

My Balsa & Glass Workshop

3D Printed Bird Houses

Print & Assembly Descriptions

As of 27 July 2026

Stone Birdhouse

My daughter-in-law Beth in TN likes her yard birds almost as much as I do here in NC. Since my wife and I were planning a visit to TN, I thought I would see what I could find in the way of a birdhouse for her back yard.

After some cruising around on the web, I was able to find a very nice and interesting outdoor birdhouse 3D model by Sonia Verdu (she lives in Spain) on cgtrader.com (<https://www.cgtrader.com/3d-print-models/house/outdoor/birdhouse-3-pieces/>) Her downloadable package includes three STL files, one each for the bottom, middle, and top sections of the 3D model. This is a simple model to print, fits together great, and her design details are very nice. *I really like it.*



Source of Images: cgtrader.com (<https://www.cgtrader.com/3d-print-models/house/outdoor/birdhouse-3-pieces/>)

Using my Creality Print slicer I increased all three STL part sizes by 110%, which was as large as I could go and still have the parts fit on my Ender-3 V3 print bed. I then printed the three parts at 200mm/sec. using some **Bone White** eSun PLA+ filament with a 0.4mm nozzle, 3 wall loops set at a 0.2mm layer height and 0.42mm layer width and used a 15% sparse infill. No supports or brims were required.

The total print time for all three parts was 23 hours, 25 minutes, and required 579 grams of filament. Since I decided to use some PLA I already had on the shelf, I applied a couple layers of Papilio Clear UV-protective spray coating to all surfaces of the model to help it withstand the outdoor elements. If I make more of this 3D model, I will use PETG instead of PLA since the PETG is much better suited for the outside environment. I assembled the three parts using some CA glue with the final results shown in

the next two images below. Since the front opening is large enough to support annual clean-out of the birdhouse, having to disassemble the birdhouse will not be required. I decided to leave any final detail painting for Beth to do as she wants.



Our NC Yard 3D Printed Bird Houses

As I stated above, we have several (14) different birdhouses placed around our yard here in NC. All were hand built using pressure treated wood and then painted different colors. Over many years of use by our many winged friends, even with yearly cleaning and repairs they are starting to look really ragged, so I decided to start replacing them with various 3D printed birdhouse models. As I work through the printing and assembly of the birdhouse models, I will update this document and post images of the selected models to my 3D Modeling & Printing webpage.

Wood Birdhouse

The first old birdhouse replacement was accomplished using a simple 3D model I found on cgtrader.com (<https://www.cgtrader.com/3d-print-models/house/outdoor/wood-bird-house>). This little birdhouse is a simple design from Prostlstudio, made to look like real wood and has only four parts.



I put each part into my Creality Print slicer and set each of them up to print with **Brown Elegoo** PLA using a 0.4mm nozzle, 0.2mm layer height, 0.42mm layer width, two wall loops, three top and bottom shell layers, 15% rectilinear infill, and a 200mm/sec. print speed. No supports or brims were required. The longest single part print time was 6 hours, 33 minutes for the birdhouse body, and it used 137 grams of filament.

After adjusting the size of the small holes on the bottom side of each roof part so the birdhouse body alignment pins would fit, I used CA glue to assemble the parts. All parts were spray painted using a Clear UV-protective spray coating to help it withstand the outdoor elements. I then made a wooden platform from an old pressure treated fence slat to mount the birdhouse to our South property border fencing as seen in the image below. Now to see if any of our yardbirds will use the 3D printed model.



Harry Potter Birdhouse

The second old birdhouse replacement was accomplished using an interesting 3D model I found on cults3d (<https://cults3d.com/en/3d-model/architecture/harry-potter-bird-house>). A very simple but interesting designed by LittleTup, this *Harry Potter Birdhouse* is composed of just three parts.



For this model I decided to use some **Satin Rainbow** Panchrome PLA I received as a Christmas gift. Using Creality Print I set each part up using a 0.4mm nozzle, 0.2mm layer height, 0.42mm layer width, two wall loops, five top and bottom shell layers, 15% rectilinear infill, and a 200mm/sec. print speed. "Organic tree" supports were required for the two main parts. Total print time for all three parts was 14 hours, 19 minutes, and they used a total of 353 grams of filament.

