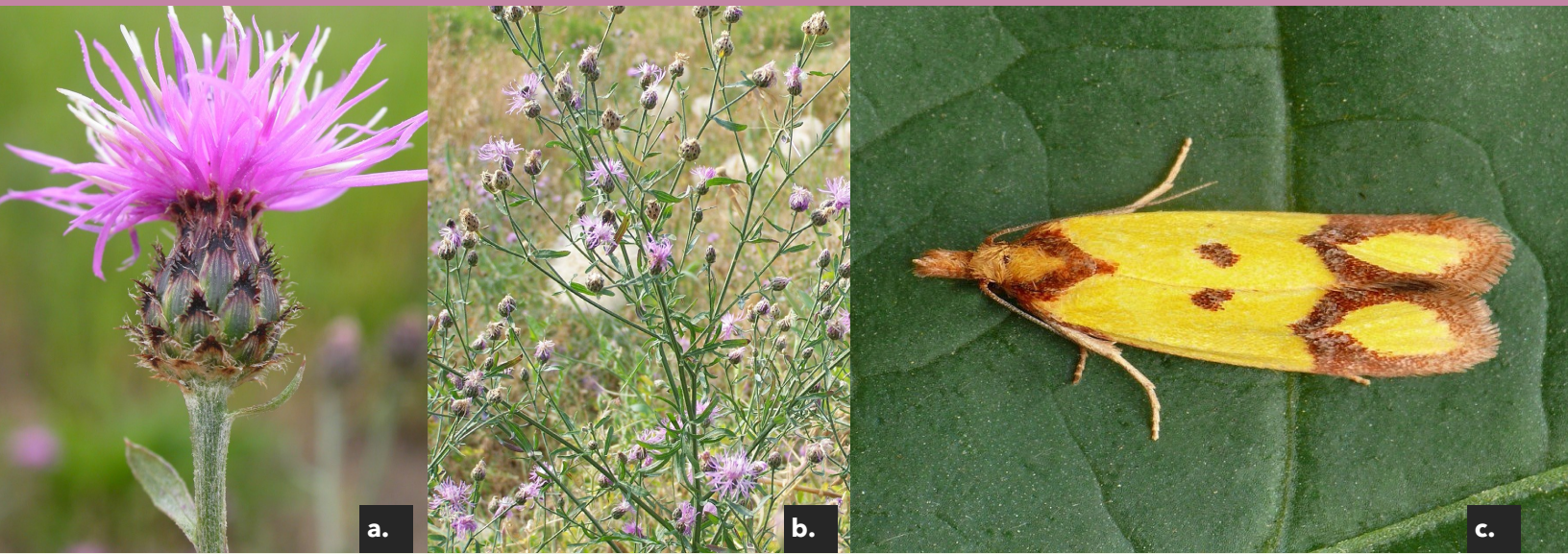


# BIOCONTROL OF SPOTTED KNAPWEED

## KNAPWEED MOTH

AGAPETA ZOEGANA



### SPOTTED KNAPWEED (*CENTAUREA STOEBE*) PLANT GUIDE

Life Cycle	Root	Leaves	Stems	Flower	Seed/Fruit
Biennial or short-lived perennial	Taproot	Rosette leaves are deeply lobed, grayish-green, and up to 6 inches long; stem leaves finely divided into linear segments	Up to 4 feet tall and highly branched	One pinkish-purple flower on each branch; top of flower bracts are dark colored and fringed (image a.)	Black seeds, 1/8 inch long with bristly tips

#### BIOCONTROL AGENT DESCRIPTION

- Larvae are white with brown mouthparts
- Adult moths are 11mm (1/2 in) long with bright yellow forewings with brownish markings, and dark gray hindwings
- Wingspan ranges from 15-23mm (3/4 in)

#### BIOCONTROL AGENT IMPACT

- Larval feeding within the roots reduces knapweed biomass and density and may kill small plants

