

The (Not So) Silent Spring and Canaries of the Forest

In 1962 Rachael Carson published a book that launched the environmental movement and alerted the public to the dangers of unregulated use of chemicals that may harm wildlife. DDT, the insecticide used to control mosquitoes, was linked to reproductive failure in eagles, ospreys, and peregrine falcons and was banned in 1970. The title of the book, *Silent Spring*, implied that if pesticides were not tested and regulated, some spring there would be no birds singing in the forest. The Environmental Protection Agency was created in 1972, largely to regulate pesticide use. Since then, candidate pesticides have undergone rigorous testing for hazard to humans and wildlife before they are registered for use. The tests included determining whether representative wildlife groups (fish, birds, mammals) are adversely affected by the pesticides. The tests do not include amphibians (frogs, toads, and salamanders) which have been called *canaries of the forest* because of their sensitivity to pollution. Amphibians live in wet environments (ponds, streams, rivers, swamps, under leaf litter), breathe through their skin, and absorb chemicals through their skin. If amphibians die, or exhibit teratogenesis (defects such as missing limbs, incomplete digestive systems), it is thought they might be first indicators of environmental pollution or poisoning by pesticides. How are the canaries doing?

Gut-check #1—take a peek: Driving forest roads in spring at night you can hardly hear yourself think for the racket—all those critters peeping in the ditches, creeks and ponds. Actually, a lot of the noise is not peepers (tiny little chorus frogs) but toads and wood frogs. A check of small forest ponds and streams reveals egg masses of wood, pickerel, and green frogs, American and Fowler toads, peepers, red-spotted newts, tiger, spotted, two-lined, spring and Jefferson salamanders. Poking around under rotted logs, in rock crevices, and in sphagnum moss reveals egg clusters of red-backed, four-toed, slimy, dusky, and Wherle's salamanders. Nobody's missing and, fun fact—the greatest amount of animal biomass in the forest is not bears or deer. It's salamanders. Ditto the birds: listening to singing birds in spring reveals a full complement (excepting extincted birds like the passenger pigeon). Some are of reduced number, such as scarlet tanagers or wood thrushes, but those reductions are thought to be due to loss of winter habitat (Central and South America, mostly). And, bald eagles, ospreys and peregrine falcons are increasing in number.

Gut-check #2—Science: Foresters use two common chemicals—Round-up and Oust—to eliminate ferns, grasses, and undesirable woody seedlings in forests to reduce the competition for oak, maple, cherry, ash, hemlock, pine, and birch seedlings. Forest Service scientists conducted a study in Pennsylvania to see if using these pesticides (herbicides, actually) negatively affected birds and amphibians. The herbicides eliminated most of the vegetation under 6 feet and birds nesting in the shrub layer declined the first couple of years—but none disappeared. By five years the shrub layer had grown back and numbers of shrub-nesting birds bounced back. None of the other birds monitored (forest songbirds, woodpeckers) or any of the amphibians declined in abundance, and no species were lost. The pesticides neither reduced/eliminated any species nor affected their food supply (mostly bugs and earthworms) in the real world.

Bottom line: Chemicals dangerous to wildlife have been taken off the shelf, and proper use of regulated, registered pesticides is not detrimental to the forest canaries or other forest wildlife.