

MAY

By Ken Solomon

"May Roosters and Hens"

May is a very active month for roosters and hens. Roosters use energy in fighting, crowing, displaying, and courting hens. The male's crowing peaks this month as he gathers a harem. A rooster can service over 20 hens but 5 to 10 is ideal. His testes reach maximum weight now. His urge to reproduce exceeds his need to eat, so he continues the weight-loss that started last month.

The hen's energy demands are greater than the male's, but she will increase her food intake. In fact her food consumption is greater in May than it was last winter. But she still loses weight as she lays 30 to 50 eggs, starts incubation, and avoids swathers and predators. Her one ovary reaches maximum weight as egg laying begins. The hen consumes 14 times more calcium than the roosters and her protein intake (insects) is six times greater. The supply of May insects is extremely important to egg production.

Spraying 95% of your lands for insect problems, instead of 100% can double the number of chicks surviving to 10 weeks.

"Fertility and Laying"

Even with a harem of 18 hens, the rooster can fertilize 87 to 97 percent of the eggs. Cold, wet weather can slow testicular growth and sperm production, but the rooster can still fertilize 90 percent of the eggs. The rooster will remain sexually active through July to serve reneating hens.

Peak egg-laying is in May. Even though her May food consumption is at its highest level for the year, she is not consuming enough energy to cover the cost of reproduction. Body fat and muscle must then be used to produce eggs. The hen uses 21 to 30 percent of the energy intake for eggs. Her weight decreases to 2.3 pounds, and her body fat decreases 14 percent. Hens may lay 15 to 20 eggs before even thinking about a nest. Once the ovary is producing one egg each day, she will instinctively build a nest and fill it one egg per morning. She may lay 30 to 50 eggs during the course of the breeding season.

One pheasant pair, free of environmental resistance, could produce 20 million pheasants in ten years, even if each young bird lived only long enough to produce one brood.

"Delayed Nesting"

Long periods of cold, wet May weather can delay and slow egg production. The hen will divert energy from eggs to keeping warm. A severe decrease of the hen's energy intake can delay laying, and can decrease egg production 9 percent. The fewer eggs are just as viable as when she was at full production. Even if food were inaccessible for two days, it would take three days before ovary degeneration occurred and egg-laying slowed. In the

Great Plains, peak nesting has been delayed until June 1 because of cool springs.

A two- or three-week delay in nesting does have drawbacks. First, it increases the chance that eggs will be subjected to high temperatures. A 90 degree day can start embryo development. A cool night will then kill the embryo. Second, chicks produced from late nests are less able to survive the hot, dry July/August weather. And third, delayed nesting can decrease hen survival next winter. A late nest means late molting, which means delayed fat production. The late nesting hen is forced, in the summer, into producing feathers instead of body fat. Less body fat means less chance of surviving next winter.

"Clutch Size and Incubation"

The average hen incubates 10 to 12 eggs. At first, she supplies all the heat to maintain eggs at 107 degrees. This heat gradually diminishes as the embryo develops and increases its own heat production. Eventually, the hen's function is to insulate the eggs, protect them from predators, and rewarm them after an absence. Incubation requires 22 percent of the hen's heat production. Arguments arise, however, about whether the hen's normal loss of body heat is enough to incubate eggs, or if energy intake must be increased to produce more heat.

The longer the hen sits on her eggs, the less likely she is to abandon or to be forced off the nest. Because of this devotion, mowing or swathing of farm fields during the later stages of incubation can destroy many hens. She will leave the nest for little more than one hour a day. If in her absence the egg temperature falls below 80 degrees, the embryo's physiological processes stop and the embryo dies. Cool weather or an extended absence by the hen means death to her young. Returning to cool eggs, elicits a thermoregulatory response by the hen, such as shivering, which increases her heat production to rewarm the eggs.

"Successful First Nest"

For the hen and the chicks, the best possible situation is a "successful first nest." Renesting costs energy. The hen must again increase ovary size, produce one egg a day, fill a nest, and incubate it. This is energy she should use to raise chicks, grow new feathers, and build body fat. Next winter the renesting hens have less body fat than first-nest hens. Chicks from a reneest have less time to grow than first hatch chicks. They go into the winter smaller, not as fat, and surviving less.

