

Finished Duck Pen; 50 ft²; dimensions 5'x10'x30"

- 1. Cut lumber to needed sizes as described in the materials list
- 2. Assemble 2"x2" frame
 - a. Drill 5/16" holes in 2"x2" pieces
 - i. Four each, 30" vertical legs:
 - 1. Drill 5/16" hole at 2" and 29" in north/south direction
 - 2. Drill 5/16" hole at 1" in east/west direction
 - ii. Four each, 60" horizontal ends:
 - 1. Drill 5/16" hole at 1" & 59" points
 - iii. Two each, 120" horizontal sides:
 - 1. Drill 5/16" at 1" & 119" points
 - b. Assemble w/carriage bolts, washers, lock washers & nuts
 - i. Bolts should point toward the inside of the pen
 - ii. A hammer is helpful to pound the bolts into tight fighting wood holes
 - c. Put top 1"x3"x10' for top of sides
 - i. Use 1-5/8 wood screws
 - ii. Do one screw at the end of each board to allow for flexing during construction. The 2nd screw for each end will go in later.
 - d. Install the edge of the "duck door" frame.
 - i. One 1"x3"x30" goes vertically to leave a 2' wide opening for the door.
 - ii. This vertical frame should be attached to the inside of the pen.
- 3. Stretch diagonal wire cross bracing



A nail holds the brace wire at the top of the frame corners



Offset frame so bolts do not hit each other

- a. Place wood screws & nails into 2''x2'' frames with $\frac{1}{4}''$ of head exposed to wrap wire around
 - i. One 16D nail at top of each leg (don't try to pound in through the carriage bolt).
 - ii. 1 screw a midpoint of each 10' side (bottom, outside)
 - iii. 1 screw at midpoint of one 5' end (bottom, outside)
 - iv. 1 screw at 24" from one side of 5' end (bottom)-this will leave room for the "duck door" at the foot of the pen.
- b. Stretch wire from one top nail to the next bottom screw in a zig-zag, "W" pattern around the frame.
 - i. Use care so you do not cross where the "duck door" will be. Start at the one side of the door, go around the long way, and end at the bottom of the doors' other side.
 - ii. One full round turn should be on each screw/nail head to secure it
 - iii. The wire should be tight, and the pen square when the wire bracing is completed.
 - iv. The bottom sides will flex up some in due to the tension of the wire
- 4. Put final parts on the frame
 - a. Spreaders on the middle of the sides
 - i. These help keep the side bracing wire taut
 - ii. Wood screws secure the 1"x3"x30" vertical boards in the middle of each side on the inside of the pen. One on each side.
 - iii. The screws at the top of the spreader should be angled so that the ends don't poke through the wood.
 - 1. Drive the screws from the outside into the top of the spreader, which is on the inside of the pen.
 - 2. Angle the screws about 45" down
 - iv. The screws for the bottom of the spreaders are driven from the inside of the pen into the 2"x2" frame
 - b. Optional: install 2"x2"x5' bottom board to help stabilize the bottom boards.
 - i. It touches the ground, and divides the pen floor into two 5'x5' squares.
 - ii. First, install wire between the two sides to keep tension on this board. The wire should be a little too short for the board to slide easily in place.
 - iii. Install the board by placing one end against the bottom frame, and hammer the other end against the other frame. The goal is for this board to hold tension in the cross wire.
 - iv. Use nails, not wood screws to secure the board to the frame
- 5. Install "duck door"
 - a. Use long narrow crow staples to fasten the door corners.
 - i. Shoot them all the way through, then bend them over with a hammer. This makes a very secure connection & is simple.
 - ii. Create a frame of 1"x3" material that is 23" wide & 28" tall







A spreader keeps the poultry netting tight

- Put 1 staple through each corner first, and make sure the door is square before adding more staples to stiffen it.
- iv. Add staples so that each corner has 3-5 staples spread an inch away from each other.
- b. Use $\frac{1}{2}$ galvanized hardware cloth to screen the door.
 - i. You will need a piece that is at least 17"x22". Use a diagonal cutters or tin snips to cut the piece to match the frame.
 - ii. Use the $\frac{3}{4}$ staples to fasten the hardware cloth screen to the inside edge of the door frame you just made.
- c. Attach 2 light duty hinges to the top of the door.
 - i. Inspect the hinge & door first so the hinge location makes sense for were the door is.
 - ii. The finished door will swing UP to open and DOWN to close
 - iii. A long twig or handy stick will be used to prop the door open
- d. Attach the gate latch to the bottom of the door
 - i. Drill a $\frac{1}{2}$ hole into the 2"x2" frame for the 5/16" lag screw. Line it up so the latch will grasp the lag screw to hold the door closed.
 - ii. The door should drop closed and latch on its own.
- 6. Staple on the 24" hex netting for the sides
 - a. Attach the bottom first, all the way around
 - b. One ¾" narrow crown staple goes every 6" 8"
 - c. Flip the pen upside down to staple the top edge of the wire mesh. These staples go into the narrow edge of the top frame.
 - d. Stretch the netting tight as you staple the top in. Let any extra bend into the inside of the pen. Tight wire on the sides helps a lot in the finished pen. 1" hex poultry netting is very stretchy in

the vertical direction.

- 7. Build & install the tilt roof
 - a. Layout corrugated vinyl roofing material on a flat surface. The corrugations should make the 3 pieces nest together.
 - b. Cut the wiggle molding to length.
 - i. Use care to make cuts so that the ends of the corrugations line up with the ends of the molding.
 - ii. The ends of the corrugated roofing both point the same way (either to a "peak" or a "valley"), depending on which side is up.
 - c. Use long staples to fasten wiggle molding onto three 1"x2"x57" boards.
 - d. Slide one wiggle molding under each end of the corrugated roofing, so that there is about 1" of overhang extending past the wood. The third piece of wiggle molding goes in later
 - e. Use #6 x 1½" hex screws to fasten the vinyl roofing onto the wiggle molding beneath it.

