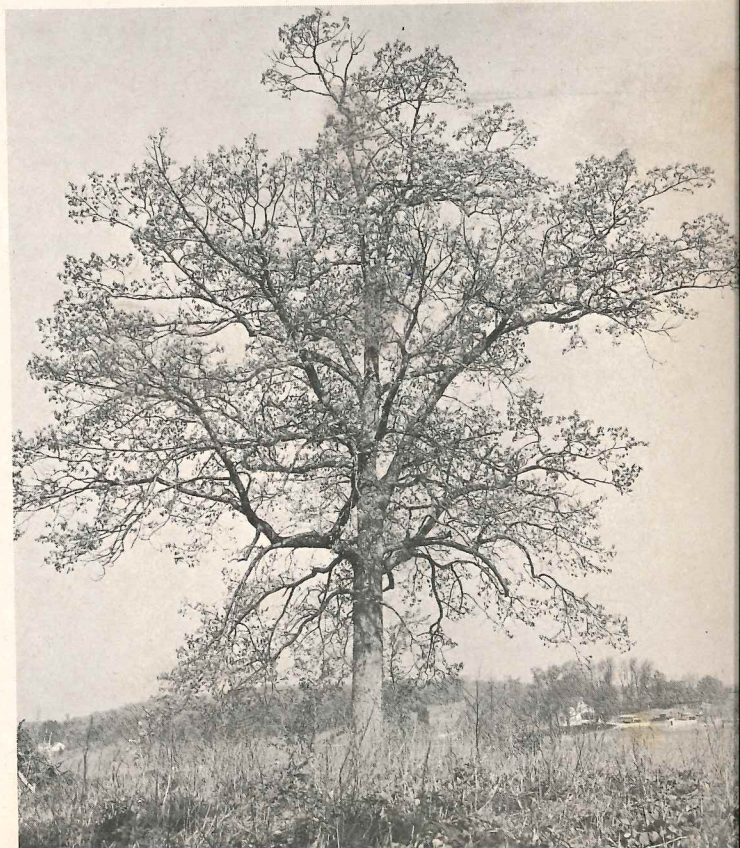
Wild grapes are much a part of our Wisconsin folklore. Grapes grow in solid masses along streams and fence rows; they flourish on stone piles and hillsides. Wherever they grow, grapes furnish not only

food but a particularly dense and impenetrable blanket of cover. There is something opulent about a solid bank of grapes, particularly if they bear fruit, which is not always the case. Wild grapes are one species that we can never have enough of for humans certainly, and possibly animals also.

If any group of plants can be accorded the title "First Family," it is easily the roses. The rose family reads like a roster of familiar Wisconsin plants—plum, cherries, thorn apple, June berry, blackberry, raspberry, chokeberry and of course the wild rose.

Excepting the cherries and chokeberry, the number of rosefamily species we have are legion. They are groups that have not settled down, that hybridize freely, with species sometimes restricted to one little corner in the state. Their importance is such that one cannot imagine our wild areas without them—the wild woods roads without their banks of blackberries, openings without clumps of June berries, thorn apples in every possible open situation. These are the spots that wildlife frequent, really

Oak trees produce acorns, good food for squirrels, deer and many other species. When the acorn crop fails, that means hard times for wildlife.



at all times of year, but particularly so now when they are loaded with food.

Most of the types we have discussed flourish in open situations, but the bogs also have their share of fruiting plants. One immediately thinks of blueberries—which also grow on higher, dryer soils, but there are others—the Labrador tea, andromedas, laurels, that produce seed and therefore food.

This is also the home of our wild cranberry.

Bearberry, a close relative of these plants, deserves special mention. It is an evergreen, low, shrub that grows on sandy barrens. The fruit is cranberry-sized and much sought after by animals who frequent these types. For those who know our wildlife, bearberry is perhaps most loved for the company it keeps—the sharptail grouse and upland plover, and the broad openings with their striking patterns of color

Mighty oaks from little acorns grow, and so do deer, squirrels and just about any animal that can gnaw, chip or swallow them. In a year when the acorn crop is good, their value as a winter conditioner for our wildlife is immense. Scrub oak, the type that grows on sandy soil, may leave much to be desired as timber, but beyond the cover that it furnishes, scrub oak usually is an important food producer. When the acorn crop fails, the entire wildlife community is poorer for it.

Hazel brush produces hazel nuts, of course, and the little chippings of shells found beside almost any squirrel or chipmunk den is mute evidence of their importance. Unfortunately for most of the higher animals, some bug, a weevil, generally gets there first, but they must live too, and there's always some animal willing to feed on the beetle.

Then there are beechnut trees that in the north, at least, seldom produce nuts, but when they do, make it a red letter year for both man and beast.

We can never have too many walnuts or butternuts and while the latter has never quite attained the glamor of the walnut, it is more tolerant of site and therefore more widespread in this state. Squirrels are a serious competitor with man for this crop.

These are only the highlights, and in some cases, not even that on this topic. To cover the entire spectrum insinuated in the title of this article would be tantamount to writing a flora of Wisconsin or a significant part thereof.

Also, it is not to be assumed that the value of plants to the wildlife community is to be reckoned only by the fruit they produce. Hazel could be considered a case in point. This is a shrub growing in thick stands throughout our areas of light soils in Wisconsin. Birds find these excellent nesting sites and all animals utilize them as escape or refuge cover. Hazel furnishes browse for deer during winter—not the best browse, to be sure, but useful where better species are gone.

All of these plants must be considered as part of a complex. At least among the higher animals, no one species has its life cycle geared to a particular plant. If it did, it would be in serious jeopardy, since there are years when production by a certain species of plant approaches total failure.

The value of these wildlife food plants to man can be approached from many avenues. A grouse hunter will do well to locate the stands of thorn apple in his area and the places where high bush cranberry flourishes. A deer or squirrel hunter can improve his chances of success by noting where the acorns have done well or where they have failed. Persons looking for fall beauty will find it in any of these where the colors and tints are every bit as attractive as the flower itself, though a bit more subtle. And of course, there are those species that because of taste or potential potency have a more direct appeal to man.

Some of these shrubs are well



Blueberries are esteemed by wildlife and man. Sometimes it's a question of who finds them first!

The wild rose is a source of food for some species, and many of its botanical relatives are excellent wildlife foods.



known. Others are less so or hardly at all, or perhaps known by names other than those listed here. June berry, for one, is also called shadbush and service berry. Holly is sometimes referred to as black alder.

By any name, they are all interesting and useful plants, not only for their immediate uses which will be obvious, but because of their integral position in the total community of living things—those that existed in the past, that exist now, and in the future.