Alfalfa mowing usually occurs during the hens last week on the nest. Landowners might delay cutting 7 to 10 days so the hen can hatch her chicks. The alfalfa's nutritional value will be lower, but there will be more chicks, greater chick summer survival, and more hens and chicks surviving next winter. Consider mowing 7 to 10 days before peak nutritional value. The hen will probably flush before the mower strikes. The regression of the ovary is less, so renesting is quicker. Also, do not mow around the nest leaving an island of cover. Fox, skunks, coons, and sea gulls quickly learn that islands hide

delicious pheasant eggs and hen. It is better to mow over the nest thus forcing the hen to begin again.

"Residual Grasses"

Look around the farm and roadsides. See any standing grass from last year? The hen is looking too for an idle grassy area. If last year was dry, nearly every blade of grass was cut, and where can the hens nest? Alfalfa fields may be the only cover available. But the alfalfa's peak nutritional value is reached during the last few days of egg incubation, so swathing will destroy 90% of the nests. Thanks to the federal CRP program, many acres of residual grass are available to the hens this spring, and fewer hens will have to rely on the alfalfa fields. But if this spring is dry, how many CRP areas will be cut like the alfalfa fields?

Hens prefer grass fields that 1) are 20 acres, 2) have been idle for less than 5 years old, and 3) have last year's dead grass standing upright. In South Dakota more hens will nest (per acre) in a 20 acre field than anything smaller or larger. As the idle stand ages, dead grass lodges and becomes too thick. Mow or graze the stand every 5 years to get rid of the dead litter. Mow or graze more frequently if the grass does not stand well under winter snows. Brome grass falls easily under snow, and must be mowed or grazed more frequently than switch grass which stands well under snow.

"Dump Nests"

While the hen is building her ovary to the point where she can lay one egg per day, she will drop eggs anywhere. Single eggs can be found in pastures, small grain fields, and farm yards. If a hen sees another hen's egg laying in a field, she may deposit her egg next to it. She may return in 3 or 4 days when she's ready to drop her next egg. With other hens visiting the site, more than 30 eggs may be laid over several weeks. This is called a dump nest since no real nest was ever constructed, and since the hens laying there will not incubate them. With so many eggs, it is impossible for one hen to keep them all warm. Dump nests do not detract from the ability of those hens to later build and lay in their own nests. It is a convenient place to dump eggs until she is able to lay one per day, and build a real nest.

An early egg may be deposited in a duck nest. This can cause the duck problems in that the pheasant egg will hatch in 23 days while the duck eggs will take 25 days. With the pheasant egg hatching first, the duck may be tempted to take her pheasant family and desert the about-to-hatch ducklings. This does not occur very often, and biologists feel it causes the duck population no real problems.

"Too Hot or Too Cold"

The first two weeks of May is when hens are depositing eggs in their nests. Temperatures during these two weeks can be critical in determining how many eggs will hatch. A hen will visit the nest each morning, lay an egg, and then leave again until next

morning. Because incubation does not start until the nest is full, the first eggs are subject to temperature extremes. Say the nest now has 8 eggs. If the temperature just one night drops below 35°F, the unprotected eggs chill or actually freeze. These eggs will not develop when the hen does start to incubate. The hen will continue to lay until 12 eggs fill the nest. She incubates. Only 3 eggs hatch. Instead of a family of 11, she has 3, and next fall's hunting season will not be as good as last year. High temperatures during the first two weeks of May can have the same effect. Say the temperature reaches 92°F one afternoon. The 8 unprotected eggs start to develop on their own without a sitting mother. That night, if the temperature drops below 60°F, the embryos die. Again the hen does not know of their death, and will fill the nest, incubate, and hatch 3 chicks. Even if she hatches only 1 chick, the hen is now a mother and will not try again to hatch a bigger family.

"Fertilizers"

Before or after the crops are planted, they must be fertilized to assure top yields. Does this hurt the hen's ability to lay and hatch eggs? South Dakota treated hens with recommended field mixtures of N, P₂O₅ and K₂O. Fields were fertilized in which hens were penned, and other hens were force fed amounts equal to what they might consume in the wild. Also different fertilizer mixtures were combined with the food of 3-day old and 6-day old chicks. When results were compared to hens and chicks receiving no fertilizers, no differences were seen in egg production, clutch size, egg fertility, eggshell thickness, pipping rates, hatchability, chick behavior, and in chick or hen weight. While 3-day old chicks tended to consume more fertilizer than 6-day old chicks, it did not affect their growth rate.

