Dry Land Ecosphere

A ‘dry land’ ecosphere is basically a terrarium with bugs, also known as a vivarium because it has live creatures in it. It’s best to keep your ecosphere simple, and we’d advise using non-vertebrate animals. As we mentioned in the Virtual Ecosphere, the trick is to get the mix of soil, plants and animals right, but in a real system humidity is also a factor. If you over water your ecosphere your plants will either grow mould and rot, die from waterlogging, or the humidity will condense on the transparent surface allowing less photosynthesis to occur. Condensation also stops you from being able to observe your bugs. Light and temperature are also important in living systems, so try to keep your ecosphere cool and out of direct sunlight.

To start off with, you might also want to consider not using any predators so you can see how the system balances itself out. Don’t expect to get the balance right first time, we didn’t! Expect to see some extinctions in your system.

The fun part of having an ecosphere is recording your results. Take note of what lives, what dies and population levels. If you want to measure the temperature, try to do it at the same time every day. Measure the height of plants, and record if they’re being eaten by the animals. Draw some conclusions as to what you think this is happening. Then post your results on the DIY Science forum at http://www.open2.net/forum.

You will need:

- Gravel
- Garden soil
- Transparent jar, bottle or container with a large enough top to put your hand into. (Ours is a cylindrical glass vase.)
- You also need a cap, stopper or top to seal your container. We used a cake container lid. If you’re using an aquarium tank make sure you have a tight fitting lid that you can seal with tape.
- Plants - try to get plants that can survive in indirect sunlight and that don’t require pollination to propagate. Non-flowering plants are best.
- Animals from the garden.
- Wood, garden rocks or branches to make it look fantastic.
- Sealant (silicon, sealing wax or gaffer tape)
- Thermometer (if you want to measure temperature)

What to do:

Step 1: Add the gravel, about 3/4 inch all over the bottom of your transparent container. Gravel will allow drainage and help to prevent plant deaths.

Step 2: Add the garden soil, about an inch worth, making sure that it's not too damp.
Note: To avoid getting dirt over the transparent surface, create a funnel with a piece of rolled up paper and pour all soil through it.

Step 3: If your plants are from a garden centre, try to reduce the amount of potting compost that you put into your system.

Step 4: Make sure you don't have too much soil. It shouldn't take up more than about 1/7th of your available space, after the plants have gone in.

Step 5: Add rocks, wood and any other decorative elements.

Step 6: The planting. Try to choose plants that fit into your environment. If it's a small environment only use small growing species. If you put too many plants in expect some deaths. If you think your system needs watering, you might want to consider leaving the lid off for a few days before sealing it, as this will allow the humidity levels to balance. Don't over water your system!

Step 7: This is the fun bit…. choosing some animals. You might want to include some woodlice, worms, ants, aphids, black fly - or anything you can find in your garden. Have a think about the size of your animals in your system. We added snails to ours, and after two days took them out again - they ate too much!

Step 8: Seal the environment. If you want to measure the temperature, make sure you put a thermometer in, positioned so that you can easily read it.

Step 9: Keep your results. Record the size of your container, number and type of plants and animals and how much soil you used. Then try to keep track of what's happening in your system. Count your bugs, record plant growth, note deaths and humidity levels (whether you are getting condensation on your glass or not). You also might want to record the sunlight levels; even though you shouldn't be keeping your ecosphere in direct sunlight, the ambient light levels effect photosynthesis and plant growth.

Step 10: Log on to the DIY Science forum at http://www.open2.net/forum and tell us about your results. You can do this daily or all in one go if you like. Then go to the results page to check out how ours went!