

# Best Practices Manual For Chicken-Keepers

*(with local resources for New Haven, CT residents)*

## **Introduction:**

This Best Practices Manual has been developed by experienced urban chicken-keepers in the City of New Haven, as advice and guidance for families who may choose to begin keeping hens as now permitted in under City of New Haven law, per an ordinance passed in September of 2009.

The goals of this manual are to:

- Provide a brief overview of the key issues families should consider before deciding to keep hens in the urban setting and unpredictable New England weather of New Haven,
- Offer clear, basic guidance on key issues in flock management for families who do choose to keep hens,
- List some key local resources available to New Haven hen-keepers, and
- Refer interested families to some of the many additional and much more detailed resources available on the Internet, in the library, and in bookstores.

By providing this information and guidance, we seek to encourage responsible hen-keeping, and to help new urban hen-keepers avoid some of the pitfalls which many people encounter when new to chickens. We hope that you find this information helpful.

Please note that members of the chicken-keeping community in New Haven wrote this manual as a free service to the larger community. We sought advice and consultation from poultry experts within the University of Connecticut, the Connecticut Department of Environmental Protection, and elsewhere. However, all content is our own, and not the responsibility of UConn, DEP or the City of New Haven.

Finally, while we offer this manual as a resource and for guidance, any family which chooses to keep chickens in New Haven (or anywhere else) must understand that they themselves take on full responsibility for humane, hygienic, and proper care and management of their own flock, as would be the case with any animal they chose to bring onto their property or into their home.

We wish all new urban chicken-keepers much joy in their birds, and many, many delicious backyard eggs!

## **Section I. Why Keep Chickens: Pets, Livestock, or Both?**

Why do you want to keep hens? Hens can be treated as pets, as livestock, or as something in-between. How you view your hens will guide many other decisions (in egg cultivation and plans for vet care and long-term flock management, as below). BEFORE getting hens, please think about this issue carefully.

KEY TIP: A hen means a female chicken. A male chicken is a rooster. Roosters are NOT allowed in the City of New Haven – they can be noisy and aggressive. Roosters are NOT necessary to get eggs.

As many families have found, hens make wonderful pets:

- They are cute, fluffy, and easier to care for than many other pets
- If raised humanely, they are very affectionate (will come when called, like to be petted, etc.)
- They are great with, and for, kids. Kids from small babies to teenagers like to pet, feed, and watch chickens, and hunt for eggs. Many studies show that kids raised around farm animals like chickens suffer from fewer allergies/auto-immune diseases than kids without such exposure.
- Hens are relaxing for adults to watch as well, and offer a connection to a simpler lifestyle, as well as a connection to where our food comes from
- Families interested in pet shows can show off pet hens in many fine area poultry shows (although caution & quarantine are HIGHLY advised for birds participating in shows)
- Even viewed wholly as pets, hens offer the incidental benefit of eggs and garden help

If you view your hens PRIMARILY as pets, you will want to plan for proper veterinary care, collect eggs only incidentally, and plan to continue to enjoy your pet hens for all the years AFTER they stop laying eggs (hens can live 20 years, but most lay eggs steadily for only 2-3 years – and occasionally thereafter).

RECOMMENDED RESOURCES for families raising hens PRIMARILY as pets/show birds include:

- *Keep Chickens! Tending Small Flocks in Cities, Suburbs, and other Small Spaces*, by Barbara Kilarski (Storey Publishing, 2003)
- [www.thecitychicken.com](http://www.thecitychicken.com)
- [www.mypetchicken.com](http://www.mypetchicken.com)
- For show birds: [www.ctfairs.org](http://www.ctfairs.org), [www.edis.ifas.ufl.edu/PS027](http://www.edis.ifas.ufl.edu/PS027)

Backyard hens can also be an inexpensive and fairly easily managed type of farm animal (livestock):

- They offer one of the world's healthiest forms of complete protein – eggs – grown in an ethical, local way (unlike factory farmed eggs, as described in Michael Pollan's *Omnivore's Dilemma*)
- Even with a very minimal set-up, they can be raised much more humanely than in factory farms. See for instance: [http://www.plamondon.com/faq\\_welfare.html](http://www.plamondon.com/faq_welfare.html)
- They make great garden helpers – eating kitchen scraps, making fertilizer, turning compost, and happily eating weeds, bugs, grubs, and other pests (also eating your garden if you let them!)
- Potentially, they offer a cheap and healthy source of humanely raised meat, as well as eggs

If you view your hens PRIMARILY as livestock, you will probably use minimal veterinary care, use various humane methods to increase egg production during the laying life of your hens, and plan to slaughter them once they are past their laying prime (as discussed further below).

RECOMMENDED RESOURCES for families raising hens PRIMARILY as livestock include:

- *Chicken Tractor*, by Andy Lee and Patricia Foreman (Good Earth Publications 2000)
- [www.cityfarmer.org](http://www.cityfarmer.org)
- [http://cherokeereservation.ces.ncsu.edu/depts/poulsci/tech\\_manuals/small\\_flocks.html](http://cherokeereservation.ces.ncsu.edu/depts/poulsci/tech_manuals/small_flocks.html)

KEY TIP: Hens can live for a LOT longer than they will lay eggs. Plan in advance how you will handle this.

Hens can also suffer from predators, the elements, and various diseases. While hen-keeping is not rocket science, would-be hen owners do need to think in advance whether and how they are prepared to manage these issues. See a very good, and sobering, story on the issue of owners deciding they have taken on too much, and abandoning hens, at:

- [http://www.nytimes.com/2009/10/23/dining/23sfdine.html?\\_r=1&emc=eta1](http://www.nytimes.com/2009/10/23/dining/23sfdine.html?_r=1&emc=eta1)

We assume in writing this manual that most New Haven families, like most of us, will view their hens as something in between pets and livestock. Every family will have their own mix of considerations. It is worth thinking through some key issues in advance. For instance:

- If a chicken (which costs \$1 to \$10 depending on where/what age you bought it) gets sick or wounded, will you do your best with home remedies, cull it, or take it to a vet who may charge \$50 to \$100 for an initial evaluation - and much more if surgery is required?
- How long - if at all - are you prepared to keep hens after they are no longer laying?
- How will you handle culling decisions if your children see the birds primarily as pets?

Most of us muddle through these decisions with a flexible mix of responses. Some families, for instance, allow kids to choose one "special" chicken to be treated as a pet (think: Wilbur in *Charlotte's Web*), while managing the rest more practically, as livestock. Again, advance planning is helpful.

RECOMMENDED RESOURCES for families raising hens as a mix of pets and livestock include:

- *Raising Chickens for Dummies*, by Kimberly Willis & Robert T. Ludlow (For Dummies, 2009)
- [www.backyardchickens.com](http://www.backyardchickens.com)
- *Backyard Poultry* magazine. See: [www.backyardpoultrymag.com](http://www.backyardpoultrymag.com)
- [www.urban-chickens.meetup.com](http://www.urban-chickens.meetup.com)
- <http://www.ithaca.edu/staff/jhenderson/chooks/chlinks.html>: a very good meta-list of links
- [http://www.ansci.umn.edu/poultry/resources/small-scale\\_production.htm](http://www.ansci.umn.edu/poultry/resources/small-scale_production.htm) another meta-list
- Common Ground in New Haven, which periodically offers workshops relevant to hen-keeping. For information see [www.commongroundct.org](http://www.commongroundct.org)

The New Haven ordinance is broad enough to allow a range of RESPONSIBLE approaches to hen-keeping. The full text of the ordinance in Article IV, Section 34 of the City of New Haven Zoning Code, is below:

**Section 34.** Keeping of hens.

- (a) *Statement of purpose.* This regulation is intended to make provision for the limited keeping of female chickens, henceforth referred to as hens, on certain residential properties for the health, convenience and personal enjoyment benefits afforded by such use, in a manner which preserves the quality of life of the surrounding neighborhood.
- (b) No more than six (6) hens may be kept on any property located in the following residence zoning districts as a non-commercial accessory use: RM-2, RS-1, RS-2, RM-1
- (c) The use shall be confined to a fenced enclosure of no more than 200 square feet in area, located in a rear yard. The fenced enclosure shall be at least 25 feet from any street line, at least 15 feet from any residential dwelling and at least five feet from any property line. In the instance that more than one distance requirement shall apply, the greater distance requirements shall apply.
- (d) Any portion of the enclosure located closer than ten feet to a property boundary or directly visible from a street line at any distance shall be screened by either a fence or a landscaped buffer of at least four feet in height.
- (e) A building shall be required for the hens. Any building used for this purpose shall be located at least ten feet from any lot line. All such buildings shall be constructed and all food products kept so as to prevent offensive odors and the presence of pests and predators.
- (f) No hens may be kept inside any structure used for residential purposes.
- (g) No rooster shall be kept on any property.

(h) The keeping of hens shall be conducted in a manner consistent with and in compliance with the Health Code of the City of New Haven.