"Spring Releases"

Spring and many folks consider releasing domestic, adult hens to help the wild population. Nationwide, restockers have accepted the fact that releasing 7- to 10-week old birds does not work. They have turned to spring releases of adult hens. It has been proven that this also does not work. Six states found that with the release of 50 hens, at best 4 hens will hatch 30 chicks (0.60 chicks per hen released). South Dakota has firmed these poor results. Of 54 hens released in 1990, only 3 nested, and 9 chicks were hatched (0.19 per hen released). They kept track of each hen by using small, solar-powered radio collars.

These poor successes may be attributed to the fact that the hens, when they were chicks, had no mother to reinforce their innate behavior patterns. In 1990, Sweden placed chicks with a foster mother. Those who had a mom were able to produce four times more chicks than those who did not have a mom (0.80 chicks per hen vs. 0.19). In other words, if you released 50 hens that had had a foster mother, they would still produce only 40 chicks. England recently found that the released hens which do hatch a nest are far less able than wild hens to keep her family alive to 10 weeks.

"Laying and Sitting Hard"

May is a month of egg laying and incubation for pheasant hens. This winter was mild, so the hens should be fat and in perfect body condition to produce good size nests this month. With the onset of laying (before incubation starts), daily air temperatures become important. Temperatures above 92⁰ and below 35⁰F can destroy the unprotected eggs. Heavy rains can also slow egg laying. Producing chicks isn't easy for the hen, and the rooster cares only about breeding.

While walking through a field you might flush a hen from her nest. Without breaking an egg open to examine the chick, can you tell how close she is to hatching the eggs? Once the nest is full, the hen will incubate the eggs for 23 days. The closer the chicks are to hatching, the harder it is to flush the hen. If she flushed when you were 40-50 feet away, she is in the first week of incubation. If she flushed 20-40 feet away, probably in the second week. If you had to almost step on her, the eggs are close to hatching. Also, listen to an egg. The chicks start peeping 3 or 4 days before they hatch. Hens communicate with the chicks a couple days before hatching to enforce the bond between chick and hen.

"Nests in Trees"

Pheasants will nest in shelterbelts, but it is not ideal cover. Shelterbelts are the hens next to last choice for nesting. A summary of 10 western states showed that only 3.5 percent of the pheasant nests were in woody cover. If a high percentage of your hens are nesting in shelterbelts, it is probably because the hen can find nothing else in which to nest. Pheasant are persistent and will use any available habitat to breed and survive. If good grass cover is not available to the hens, they could concentrate nests in tree cover. Although they might not have the greatest nesting success among trees, the hen will still give it a try.

A more typical nesting area, like a switch grass field, will have greater nesting use when square in shape and near 20 acres in size. Tree plantings of similar shape and size might provide better nesting than do narrow tree belts. Remember though that the ringneck is not a woodland bird, and that it is not known if predators would be less efficient in larger belts.

"Easy Over"

During incubation, it is very important that the hen turn the eggs often each day. Each time she leaves the nest or stands to stretch, she will roll the eggs over. Why? Gravity of course pulls the developing chick downward, so the chick actually lays on the inside of the egg shell. If it lays there for more than a day, it might stick to the shell. The hen therefore keeps turning the egg so the chick can keep flip-flopping inside the shell. Depending on when the chick first gets stuck, the chick will continue its development. Death comes at hatching time. With part of its body stuck to the shell, the chick can not pip a complete circle in the shell to hatch. The chick will exhaust itself and die trying to get out of the egg. The hen will not help her struggling chick hatch.

Sticking to the shell is more probable during drought conditions. With low humidity levels during incubation, the chicks are more likely to stick and not hatch. States (conducting pheasant brood surveys in July and August) often note smaller brood sizes when May and June were hot and dry.

