

Spotted Knapweed Activities

Sulfur Moth Collection
Play Audio Track #16

(20 minutes)

Levels
Grades 4-8

Subjects
Science

Skills
Locating, Examining, Identifying, Separating,
Verifying

Concepts
Structure and functions of living things;
interactions among technology, science and society

Objectives
Students will learn how to collect and distribute
noxious weed biological control agents--insects.

Materials (20 student class-size)
What's in Your World? CD audio track #16
(inside the back cover) - 1 per class
flash card of Spotted Knapweed Sulfur Moth (inside
the back pocket of the What's In Your World?
activity tool kit) - 1 per student
white sheet, sweep nets - 3 per class
aspirators (inside activity tool kit) - 1 per student
fake bugs or rice if the activity takes place indoors

Time Considerations
Preparation - 5 minutes
Activity - 20 minutes

Lesson Overview
• Sulfur Moth Collecting (20 minutes)

Background
Land managers distribute biological noxious weed
control insects to reduce their population and slow
their spread. Once plant populations are reduced to
a point where they can no longer support the
insects, land manager collect the insects and take
them to other weed infested sites for distribution.
There are several ways land managers collect in-
sects--sweep nets and aspirators are two ways.

The sulfur moth is especially interesting because it
glows in the dark. When land managers want to
count how many sulfur moths they will be collect-
ing they go out at night with a white sheet and
flashlight. The sulfur moth male is attracted to the
light and the land manager can count them
because they glow underneath the elevated sheet
covered light of the flashlight.

SULFUR MOTH COLLECTING LESSON DETAILS

STEP ONE. Arrange to take the stu-
dents to the school yard for the activity.
If the outdoors is not an option, a gym-
nasium will work. Demonstrate with a
sweep net how to “sweep the floor” back
and forth in a figure eight. Explain how
to tap the net ring lightly from the side
to dislodge the insects to fall to the bot-
tom so they don't fly out. Next pass all
three sweep nets to three students and
ask them to see how many insects they
can sweep in one-minute. After the
minute, have the students inspect the
nets and determine the winner with the
most insects. You can repeat this until
each set of three students has a turn.

STEP TWO. Ask the students to locate
the aspirator and its three plastic con-
tainers inside the What's In Your World?
activity tool kit. Demonstrate the safe
use of the aspirator explaining the net
inside one of the metal tubes that keeps
them from sucking up bugs into their
lungs. Tell the students to find and
identify an insect of their liking and
collect it by sucking through the long
tube. The insect should be small enough
to navigate the diameter of the tube.
Once every student has an insect, ask
them to discuss amongst themselves
what is unique about their choice.

STEP THREE. Bring out the white
sheet and ask four students to hold, one
each, the corners of the sheet about two
feet off the ground. Ask a fifth student
to hold the flashlight above the sheet. If
you are in the gymnasium ask one stu-
dent to turn off the light momentarily
to illustrate how light it is under the
sheet and how dark the rest of the room
is. This demonstration is how land
managers count the male spotted knap-
weed sulfur moth. The male is attracted
to the light. The number of males gives
scientists a starting point to guess how
many total males and females are in the
area.

Tell the students that after the insects
are collected they are transported to
other sites--some many miles away. To
keep the insects healthy they are placed
in white paper cups with lids and stored
in a cooler until they arrive at their des-
tination. Insects can survive up to about
three days under these conditions if
their preferred host plant parts are also
included in the container.

Land managers map GPS coordinates
for the distribution site and take photo-
graphs to monitor the vegetation popu-
lations and compare it in later years.