(Ord. No. 1598, § 1, 9-8-09)

**Basically, the ordinance states:**

- A family-owned flock of up to six hens (female chickens) is permitted – NO ROOSTERS
- Hens must be restricted to a penned area no larger than 200 square feet total, in the backyard only, and at least 25 feet from any street
- The pen must be constructed to prevent hens escaping, and any part closer than 10 feet from any property line must be screened
- No part of the pen can be closer than 5 feet from any property line, or 15 feet from any house (yours or a neighbor's)
- Within the penned area, hens must be provided with a fully enclosed henhouse that protects them from predators and the elements
- Food and flock must be managed so as to prevent offensive odors or vermin

Within that framework, how you manage your flock over time is up to you. The key is to make those decisions responsibly.

If you choose to use veterinary care for chickens (which, for small home flocks, will likely be largely/only for birds viewed primarily as pets), here are some fine vets in the New Haven area who handle chickens:

- Country Companions ([www.countrycompanionsvet.com](http://www.countrycompanionsvet.com)): Dr. Kim McClure
- Dr Fischbach and Dr Giddings, 860 828 7736
- North Branford Veterinary, 481-1492

We strongly recommend all hen-keepers, ESPECIALLY those who choose not to use professional veterinary care, spend time reading up on chicken health and safety issues – in the later sections of this manual and in the recommended resources. By educating yourself on proper coop design, flock care and management you can prevent many, many problems, and learn how to treat on your own many simple issues that may arise. Another highly recommended resource:

- *The Chicken Health Handbook*, by Gail Demerow (Capital City Press, 1994)

We must stress that as you weigh your view of hens as pets vs. as livestock, you face a fundamental decision in long-term flock management – a nice way of saying "what will you do when they no longer lay eggs?" For most traditional home hen-keepers, in the days when most families (in New Haven and elsewhere) kept a few backyard hens, the answer was simple: hens too old to lay are too tough to roast or fry, but make very good stew or soup stock. Many families today still find that a very good option.

KEY TIP: Commercial slaughter of chickens in any form is banned in the City of New Haven. Non-commercial slaughter for personal use only is not banned under current law, but requires extreme care.

Should you decide to use hens raised in New Haven for meat that you want to eat, whether hens raised as meat birds, or layers past their prime, please be aware:

- You may not slaughter for commercial purposes anywhere in New Haven
- There is no commercial slaughterhouse or other USDA-approved facility anywhere in the State of Connecticut which will do the slaughtering for you
- There is an initiative underway (as of spring 2010) to license a USDA-approved mobile butchering facility which MIGHT offer butchering for home hen-keepers (<http://www.nofa.org/policy/regulations.php>), however, there is no guarantee if or when approval for this facility will be received

- You will therefore need to be prepared to do your own slaughtering and butchering. Please DO NOT undertake this lightly. Badly slaughtered/cleaned poultry meat can be easily contaminated (by internal/external bacteria and/or bile), and can be EXTREMELY dangerous to eat
- All by-products of slaughter (feathers, offal, etc.) must also be properly disposed of
- That said, for families prepared to take it on, properly managed home butchering can offer a highly economical source of free-range, humane-farmed (and if you like, organic) meat, as well as the ultimate in understanding where your food comes from.

RECOMMENDED RESOURCES for families who plan to do their own slaughtering of hens include:

- Bigbee, Daniel E., *Home Processing of Chickens*, University of Nebraska, Extension Publication HEG81-144.
- <http://www.extension.umn.edu/distribution/livestocksystems/DI0701.html>
- [www.edis.ifas.ufl.edu/AA188](http://www.edis.ifas.ufl.edu/AA188)
- <http://attra.ncat.org/attra-pub/poultryprocess.html#pre>
- <http://www.themodernhomestead.us/article/Butchering+Poultry.html>
- <http://www.butcherachicken.blogspot.com/>

For some families today, home slaughtering of birds seen even partly as pets is not an option. If, after thinking realistically through the issue, you believe you are one of these families, understand that as your birds age you will have limited options:

- Occasionally, families can find petting zoos or demo farms willing to take in non-laying hens, but the number of available old hens generally far outstrips available slots.
- More realistically, if you are willing to have the birds slaughtered but can't see doing it yourself, you may well be able to donate HEALTHY birds to a soup kitchen, church, family or community center within one of the several immigrant communities in New Haven whose members come from countries where home poultry processing is still a living tradition, and who know how to safely kill, clean, and butcher chickens.
- If you can't find a petting zoo or demo farm, and don't want to see the birds slaughtered, know that you will likely have pet hens MUCH longer than you will get eggs from them.

We believe that any of the above are perfectly reasonable and responsible decisions for any hen-keeping family, based on its own considerations.

It is NOT responsible to "release into the wild" hens which are past laying age. Abandoning a non-laying hen, used to coop life and regular feedings, into a park, forest, or other open area is NOT "setting her free." It is condemning her to either a slow death via starvation, or (more likely) a brutal death at the jaws and claws of one of the many, many local predators (from foxes to coyotes to hawks) that like the taste of chicken as much as people do.

Please make responsible decisions regarding long-term management of your flock. If you are not prepared to do so, please do not get chickens in the first place.

If you do get chickens, we hope you enjoy them as much as we have enjoyed ours, and that your family, like ours, finds that despite the occasional difficulty, they are on the whole a source of silly pleasure to you and to the neighborhood. They may not be the world's brightest creatures, but they take great joy in scratching about and eating bugs from your lawn. After watching them live a happy, free-range life, you may also, like many of us, never want to eat factory-farmed eggs again.

## **Section II: Choosing Your Chickens: Breed Selection, Age, and Sourcing**

Chickens have been domesticated for millennia, all over the world, for all sorts of purposes, and by now come in all shapes and sizes and temperaments, from nearly as small as pigeons to larger than some turkeys, from very plain to extremely fancy, and from very easy-going to extremely fierce. For more information on the options, see: <http://www.backyardchickens.com/breeds/>

Some would-be henkeepers get attracted by some of the more exotic breeds developed primarily as show-birds, or as fighting birds, or for various climate extremes. Some exotic breeds can be fun to contemplate, like the Araucanas of South America, which lay green and blue eggs; or the Golden Pheasant Hens of Southeast Asia, bred to look remarkably like their wild pheasant cousins.

Our advice is: don't heed the siren call of these exotic breeds unless you are an experienced animal-keeper, willing and able to go to great lengths to prevent the burrowing mites that can get into fancy feather-mops, or to use expensive outdoor heaters all winter to keep tropical breeds comfortable in our New England winters. And no matter who you are, in an urban neighborhood with kids, pets, cars, and other potential sources of excitement/targets, don't get one of the fighting breeds, or you're likely to end up with cuts on you and your neighbors and their kids and pets and more than likely a lawsuit.

Instead, we strongly recommend one of the staid but sensible cold-hardy breeds that have been bred over centuries to do well in the chilly winters of Connecticut, lay well, and tend to get along with each other and with neighbors. Some of the most commonly recommended breeds for our area include:

- Rhode Island Red
- New Hampshire Red
- Wyhandotte/Wyandotte (Golden-Laced or Silver-Laced)
- Buckeye
- Jersey Giant
- Buff Orpington
- Marron
- Plymouth Rock
- Sussex (plain or Speckled)
- Sex-link hybrids (red or black)

RECOMMENDED RESOURCES for further information on breed selection include:

- <http://www.ithaca.edu/staff/jhenderson/chooks/dual.html>
- <http://ucanr.org/freepubs/docs/7232.pdf>

***Age at Purchase:*** You have various options for the age at which you obtain your chickens. Most families either purchase day-old chicks, or buy pullets (birds fully feathered-out but who have not started laying). You can also buy fertilized eggs and incubate them. Generally, the younger you buy your birds, the tamer and more attached to you they will be throughout their lives – but also the more work and expense you will have to put into them during the months before they begin to lay eggs.

***Sourcing:*** Whatever breed and/or age you select, it is very important to purchase from a reliable source that you can be certain is selling you birds free of any of the various nasty diseases chickens can carry,

from salmonella and coccidiosis (common) to Avian flu (never yet found in the US; you don't want your birds to be the first).

In the old days, a "reliable source" meant going to a respected local farmer, and if you are lucky, you may still be able to locate one of the few, small, mom-and-pop farms in the area that sell chicks and/or pullets, generally (given the many regulations these days) under the radar and only to friends. One larger operation in the area that sells pullets is Latella Poultry of West Haven, 932-3619. Their birds are mass-raised, and so will not be attached to you the way a hen raised from a chick will, but their operations seem to be clean and disease-free. Agway of North Haven also *occasionally* sells pullets, and often sells chicks, especially around Easter-time.

For chicks you have a range of options:

- You can order directly from a large commercial hatchery such as:
  - <http://www.mcmurrayhatchery.com/>
  - <http://www.ideal-poultry.com/>
- Direct-order chicks will be sent to you through the mail. Note that you cannot order just a few chicks directly, so you will have to find someone to go in on an order with you.
- For many people a better alternative is to buy your chicks from a local grain store or cooperative farm, such as:
  - Deer Run Feed, near Waterbury, 203-757-7166
  - Agway of North Haven

These organizations make large orders of chicks from certified hatcheries, and will sell you any number you pre-order with them.