Again, I spray painted all parts using a Clear UV-protective spray coating to help the parts withstand the outdoor elements. The top and body parts were jointed together using double sided servo mounting pads so I can remove the top to clean out the birdhouse each fall. After making another wooden platform from an old pressure treated fence slat, I mounted this 3D birdhouse model to the top of one of our property South border fenceposts as seen in the image below.



Fairytale Birdhouse

Ok, so I now have two of the South fenceline post tops birdhouses replaced, but I still need to replace two more that are mounted on tall PCV poles above other South fenceline posts. For the first one I decided to use a nice little 3D model I found on cults3d (<https://cults3d.com/en/3d-model/home/fairytale-birdhouse>). This *Fairytale Birdhouse* is a design of IDMYRON and 3D printed using 11 STL files.



I first selected five of the parts (Circle, Door, Window, Porch, and Rear Support) that I wanted to print with **Black** Creality CR-PETG. Using my Creality Print slicer I set them up to print using a 0.4mm nozzle, **0.3mm** layer height, 0.42mm layer width, two wall loops, three top and bottom shell layers, 15% rectilinear infill, and a 200mm/sec. print speed. No supports or brims were required, but I did run a skirt around all of the parts to prime the nozzle. Next up was the Roof part with **Grey** Creality Hyper-PETG, then four parts (Main, Front, Back, and Details for Door) with **White** Creality CR-PETG, and finally the windowpanes (Window part 2) with **Transparent** Creality CR-PETG. All these parts used the same slicer settings as I used for the five Black parts. Total print time for all 11 parts was 16 hours, 41 minutes, and they used a combined total of 521 grams of filament. **Note** - While printing the parts, I decided to make two sets so I would have another Fairytale Birdhouse to replace an old wood one on our West fenceline. I also decided to make a perch to help the birds enter and exit through the round opening. It was sized to a 6.35mm round diameter by 63.5mm long and printed using **White** Creality CR-PETG.

The **Fairytale Birdhouse** model assembly steps are provided via several images displayed on the model's webpage. I used CA glue to attach the Circle, Perch, Door with Door Details, Window with windowpanes, and Porch to the Front. I then ran two #6 x 0.5" sheet metal screws through the back of the Front part into the two attachment holes in the Porch. The Roof was CA glued to the Main part and the Rear Support was secured to the bottom of the birdhouse using #8 x 0.75" and #8 x 1" panhead screws with nylon locking nuts. The Back part was attached to the Main part using six #6 x 0.5" sheet metal screws and the Rear Support was attached to wooden backplate using two #10 x 1.75" wood screws.



Stone Castle Birdhouse

I still needed to replace another old wooden birdhouse which is mounted on a tall PCV pole above our South fenceline. For this one I decided to use yet a very cute 3D model I found on makerworld.com (<https://makerworld.com/en/models/1391133-stone-house-birdhouse#profileId-1441340>). This **Stone Castle Birdhouse** was designed by Dodo7o7 and can be 3D printed using just five STL files.



Using my Creality Print slicer I first took the original House STL file and made a cut such that the Base portion was separated into a new STL file from the House STL file. Then I setup the main House STL part to print with **Grey** Creality Hyper-PETG using a 0.4mm nozzle, 0.2mm layer height, 0.42mm layer width, two wall loops, five top and three bottom shell layers, 15% rectilinear infill, and a 200mm/sec. print speed. This part required support enabled for "critical regions only" using an "Organic Tree(auto)" setting. I then took the new Base STL part and 3D printed it with **Brown** Elegoo PLA using the same slicer settings, except no supports were needed.

With those finished I next printed the Door and Window STL files with some **Black** Creality Hyper-PETG using the same slicer settings as the House. Finally, I printed the two Roof STL files with **Copper** Giantarm Silk-PLA, using a 0.4mm nozzle, 0.2mm layer height, 0.42mm layer width, three wall loops, Classic wall generator with Inner/Outer/Inner wall print order, five top and bottom shell layers, 15% rectilinear infill, and a **slow 60mm/sec.** print speed needed for Silk-PLA. Total print time for all six parts was 23 hours, 2 minutes, and they used a combined total of 514 grams of filament.

