

Working With Nature: Local Bees and the Best Way to Utilize Northern Queens

by KIRK WEBSTER



WHY LOCAL QUEENS?

It seems hard to imagine now, but before 1985, most queens used by American beekeepers were raised in a few southern states and California. Package bees with queens arrived several weeks before they could be reared and reliably mated further north, so many northern beekeepers used southern bees as the best and cheapest way to replace winter losses, increase the number of hives, give queens to their own splits, and to regularly requeen their colonies. The work could be done early, while the clusters were still small, the old queens were easy to find, and removing the extra brood to make splits helped prevent swarming.

These southern bees did amazingly well in their new northern homes — environments very different from the places where they had been selected and raised. These queens, mostly Italians, introduced easily, built up big colonies of gentle bees, produced huge honey crops if the resources were there, and then wintered extremely well with large clusters. By the time I came along and started building up my apiary in the early 1980s, beekeepers in New England had obtained their new queens from the South for so long that they never even considered raising their own. Even among beekeepers with many colonies and long experience, some were convinced that it wasn't even possible to raise good queens in Vermont. Of course, they had never tried.

All this changed, probably forever, when the tracheal mites arrived in the mid-1980s. Suddenly, beekeepers who had never lost more than 5% of their

bees over the winter, were losing 30-50%, or even more. Since this watershed event, the yellow bees from the South have never been able to thrive in the northern states as they had in former days. The era of beekeeping struggle, chaos, and adaptation has continued to the present day with the arrival of varroa mites, loss of habitat, and the increasing degradation and poisoning of the environment.



The real basis of healthy beekeeping: a clean and diverse environment, especially in our agricultural ecosystems

The tracheal mite and other subsequent disasters highlighted how important it is to raise local strains of bees in all parts of the country. In this regard the northern beekeepers were crippled by our dependence on southern queens and the mistaken idea that early spring was the only efficient time to utilize them.

When I first tried to raise my own queens here in Vermont in the early 1980s, I made the same mistakes everyone else had made before me. Trying to raise the queens as early as possible, I encountered all the old problems of cold, unpredictable weather, lack of young bees for cell

building, and not enough mature drones to have good mating. Conditions became excellent for queen rearing during the summer, but the market for queens at that time of year was almost non-existent. Struggling with all this, I at least found out that excellent queens could be raised here during June, July and August; but how best to utilize them?

RAISING QUEENS IN THE NORTH

By chance I stumbled onto the solution, which can be summed up in two simple sentences:

1. Nucleus colonies on four combs, or even smaller, can reliably overwinter outdoors almost anywhere honey bees can thrive in the northern U.S. and Canada.
2. Establishing all the season's new queens in these nucleus colonies opens the door to profitable, self-sufficient beekeeping, serious bee breeding, and the production of surplus bees anywhere in good beekeeping territory at the latitude of Philadelphia and further north.

A CHANCE DISCOVERY

That very small colonies can survive cold long winters I discovered by accident. I was using standard hive bodies divided in half for my mating nucs (see photo). I would make them up in early summer by splitting up strong two-story colonies, and then recombine them again in early fall. At that time everyone believed that only large clusters could survive the extreme cold of our winters up here.



A standard deep box divided in half with a feeder houses two four-frame nucs.

But one fall when I came to pack the bees I found two boxes that had never been recombined. Not knowing what else to do, I set them on top of two full-sized colonies, put Styrofoam insulation and cardboard packing cases over each stack, and cut out some holes in the cardboard for the nuc entrances (see photo). I assumed they would never survive, and soon forgot about them.

To my surprise, all four nucs (and the colonies below) were still alive the following spring and developed into thriving colonies. The next fall I tried overwintering four boxes (eight nucs) the same way, and achieved the same result. That spring of 1988 — when I unpacked those four stacks and found all the bees surviving — was my epiphany experience, and in that moment the whole form of the apiary I have now flashed through my mind. I could also see that the income from nucs and queens could double the revenue of honey-producing operations, without migrating to other regions.

I've spent almost every day since that time developing the

potential of this system — and there's still plenty left for future generations to do! It took many years of writing (find my articles on KirkWebster.com) and talking to get this method into the American beekeeping consciousness, but once beekeepers like Michael Palmer, Larry Connor, and others started using and promoting it, the practice has spread far and wide.

In fact, beekeeping combining honey production with queen rearing and overwintered nucleus colonies can be twice as productive and profitable as the old beekeeping based on honey production, pollination, and buying bees and queens from the South. Whether you have one colony or many thousands, you no longer need to depend on expensive and poorly adapted bees from elsewhere — local bees can be efficiently bred, propagated, and distributed from any part of the country.

This method is powerful and useful, and it is not even new: You can find it in the old books written more than a century ago.

SOUTH AND BACK AGAIN

I invented nothing new with my method. It's all in the old books, one detail here and one detail there — another tribute to those incredible men who basically created modern beekeeping from scratch between 1870 and 1890. But the piece about overwintering nucleus colonies was forgotten and lost while getting bees and queens from the South was so easy and effective.