Common Ground will also share hatchery orders with individuals who want just a few chicks, and can also sell their own fertilized eggs to those who want to hatch their own (with the disclaimer that they cannot take back any that hatch out as roosters!). For information contact Rebecca Holcombe at [reholcombe@nhp.com](mailto:reholcombe@nhp.com) or (203) 389-4333 ext 1-213.

### **Section III. Planning Your Coop: Protecting Your Birds from Predators and the Elements**

A hen's coop is truly its castle. Your hens will depend 100% on the coop you design and build for them to protect them, as a life-and-death matter, from our unpredictable New England weather, and from the many, many predators in our area who love the taste of chicken. Please take time to think carefully through coop requirements, and to build a coop as sturdy, weather- and predator-proof as you can.

KEY TIP: The coop includes both the henhouse and if desired a pen for hens to roam outside.
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Coop Size: Maximum coop sizes are set by various New Haven ordinances. Under the ordinance permitting family flocks of hens, hens must be contained in a penned area which is a maximum of 200 square feet. Within the pen, hens must be provided with a fully enclosed henhouse. It is also permissible under local ordinances (and can be consistent with humane farming guidelines) to have a henhouse only and no outside pen. If you want to avoid building permit requirements for your henhouse (highly advisable), you can't build it any larger than 100 square feet.

In practice, you will likely end up building MUCH smaller than the maximum requirements, at least for the henhouse. Some points to keep in mind:

- The henhouse (where the birds sleep at night) is generally better off smaller than larger. Hens like to sleep closely packed together, especially in the winter for warmth. A larger henhouse will be harder to predator-proof, clean, and keep warm and draft-free in winter.
- Humane farming guidelines for free-range hens generally require providing at least 3-4 square feet of floor space in any area where birds will be spending substantial amounts of time (such as the henhouse, assuming you lock them in at night). For 6 hens, this means just 18-24 square feet of floor space is needed: a 4x6 piece of plywood provides 24 square feet.
- Hens will also need roosting space off the floor, about 1 foot of roost space per bird (because roost space required is smaller than floor space required, many henhouse designs save on materials by using a triangular or A-frame shape).
- While these sizes may seem small, bear in mind they are MUCH larger than the approximately 1 cubic foot of space per bird offered in factory farms, and are about as much as hens will realistically use in a free-range henhouse.

As to your pen, if any: your hens will want it to be as large as possible, (ideally encompassing all the backyards on your block!). You will want to balance size of the pen with size of your yard, materials costs, ordinance requirements, and the need to do at least minimal predator-proofing on the pen. Humane farming guidelines recommend that hens have a total available ground space (inside henhouse and outside in pen, if any) of at least 10 square feet/bird.

Coop Design: In terms of coop design, there are virtually limitless options available today, from high-end designer coops that can be bought ready-made and shipped to your door (and have prices to match), to simpler pre-built coop kits that can easily be assembled with minimal tools, to do-it-yourself designs that can be made from scrap-wood and leftovers. Any sturdy, weather- and predator-proofed, and reasonably presentable coop will be fine, and your chickens will not care how fancy their housing is.

Key points to consider for all coops to be used for flocks in New Haven include:

- Coops in an urban setting should be made and kept reasonably neat and presentable
- Coops should be easy for you to keep clean and well-maintained – and to collect eggs
- Henhouses must keep your hens dry and draft-free
- Henhouses must include adequate ventilation for summer heat

- Henhouses should ideally be wired for lights (to humanely extend laying season, and to provide some extra warmth in the dead of winter)
- Coops/pens must include shaded areas for the summer months, and include facilities to keep food dry and vermin-proof, and water clean
- If you use a portable coop design, the coop must be moved every day to prevent the hens from killing the grass under the coop
- If you use a fixed coop design (more practical for most urban backyards), know that they will kill all grass inside the pen, if any, and predator-proofing requirements will be higher
- Your coop will need nesting boxes (small enclosed spaces where the hens feel safe laying eggs)
- Your henhouse must also include a roost – a pole or narrow board (ideally with sharp corners sanded off to reduce wear on feet) elevated 1-2' off the floor to allow for the natural roosting instinct of hens
- Make sure that all boards are tight and roosts secure, with no narrow cracks or open seams (especially on or near the roosts) that a chicken could catch a foot in – sleeping hens have been known to wiggle feet into tight places, then wake and try to get out in a panic, dislocating feet or breaking legs
- Crucially, coops in our area must be EXTREMELY carefully predator-proofed, as discussed below

RECOMMENDED RESOURCES for designs/pre-built coops appropriate for New Haven flocks include:

For do-it-yourself designs:

- <http://www.instructables.com/id/Backyard-Chicken-Coop/>
- <http://www.plamondon.com/chicken-coops.html>
- [www.motherearthnews.com/Do-It-Yourself/2007-04-01/Portable-Chicken-Mini-coop-Plan.aspx](http://www.motherearthnews.com/Do-It-Yourself/2007-04-01/Portable-Chicken-Mini-coop-Plan.aspx)
- [www.howtoconstructachickencoop.com](http://www.howtoconstructachickencoop.com)
- [www.buildingachickencoop.com](http://www.buildingachickencoop.com)
- <http://www.thepoultrysite.com/articles/118/managing-a-small-poultry-flock>
- For nest boxes in particular: <http://www.backyardchickens.com/coops/nestingbox.html>

For pre-built coops and kits:

- [www.critter-cages.com](http://www.critter-cages.com)
- [www.henspa.com](http://www.henspa.com)
- [http://www.omlet.us/products\\_services/products\\_services.php?view=Chickens](http://www.omlet.us/products_services/products_services.php?view=Chickens)
- [www.chickencoopsource.com](http://www.chickencoopsource.com)

You can also get a coop in between the cost of a ready-made and a self-made model by having a local carpenter make one for you. Local carpenter Rudy Farricelli has made several coops for local owners, 203-710-9807.

Coop Materials: In terms of materials for do-it-yourselfers, you can very often find most of what you need to build a coop from the leftovers at construction or demolition sites, from lumber to plywood to hardware. Some important points to note:

- Do not use wood that has been pressure-treated or otherwise treated with toxic materials – your birds will scratch and peck around their coop and can be hurt by toxic chemicals
- Be careful of old nails, hooks, and other sharp objects that can wound your birds
- Plan to buy new materials for roof shingles (proper waterproofing is crucial), and for fencing (as described further below, double-layers of good quality wire mesh are very important for predator-proofing).
- Given that all New Haven flocks are in an urban setting, please pay attention to esthetic considerations. A coop made of all scrap materials can look like a shanty – or with a coat of non-

toxic latex paint, it can look quite presentable. The latter is much more likely to keep your neighbors happy with your choice to keep hens.

Weather-Proofing Your Coop: Your coop must be properly weather-proofed for the extremes of New England weather, or your flock may well die of exposure:

- Ensure at least part of your coop/pen has good shade for the heat of the summer
- Guarantee a source of clean water to your birds year-round (note in the depths of winter this may mean bringing out pots of boiling water once or twice a day to melt ice)
- Make sure the birds can shelter from the rain: hens exposed to cold rain without a chance to dry out can die in a day
- Keep the henhouse dry and draft-free all winter (some keepers stack hay bales around the henhouse as winter approaches as extra insulation/wind-proofing)
- Ideally, wire your henhouse for lights (properly, using cables and fixtures rated for exterior use). As discussed above under breed selections, if you select cold-hardy breeds, they can survive even in the coldest weather with no added heat, but a 20- or 40-watt red light bulb on nights that drop below 0 degrees Fahrenheit will support not just survival but also a measure of comfort. As discussed below, lights can also be used to humanely increase egg production.

Coop Location: Site is also important to consider. New Haven's ordinance requires that coops be:

- No larger than 200 square feet total, in the backyard only, and at least 25 feet from any street and 20' from any open water source (pond or stream)
- Constructed to prevent hens escaping, and any part closer than 10 feet from any property line must be screened
- Constructed so no part of the coop is closer than 5 feet from any property line, or 15 feet from any house (yours or a neighbor's)
- Constructed to include fully enclosed henhouse that protects them from predators and the elements

Most of these requirements seek to prevent diseases from spreading from your chickens to your family, or the neighbors. Please respect these setback requirements carefully. Ideally, locate the coop in the part of your backyard that is farthest from all your neighbors' houses. Hens are not especially noisy, but they do cluck and squawk a bit, especially right after laying an egg, or when they see a predator. Careful coop site selection will reduce the likelihood that a neighbor will be bothered by noise from your hens.

Water for the Coop: In terms of providing for clean water, many commercial watering set-ups are available, as are many do-it-yourself designs. The most important things to keep in mind are:

- Hens will knock over any water container that is not heavy or tied down, and can easily foul it, breeding disease
- Water must be changed regularly to prevent disease (we recommend checking daily, and changing water anytime it is fouled, and at minimum changing water & scrubbing all water containers once per week)
- It is crucial to ensure hens don't run out of water, especially in summer: they can die in 12 hours without water on a hot day.

