

Sand (Ground) Doves are Well-Adapted to the Open, Sandy Longleaf Pine Forest Floor Habitat

(bolded words in text indicate key words and concepts)

Student Information:

Sand doves, a smaller cousin of the more common mourning dove and pigeon, live comfortably in the open sandy longleaf forest ecosystem. They feed on the seeds of grasses and other plants, like the butterfly pea. Butterfly peas are related to the beans and peas you eat for supper. However, unlike the peas on your dinner plate, these butterfly peas are poisonous and should not be put in your mouth.

Teacher Information:

The open nature of the fire-maintained longleaf forest is ideal for many song and gamebirds. **Sand doves**, like other members of the dove family have weak feet and are poor scratchers for food in heavy litter or vegetation. Fire maintains shallow litter layers and open sandy stretches giving birds easy access to the myriad of native grasses and plant seed.

The butterfly pea on the right side of the drawing is one of the legumes of the longleaf ecosystem. It flourishes in the sunlight filtering through the open pine canopies and its seeds fall onto mineral soil, where they are stimulated to germinate by the frequent fires that pass through periodically. Nitrogen is essential to all life. The **sandy soils** longleaf pine often grows in can be low in nitrogen due to its ready solubility (ability to dissolve in water) and the fact that rainwater percolates through the soils very quickly. Also, a great deal of nitrogen can be released from the soil into the atmosphere when organic material is burned up in fires (called **volatilization**). Through a **mutualistic relationship** with microscopic bacteria called **Rhizobium**, butterfly peas (like other legumes) can take nitrogen gas from the air and convert it to a form which can be transferred to the soil and used by other plants and animals. This process is called **nitrogen fixation**. The relationship between legumes and the tiny nitrogen-fixing bacteria found on their root hairs is **symbiotic**; meaning both sides prosper from the relationship.

The dwarf live oak is well adapted both to the droughty infertile soils and to the low intensity fires that sweep through the forest floor. Although fires generally kill the above-ground portion of the tree, nutrient reserves in the **roots** allow the trees to resprout weeks after the fire passes over (called **root-sprouting**). Though small in stature, dwarf live **oaks** can produce abundant acorns which are valuable foods (called **hard-mast**) for a variety of wildlife, including grey and fox squirrels, deer, and wild turkeys. Also, blueberries, huckleberries, and other (**soft-mast**) berries are also found in abundance in this forest and provide a valuable food source for various critters (including man).

Key Words and Concepts: hard-mast, mutualistic relationship, nitrogen fixation, oak, rhizobium, root, root sprouting, sand dove, sandy soil, soft-mast, symbiosis, volatilization.