

Build-your-own Solar Birdbath

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It is well known that birds are attracted to water, especially running water. However, most fountains or small ponds require a 120-V electrical pump which is expensive to install, may require permitting, and--if not installed properly--could potentially pose an electrocution danger to humans and wildlife. This article will show you a solar-powered alternative you can make yourself. The solar birdbath is inexpensive, easy to build, and uses readily available parts. The two applications shown (ground and patio installations) are examples of the many ways the birdbath can be configured.

Two 5-gallon buckets are used: one for a reservoir and a second one that functions as a casing to prevent the sides of the hole from caving in. A 14 inch saucer, the kind that goes under a potted plant, forms the birdbath basin. Water from the reservoir is pumped to the basin by a solar-powered pump. It then drains back to the reservoir via a 1" high standpipe. Thus the system is a closed loop that recirculates the water.

These photos of a display setup show how the system is assembled. (The casement bucket is not shown.)



Birdbath Components



Assembled Birdbath

Modification of Component Parts

Buckets

The reservoir bucket nests in the casement bucket which is partially buried.

- Cut a notch (about 1/2" sq.) in the top rim of the reservoir bucket for the tubing and electrical line to pass through. A hacksaw blade works well for this.
- Drill several holes (about 1/2" in diameter) in the bottom of the casement bucket to allow any spilled water to drain.

- Spray paint the top of the buckets to blend with the soil or vegetation if desired. Roughing up the surface with sandpaper will improve adhesion.

Basin

The basin shown is a sturdy terracotta saucer made of polyethylene. Other options and colors are available from garden stores or Home Depot. The bottom of the basin should be at least 14" in diameter to easily fit over the mouth of a five gallon paint bucket.

(Ceramic basins will not work since it's almost impossible to drill a hole in a ceramic.)

- Drill a 7/8" diameter hole in the basin about 3/4" in from the rim.
- Make a gasket (2" diameter with a 1" hole) from an old inner-tube or cork sheet to fit the standpipe and make a seal. Various sealants may also be used prevent water from leaking around the standpipe.
- Install the standpipe (a kitchen sink hose guide) with the threaded portion on the bottom and gasket on the top face of the basin. This will maintain a one inch water depth in the basin.

Tubing and Spout Assembly

Cut a 30" length of 1/4" ID x 3/8" OD" vinyl tubing for the water supply line. Slip the tubing over the pump outlet by heating the end of the tubing in hot water to make it flexible. (The pump kit comes with several plastic fountain parts and spray heads that are not needed for this design.) Cut a section of 1/4" copper tubing about 2 feet long. Bend one end to form a spout as shown in the photo. Use a small can, such as a coffee or soup can, as a form.

Installation

Reservoir and Basin

Select a location that is good for viewing. It is desirable to have some bushes nearby that birds can use for cover should a hawk approach. An elevated perch made from a pole or dead branch is desirable as well. If cats are a problem, trim up the bushes so birds can see the cat. An alternative design for a patio or small yard is to use a large pot or half of an oak barrel and place the birdbath in the middle with plantings of around the sides. The solar collector may be located in the barrel or placed in a sunny spot nearby.

- Dig a hole for the casement bucket. The bucket should extend at least one inch above the surface and must be approximately level. (If you don't have a level, place the basin on the bucket and add a little water to check for a level surface.) Add about three inches of sand to weight down the bucket. If it is difficult to remove the reservoir without pulling up the casement bucket, add about 1/2" more sand so the reservoir bucket just rests on the sand and prevents a seal from forming between the two buckets.
- Place a small post near the basin as a support for the copper tubing. Use plastic cable ties, wire, or staples to attach the copper tubing to the support post. Make sure the spout is positioned so the reservoir bucket will not hit it when the bucket is removed for cleaning. Once the placement of the post has been determined, bend the tubing at a point slightly below ground level to connect it with the vinyl tubing. Slip the vinyl tubing over the copper tube.

Use a tight double wrap of wire around the connection to prevent any leakage. Add dirt, rocks or vegetation to hide the tubing and exposed portion of the buckets as desired.

- Add a 1½” sink strainer over the standpipe to keep feathers and leaves from getting in the reservoir.
- If animals use the basin and knock it off center, try placing four small stakes around the perimeter of the basin to keep it in place.

Solar Collector Placement

The latest version of the solar pump kit, AquaJet-Kit-6V-v2, comes with a plastic stake and mounting bracket for the collector. (If the fit between the two parts is too tight, just scrape off some of the plastic from edges of the stake with a pocket knife.) To achieve a higher location for the collector, secure the mounting bracket to a post and locate it as desired. The electrical cord is 9½ feet long. The collector should face south and be located where there is minimal shade from trees or structures.



Sample Ground Installation



Sample Patio Installation using an oak barrel and concrete basin

Maintenance

When the pump is not in water, always stop the electrical current by covering the collector or disconnecting the electrical cord. Running the pump very long without water will damage the pump so check the water level every few days, especially if the birdbath has had a lot of use. (Birds will splash a surprising amount of water out of the bath.) The pump must be submerged when started or cavitation will occur.

If the pump stops and there is ample water in the reservoir, debris may be preventing the pump impeller from rotating. To clean the impeller, lightly press the bottom of the pump and pry off the plastic grill. Remove the plastic cover from the impeller housing. Pull out the impeller, remove any obstruction, and reassemble.

During periods of warm weather, algae may buildup. To clean the reservoir and basin, stop the pump by covering the collector then remove the pump. Lift out the reservoir and rinse with fresh water. If a heavy coat of algae has formed, use a 10% Clorox solution to clean the bucket. (Dump the solution down the drain when finished.)

Parts List for Solar Birdbath

In most locations, the only item that is not available is the pump kit from Silicon Solar. The saucer shown is a sturdy 14" polyethylene model. However, any rigid plastic saucer that is at least 1 1/2" deep and fits flush over a 5-gallon bucket will work.

Item	Source	Price
Solar collector & pump – Aquajet-Kit-6V-v2	Silicon Solar Inc. (www.siliconsolar.com) 1 800 786-0329	\$39 (includes shipping)
Saucer for large pot – 14" or greater	Garden store or Home Depot	\$15
Danco Kitchen Spray Hose Guide	Home Depot	\$4
2, 5-gallon buckets	Home Depot or paint store	\$6 (\$3 each)
Miscellaneous parts:		
3 feet 3/8" O.D. x 1/4" I. D. vinyl tubing	Ace Hardware/ Home Depot	varies
2 feet 1/4" O.D. copper tubing	Ace Hardware/ Home Depot	varies
1 1/2" Sink strainer	Ace Hardware/ Home Depot	\$3
Estimated Total:		about \$75