RECOMMENDED RESOURCES for designs/pre-built watering set-ups include:

For do-it-yourself designs:

- <http://www.backyardchickens.com/LC-waterer.html>
- <http://www.nifty-stuff.com/chicken-automatic-waterer-feeder.php>

For commercial watering equipment:

- [http://www.farmtek.com/farm/supplies/cat1a;ft1\\_poultry\\_equipment.html](http://www.farmtek.com/farm/supplies/cat1a;ft1_poultry_equipment.html)
- [www.randallburkey.com/departments.asp?dept=242&gclid=CMjRrcGKiJ0CFcZM5QodDUfzbQ](http://www.randallburkey.com/departments.asp?dept=242&gclid=CMjRrcGKiJ0CFcZM5QodDUfzbQ)

*Vermin and Predator-Proofing Your Coop:* You will also need to prepare as part of your coop set-up a vermin-proof container for feed. This topic is discussed further below in Section V.

Probably the most crucial goal of coop design, construction, and maintenance in our area is predator-proofing. New Haven includes and/or neighbors on many fine parks, water company properties, and open spaces that are home to LOTS of animals who would love to eat your hens and/or their eggs.

KEY TIP: MANY local animals would love to eat your hens. It is your duty to protect your birds, with a properly constructed coop that will effectively prevent predator attacks.

A partial list of local predators that have at one point or another been seen (or their fur/spoor noted) by New Haven chicken-keepers includes:

- hawks, vultures, eagles, osprey, large owls
- foxes, coyotes, raccoons, opossums, badgers, neighboring dogs and cats
- stoats, weasels, martens, mink, fisher-cats, and rats.

In fact, one strangely positive side-effect of hen-keeping in New Haven is getting to know just how much wildlife really lives in and around our city, as they stalk and try to take your birds.

Your hens will let you know when they are being stalked – their eyesight is far keener than yours, and the stakes are higher for them. They will squawk loudly with a quite distinctive “alarm call” when predators are present. Many times we have been in our back yards gardening, oblivious of the presence of wildlife, till we were alerted by our hens squawking. Then looking around, we saw magnificent red-tail hawks perched on our garage roofs, or silver-tip raccoons walking on the fence-tops, or foxes dashing into the shrubbery.

When (not if) you see predators stalking your chickens, or realize (from their cowering inside the henhouse and not laying eggs) that they are being stalked, DO NOT call the City of New Haven Animal Control unit. It is not the city’s job to try to eliminate the thousands of natural predators that inhabit our parks and area farmlands. In fact, if the city somehow managed to eliminate larger predators, we would quickly be over-run by rats and mice – both central to the diets of predators today.

Instead, we must reiterate over and over: defending your birds is your job, via effectively predator-proofing your coop. Fail in that, and sooner or later you will head out to your backyard (or your kids will, or your neighbor’s kids will) and find the bloody, shredded carcass of one of your former pets.

There are many details to consider, as below, but keep three key principles in mind:

*Freedom vs. security:* As in much of life, in hen-keeping there is a balance between giving your hens freedom, and keeping them secure. They will want to roam – in the day – as far as they can. But the further you let them roam, the harder it will be to keep them secure.

*Daytime vs. nighttime:* Relatively few predators will attack your birds in broad daylight, and an awake/aware hen with uncut beak and claws can defend herself pretty well anyway. In fact, your hens themselves are powerful daytime predators in their own right, not just on bugs but also on mice, voles, and even smaller birds, so be aware where you place birdhouses, feeders, and birdbaths designed to attract songbirds, relative to chicken coops.

But at night, perched asleep on her roost, a hen is deeply vulnerable to MANY nighttime predators. So there is a quantum leap between predator-proofing requirements for the daytime pen, and for the night-time quarters (henhouse, and any pen area the bird can enter freely from the henhouse).

Long-term vs. short-term convenience: For the sake of ease in constructing the coop, many hen-keepers starting out building a small henhouse, which is relatively easy to predator-proof effectively, and locking their hens in the henhouse every night. But with that set-up, your first chore each morning must be to let the hens out of the henhouse so they don't start feather-picking and/or pecking at each other out of boredom at being "cooped up" (yes, that's where the expression comes from), and you must lock the birds in at dusk each night to ensure they are safe from night-prowlers. This makes your daily schedule more tied to your chickens than you may want, and also means you must find a reliable chicken-sitter if you will go away even for a weekend.

So over time, many hen-keepers either a) build a larger henhouse, that allows birds to be locked in all the time, or b) develop a coop that incorporates a fully secure, covered "run" area that the hens can enter and exit freely from the henhouse (while also perhaps including a larger, uncovered pen that the hens can be let into for daytime use only). The advantage of such a set-up is that hens can then be left in the henhouse/covered run area for days at a time with little or no attention, so long as they have plenty of food and clean water available. You can go away for a long weekend and have nobody watching the hens, or at most checking for eggs and to see that their water stays clean. The disadvantage is that anything that gets into the run can get freely into the henhouse, so the entire covered run area must be predator-proofed to the same standard as the henhouse itself.

With those principles in mind, here are some detailed predator-proofing requirements for urban hen-keepers in the New Haven area (see also: <http://www.backyardchickens.com/LC-predators.html>):

For daytime-use only pens:

- A simple fenced area will meet the requirements of keeping your birds contained. Fencing should be at least 5' tall. Easiest to construct is wire-mesh fencing attached to simple steel fencing posts that have been pounded at least 18" into the ground.
- Such a fence will also keep dogs and cats (the main daytime threats) away from your birds.
- When your birds are very young, they may occasionally fly over a 5' fence. Since they dislike landing on anything insecure, you can sometimes cure them of this by adding a layer of floppy fencing material to the top of the main fence. As they age, they will fly less.
- If you have a problem hen who continues to fly out regularly, clip her wings. So long as you don't clip into the very base of the feathers (which may have some nerve connections) it won't hurt your birds any more than clipping fingernails hurts you. See detailed instructions at: <http://www.backyardchickens.com/LC-wingclipping.html>
- Using an open-top daytime pen, there is a small but real risk that a hawk, eagle or osprey MAY take one of your birds in broad daylight. This is very rare, but has occasionally happened. Most New Haven hen-keepers, balancing giving their birds a reasonably large daytime pen to roam in with reasonable ease of construction, have accepted this small risk to give their birds the freedom of a large open-top daytime-use-only pen.
- To further reduce risks of an attack, ensure that your hens can freely retreat during the daytime from the open-top pen to the secure henhouse; rare as a daytime attack is, it would be even rarer for a wild bird of prey to follow hens into a covered henhouse.
- Some hen-keepers let birds roam freely in their backyard when the keeper is personally present to discourage dog, cat, and other attacks. If you want to do this, please check with neighbors first to see they don't mind, and be sure to lock hens back in their pen if you go away or inside.

For night-time use areas (hen-house and any covered run), requirements are much stronger, and require thinking through and blocking the various ways various predators may attack:

- Raccoons, one of the toughest predators to foil, are strong and have very agile forepaws. They can unlatch a simple hook-and-eye latch, tear off a board that is even slightly loose, rip through traditional small-mesh "chicken wire," and reach through wide-mesh heavy-gauge wire or large ventilation holes to kill a chicken, tear her apart, and pull her out in pieces.

- Thus, to foil raccoons you must:
  - use predator-proof (sliding-top) latches on all doors/windows
  - ensure all henhouse boards/parts are tightly secured with nails and/or screws
  - select ventilation grills with small holes/vents (ideally less than ½" wide)
  - use TWO layers of wire fencing on any wire-covered sections of the coop/run:
    - one layer of heavy-gauge wide-mesh to prevent tearing, AND
    - one layer of small-mesh "chicken wire" to prevent reaching through
  - staple down all wire fencing using heavy-duty wood staples every 6" minimum
- Another tough predator, weasels, have flexible rib-cages that let them flatten their body to as small as 1" thick and 3" wide. Thus, to foil weasels, you must:
  - Ensure there is no crack or opening in the henhouse/run larger than ¾" thick, 3" wide
- Because hawks, owls, eagles and ospreys can attack from the air no fence alone, no matter how high, will protect your birds at night. Instead you must ensure the entire henhouse/run:
  - Is completely covered, with a solid roof or double-layers of wire as above
- Raccoons and foxes to some degree and badgers to a large degree are diggers, and can dig under fences and walls. Preventing this in a henhouse is fairly easy:
  - Use a fully enclosed wooden floor, and a door that latches securely
- Preventing this in a covered run is more complicated, as below.

