

## Chicken Story, Part Two: Strategies

by Tom Ward

In Part One, Tom Ward detailed his observations gleaned from six years of running a free-range chicken flock: "...maybe we don't need overly domesticated animals, maybe we can work with wildlife that we domesticate very slightly by helping them out. We can look at how wildlife can help us, we can deal with them and help them, and we can have an integrated social ecology."

Traditionally, people raising chickens confine them to a coop for feeding, egg laying and brooding. The people provide most of their food, and clear away the manure. The free-range system Tom describes provides protection from predators and weather extremes with a portable coop where the chickens are confined at night. During the day, they forage for food and lay eggs in "trap nests" in the landscape. The people gather the eggs, the chickens live off the land and return their waste to it. Read on for strategies that Tom has found successful in his experience.

(Transcribed from a lecture given at a Permaculture Design Course in Sonoita, Arizona, November, 1987. Edited by Joni Keating, Tom Ward, and Vicki Marvick.)

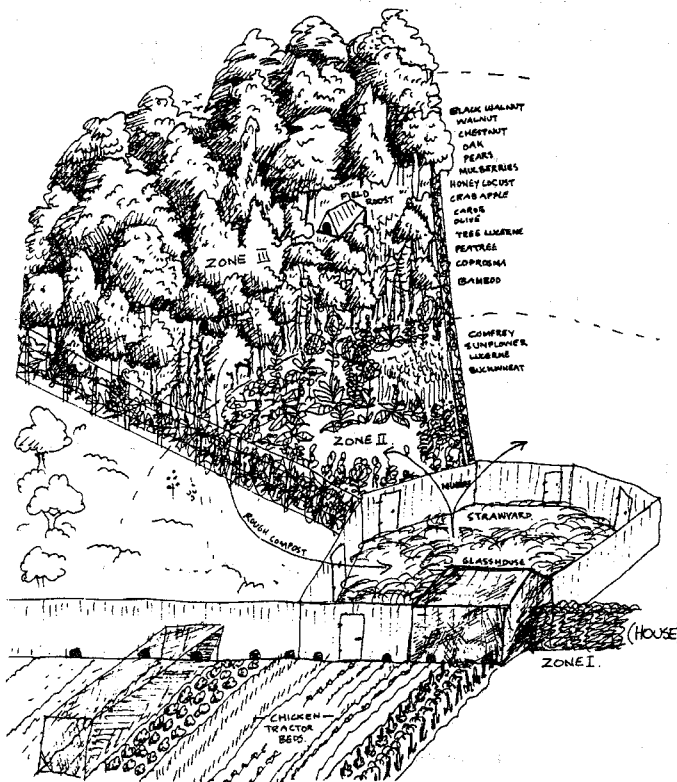


FIG. 31: POULTRY FORAGE SYSTEMS.

A poultry forage system showing the relationship of free-range areas to permaculture zones. Permaculture Two

### Feeding

Before you get your chickens, you need a small fenced yard and coop. When the birds arrive, confine them for two to four weeks while they learn about their roost and home. Feed them grain scratch on demand, good water, and grass as greens. As they begin to free range, they will come to prefer grass (if previous bad training is overcome). Don't feed them kitchen scraps and garden thinnings; this encourages them to attack vegetables in the garden. You can feed ripe berries, overripe fruit, and vegetables with rot spots.

By providing a grain supplement and water at the coop, the flock develops a strong homing forage pattern, and the birds dig less desperately and chase bugs and other protein more.

Very seldom have I seen rich enough multilayered chicken forage systems. [See the poultry forage matrix, page 5, for help in planning a diverse forage system--ed.] A 20 bird bantype flock will enjoy 500-800 pounds of mixed grain scratch per year, depending on the forage available. A well fed, healthy flock will help you more as insect foragers and will still prefer forage over board. However, if you only assess feed costs against egg and chick production in order to justify a flock, you are going to need a more complex accounting before the true worth of the flock is clear.

### Chicken Coop Design

Your coop is a place where the chickens can sleep at night. It has their roosts in it. And it also is a brooding house.

Where there is heavy predation, you want chickens to brood in the safety of the coop. The oldest hens, who are most capable of raising chicks, have learned that this is the safest place to brood.

