

Build-your-own Solar Birdbath

Courtesy of Mel Hinton, San Diego Audubon Society

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 describes a solar-powered alternative you can make yourself. The design uses readily available parts, and is inexpensive (about \$85), easy to maintain, and is relatively simple to build and install.

Two 5-gallon buckets are used: one for a reservoir and a second one that functions as a casing. 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.

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



Birdbath Components



Assembled Birdbath

Modification of Component Parts

Buckets

One of the buckets is used as a reservoir, the other as a casement vessel to keep the sides of the hole from caving in when the reservoir bucket is removed for cleaning. The reservoir bucket nests in the casement bucket which is partially buried. If you want to have the birdbath well above ground level, you may want to use a mound of large rocks and soil to create a natural appearance. An alternative for a patio is to use half of an oak barrel, partially filled with soil and vegetation, with the birdbath in the middle.

- Cut a notch (about ½" 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 (¼" to ½" in diameter) in the bottom of the casement bucket to allow any spilled water to drain.

- You can spray paint the top of the buckets a tan color to blend with the soil if desired. Roughing up the surface with fine sand paper will improve adhesion.

Basin

The birdbath basin shown is a sturdy 14” terracotta saucer made of polyethylene. (It’s almost impossible to drill a hole in a ceramic basin.) Other options and colors are available from garden stores and the Home Depot although the basin shown is recommended.

- 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. Various sealants may also be used.
- Install the standpipe (a kitchen spray 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 Pump Assembly

Slip the vinyl tubing over the pump outlet. Heating the end of the tubing in hot water will make this task easier. Use several cable ties to keep the tubing and electrical cord together for about 18 inches. (The pump kit comes with several plastic fountain parts and spray heads that are not needed for this design.)

Installation

Reservoir and Basin

Select a location that is good for viewing. It is desirable to have some bushes nearby that the birds can use for protection should a hawk approach. If cats are a problem the bushes should be trimmed up so birds can see the cat. A small wire screen can also be used to protect the birds.

- Dig a hole for the casement bucket. The bucket should extend at least one inch above the surface and must be 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 two inches of gravel or small rocks to the bucket and back fill the dirt around the sides of the bucket. If it is difficult to remove the reservoir without pulling up the casement bucket, empty out some of the water or put a lid on the reservoir bucket. This will prevent it from becoming egg shaped and binding when lifted.
- Use a 1½” sink strainer over the standpipe to keep feathers and leaves from getting in the reservoir.
- Place a few rocks in the basin to give it a natural look and added weight. Animals may try to use the basin and knock it off center. If this is a problem, try placing four small stakes around the perimeter of the basin to keep it in place.

Spout Placement

Place a small post near the basin such that it will support the copper tubing which will be bent into an arc over the basin. Carefully bend the tubing to the desired shape. Use a curved form such as a soup can for sharp bends to avoid crimping. The water flow from the tubing should go into the reservoir even if the basin is removed. Use cable ties, wire staples or other means to attach the copper tubing to the support post. Make sure the spout end of the tubing is high enough so the reservoir bucket will not hit it when the bucket is removed for cleaning. Once the placement of the post and tubing have been determined, cut off the excess copper tubing and slip the 3/8" plastic tubing on the copper tubing. Use a small hose clamp or wire wrap to make a leak proof connection. Use dirt, rocks or leaves to hide the exposed tubing.

Solar Collector Placement

Position the solar collector facing south and tilted to about a 45 degree angle. It should be high enough to receive direct sunlight. The collector can be slipped over a 2"x 2" cut at a 45 degree angle with the sharp end slightly rounded.



Sample Installation

Maintenance

Minimal maintenance is required. 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.) If leaves and feathers block the flow of water down the standpipe the basin will overflow and deplete the water supply. Running the pump without water will damage the pump.

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, carefully pry the plastic grill from the

inlet of the pump. Remove the plastic cover from the impeller housing thus exposing the impeller. Pull the out the impeller, remove any obstruction, then reassemble.

During periods of warm weather, algae will buildup after about a week. To clean the reservoir and basin, cover or unplug the solar collector so the pump will stop. Remove the basin and set the pump to the side on a dirt free surface. 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.

Sit back and enjoy watching birds get a drink and frolic in their new avian waterhole. During migration periods expect to see more activity and different species.

For more information, contact the San Diego Audubon office (858 273-7800) or email Mel Hinton at melhinton at sbcglobal.net.

Parts List for Solar Birdbath

All of the parts listed were purchased in the San Diego area or online. The only item that may not be available in other locations is the 14" saucer. However, any sturdy, 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 fountain kit (SKU-11-1068)	Silicon Solar Inc. (www.siliconsolar.com) 1 800 786-0329 ext 231	\$45 (includes shipping)
14" polyethylene saucer (terracotta colored)	Canyon Pottery (858-279-2600)	\$17
Danco Kitchen Spray Hose Guide	Home Depot	\$4.00
2, 5-gallon buckets lid for bucket (optional)	Home Depot or paint store	\$6 (\$3 each) \$ 1
Miscellaneous parts:		
3 feet 3/8" O.D. x 1/4" I. D. vinyl tubing	Ace Hardware/ Home Depot	varies
3 feet 1/4" O.D. copper tubing	Ace Hardware/ Home Depot	varies
1 1/2" Sink strainer	Ace Hardware/ Home Depot	\$3
Misc. screws, clamps, cable ties	Ace Hardware/ Home Depot	varies
Estimated Total:		\$85