Anti-digging barriers in a covered run go from fairly easy, to very hard work. The more effective they are, the harder they are to build. You will find your own balance between how hard you want to work on anti-digging barriers, how large you want the covered run area to be, and how thoroughly you want to guard against predators which can dig. Some options include:

- Lay loose bricks, cinder blocks, or flagstones around the perimeter of the run – this discourages but does not wholly prevent digging
- Same as above, but use a little mortar. This is more secure but not 100%.
- For a very secure run: dig a trench around the run about 18" deep, then lay two layers of wire mesh fencing (as above) vertically in the trench, using heavy-duty wood staples or wire ties to secure the top of the wire mesh to the base of the henhouse/run. Pour gravel or concrete/construction debris around the bottom of the wire mesh. Refill the rest of the trench with dirt.
- For a fully secure run: excavate 12-18" over the entire area where you plan to have your covered run. Lay heavy-duty wide-mesh wire fencing over the entire bed of the excavation, and two layers (heavy wide-mesh AND chicken wire) on the sides of the excavation, securing the bottom to side fencing with wire ties. Cover the wire bed with 4-6" of gravel. Cover the gravel with 4-6" of sand. Cover with dirt to ground-level (or, use all sand if you prefer a sand floor). Finally, secure the wire mesh from the coop bed to the sides of your henhouse/run with heavy-duty wood staples or wire ties. This is a major job, but will 100% guarantee that any predator who tries to dig under the pen and get to your birds will be foiled – and get very sore paws.

The above offers the best we know about predator-proofing. It is hard work, but important. If a predator successfully kills one of your hens, it will know where easy, tasty meals can be caught, and may well try repeatedly to attack your remaining hens. Eventually, however well you predator-proof, a determined repeat predator may find a way back in.

At that point, your only real alternatives will be to call the exterminator to eliminate this particular problem predator (please don't trap and relocate – that's just giving the problem to someone else), do the extermination yourself, or give up on keeping hens. Don't let it get to that point – do proper predator-proofing in the first place.

Finally: even with the best efforts, sometime along the way a door may be left open or a board come loose, and the predators which will always be watching your hens at least as closely as you are may get in. If that day comes, if you are like us, you will likely rest easier if you can honestly say that you did your best to keep your hens safe. And those henkeepers who choose to give hens outside access to

grass and bugs may take some added comfort, having watched their many outdoor antics, in knowing that the hens spent their lives with some measure of chickenly joy.

#### **Section IV: Preparing for Your Chickens to Arrive**

How much equipment you need to prepare depends on the age of your chickens when they arrive.

With either eggs or chicks you will need a variety of special equipment, either home-made or commercially purchased, including heat-lamps, special feeders/waterers, and possibly an incubator. You will also need to be prepared to invest lots of time, and buy proper equipment for brooding and hatching. Please pay special attention to:

- Special feed and water needs of chicks and fledglings
- Cleanliness of the cage, remembering that chicks are very vulnerable to disease
- Temperature, ensuring relatively constant warmth

RECOMMENDED RESOURCES for information on raising hens starting as chicks include:

- <http://extension.missouri.edu/publications/DisplayPub.aspx?P=G8351>
- [http://4hpoultry.osu.edu/Basic\\_Brooding\\_Tips.htm](http://4hpoultry.osu.edu/Basic_Brooding_Tips.htm)
- <http://www.backyardchickens.com/LC-first60days.html>
- <http://www.mypetchicken.com/backyard-chickens/chicken-care/chapter-4-caring-for-baby-chicks.aspx>

Your chicks will need gradually larger cage-space as they molt their fluffy baby-chick feathers and become fledglings, and then molt again and become pullets. By the time they have their true feathers and the weather is warming up, they can be kept in a basement or garage, and then outdoors. Chicks and pullets should be kept separate from any adult birds until they are close to adult size. For most breeds this will take 4-5 months.

The easiest option is to buy pullets. Once birds are feathered out you won't have to provide artificial heat, and you will be within a few months of being able to get eggs from them. For good articles comparing raising from chicks vs. buying as pullets, see:

- <http://www.extension.umn.edu/distribution/livestocksystems/DI1191.html>
- [http://aces.nmsu.edu/pubs/\\_circulars/Circ477.html](http://aces.nmsu.edu/pubs/_circulars/Circ477.html)

*Preparations for Pullets/Older Hens:* If you start with pullets or adult birds (and once your birds mature if you start with chicks), you will need:

- A properly weather- and predator-proofed coop, as described in Section III
- An ongoing source of suitable feed and supplements
- An ongoing source of bedding/litter
- Resource information (a book or two/websites) to help you care for chicks/troubleshoot
- Contact with a local vet, if you plan to use one

Many experts recommend vaccinating all birds for various diseases as soon as they arrive. Practically, if you plan to have a closed flock (no show birds, quarantine of any new birds introduced, take care with biosecurity when visiting other flocks), you may not need to spend money on vaccinations. If in doubt

on any of those points, vaccination is a good idea. If you do plan to show your birds, vaccines are required.

Finally, check in any area where your chickens will be allowed to roam freely, and eliminate any **plants toxic to chickens**. For information, see:

- <http://www.poultryhelp.com/toxicplants.html>

*Feed Preparations:* Chickens are omnivores and will eat anything and everything – grass and bugs from your yard, kitchen scraps, scraps from local stores or restaurants, etc. Some of us help out local churches, synagogues, mosques, etc. by taking home some of the food waste from events at these institutions to feed our birds. This is a perfect example of turning trash into treasure, saving the institution on disposal costs and you on feed costs at the same time.

The variety of foods provided by scraps will keep your hens interested, eating well, and thus laying well. And you will notice that flavors the chickens eat affect flavor of the eggs, often in surprising ways. Large amounts of garlic, for instance, will lead to slightly garlic-scented eggs, great for garlicky frittatas, not so good for making birthday cakes.

Note on meat: your hens will happily eat meat scraps, including chicken meat scraps, but take care when feeding these to give no more than the chickens will eat quickly, or you may end up attracting rats. To prevent potential disease concentration, don't feed large amounts of chicken scraps.

To keep your chickens from developing a taste for eating their own eggs, don't feed them raw egg. We have found, however, that feeding the eggshells back to them seems to do no harm and may help prevent calcium deficiency.

Also, be careful not to feed your chickens the following **potentially toxic items**, especially in large quantities (small amounts won't matter overly much in most cases):

- raw green potato peels, dried or lightly cooked beans, avocado pits or peels, citrus peels, chocolate, anything very salty or greasy or sugary (for more details, see the "foods to avoid" section at the bottom of [http://www.backyardchickens.com/web/viewblog.php?id=2593-Treats\\_Chart](http://www.backyardchickens.com/web/viewblog.php?id=2593-Treats_Chart)).

All the above said, scraps alone won't provide the balanced diet of minerals, vitamins, and other nutrients your chickens need. So, you should also provide them with a commercial feed designed for their age:

- Starter mash or pellets for chicks/pullets
- Layer mash or pellets (which contains much more calcium, among other things), for laying hens

Your birds will also need some regular supplements to keep them happy, including:

- Grit: Hens have no teeth, they digest food by grinding it in their crops with small bits of rock and sand called grit. Outdoor hens get all the grit they need from scratching in the dirt. When they are small, and for any hens without access to dirt, you must supplement. See: <http://www.chickenkeepingsecrets.com/members/chicken-feed/chicken-grit-grit-for-baby-adult-chickens/>

- Calcium supplements, once they are laying: we have had good luck with ground oyster shells, available at local feed stores
- Flax seed/flax seed meal in the winter will add extra fat and Vitamin E to their diet, helping them stay warm in the winter, and also boosting the Omega-3 “good” fatty acid content of the eggs
- Food-grade diatomaceous earth 2-4 times per YEAR, to prevent worms

RECOMMENDED RESOURCES for further information on feed and supplement requirements include:

- [http://www.ces.ncsu.edu/depts/poulsci/tech\\_manuals/cage\\_free/feeding\\_chickens.pdf](http://www.ces.ncsu.edu/depts/poulsci/tech_manuals/cage_free/feeding_chickens.pdf)
- [http://www.agriculture.gov.sk.ca/General\\_Nutrition\\_poultry](http://www.agriculture.gov.sk.ca/General_Nutrition_poultry)
- <http://www.wvu.edu/~Agexten/poultry/pfs17.pdf>
- <http://www.lionsgrip.com/topics.html>

Several fine feed stores in the New Haven area stock chicken feed and supplements. We have had good luck with:

- Dick Farrell Feed and Seed Sales, 636 Amity Road, Bethany, 397-0875
- Agway of North Haven, 66 State Street, North Haven, 239-1687
- Agway of North Branford, 11 White Wood Lane, North Branford, 483-7800
- Deer Run Feed, near Waterbury, 203-757-7166

Bedding/Litter: Your henhouse needs to be filled with a few inches of bedding to keep it clean. This can be any natural material which is high in carbon (to combine with the high nitrogen in chicken poop to prevent smells). Ideally it should be relatively low in dust as well. Good choices for bedding include:

- Hay or straw
- Pine or cedar shavings
- Sawdust
- Dry leaves (not as absorbent as other bedding choices, but in season they are free!)

The feed stores recommended above also sell shavings, hay, and straw. You can also often pick up hay and straw less expensively (since it does not need to be especially high quality) by buying “seconds” or scrap “meadow hay” at local farms.

Some fastidious hen-keepers use a cat scooper to clean out droppings daily. Most of us clean once per week. A few of us use the “deep litter” system, which means never cleaning, but requires careful management to avoid smells. Whenever you clean, compost the droppings by moving them to a corner of the pen away from the henhouse to help reduce predators. Your chickens will gradually mix droppings, scraps, and leftover bedding into lovely new dirt for you.

