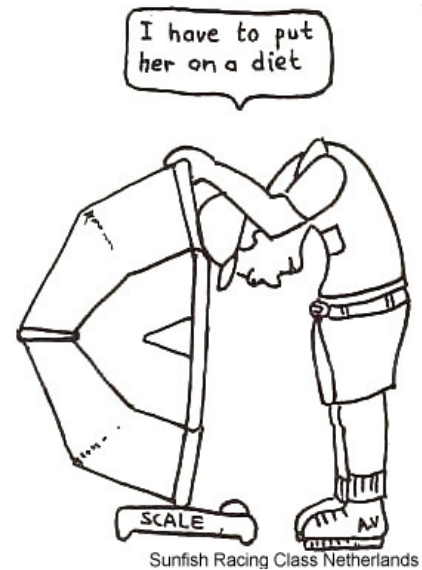


## Dried Fish

Are you beginning to notice your Sunfish is a lot more difficult to move around and doesn't seem to be as sprightly on the water? There's a likelihood your boat has been slowly taking on water. It can happen with any year Sunfish, but is more commonly found in boats over twenty. The condition comes about when water seeps into the hull and goes unnoticed. The process can be glacially slow so detection isn't always immediate even if you are good about checking for water at the drain port after each day's sail.

The real problems begin when moisture inside the hull sits unabated month after month, year after year. Eventually the inner hull becomes a floating steam bath of high humidity. In this type of an environment the moisture laden air starts creeping into the cell walls of the flotation foam where it condenses, saturating the emergency flotation, in the worst cases, to an extent resembling a ripe watermelon.

It doesn't take a big leak. It might even be a leak so small there's never any free water running out the drain port. All that's needed to feed the cycle is just enough moisture to keep the inner hull environment damp.



The quickest way to know for sure if your Sunfish is getting waterlogged is to weigh it.

### Weighing a Fish

The weighing procedure is simple. First open the deck mounted drain plug and empty out any accumulated water. Once all the free water is removed the only excess water remaining, aside from clinging dampness, will be water that's been taken up by the flotation.

Turn the hull up edge-wise on a bathroom scale and check the weight.

Since different builders have made Sunfish hulls with slightly different construction weights, consult the builder weight chart to find the published weight for each manufacturer generation of hull. Hulls that show a gain that exceeds the published weight by about 10 pounds or more are suspect for waterlogging.

If you find your hull is heavy from waterlogging you will then have two significant pieces of information, (1) you are going to need to dry out if you want to regain handling ease and sailing performance, and (2) you have a leak that needs fixing.

### How does water get into a closed-cell flotation foam?

Water enters the flotation by first becoming vapor, then it moves into the foam's cells by **osmosis**, *the diffusion of water vapor from an atmosphere of high concentration into an atmosphere of low concentration across a selectively permeable membrane*. In our case the semi-permeable membrane is the cell wall of the flotation foam. Closed-cell foam is selective against liquid water molecules, but not so resistant to the extremely tiny molecules of water vapor.



## The Process of Drying Out

In order to begin the drying process a couple of conditions need to be created. First, the atmosphere surrounding the foam blocks needs to be made drier and kept drier than inside the foam's cells. Second, the whole process will need time.

It takes years for the flotation to take up any appreciable quantity of moisture. Using aggressive tactics to reverse the process can speed up drying, but it still can take months to accomplish total restoration.

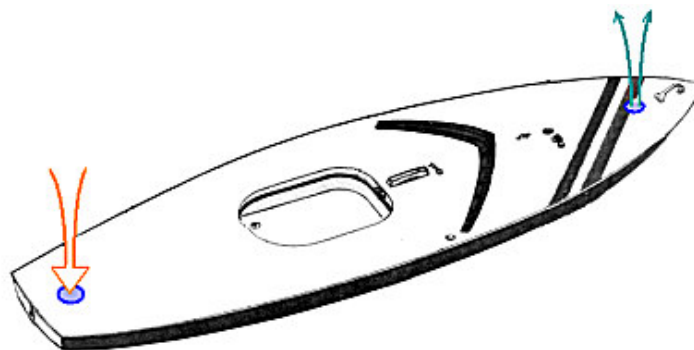
Often a weight reduction of 50% or more is seen in the first month or two. The second 50% takes the longest and in the worst cases has required six months or more depending on how aggressive the drying method is.

## Preparing to Dry

For hulls exhibiting only a slight to moderate weight gain the typical approach is to install a central inspection port.



Hulls that have become very heavy usually take a couple of ports to facilitate drying in a timely manner.



Port Location Note: It might be a good idea to Leak Test the hull prior to installing any inspection ports. In the event repairs will require an inspection port in a non-typical location this would help to avoid adding more ports than absolutely necessary. Ventilating can be just as successful through ports located almost anywhere so repair needs would take precedent.

## Drying Methods

**Passive drying** can be done by simply opening a port while the boat is parked in the sun or over-wintered in an (ideally) heated garage. This is the most common approach for slightly wet or lightly waterlogged flotation and for general upkeep to help maintain a dry boat.

**Hanging a shop light** in the interior works to warm the air and drop its relative humidity thereby giving it a higher moisture carrying capacity. With the light bulb method you want to be careful not to circulate outside air through too rapidly. Zealous venting could remove the slowly warming air before it has a chance to pick up much moisture. In that case the process would simply be a well lit air circulation system. Use a thermometer to test that the air leaving the hull is warmer than the air being fed in. If the two flows are equal temperature the airflow is probably too rapid.

Hanging a bulb in the vicinity of one port of a two port system creates a flu effect drawing air through the hull slowly. This is just about all the air movement that's needed for this approach to work at peak efficiency. The lamp method is the least complex and lowest cost of the active approaches to drying. It is well suited for boats stored undisturbed through the off-season in a shed or garage.

**Chemical bead dehumidifiers** work to dry the ambient inner air by desiccant absorption. In this case you want all the effort focused on moisture building up from drying the foam. Depending on the local climate, circulating in outside air could add to the humidity load and reduce the bead efficiency. With beads, the ports are usually closed for a day or two, then opened to swap bead canisters and closed up again.

**Fan circulation** boosts the removal of moisture laden air by rapidly exchanging the air layer next to the foam blocks. The system involves a small box type or equivalent high volume fan blowing into a trash bag with a dryer vent or similar hose for air delivery to the inner hull.



With a single port, fan-forced air can be piped in using a shop-vac hose or a small dryer vent hose so long as the hose size leaves enough room through the inspection port for exhaust air to exit around it. A dual port, fan forced system gives the best outside air exchange.

Using the output from a **dehumidifier** as the fan flow insures the circulating air is dry regardless of local climate. The dehumidifier approach is reported to dry the final 50% or moderately waterlogged foam in a short amount of time.

**Solar heated fan circulation** -The drying process can be supercharged by covering the boat with black plastic or a dark tarp and parking it in the sun. With solar heating, air circulation can simply be a steady, soft breeze like you get from a computer fan or small desk fan. Reports from people drying heavily waterlogged hulls say this method gets the quickest overall results.