You build your chicken coop with certain things in mind. Bantys like to be crowded on the roost poles, with a roof at their back. They don't like to be out in space without anything near them. They like to feel as if they have gotten into a nice, secure place. So you want the roost poles to be fairly close to the roof. I build a slant-roof coop that is very narrow—about 3 to 3 1/2 feet by 6 to 8 feet at the bottom. The back is 4 feet high, and the front is 6 to 7 feet high. This size houses 20 to 40 birds, with 8 brood boxes. I make a sliding back door access with big panels of plywood and rails made from strips of plywood. I have two doors that slide out so I can completely open the 4 foot height at the back of the coop.

The heat here in the southwest is a factor to consider. The steeply-slanted roof faces north, with a large overhang in front providing shade. I insulate the roof—both as a sound barrier and to keep hot summer sun from overheating the brood boxes. This plus manure in the coop will help keep moisture levels up. If your coop is permanently placed, you might lean up brush

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against it, or make use of an existing source of shade, like a mulberry tree or mesquite. Extra shade is important because the chickens like to hang out outside during the day; the hotter the day, the more they want to sit in the shade. So you employ a whole bunch of little strategies—and you get better.

My coop is on wheels; two people can easily load it into a trailer and move it around. The flock can be rotated to other areas—anywhere with enough raptor cover available—in the off-brooding season. I have them work the orchards, then I have them work the garden. I have them work the front yard, then...whatever. (Of course you don't have front yards in permaculture...)

Most flock-destroying predation can be avoided by closing the coop after roosting every evening at dusk. If water and scratch is provided inside, you can wait until late morning to let the flock out.

### Brooding

The chicken coop has brooding boxes in it, not egg collection systems. For brood boxes, I use those small cardboard boxes that so many things come in—like jams and little cans of chili. They're about 10x 10x 12 inches. I take each box and cut a hole in the front to make a tunnel of sorts. Sometimes I will even tape the flaps shut on top so that it is a little cave—their favorite type of space. Then I put straw inside. The hens go in and brood. Since these boxes are closed systems, the hens lose less moisture while brooding.

In Oregon, I let the hens start setting at the end of March. I try to go for Easter chicks—a ballpark figure. Sometimes a hen will get away with nesting in February and she'll pull out a brood in early March that survives. It depends upon the weather.

Your brood boxes should be at ground level in the coop so that the chicks can get out of them. If your coop is not flush with the ground, you need to have a ramp coming out of it into your temporary fenced yard.

### The Fenced Yard

You don't have to bury chickenwire fencing to keep out skunks and coons. You can fold the fencing over so that it extends outward on the ground for about two feet, and stake it down. Put rocks in the fold. Skunks and coons are not very smart: they go into the corner where the fold of the fence is and try to dig, but they can't because the fencing is continuous. They never know enough to back up two feet and dig a tunnel into the pen. I've never had that problem with skunks and coons—though there could always be a first, you know.

A chickenwire fence with a wobbly loose top—though well secured—can't be climbed by coons and skunks. It's too wild for them, and they drop off. So you leave the top open. But you do one other thing. You stretch monofilament fishing line in a loose pattern over the top to keep hawks from going into the yard. They see the glint of the sun on the filaments, and don't dive in.

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## Using the Poultry Forage Matrix

The poultry forage matrix which appears on the next three pages contains species of woody perennials suitable for drylands. Broad references such as height and climatic zones are followed by more detailed characteristics relevant to permaculture design. We invite feedback, observations, and additions to this matrix.

**Origin:** "Native" refers to southern Arizona.

**Climate Zones:** The Sunset Zones define the range of the species; USDA Zones define the maximum low.

**Flowering/Fruition Times:** These allow the design of a system with something to eat most of the time for more than one forage species. For instance, a system could be designed to meet the needs of deer, turkeys, and bees throughout as much of the year as possible.

**Permaculture Zone:** Refers to the permaculture concept of zonation—see *Permaculture Two*, Chapter 2.3 for explanation of the concept.

**Design Considerations:** Recommended placement in relation to landform, extrapolated from placement in the wild.

b = bosque  
e = edge  
ef = exposed flats  
ewc = ephemeral watercourse  
o = overstory  
rc = rocky crests  
s = slope  
u = understory

N, S, E, W = directions

**Key to general characteristics of the genus (far right column):**

b/bmj/bmr = bee plants, major and minor  
br = browse  
c = coppice  
ed = edible (human consumption)  
n = nitrogen fixing  
t = timber  
p = pioneer

Researched and developed by Tim Murphy.

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Banty chickens fly, and they learn where they can fly out through the fishing lines. So they can come and go from the yard. The chicks can come and go too since they can go right through the chickenwire when they're small. And when they get too big to go through, they can fly over the fence themselves, amazingly.