Raising large numbers of queens from outstanding colonies was pioneered, and perfected, by beekeepers in the northern states dur-

ing the late 1800s. Henry Alley in Massachusetts, Gilbert Doolittle in New York, and C.C. Miller in Illinois were some of these leaders who also wrote wonderful books about their methods and experience. We still use these methods today — in many variations, but the basic principles they laid out have never been improved upon. We may have a better understanding of genetics than they did, but we have never surpassed them in terms of practical results appropriate to their situation, or love of their vocation.

The epicenter of queen rearing then moved south in the early 1900s; there were in fact some good reasons why things had developed this way. It was discovered that surplus bees could be shipped from the Deep South and California in screen cages during April, and used to establish new colonies capable of producing a crop of honey that same year. The skills developed by the southern package producers and queen breeders — and the competition between them — created a situation where each new colony could be started, or an older one requeened, for just a few dollars of out-of-pocket expense, at what seemed to be the optimum time of year. This system worked beautifully until the early 1980s.

THE METHOD

I'll describe for you the routine I have used successfully in central Vermont for 30 years. It's a proven model to start from, but to succeed in the long run you will have to watch closely for a period of years and adapt it to your own needs and local conditions.

Starting the nucs

The basic idea is very simple: Nucleus colonies are started in midsummer with the smallest number of bees that will still create a healthy, growing colony — exactly as if they were intended for queen-mating nucs. The nucs can be started with either queen cells or mated queens. They can even be allowed to raise their own queens, but for this they need to be started twice as strong, the whole process takes much longer, and much of the explosive power of the system is lost.

I use deep Langstroth boxes divided in half, with two entrances pointing in the opposite directions. I start



Nucleus colonies winter well on top of two-story hives.



I produce some 36,000 pounds of honey in a good year.

each nuc with one frame of honey and adhering bees next to the central feeder; then one good frame of brood with bees; another partial frame of brood, or frame of pollen with bees; and then one frame of foundation (see photo). No extra bees are shaken in, and I move all the nucs to another location before adding the cell or mated queen one or two days later.



Raising local queens and overwintering them in small colonies is a key to sustainable beekeeping.

They are then left alone until the new queens have sealed brood of their own — two weeks for mated queens, and three weeks for cells. At this point the nucs can be equalized, if necessary (brood and bees moved from one colony to another), and any found without queens can be combined with its neighbor, or set up to receive a new cell or queen. Then they are allowed to grow at their own pace until the boxes become crowded.

The right timing

An important part of the whole system is to figure out the optimum time

to start these nucs in your location. They are started when it's warm and small colonies can easily thrive and grow. Food and drones are plentiful, and the weather for queen matings is at its best. Here in Vermont's Champlain Valley this optimum time is in mid-summer, between June 23 and July 1.

Conditions can vary enormously from one year to the next, but if you experiment and start some batches at different times, over a period of years you will find a certain date for starting the nucs that consistently yields the best results in the fall, and the best overwintered colonies the following spring.

Colony growth

After the nucs are started, these small colonies are allowed to grow slowly until the bees are filling their small space. Ideally, in my area, they should fill their four frames a week or two before the heat of summer breaks and the first signs of fall start to appear. But I have no strong fall honey flow here, and things may work differently for you.

I raise nucs for sale as well as for my own use, so every year I start four batches eight days apart — beginning around June 15 and ending around July 10. In an average year, most of the first batch and a few of the second batch will need more room before the weather starts to cool off. In an exceptionally good summer, all of the first two batches and some of the third will have to be expanded. In a really poor season, none of the colonies grow out

of their 4-frame space, and only the first two batches produce really good results the following spring. This is my compromise — the way I try to “catch the wave” every year, no matter what the weather brings.



A growing colony expanded to eight frames

If the nucs need more room, I remove one colony from a crowded double box to a new box, and give each colony four more empty combs or frames of foundation. (Alternatively, a second divided box can be added; and the bees do well this way. But I prefer to have all the nucs in single boxes over the winter — with either one or two colonies in each box — to make things easier during the busy spring.) In any case, I aim to have all the nucs on 4-10 combs for the winter and early spring.

Fall feeding

In late September and early October, I feed the nucs cane sugar syrup if they need more food for winter. At this point it helps to imagine them as bonsai colonies of bees: In a 2-story colony, we like to have the top box completely full of winter stores, and some honey along the outside in the box below. In the nucs, if the top half of the space is full of honey or syrup, and the outside combs are filled to the bottom, that should be ideal.

Winterizing

Quite miraculously, these small clusters can survive reliably outdoors, even if winter temperatures fall to -20 or -30 F, as they do here. To protect them from the wind and the most severe cold, I pack my nucs on pallets, with the four boxes pushed together. Pieces of rigid insulation are placed above and below each box, a small amount of ventilation is provided, and a homemade tarpaper covering (with entrance holes already cut out) is wrapped around the whole thing. More tarpaper covers the upper insulation, and then the summer covers

are tied down on top. I learned this method from beekeepers in Saskatchewan, and it has been very successful here in Vermont. Further south, you may not have to pack them.