The **Stone Castle Birdhouse** model assembly was straight forward, and everything fitted together fairly well. Some trimming was required on Roof2. I applied a couple layers of Clear UV-protective spray coating to all surfaces of the PLA parts to help them withstand the outdoor elements. CA glue was used to join the parts, except for the pointed Roof1 part so it can be removed to perform yearly house cleanings.



Swallows Nest

We have a covered concrete area along the side of one of our old tobacco buildings. Over the past couple years some Swallows have built nests up under the large covering, first on top of my security lights, then on top of the center support beam at the open end of the covering. Problem is that every time we get a large storm, the wind blows their nest off the beam, and they have to rebuild a new nest.

So, I decided I would help them out by putting a nice 3D printed Swallows nest up where they keep building their nest. After cruising the internet, I found a simple 3D model on makerworld.com (<https://makerworld.com/en/models/1321999-swallow-s-nest#profileId-1358349>). This model was designed by 3DOmli and can be printed on a standard size 3D printed using just a single STL file. He created his swallow's nest model based on size data from the Hungarian Ornithological and Nature Conservation Society and indicated it should be suitable for both barn swallows and house martins.



Using the latest version of Creality Print (7.2) I set up the STL file to print with **Brown Elegoo PLA** using a 0.4mm nozzle, 0.2mm layer height, 0.42mm layer width, two wall loops, four top and bottom shell layers, 10% rectilinear infill, a 200mm/sec. print speed, something new for me, a Fuzzy Skin setting. No supports or brims were required. Total print time for the single part was 3 hours, 28 minutes, and it used 135 grams of PLA filament. I applied a couple layers of Clear UV-protective spray coating to all surfaces

of the PLA part to help it withstand the outdoor elements. The model has small drain holes at the bottom of the center. I moved the nesting material from their last nest on top of the wood beam and placed it inside my 3D nest. Now to see if they will take to this new nest.



Classic Birdhouse

I still have a couple other old wooden birdhouses on the South fenceline post tops that need to be replaced. While I was looking through files in makerworld.com, I came across a model for a nice **Classic Birdhouse** with a mounting bracket (<https://makerworld.com/en/models/407928-classic-birdhouse-with-mounting-bracket#profileId-3261464>). This model is a design from Techro3D and can be 3D printed using just six STL files to produce the 12 parts needed for assembly. The design not only has a nice mounting bracket, but also allows for water drainage, fresh air through ventilation ducts, a removable roof for cleaning, and a front opening of 32mm with a perch.



Once again using my Creality Print slicer I setup the various STL files for printing. Since I will also use this model on my West fenceline, I printed two sets of parts. I started with the smaller parts (perch, four house to mount attachment screws, four roof hold-down pins). For these I used **Black** Creality CR-PETG using a 0.4mm nozzle, 0.2mm layer height, 0.42mm layer width, two wall loops, three top and bottom shell layers, 50% rectilinear infill density, and 200mm/sec. print speed. No supports or brims were needed. Next was the mounting bracket using the same slicer settings except for an infill density of 25%. *Last item was a ladder I made (40mm x 165mm) which mounted against the inside front wall of the house body just to one side of the round opening to aid my feathered friends in reaching the exit. With some further examination of the perch, I modified the STL file so the perch would extend 30mm on the inside and 50mm on the outside of the birdhouse.* Print time for a single set of all the **Black** parts was 6 hrs. 21 min. and required 157 g. of filament.

With those finished I changed out the filament for some **Grey** Creality CR-PETG to print the roof using a 0.4mm nozzle, 0.2mm layer height, 0.42mm layer width, two wall loops, three top and bottom shell

layers, 15% rectilinear infill density, and 200mm/sec. print speed. Supports were needed for this part. Print time for the roof was 6 hrs. 42 min. and required 176 g. of filament.