#### MONITORING

- Visually inspect or sweep net on or near spotted knapweed for adults during late spring to late summer
- Pull roots year-round, inspecting for larval feeding damage or larvae in the taproot
- Pupae can be found in the roots during a short window in the spring

LIFE CYCLE	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SPOTTED K NAPWEED				Rosette		Bolting		Flowering		Seeding/ Rosette Regrowth		
KNAPWEED MOTH							Adults					
								Eggs				
				Larvae				Larvae				
	Overwintering Larvae										Overwintering Larvae	
					Pupae							

## HOW TO USE

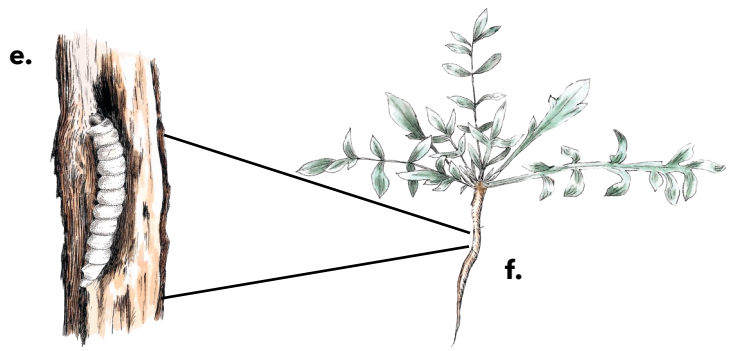
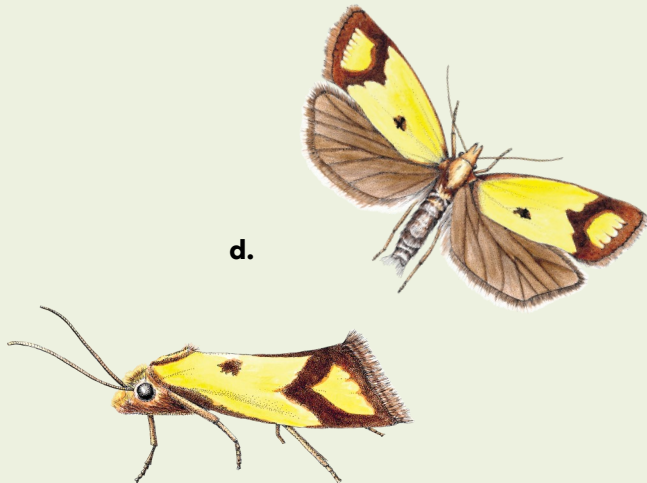
- It is typically not necessary or recommended to collect and move these moths; they are delicate but also well established and readily fly from infestation to infestation
- The greatest impact is observed when the knapweed moth is combined with other spotted knapweed biocontrol agents such as the knapweed root weevil (*Cyphocleonus achates*) and knapweed flower weevil (*Larinus* spp.)

## NOTE

- Knapweed moth larvae are slender and straight, while knapweed root weevil larvae are C-shaped
- It is difficult to distinguish between larval feeding by the knapweed moth and root weevil
- The knapweed moth will also attack diffuse knapweed

## IN MONTANA

- Well established west of the Continental Divide and increasing in population east of the divide



### IMAGE KEY

- a. Spotted knapweed flowerhead (Matt Lavin, Wikipedia Commons)
- b. Spotted knapweed typical plant (Montana Biocontrol Coordination Project)
- c. Adult knapweed moth (Montana Biocontrol Coordination Project)
- d. Adult knapweed moth illustration (not to scale)
- e. Knapweed moth larva in spotted knapweed taproot
- f. Spotted knapweed rosette visible in spring and fall
- g. Flowering spotted knapweed seasonal changes; budding in spring and early summer (left), mature flowers in summer (center), seeding in fall (right)

Illustration Credit: **d–g.** Evelyn Neel, [www.evelynneel.com](http://www.evelynneel.com)