Tilting lids give needed shelter & shade line up with the ends

Drive a screw every 3rd "peak"



The door latches closed easily



- i. Screw through the "peaks" rather than the valleys
- ii. Use one screw for every other peak.
- iii. If it is warm (above 65° F), you will not need pilot holes. Driving screws through cold plastic could crack it.
- f. Use wood screws to fasten the three 1''x2''x48''
 - boards onto the bottom of the roof.
 - i. This will give depth & stiffness needed for the roof.
 - ii. The three pieces of wiggle molding will be perpendicular to the three other boards beneath them to form a square support for the roof.
- g. Install the 3rd wiggle molding into the roof assembly
 - i. Put the whole assembly onto the pen so you can adjust the location of the middle support
 - ii. The hinge screws should pass through the two perpendicular boards which support the roof, so the middle one needs to be in the right spot.
 - iii. Mark the spots where the hinges will go with a pencil & then move the roof back to the floor.
 - iv. Screw the vinyl onto the middle wiggle molding from the top.
 - v. Use 1-5/8" wood screws to fasten the hinges in place where you marked with the pencil
- h. Attach the roof onto the pen
 - i. Climb inside the pen & close the roof over you.
 - ii. Attach the two hinges to the cross joist.
- i. Use a swivel hasp to secure the roof closed against windy weather or raccoons
- j. Use chains on each corner to prevent the door from opening too
 - far and twisting the joist it is mounted on.
 - i. One end is attached to the frame corner
 - ii. The other end is attached to the corner of the roof
 - iii. Squeeze the end link with a pliers to make it narrow
 - enough for the nail or screw head to hold it securely
- 8. Stretch poultry netting over the top of the pen.
 - a. Wrap the netting around the joist next to the tilting roof, so that the wire ends won't post a "scratch hazard" to people reaching into the pen.
 - b. Use $\frac{3}{4}$ " staples to secure the netting in place
 - c. Cut the ends of the poultry netting to size after it has been stapled in place.
- 9. Screw handles into the top ends of the pen to help when moving it
- 10. Make hanging feeder from remaining 1"x6" cedar so you don't have to pick it up when moving the pen.
 - a. Use heavy wire to hang it from the joist supporting the lid of the pen



A swivel hasp holds the lid shut



"No scratch" netting wraps around inside



Bend the end link so it fits tightly to the nail

Discussion:

Brace wire should not be on the inside of the frame, because there will be about 1" between it and the poultry netting. Ducks will get their heads caught in this gap sometimes. They can get free pretty easily, but it isn't a pleasant experience for the duck.

Top ends need to be $2^{"}x2^{"}$ material to handle the strain of dragging the pen across the grass.

The ends of the bottom frame should be higher than the

bottom sides. This extra inch makes a tremendous difference in the effort required to drag the pen across the grass.

Carriage bolts are required at the points described. I tried wood screws and they started pulling out after only a week of use.

The center cross brace may be optional, but I haven't tried a pen without it yet. It poses a hazard to the birds when moving the pen. Sometimes the birds get their feet stuck underneath it during the move.

I've used gutters to direct rain water runoff into a water tub. This worked great except ducks use more water than falls as rain. This would probably be more successful with chickens. A Plasson bell poultry waterer works great with a bucket reservoir. Drawbacks are the fact that a bucket full of water is heavy, and the water ballast tank of the waterer itself is also heavy. 8 ducks will easily puddle through a 5 gallon bucket of water in a day. They use the water to clean their bills. I've gone back to 2.5 gallon tubs for waterfowl, and the chickens get the Plasson Bell. In my area of western WA, a gallon of water is enough for several days for the 6 chickens in the pen. In the winter, the rain falling in the bucket is enough to keep up with what 6 hens drink. Use the shorter waterers for these short pens. There is barely enough headroom in my pens for the tallest one.

Use a short swivel hasp. I installed a 4" one and I think it left too much room for raccoons to get into the pen.

I've been able to capture returning raccoons by putting raw fish bones in a have-a-heart trap next to the pen. Remember to check the trap daily, and make sure you feed the cat the same evening that the trap is out.

Chickens are more vulnerable to raccoons because they sleep at night. They need to be trained to go into the nesting box. Mine learned to huddle together in the nest box only after there was snow on the ground. Now that it is spring, they have kept the routine up. This is safer for the chickens, but makes the nest box messier. (My choice is for safe chickens & dirty eggs.)

To get clean eggs, you must keep chickens out of the nesting box at night, because they leave their "calling card" deposit when they wake up in the morning. Allow them access to the nest box during the day.



A hanging feeder makes moving the pen easier

Chicken specific options:

- 11. Install egg laying boxes with exterior access door.
 - a. Bottom uses ½" hardware cloth
 - b. Make sure lid has a latch to keep chickens from popping out on their own, or letting raccoons in.
- 12. Install chicken roost
 - a. A tree branch works well
 - b. Support branch with a "V" of bailing twine so it will not swing. Do not use wire, which will eventually break with use.
- 13. Plasson Bell watering system
 - a. Supply from bucket setting on top of pen joists
 - b. Drill a hole in the bucket and pull vinyl tubing through with a pliers. No complex plumbing required for this low pressure setup.
 - c. Recommend either Broiler drinker or Compact Adult drinker styles. http://www.gillisag.com/poultry/plasson.php



The tubing fits tightly in a hole in the bucket