Last part to print was the main house body. For this I used **Blue** Creality CR-PETG for the South fenceline birdhouse, and **Orange** Creality CR-PETG for the West fenceline birdhouse. **Note - For the Orange birdhouse, I increased the opening to a diameter of 38.0mm (1.5") so it could be used by our Bluebirds.** Using a 0.4mm nozzle, **Variable layer height (0.13-3.0mm)**, 0.42mm layer width, two wall loops, three top and bottom shell layers, 15% rectilinear infill density, and 200mm/sec. print speed, the print time for a house body was 11 hrs. 17 min. and required 326 g. of filament. No supports were required. **If you would like the modified STL file for the main house body with larger sized opening, just send me an email to niemanl@balsaandglass.com and I'll send you the file. Same for the ladder and modified perch.**

Assembly of the birdhouse was straight forward, simple, required CA gluing only for the perch and ladder, and three wood screws to attach the mounting bracket to the wood slat on my fence post. **In order to get the four large corner bolts to fit, I had to reduce their size to 97.5% in all three directions.**



Bluebird Birdhouse

We have had at least three pairs of Eastern Bluebirds in our NC yard for several years. They seem to like using the birdhouses I have up on PVC poles mounting to the posts on our West fenceline. To replace the old wooden ones, I wanted a 3D model that was designed specifically for bluebirds. Bluebird houses (nesting boxes) require specific dimensions and design features to attract bluebirds and protect their nests. Some of these features include a specific size of access hole, and internal "ladder", and a "no perch" requirement. Here is a useful link on bluebirds and their nest boxes : <https://www.audubon.org/news/how-build-bluebird-nest-box>.

After cursing the internet for a 3D model that would fit my requirements, I selected a very nice and simple designed **Bluebird House/Nest Box** that I found on Printables.com (<https://www.printables.com/model/832468-bluebird-housenest-box>). This **free** model was designed by "kaje" and has five STL files to 3D print the parts needed for the nesting box, plus two additional parts in a related publication (3D model) for mounting the house to a round pole, and another related 3D model to construct a M4x20 thumb knob used to secure the house front in place.



Using my Creality Print slicer I setup the various STL files for 3D printing. I started with the larger main parts (roof, body, front, and bottom). For these I selected **Purple** Creality CR-PETG using a 0.4mm nozzle, 0.2mm layer height, 0.42mm layer width, three wall loops, three top and bottom shell layers, 20% grid infill density, and a 200mm/sec. print speed. No supports or brims were needed. Next was the lock using the same slicer settings except for an infill density of 50% and five wall loops. Print time for a complete set of all five birdhouse parts was 17 hrs. 48 min. and required 531 g. of PETG filament.

I then setup the three STL files for the mounting bracket, mounting block, and thumb knob. ***I modified the two mounting STL files so they would fit around a 33mm diameter PVC pipe.*** Using some **Black** CR-PETG filament I adjusted the slicer settings to print using four wall loops and 50% grid infill. Total print time for these three parts was 3 hrs. 6 min. and required 78 g. of PETG filament.

The **Bluebird House/Nest Box** assembly was very simple using the instructions provided by the designer with the STL files download. All required hardware (bolts, nuts, washers) were clearly listed in the instructions. ***The only modification I needed to make was to drill some holes along the perimeter of the bottom part to allow for water drainage.***



Crooked Birdhouse

Three of the old wooden birdhouses along our West fenceline were built to try and mimic the "Whoville" (Dr. Seuss) style of homes. In my search to find some 3D models to replace these, I came across an interesting birdhouse designed by "cmcguirk" named "**Crooked Birdhouse**" (<https://makerworld.com/en/models/453409-crooked-birdhouse?from=search#profileId-360725>) that I felt was a similar style as my old wooden birdhouses.



This **free** 3D model was downloaded using the link I provided above and contains 15 STL files for the various parts. A detachable porch slides over the variable hole part on front of birdhouse , this itself is interchangeable with popular bird hole sizes, depending on what type of bird you want to use it. The roof is detachable to support annual cleaning.

First thing I needed to do was determine what filament colors to use for each of the various parts. I'm not a fan of using black for a roof because it would generate high internal birdhouse temperatures during the summer, so I decided to use my standard **Gray** Creality CR-PETG for the three different Roof parts. Using a 0.4mm nozzle, 0.2mm layer height (*variable layer height on the main roof part*), 0.42mm layer width, two wall loops, three top and bottom shell layers, 10% grid infill density, and a 200mm/sec. print speed, the total print time for these three parts was 9 hrs. 16 min. and required 256 g. of Gray PETG filament. Then I printed the Roof Supports and Chimney with **Black** Creality CR-PETG. Total print time for these three parts was 24 min. and required 15 g. of filament.