The Neighbors: Small flocks of hens are now legal in New Haven, but it is still wise to speak in advance with your neighbors about your plans to have chickens, and to listen to any special concerns they raise. Some people in cities and suburbs still see chickens as livestock that would have a negative impact on property values. If you offer them eggs, they may be more inclined to accept chickens.

## **Section V: Managing your Flock – And Protecting Human Health**

You have chosen your chicken breeds, prepared a safe coop, gotten all your materials together and now your chicks arrive. They may come in the mail, shipped from a hatchery as day-old chicks, or you may have bought them from Agway as chicks, or from a local farm as pullets. Whatever their age, here is the information you need to be ready to care for them without causing problems for yourself or neighbors.

*Initial Introduction:* What initial care your birds needs depends on what age they are when they arrive. If you get day-old chicks, especially in the very early spring, then they will need careful care in a much smaller cage, most likely indoors, for some time before they are ready for their coop (see above).

By the time chicks have become pullets (or if you bought them as pullets), they are ready to be introduced to the coop. Do this on a day with decent weather, when you have time to hang around and see how the birds become accustomed to their new environment. Remember to:

- If possible, first put their smaller cage inside the larger coop/run so they have a familiar place to retreat to
- Watch to see that they figure out how to get food and water from whatever set-up you have supplied
- Ensure that they have access to shade, that the temperature is not hugely different from whatever they have been used to, and that no weather extremes are expected immediately
- Make sure they have a good layer of litter in the henhouse

Special considerations must be made when introducing new hens to a coop which already has chickens in it. For further information, see:

- <http://www.articlesbase.com/pets-articles/5-tips-for-integrating-new-chickens-773131.html>
- <http://stonehead.wordpress.com/2006/06/28/introducing-new-hens-to-a-flock/>

*Regular Maintenance:* If you have set your coop up well, your hens will need minimal regular care and maintenance. However, doing that needed maintenance regularly is crucial to healthy hens and happy neighbors. A well-maintained coop will have little if any smell; a poorly maintained one stinks.

KEY TIP: A clean coop is a safe coop, for you, your hens, and the neighbors.
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On a daily basis, at least most days, you will want to check on your hens once or twice to:

- Make sure they have plenty of clean food and water
- Look for fresh eggs (late morning is the best time for this, when eggs are freshest, but any time is OK)
- Bring them any kitchen scraps or treats you want to give them:  
<http://www.backyardchickens.com/web/viewblog.php?id=2593-Treats> Chart
- Make sure the nesting box isn't fouled with droppings or a broken egg
- Give your hens a once-over to be sure they all appear to be eating and drinking and otherwise behaving normally

The above takes about 5 minutes, but often we find ourselves enjoying spending much longer than this with our flock, watching the shenanigans of our hens as they hunt bugs and continually sort out their social world.

On a weekly basis, you should set aside 20-30 minutes to:

- Clean the watering set-up, scrubbing all bowls
- Clean/change the litter in the henhouse, unless you plan to use the deep-litter system (generally less advisable for small urban coops: see [http://www.plamondon.com/faq\\_deep\\_litter.html](http://www.plamondon.com/faq_deep_litter.html))
- Scrape droppings off the roosts
- Thoroughly clean the nest box
- Check that the food bin has not been fouled, clean as necessary, and refill
- Review cleanliness in the henhouse/run, and make adjustments as necessary. For instance:
  - If the henhouse smells of ammonia, you need to add more ventilation
  - If the pen smells strongly at all, there is too much nitrogen and/or ammonia build-up in the soil of the pen, add extra carbon-heavy material to absorb/combine, like:
    - Extra hay, straw, cedar shavings, or other bedding – if you take soiled bedding out of the henhouse but leave it in the pen it will help with this
    - Dry leaves (many of us rake our autumn leaves into the chicken pen, and our chicks help us turn them into partly-prepared compost by spring, which can then be shoveled into a compost heap for final aging)
    - Grass and leaf trimmings, especially as they dry
  - If there is any sign of rats or other vermin, carefully review your food storage and feeding practices, as discussed further in the next section. In particular:
    - Make sure your layer feed is stored in a metal container with a tight-fitting lid
    - Be careful when feeding meat scraps to your chickens. Feed only scraps they will consume quickly
- Tidy the pen as necessary – many of us rake loose materials into a pile weekly, which the chickens then enjoy scratching at and gradually spreading out again

On a monthly basis, make time to:

- Take a walk around to check henhouse & fencing for loose boards, fence gaps, or other issues that might compromise predator-proofing, and fix as necessary
- Check carefully for any signs of rats or other vermin, and address as necessary

For further information, see the resources listed in Section I.

**KEY TIP:** Regular, proactive maintenance will keep your coop clean and you and your flock safe.

*Preventing Pests and Vermin:* You want to keep rats, mice, roaches and other vermin out of your coop and away from your chickens for your sake, their sake, and the neighbors. Please pay attention to pest-proofing.

In the coop itself, wherever chickens can reach, there will be no problem with bugs and little with rats. The chickens will eat anything small. Large, determined city rats might be attracted to the chicken feed and eggs, and be too much for your birds to drive off. But proper predator-proofing (including anti-digging barriers) will keep rats out of the henhouse and any covered run, along with weasels and other

riff-raff. If you do end up with a determined rat attack, you will likely need to poison the rats, taking care with placement of the poison so your hens can't get it! See: <http://www.thepoultrysite.com/forums/showthread.php?t=4836> Again, prevention is the best defense – secure your coop well to begin with.

Another crucial part of pest-proofing is to keep food supplies secure. We recommend:

- Storing all food in a metal container: we recommend a 55-gallon galvanized garbage can with a tight-fitting lid, set up on bricks to keep the bottom from rusting, lined with a plastic garbage bag and the feed bag set inside that to prevent condensation (food that gets wet will mold, and breed disease: DO NOT FEED WET OR MOLDY FEED TO YOUR HENS).
- The metal can will also hold ground oyster shells and other supplements
- If the feeder is inside the henhouse, the system most of us use, an open-top box is fine. If it is outside, ensure it protects the food from getting wet, and keeps away rats. For a good design, see: <http://www.backyardchickens.com/LC-feeders.html>

If you keep your hens locked permanently in an adequately-sized, properly cleaned, and well-ventilated henhouse with no access to dirt, they will, on average, have fewer bouts with parasites than will hens with outdoor access. However, they will lose the pleasure of running outdoors, scratching in dirt, and bug-chasing, and you will lose the many garden-slave benefits of them eating bugs and making compost. Each family must weigh the advantages and disadvantages of that trade-off. Either system can be done humanely, so long as adequate space is provided. Most local keepers do allow outside access for hens, and use preventive measures to minimize and manage potential parasite problems.

To prevent mites and other skin parasites, your hens need to be able to take dust-baths, odd-looking rituals in which your hens will spin themselves in the dirt to get grit down between their feathers to help scratch itchy skin. Dust baths are important to chicken health, so make sure any outside birds have access to open, dry ground where they can take them, and indoor birds get a sandbox. For a video, see: <http://successwithpoultry.blogspot.com/2007/08/dustbathing-chickens.html>.

And of course, stay vigilant against predators over time, checking regularly for loose boards or other issues.

*Protecting Human Health:* In caring for your flock, you must also care for yourself, your family, and your neighbors. There is no need to get paranoid about this: small, well-managed backyard flocks pose few if any real health threats to humans. A flock of six hens will produce about ¼ pound of droppings per day, and that will rapidly degrade into the ground. Arguably, the birds will more than make up for that minor threat with reduced disease due to the many bugs they eat.

That said, chickens can and do carry a variety of diseases in and on their bodies and eggs that can be communicated to humans, from the familiar and relatively common like salmonella to some exotic and potentially very dangerous diseases. In order to protect against these, follow these key guidelines:

- Per the requirements of the New Haven ordinance, locate the coop at least 15' from any human habitation, and after they are no longer chicks, do not bring hens into your house
- Clean your coop regularly, as above, and check for and address any odors
- Make sure food is stored in vermin-proof containers, as above
- Be particularly cautious if anyone in your house or your immediate neighbors is immune-compromised in any way

- Follow USDA-recommended biosecurity procedures, including:
  - After visits to other flocks, bird shows, and live-bird markets, shower and change clothes and shoes before visiting your own flock (we recommend keeping a pair of old slip-on shoes to use only for working with your own chickens)
  - Don't share equipment between flocks without proper disinfection
  - Quarantine any new birds for 2-4 weeks before adding them to your flock, and any birds you have sent to a show for 2-4 weeks before returning them to your flock
  - Take any birds that have sickened or died for unexplained reasons to a lab to determine the cause of the illness, and report it if the illness is reportable.
  - Keep wild birds away from your poultry building and pens. Take care with location of bird-feeders, baths, birdhouses, etc. Especially, keep your coop at least 20' away from any pond, stream or other open water source, both to avoid contaminating the water, and to avoid cross-contamination between your flock and wild water-fowl (this has been a key source of avian flu in other countries)
  - Some experts recommend a solid roof over the entire henhouse/run to prevent your flock from coming in contact with wild bird droppings
  - If you travel overseas and have contact with foreign poultry or livestock, do not go near any types of birds or livestock for at least 5 days after returning home. Thoroughly clean all travel clothing, shoes, and equipment after returning home.
- Most important: WASH YOUR HANDS thoroughly after every time you handle your chickens or touch their coop. Proper hand-washing after handling your chickens is the single most powerful tool you have for preventing disease.

