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Beetle breathing saves water according to a report in ScienceNOW 6 Aug 2002. Insects breathe through holes (spiracles) in the thorax and abdomen. Air enters through the spiracles on the underside of the thorax (mid section) and leaves via spiracles at the sides of the abdomen. During this process it passes through the cavity under the wings which means that in a desert environment the insect could easily lose too much moisture. Scientists at the University of Witwatersrand, South Africa studied desert dwelling dung beetles and found that when the beetles are resting they restrict their breathing to only one spiracle for both in and out breathing, while keeping the other 15 spiracles closed. This means air is re-circulated though internal cavities and helps beetles retain water.

**Editorial Comment**: Dung beetles are incredibly useful beetles that collect and bury animal dung. Fossil burrows are even found in petrified Dinosaur droppings. It doesn't take too long to figure out that you couldn't have huge 20 ton dinosaurs producing volumes of Dino dung, if you didn't also have tiny Dung beetles disposing of it as fast as it dropped. Dung beetles are an excellent example of necessary design in the way different animals interact within the environment. Now "back up planning" in their internal structure and function has been discovered as well. Whatever level we study biology, from microscopic sub-cellular processes to whole interactive ecosystems we find abundant evidence of careful planning. (Ref. dung beetles, insects, design)