"Incubation Activities"

Until the last egg is placed in the nest, the hen can roam here and there, and do as she pleases. While she is filling the nest, her only daily obligation is to return to the nest each morning to lay one more egg. Last egg laid means her freedom stops. For 23 days she must remain on the nest keeping the eggs warm, and protecting them from scorching afternoon temperatures and rain. Occasionally she will roll the eggs around in the nest to insure the chicks do not stick to the inside of the shell. Surely incubation is easier on the hen than producing up to 40 eggs before the nest is full? Not so! While egg production caused her to lose weight, so does incubation. Mainly because she no longer feeds herself well. Protecting the eggs is priority, feeding is secondary. The hen will leave the nest for only an hour each day to feed herself. This is not enough to maintain a stable weight. She will continue the weight loss she started in March.

"Should You Incubate?"

Peak egg laying occurs in early May as hens fill their nests. If you find an egg should you take the time, and expend the effort to incubate it? This depends on if the nest is abandoned or not. If you know the hen has abandoned the eggs or has been killed, why not try incubating them. Remember though that when you release the incubator hatched birds, their survival in the wild is very poor. If you find the nest is in a harvested field and the hen is alive, leave the nest alone. Although the cover is gone, and predators may have a better chance of finding the nest, the eggs are best left to the hen. The probability of a chick living until fall is greater if the hen tries to hatch and raise it, than if you hatch and release it.

Without a hen to teach survival techniques and feeding habit, and to reinforce instinctive behavior patterns, the chicks' chances of surviving the wild are small. Of 50 chicks released in July or August, fewer than 15 will survive into winter and fewer than 4 into spring. Of 50 chicks raised by wild hens, 33 will survive into winter and 22 into spring (S. Riley).

"Incubate a Full Nest"

One egg is laid in the nest each morning. The hen will NOT start sitting on the nest until it is full (12 to 14 eggs). So for 10 or more days the eggs are not protected from the weather. Temperatures over 92 degrees or near freezing will kill the eggs because the hen is not protecting them. So why doesn't the hen sit and protect the eggs earlier? ... Because of skunks, raccoons, and foxes, that's why! You see, spring weather that is too hot or too cool threatens nests only once every few years. But predators threaten nests

every year. They are always hungry. If the hen did sit on the first egg laid in the nest, that egg would hatch 12 days before the last egg laid. That gives a raccoon 12 days to find the nest and chicks. So the hen waits until all eggs are laid before starting to incubate, so they all hatch at the same time. Then she can quickly take the chicks away from the stinky nest. The fox may smell and find the hatched eggs, but the chicks will be long gone.

"Age That Chick"

If you capture a chick, or find one road-killed, you can age it using feather growth. Since flight feathers are the best indicator of age, let's first learn how to identify these feathers, and how they grow. Then next week you'll get a table to use to age the chick. The most important aging feathers are the outermost flight feathers, called "primaries". These are the 10 longest wing feathers and are on the hand segment (tip) of the wing. For aging purposes, we will number these feathers 1 (the outer most feather) through 10 (the inner most primary). Pheasants grow two sets of primaries the first year. The first set of 10, "juvenile" primaries, are fully grown at 2 to 3 weeks of age. Then each feather is systematically molted (dropped), and replaced with a larger "post juvenile" feather. This is like molting your baby teeth systematically for larger adult teeth. The first primary feather molted is No. 10, then 9, then 8 ... progressing to No. 1. When fully grown at 23 weeks, the post juveniles are not molted again until after next year's breeding season.

"Age That Chick"

If you capture a chick, or find one road-killed, you can age it using feather growth. See last week's article to learn how to identify the primary feathers described below.

<u>Age</u>	<u>Feather Description</u>
1-2 days	-has primary wing feathers 10-4, and egg tooth.
1 wks	-secondary wing feathers start growing.
2 wks	-body feathers start on breast/rump/back/tail, can fly short distances.
3 wks	-feathers everywhere except head, neck, belly.
4 wks	-feathers start on top head, No. 10 primary lost.
5 wks	-very little down remaining, No. 9 primary lost.
6 wks	-head has pinfeathery look, No. 8 primary lost.
7 wks	-roosters showing red color, No. 7 primary lost.
8 wks	-roosters red deepens, No. 6 primary lost.
9 wks	-first greenish color on rooster neck, No. 5 primary lost.
10 wks	-No. 4 primary lost.