RECOMMENDED RESOURCES for further information about chickens and human health include:

- <http://www.clemson.edu/extension/hgic/food/nutrition/health/hgic4351.html>
- <http://www.worldwatch.org/node/5900>
- <http://cmr.asm.org/cgi/content/full/20/2/243>
- *The Chicken Health Handbook*, by Gail Demerow (Capital City Press, 1994) (chapter on human health)

Learning About your Flock: Over time, you will get to know your birds, and what is normal behavior for them. Some natural chicken behavior can seem a little odd till you get used to it, like:

- Turning heads sideways to get a good look at things (their eyesight is better that way)
- Scratching at food as if to partly cover it with dirt before eating it
- Continually jostling for predominance – that's where we get the term "pecking order"

Once you get to know what is normal, you will be better prepared to spot problems, as discussed in Section VII. For instance, if you take time to watch the quick, sometimes fierce but rarely if ever bloody jousting that is part of normal pecking-order pecking, then you will immediately be able to distinguish the sort of abnormal, violent and dangerous pecking that can happen when a particular hen is ostracized. There are many examples like this. Bottom line: take time to get to know regular day-to-day hen behavior, so you can recognize and know to deal with abnormal issues.

RECOMMENDED RESOURCES for information on normal chicken behavior include:

- <http://www.chicken-yard.net/general/behavior.html>
- [http://www.culinate.com/mix/dinner\\_guest/pecking\\_order](http://www.culinate.com/mix/dinner_guest/pecking_order)
- [www.backyardchickens.com](http://www.backyardchickens.com) – especially the forums

- <http://www.extension.umn.edu/distribution/livestocksystems/DI1192.html>

*Managing Molting:* One regular oddity to expect is seasonal molting, when all your birds will be out of sorts, drop large numbers of feathers (often leaving patches of bare skin), and reduce egg laying or stop altogether. If this happens in spring and fall when the weather is changing, it is simply seasonal molting.

During molting:

- Make especially sure your birds have plenty of access to clean water and good food
- Don't expect too many eggs
- Keep an eye out for severe weather changes – in a cold snap, rub Vaseline over any exposed skin

RECOMMENDED RESOURCES for further information on managing molting include:

- [http://msucares.com/poultry/management/poultry\\_feathers.html](http://msucares.com/poultry/management/poultry_feathers.html)
- [http://www.plamondon.com/ncp\\_newsletter030801.html](http://www.plamondon.com/ncp_newsletter030801.html)

*Arrangements for Chicken-Sitting:* With a good coop set-up, you can go away for a long weekend and not have to arrange any care. For a longer trip or vacation, you'll want to arrange for someone to watch your flock. Make sure they:

- Are familiar with your set-up and normal schedule
- Are comfortable with your birds
- Are not too squeamish in case a "yucky" job comes up like cleaning droppings from the water dish or a stinky broken egg from the nest box
- Are reliable

For more thoughts on chicken-sitters, see:

- <http://www.backyardchickens.com/forum/viewtopic.php?id=190068>
- <http://www.backyardchickens.com/forum/viewtopic.php?id=207202>
- And, believe it or not: <http://www.chickensitters.com/>

We hope that you also enjoy your flock! Hens that get watched most closely tend to be happiest, healthiest, and best-protected, and also tend to lay more eggs.

## **Section VI: Eggs....!**

Even keepers who view their hens primarily as pets generally enjoy the bonus of fresh eggs, and for hen-keepers who view their small flocks as mainly livestock, getting eggs is the Main Event.

When your hens will start to lay varies based on the breed, time of year, and other factors, but most hens lay starting at 4-6 months of age, some as late as 8-10 months of age. This again means that if you start your birds as chicks you will care for them for some time before they start to lay. Some hens are early-birds, however. Make sure that your hens have access to a nest box by 18 to 20 weeks old, in case you have an early layer (but do NOT use lights or other methods to encourage laying before 20 weeks).

Initial laying may be spotty, and some hens take a few months to get up to peak production. Once in their prime, hens will lay on average an egg every day and a half, so if you have the maximum six hens allowed by the New Haven ordinance, during their absolute peak production months you will get around two dozen eggs per week.

KEY TIP: Most hens will lay well from about 6 months to about 3 years

Actual production varies widely, however. Laying rates vary naturally by season (highest in late spring/early summer, lowest in winter and in the hottest part of summer), and can come to a halt during molting, for some days after a major predator scare, or whenever the hens are spooked. In actual practice, on a year-round basis, using humane methods only with six healthy hens in their laying prime you can reasonably expect to AVERAGE about a dozen eggs a week, or a bit more.

For most hens, egg production hits prime at about 8-10 months, and continues at a peak level (give or take seasonal and other variations as above) till around 36 months, then begins to taper off. While hens can lay occasionally till age 14 or 15 years, don't expect many eggs after age 4 or 5 years. As discussed above in Section I, if you are into hen-keeping primarily for the eggs, this means you must make some hard-nosed decisions about long-term flock management.

RECOMMENDED RESOURCES for general information on expectations for egg-laying include:

- [http://extension.unh.edu/resources/representation/Resource000472\\_Rep494.pdf](http://extension.unh.edu/resources/representation/Resource000472_Rep494.pdf)
- <http://www.backyardchickens.com/cgi-bin/faq/mojofaq.cgi?cat=1>

*Humanely Increasing Laying:* Commercial egg factories use an intensive schedule of light manipulation, feeding of hormones and antibiotics, and manipulation of protein ratios in the feed to increase production. For those interested, you can find a "recommended schedule" for maximum egg production at: <http://ag.ansc.purdue.edu/poultry/publication/commegg/>.

Fortunately, there are a variety of simpler methods for increasing laying, fully compliant with humane farming guidelines, based on two simple but powerful principles:

- First, hens lay most when they are happy, comfortable, interested in the world around them, protected from frights, and eating well.
- Second, hens lay most when the days are longest, and using even minor and non-intrusive manipulation of timed lights, you can trick them into behaving as if days are longer than they are

Given these principles, safe and humane methods for increasing laying include:

- Keep your hens safe from predators, and try to protect them from loud noises and other frights (the inverse: expect reduced egg production when your street is being worked on or your neighbor's house rebuilt)

- Never let your kids, or visiting kids, chase your chickens. Teach them to approach the coop calmly, and to offer the hens treats.
- Give your hens as much variety of experience as you reasonably can. If neighbors agree, when you are in your backyard, let them roam freely through the yard. Give them fresh dirt to dig.
- Vary their food. Try mixing up their basic feed – sometimes crumbles, other times pellets, occasionally mash. Give them the chance to dig and scratch for worms, and to eat fresh grass and leaves whenever they can. Offer treats. Toss interesting scraps into their pen whenever you have them and invite neighborhood kids to stop by to feed them extra treats.
- If they are tame, pet them and pick them up and encourage your kids and neighborhood kids to do the same. Especially for birds raised from chicks who are heavily attached to/imprinted on people, extra time with people seems to keep them comfortable and laying well.
- Within reason, use lights to artificially extend the peak-production season. For a good guide to use of artificial lighting for small flocks (including some good warnings on how and why not to OVERDO it and cause too early egg production), see: <http://www.umext.maine.edu/onlinepubs/htmpubs/2227.htm>

*Using those Home-Laid Eggs!* Most of us know what to do with a good supply of eggs, and in general, home-raised eggs are considered safer than eggs raised in highly concentrated production facilities. Backyard eggs are far less likely to have hormone or antibiotic residues, and also seem less likely to be contaminated by salmonella, coccidiosis, and other diseases. See for instance: <http://www.backyardchickens.com/forum/viewtopic.php?id=46763>. For statistically valid studies on the topic see <http://www.food.gov.uk/science/surveillance/fsis2004branch/fsis5004eggs> (note the differences found based on flock size).

In addition, studies have shown that eggs raised by free-range hens on a mixed diet that includes access to grass, bugs and other natural chicken foods may have lower “bad” LDL cholesterol, higher “good” HDL cholesterol, more vitamin D and other benefits as compared with store-bought, conventionally raised eggs. For a quick summary of this info see: <http://www.fitnessspotlight.com/2009/07/06/truth-isfree-range-eggs-healthier-store-bought-eggs/>

KEY TIP: Backyard eggs are healthy, but keep eggs clean and wash hands well to prevent diseases.