Nucs packed on pallets for the winter

Another good way to winter a small number of nucs is to wait for some cold weather, and then set the nucs on top of healthy, two-story colonies. Put a piece of rigid insulation on the top of the nuc box, and then cover the whole stack with tar paper or cardboard packing cases, cutting holes for the entrances. An advantage with this setup is that the nuc entrances don't move when you unpack them, and the upper boxes can stay right where they are until mid-May if necessary.

ADVANTAGES

By the following spring, an apiary using this system already has a long list of valuable accomplishments. Here are a few of the most important ones:

1. *Local queens.* New queens have been raised from colonies already thriving in your location, and were reared and mated during the peak of the previous summer.

2. *Easy queen evaluation.* These new queens were all overwintered in nucleus colonies, and have been tested on just 4-10 combs. Almost all the important traits we look for in honey bees can be easily evaluated in these small colonies in the spring. Ranking them occurs in a fraction of the time it would have taken in full-sized hives.

3. *Less equipment.* The equipment that used to house two colonies now houses four or five. With equalizing, all of these colonies have the potential to produce honey crops from the early midsummer onward.

4. *More bees, better bees.* Extra colonies of the very best local stock are available to replace winter loss, expand the apiary, or for sale. Because the worker bees are all daughters of a proven mother, the overwintered



A four-way hive body housing four mating nucs



A four-frame "baby" mating nuc requires fewer resources and makes it easier to find the queen.

nucs are far superior to any package bees from the South, or to nucs made in the spring with untested queens. No more buying replacement bees, or expensive losses from unsuitable stock.

5. *Sustainable operation.* The stability, flexibility, productivity, and resilience of the apiary have been dramatically increased, and many options are now available for the production of honey, nucleus colonies, and/or queen bees.

I now recommend that all stationary beekeepers in the northern half of the U.S. use one third of their brood combs for overwintering nucs. Managing bees like this goes a long way toward alleviating or solving many of the problems we face today, when honey bee colonies are much more difficult to maintain in good condition than they were twenty years ago. When combined with careful selection, it becomes the basis for serious bee breeding and the creation of locally adapted stocks in every region of the U.S.

USING SMALL MATING NUCS

I use smaller "baby nucs" for mating the queens I offer for sale, and the ones transferred from one colony to another within my own apiaries. The use of these baby nucs made my op-

eration still more productive, resilient, and profitable. For mating less than 300 queens in a season, it's best to use nucs with 3 to 4 standard combs as described above, so that all the equipment is interchangeable in the apiary as a whole. Once you cross that 300 mark, catching and caging the queens becomes a serious bottleneck, and anything you can do to speed up the process is worthwhile.

The smaller the mating nuc, the faster you can find and catch the queens. But I also wanted to preserve the huge advantage of overwintering the last round of queens in the nucs, each surrounded by her own bees. So I tried to find the smallest baby nuc that could reliably overwinter outdoors without extra trouble and attention. This turned out to be a standard hive body divided by one permanent partition and two moveable feeders into four compartments, each containing four small combs. By moving the feeders, these 4-way boxes can finish the season with two, three, or four colonies in each box, and I winter them in the same configurations as the larger nucs on standard combs.



A standard hive body divided into four baby nucs

Having these surplus, tested queens among their own bees in the spring, has made the apiary unstoppable by anything except loss of habitat and pesticide damage. In the spring these queens could be sold for far more than the untested queens available from the South, but I use them for requeening overwintered colonies that are not up to the mark, for making early splits from the honey producers that build up too fast, and for raising brood for the next crop of baby nucs.

IN SUMMARY

I hope this will encourage you to raise your own queens and overwintered nucleus colonies. You'll have to experiment to find the best way for you, your bees, and your surroundings. Just keep in mind the basic idea: Small nucs are made up in midsum-



Two mating nucs expanded to eight small frames each

mer, with only the minimum number of bees necessary for survival and health. Let them grow slowly until they fill a 4-10 comb space before winter. Feed them and protect them, if necessary, from the most severe winter cold.

Following this simple process transformed my life as a beekeeper and enabled me to spend most of my working career with Nature and her wonderful gifts, her indescribable beauty, her important lessons, and her endless mysteries. We need all of Nature's wisdom now and I hope you will be able to carry it on much farther than I have.

NEW BOOK! This article makes part of the new book "Raising Honeybee Queens: An Illustrated Guide to Success," by Gilles Fert. Order online at www.HorizontalHive.com or send \$33 (shipping included) to Deep Snow Press, HC 73 Box 470, Drury MO 65638. This book is 144 pages, full-color throughout, over 150 illustrations, and will be reviewed in an upcoming issue.



Kirk Webster is a long-time treatment-free beekeeper from Vermont with 300 honey-producing hives, plus several hundred nucs started each season.