Next were the various Windows and Porch Hole. Here I used **White** Creality CR-PETG, selecting the small hole STL file and *did not* print the Porch Extension. For the five Windows and Porch Hole the total print time was 1 hr. 55 min. and required 42 g. of filament.

Last two parts were the Loft and Main Body. For these I selected some **Green** Creality CR-PETG. *Before printing the Main Body, I modified the STL file to add 8mm holes in each corner of the bottom for water drainage, 4mm holes in the bottom for mounting screws, and a couple 10mm holes along the back wall near the peak and three 10mm square cutouts under the shorter side overhang to allow for cooling airflow.* Using the same slicer settings as used with the Grey parts, the total print time for these last two parts was 13 hrs. 3 min. and required 388 g. of filament.

Assembly of this model was not difficult and only required CA glue. I first painted all the Windowpanes silver, then attached them to the Loft and Main Body, along with the Porch Hole part. The Loft, two smaller Roof parts, Chimney, and Roof Supports were then glued in place. *I also used 3Mx16mm screws at the peaks on the front and rear to secure the Roof to the Main Body.*



"Tooned" Birdhouses

Having found one replacement for my West fenceline "Whoville" (Dr. Seuss) style of homes, in my next internet search I came across some birdhouses designed by "PA1_MAKER" named "**Tooned Birdhouse**". One of the three I liked was "**The Shack**" (<https://cults3d.com/en/3d-model/home/toon-birdhouse-the-shack>). A couple nice things about this model are that it has three sizes of entrances included (28mm, 32mm and 38.5mm) so you can select one depending on which bird you want to attract, and a large removable back plate for cleaning between seasons.



The downloaded STL package contains 29 STL files for all the model parts, along with some very nice, detailed instructions with exploded views for assembly of the model. All parts were already placed in the right orientation in the slicer, and being a multi-parts design there is no need for painting. The model fits any 220x220mm print bed or larger, is easy to print, and is optimized for a 0.4 nozzle with a 0.3 layer height for faster print times.

As with my other birdhouse models, the first thing I needed to do was determine what filament colors to use for each of the various parts. For the Main Body, Back Plate, and Front, I decided to use some **Yellow** Creality CR-PETG. Using a 0.4mm nozzle, **0.3mm** layer height, 0.42mm layer width, three wall loops, three top and bottom shell layers, 15% grid infill density, and a 200mm/sec. print speed, the total print time for these three parts was 12 hrs. 27 min. and required 347 g. of Yellow PETG filament.

I then swapped out the filament for a spool of **Tan** Creality CR-PETG, and started 3D printing the Roof, Door Frame, Porch, Front Window, and Side Window parts using the same slicer profile as above. The total print time for the five parts was 9 hrs. 43 min. and required 264 g. of Tan PETG filament.

Next up were the two styles of Window Planks, the Roof Repair Wood Planks, and the Door Panel parts. For these parts I selected **Brown** Creality CR-PETG and used the same slicer profile. The total print time for the four parts was 39 min. and required 17 g. of Brown PETG filament. With those finished I

loaded up a spool of **Gray** Creality CR-PETG to print the five Chimney parts and three different Steel Repair Plates. For these eight parts the total print time was 1 hr. 28 min. and required 28 g. of Grey PETG filament.

Using **Black** Creality CR-PETG I next printed the two Front Windowpanes, the side Broken Window Corner; of which they used 7 g. of filament and 13 min. to print. I did not print the Rear Support due to the method I plan to use for mounting the birdhouse. I then moved on to **Red** Creality CR-PETG for the Door Handle and 38.5mm Entrance parts which took 19 min. to print and 6 g. of filament. The last part printed was the Side Windowpane using **Transparent** Creality Hyper-PETG.

With the 26 parts finished, I followed the designers' detailed instructions and exploded views to assemble the model. This required CA glue and the following hardware: (8x) m3x6mm screws, (2x) m3x16mm screws, and (4x) m4x12mm screws.

Final Model Image Coming Soon!!!