That said, there are some rules for safe handling of home-raised eggs. Key ones include:

- Don't let eggs sit in the coop too long. If you find an egg outside the nest box, don't use it unless you are certain it is still fresh. When in doubt, throw it out. See: [http://www.oregonlive.com/foodday/index.ssf/2009/01/how\\_long\\_can\\_eggs\\_sit\\_in\\_your.html](http://www.oregonlive.com/foodday/index.ssf/2009/01/how_long_can_eggs_sit_in_your.html)
- When collecting eggs, keep dirty and clean eggs separate
- While lower rates of salmonella and other diseases likely make backyard eggs safer to use raw than store-bought eggs (and thus may bring back the true flavors of everything from Caesar salad dressing to home-made ice cream!), caution is still advised:
  - Be sure that any eggs you intend to use raw are especially fresh, and clean.
  - Never serve food made with raw eggs to small children, pregnant women, or anyone else who is immune-compromised.
- Clean all eggs properly before use. For detailed proper washing instructions (water temperature, use of disinfectants, etc.) see: <http://www.ianrpubs.unl.edu/epublic/pages/publicationD.jsp?publicationId=798>
- That said, eggs have a natural protective film on them that you want to be careful about washing off if you will store the eggs before use (in commercial facilities, the eggs are washed in specially designed machines, then sprayed with artificial protectants). Instead:
  - Clean off visible dirt/droppings using dry sandpaper
  - If extremely dirty, wash and cook thoroughly right away, or throw the egg out

- Store clean but NOT washed eggs in the refrigerator
- Wash in warm water immediately before cracking open
- If you will use the egg raw or only partly cooked, wash in warm water AND disinfectant immediately before cracking open
- Wash your hands thoroughly after handling eggs.

RECOMMENDED RESOURCES for further information on egg safety include:

- [http://www.who.int/foodsafety/fs\\_management/No\\_07\\_AI\\_Nov05\\_en.pdf](http://www.who.int/foodsafety/fs_management/No_07_AI_Nov05_en.pdf)
- <http://www.abc.net.au/tasmania/stories/s1524716.htm>

Finally, do enjoy those eggs! One of the great benefits of backyard eggs is their extreme freshness relative to store-bought eggs that have been stored, shipped, warehoused, and then sat on shelves. This makes cooking everything from home-made ice cream to soufflés much easier. See for instance: <http://chowhound.chow.com/topics/487755>

Some of our favorite recipe resources include:

- [http://www.eatbetteramerica.com/recipes/breakfast-brunch/eggsegg-substitutes.aspx?WT.mc\\_id=paid\\_search\\_200300\\_636117&WT.srch=1&esrc=11214](http://www.eatbetteramerica.com/recipes/breakfast-brunch/eggsegg-substitutes.aspx?WT.mc_id=paid_search_200300_636117&WT.srch=1&esrc=11214)
- <http://www.epicurious.com/tools/searchresults?search=eggs>

Enjoy!

## **Section VII: Troubleshooting**

Many problems identified as common in the commercial poultry industry are in fact highly abnormal results of the extreme conditions in factory farms. Chief among these is active cannibalism. When crowded to the point that normal social/flock behavior breaks down, chickens become cannibalistic, actively attacking, killing and eating each other. Many egg-industry publications blithely label this behavior as normal, and calmly advise beak clipping or cauterization to reduce cannibalistic attacks.

Active cannibalism in chickens is NOT normal. Its presence in factory farms should convince us of the folly of highly concentrated egg production. For a good guide to the differences between normal chicken behavior and abnormal behavior related to overcrowding, see:

[http://www.hsus.org/farm/resources/research/practices/comparison\\_hen\\_welfare\\_cages\\_vs\\_cage\\_free.html](http://www.hsus.org/farm/resources/research/practices/comparison_hen_welfare_cages_vs_cage_free.html)

That said, as the guide above indicates, even under normal conditions issues may arise, including “passive cannibalism,” which IS, alas, normal for chickens. What this means is that if one of your birds is somehow wounded, the others may react to the sight of blood and begin pecking at the wound, making it worse. And of course, your flock is subject to temperature extremes and various parasites and diseases that you need to learn to watch out for.

Some of the issues you may see in a backyard flock, and basic thoughts on how to handle them, include:

- Panting/breathing heavily: your hens are too hot. Make sure they have access to shade and cool water. In extremes, treat for heat stroke by sprinkling them with cool water
- Huddled together/shivering: your hens are too cold. Make sure they have dry shelter out of drafts. In extreme cold weather (below 0 degrees Fahrenheit) consider providing a heat lamp. Adding treats high in fat will also help. If a hen gets frostbite (most common on the comb – you will notice the skin turning grey or very dry-looking), coat the affected area with Vaseline, and try to better draft-proof or provide a heat light (40 watt red light bulb) going forward
- Feathers thinning: Probably normal molting (see Section V), which can vary in timing/length between breeds/birds. But may be a sign of mites. See: <http://www.backyardchickens.com/LC-mites.html>. Mites can generally be prevented by keeping the coop clean, and making sure hens can take dust baths (<http://successwithpoultry.blogspot.com/2007/08/dustbathing-chickens.html>). Once mites appear, you may need to treat chemically to get rid of them.
- Feather-picking: Generally a sign of boredom/being cooped up. Give them more free time outside. Can also be a sign of mites, as above.
- Hen (especially young hen) listless/thin, not eating, but has a bulge or hard area at the front base of neck: may be crop-bound. See: <http://successwithpoultry.blogspot.com/2007/07/crop-bound-chicken.html>. To help prevent this, do not feed tree leaves or other very stringy material to young hens.
- Hen eating normal/larger than normal amounts, but seems listless, not gaining weight, and/or not laying: may be worms. For information on worms, see: <http://edis.ifas.ufl.edu/VM015>. You can treat for worms organically using diatomaceous earth (make sure you get the food-grade kind, see: [http://www.backyardchickens.com/web/viewblog.php?id=1560-Food\\_Grade\\_DE](http://www.backyardchickens.com/web/viewblog.php?id=1560-Food_Grade_DE)), which can take time but is generally perfectly effective, or chemically using a veterinary dewormer. Local hen-keeper Jane Garry has veterinary deworming supplies available and has kindly volunteered to be contacted by other local keepers who need these, 203-891-6652.
- Hens are eating, but seem thin, and droppings seem to contain undigested grain/feed: may need more grit in feed.
- Eggs have very thin shells/break very easily: calcium deficiency. Make sure you are feeding chicken feed formulated for laying hens, and also supplement with ground oyster shells or other source of easily absorbed calcium. Occasionally egg will have no shell/be rubbery: this MAY be

an extreme case of calcium deficiency, especially in very young hens. But it can also be a genetic condition that is probably not treatable and may lead to other complications.

- Hen moving erratically as if in pain/distress, humping back, shaking head, has not laid for some days, especially with hens who have a history of laying large eggs: may be egg-bound. See: <http://www.poultryhelp.com/eggbound.html>
- Feet swollen: may be Bumblefoot – see: <http://successwithpoultry.blogspot.com/2009/09/bumblefoot-chicken.html>
- Leg scales rising/uneven, seem itchy (hen scratching at her own legs): may be scaly leg mites. See: [http://msucares.com/poultry/diseases/poultry\\_shanks.html](http://msucares.com/poultry/diseases/poultry_shanks.html)
- Ostracism: It is rare but possible for the social order of the flock to break down and a bird to be ostracized from the flock and attacked by the others even in the absence of over-crowding. This is different from normal pecking-order pecking, very fierce, may cause wounds. Separate the ostracized bird, treat any wounds, and reintroduce her to the flock only gradually.
- Wounds: If a bird is wounded, clean the wound with warm mildly soapy water then flush with clean water or saline solution and hydrogen peroxide, add an anti-bacterial salve like Neosporin or Derma-Gel, and cover if possible. Separate the bird from the flock (ideally in a smaller area sectioned off within the covered run, with an enclosed box to go in at night) until the wound is basically healed over to prevent pecking by other hens (hens heal remarkably fast). Also, try to identify how the bird was wounded (a loose nail? A sharp board-end?) and correct the problem to prevent further wounds. For more information on handling wounds, see the very good Nathalie Ross article reproduced at: <http://www.backyardchickens.com/forum/viewtopic.php?pid=2544011>.

RECOMMENDED RESOURCES for further advice/information on diseases/parasites/other issues in backyard flocks include:

- <http://www.avianweb.com/chickendiseases.html>
- *The Chicken Health Handbook*, by Gail Demerow
- Various forum topics on [www.backyardchickens.com](http://www.backyardchickens.com)

If your chicken has a wound or disease that is more than you can handle with home-treatments, you can try consulting with more experienced hen-keepers, either locally or via online forums. If that fails, you will need to decide between calling the vet (see local resources in Section I), or culling the hen.

If you do need to cull, please do so humanely, using the same methods recommended for humane slaughter for meat consumption (see Section I). However, NEVER eat a bird slaughtered due to disease or wounds, some infections can remain even in fully-cooked meat. Instead, burn the bird if you can, or else bury her at least 2-3' deep, or double-wrap in plastic and dispose of her in the trash.

Again, many if not most diseases or other mishaps that can befall chickens can be prevented with proper coop design, feeding procedures, and maintenance. Forewarned is forearmed, and strong knowledge well applied is the best defense. Good luck, and may your hens be happy and healthy for years to come!

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