



# guidelines for living

*a 5 minute message*

February 20, 2018

BALANCE BY DESIGN

**Then God said, "I give you every seed-bearing plant on the face of the whole earth and every tree that has fruit with seed in it. They will be yours for food..." God saw all that he had made, and it was very good. Genesis 1:29, 31**

As the resources of our planet have rapidly started to be depleted in our generation, we've begun to understand something of how vitally important these natural resources are. In a matter of a few years, entire rain forests can be destroyed, upsetting the delicate balance of nature. We're slowly learning that even the small things are important, things which previous generations never even considered important.

Like what? Like the importance of bats, the tiny little animals which often send shivers up and down our spines. Yes, I did say "animal" because bats are mammals and constitute 70% of all the mammals on planet Earth. Before I address that issue of their importance, let me tell you something of this amazing little animal. Female bats bear their young and nurse them with the mother's milk, just as do dogs and cats. But unlike most mammals that walk the earth, these little creatures have wings and take to the air from dusk to dawn. Today scientists believe that bats are probably the most misunderstood of all animals. That may be because they live in caves and from medieval days have been associated with witches and goblins.

There are a lot of things which are remarkable about these little creatures, such as the fact that the young are segregated from the adults in a kind of nursery, and that the mother bat can identify her baby with an uncanny instinct that scientists still can't quite understand. But the most remarkable thing about these little creatures is how they find their way through total darkness, the result of a kind of ultrasonic radar which long preceded the kind that guides airplanes through the dark night.

Back in the 1780s, an Italian scientist by the name of Spallanzani suspected that bats could not see in the dark. He filled a room with silk threads, then covered their eyes. When they were released, instead of crashing into the silk threads, the bats flew through them with amazing alacrity. But when he filled their ears with wax, they crashed into the threads helplessly.

In 1941, with a world war looming on the horizon, two American scientists began serious experiments with bats, trying to learn how they could fly in the dark. Naturally, they were thinking about developing a radar system for airplanes. They discovered that bats were able to do things that defied understanding. Suspecting that bats emitted a signal which then bounced back, they began placing bats in front of microphones. But they heard nothing. Then when these sounds were



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converted into lower frequencies, they heard a deafening array of sound, proof that bats did emit a kind of sonar or radar.

Donald Griffin and Robert Galambos of Harvard University, the two scientists who did the experiments, eventually discovered that a bat's vocal organs are as important as its ears in navigating through the air. A bat sends signals--high-pitched squeals that bounce off anything in its path, and the ears of the bat then pick up the echo, warning them where not to fly.

Why are bats important? Bats eat insects, which destroy fruit and vegetation. Also much like the birds, bats pollinate flowers, shrubs and trees. Where the bat population is destroyed, ecological havoc follows. All of this, of course, just happened. Right? It happened like an explosion would produce a volume of Shakespeare!

It was all part of God's plan in maintaining the balance of nature. Moses records it. "Then God said, 'Let the waters teem with swarms of living creatures, and let the birds fly above the earth in the open expanse of the heavens.' God created...every living creature that moves...and God saw that it was good." (Genesis 1:20-21). How marvelous are those acts of creation!

Resource reading: Job 38:1-41