If you use steel fenceposts that you can drive into the ground with a fencepost driver, and wire on chickenwire that you fold out onto the ground and stake, you can move a fenced yard very easily.

### Egg Collection

In this free-range system, you don't get any eggs out of the chicken coop—so where do you get them? You put out "trap nests" and you collect your eggs from those. You create these trap nests within 50-100 feet (maximum) of the hen house with its water and mixed grain maintenance food supply. (The hens will go further if there are no possible nesting areas close to the hen house.)

You want to create perfect nesting places: you pile up brush, you add features that give a little rain protection and create the tunnel approach that these chickens like. I tend to use leaky buckets, or old five-gallon rusted metal cans. Then I throw a bunch of weeds and grass into them. I don't try to make them look too official—just comfy.

I don't collect eggs every day. You can wait four days before you collect Banty eggs, and the eggs will be fine. After all, the eggs you buy in the grocery store are sometimes months old—not just days or weeks old. Though sometimes they've been sprayed with silicon to keep them from spoiling.

If you're on top of what's happening with your Bantys, you're going to know when there is a nest that's gathering eggs. A hen won't start brooding on a nest until she reaches a certain minimum number of eggs—somewhere between eight and ten. So when I find a nest with eight eggs in it, I grab those eight eggs.

Once you go into the nest with your hand, clean it out. Your smell will make it unusable again anyway. Just take all the eggs, then build a new trap nest. After a little while you can go back to that first trap nest and put new bedding in it. Some other hen discovers it; by then the smell has dissipated, and there is no memory of it being a "lost" nest. You keep changing your trap nests, and you collect a lot of eggs that way.

We're talking about a system that has many benefits—the question is how to collect eggs from it. If you don't get any eggs out of the hen house, the strategy is creating trap nests.

There are a few times when I do take eggs out of the chicken coop. Bantys have egg laying seasons in the spring and the fall—not year round. If a hen tries to set too early, she won't successfully brood. Her chicks will die because it's still too cold. So I take eggs out of the coop at the beginning of the spring season. I also take them out at the end of the fall season to discourage the hens from brooding too late in the year. But during brooding season, I don't take any eggs from the coop.

### Cleaning the Coop

Changing the brood boxes will help with parasite problems. If you leave the brood boxes in the chicken coop too long, you will notice all of these red and black specks swarming over every surface inside them. As soon as the hens finish brooding, remove the nests. About 30 - 50% of their eggs will be unhatched. You put these in your compost pile and smash them. Burn the used brood boxes. Then you can paint used motor oil on the walls of the coop, or on the floor under where the brood boxes go—but not where you are going to be collecting manure. Finally, you put in new brood boxes. It might also help to sprinkle some diatomaceous earth in the nests. I don't know what it would do to the moisture cycle of the eggs being brooded. But it would cut back the lice, for sure.

You learn when it is time to clean out your chicken coop. I change my brood boxes and clean out the whole coop thoroughly two or three times a year.

### Chickens and Greenhouses

You can build a greenhouse with an attached chicken house. [See illustration on the next page for one example from Permaculture Two.] There's an article in the *International Permaculture Journal*, Issue #25, which shows one system. It is a very simple closed system. During the night, the roosting birds breathe out carbon dioxide, which goes up into the atmosphere of the greenhouse and chicken coop. A lot of flower growers pump carbon dioxide into their greenhouses to get extra growth—so the plants will like the high level of CO<sub>2</sub> produced by chickens. During the day, they convert that CO<sub>2</sub> into sugar and oxygen. So by the time the birds return to roost, there will be a very high oxygen level in the chicken coop. This helps them keep their body temperature up—which is very important in cold weather. Then, by daybreak, the oxygen has been reduced to carbon dioxide, and the plants go at it again.

The chickens are also producing manure which can be composted right on site and used for plant food in the greenhouse. Fresh greens can be clipped from the greenhouse for the chickens. In the winter, this might be important to keep up their vitamin levels.

When you put a chicken in a greenhouse, you are creating heat and humidity factors that need to be carefully controlled. You are possibly taking care of some bug problems as well. If you have your plants up on shelves, you can let the chickens into the greenhouse for short bursts, and they will do some good insect work in that time. And some insects will move out of the greenhouse into the chicken coop, where they won't last long. You won't find very many flies in a chicken coop. Chickens love flies—it is a game for them.

I highly recommend a little brown book called *Recipe for Raising Chickens* by Minnie Rose Lovegreen. That's her real name—an old English name. I met Minnie Rose Lovegreen and learned a lot of my stuff from her. She was my chicken guru. The book is great.