MORMON CRICKETS | THE PROBLEM

Identification

This brochure is intended to help those working in the field to identify Mormon crickets both to help predict and prevent possible outbreaks and to aid research efforts. ID tips can be found inside. (Look-a-likes are also noted below.)

The Economics

Because of their migratory habit, bands of Mormon crickets may be present in a particular site for no more than three or four days. In this short time, their damage to rangeland is limited unless exceptional conditions exist (ie drought, sparsely vegetated areas) when they can compete with cattle for forage.

However, while rangeland is frequently unaffected by migrating bands, those same bands of nymphs or adults may completely destroy fields of sugarbeets, small grains, and alfalfa, requiring control efforts.

Mormon cricket range

Outbreaks of the Mormon cricket (*Anabrus simplex*) continue to periodically threaten large parts of the western United States. Mormon cricket outbreaks originate on rangeland and can lead to the formation of huge migratory bands that move into and damage crop systems.

Contrary to their name, Mormon crickets are not crickets, but flightless, shield-backed katydids. Although they do not fly, they are highly mobile and capable of migrating great distances. They move in wide bands by walking or jumping, and may devour much of the forage and crops in their path. Migrating bands of nymphs or adults can completely destroy fields of sugarbeets, small grains and alfalfa as well as garden vegetables.

A massive Mormon cricket outbreak from 1998-2012 – with a major surge in acreage infested in 2003/2004 – was one of the most severe on record and included major infestations in 7 western states including Utah, Nevada, Idaho, Colorado, Wyoming, Oregon and Montana.

Sidney ARS scientists are working to understand the mechanisms contributing to these outbreaks and how to predict them. Predictive models will help producers, government agencies and other land managers reduce the cost, manpower, and non-target effects associated with current broad chemical control operations to battle the insect pests.

Complicating those predictive efforts, however, is a recent discovery by Sidney ARS scientists demonstrating that Mormon crickets may be able to "bank" their eggs in the soil, much like weeds routinely do with their seeds. A proportion of the insect's eggs have been shown in the lab to remain in diapause for up to five or more years before hatching likely as a means of avoiding specialized predators.

Look-a-likes

Jerusalem Cricket

Katydid sp.

Common Field Cricket

Camel Cricket

- Mormon crickets are shield-backed katydids because of their enlarged pronota (on thorax).
- Most shield-backed katydids are short winged.
- 100+ shield-backed katydids are found in western North America.
- Only a few shield-backed katydids are ground dwelling rangeland insects while the majority live in shrubs and bushes.
- Camel crickets have a hump shaped body with NO enlarged pronota.
- Field crickets are usually black to brown with developed wings and are capable of flight. Ovipositors are straight.
- Jerusalem crickets have black/white striping on abdomen, enlarged chunky legs, DO NOT hop and NO enlarged pronota.
- Many common katydid adults have functioning wings, are capable of flight and wings may look like leaves.

~ USDA Animal and Plant Health Inspection Service
(APHIS also contributed to other sections of this brochure)

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MORMON CRICKET

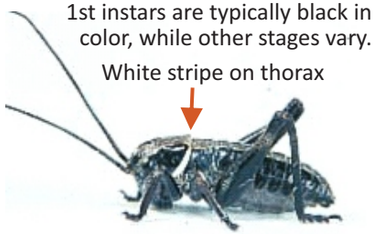
IDENTIFICATION

HELPFUL TIPS FOR SURVEYING ANABRUS SIMPLEX

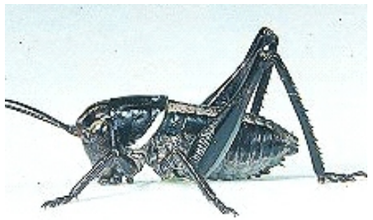
U.S. Department of Agriculture
Agricultural Research Service

USDA-ARS Northern Plains Agricultural Research Laboratory

IDENTIFYING MORMON CRICKET (ANABRUS SIMPLEX)



1st Instar — Body length 7 mm:



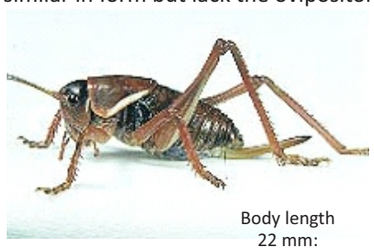
2nd Instar — Body length 8 mm:

3rd Instar — Body length 11 mm:

NOTE: The 4th-7th instars shown are females. Males, like the three instars above, are similar in form but lack the ovipositor

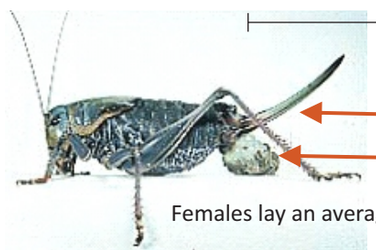
4th Instar — Body length 13 mm:

5th Instar — Body length 18 mm:



6th Instar — Body length 22 mm:

7th Instar — Body length 30 mm:



Females lay an average of 86 eggs each.

Adult Female

Male cercus, with two large teeth.

~ WY Ag Experiment Station Bulletin 912
Species Fact Sheet - Mormon Cricket

Life Span | Growth Stages

Adults and nymphs of Mormon crickets have long antennae and a smooth, shiny exoskeleton in a variety of colors and color patterns. The adult female has a sperm holding sack (spermatophore) for a short time after mating and a long ovipositor (egg layer) with a gentle upward curve. The male cercus (appendage at the posterior end of the abdomen) has two large teeth (*see diagram*).

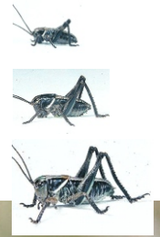
Eggs are laid singly in the summer and are dormant through winter. Mormon cricket eggs hatch and nymphs emerge in the early spring when soil temperatures reach 40°F. At higher elevations where the soil remains cold, eggs may incubate an additional year. (*See "The Problem" section on the back of this brochure for new findings on M. cricket egg viability*.)

Mormon crickets pass through eight growth stages (7 instars and adult) within 60 to 90 days depending on temperatures and other environmental conditions. Mormon crickets molt in 10 to 20 minutes, hanging on plants in the sun while their new exoskeleton dries, darkens, and becomes hard. Before crawling away the insect eats its old, cast-off skin (exoskeleton). Courting and mating begin 10 to 12 days after becoming adults.

Although Mormon crickets feed on more than 400 species of plants, succulent forbs are preferred.

~ Univ. of Nevada Cooperative Extension

Body Length



1st Instar = 7 mm
2nd Instar = 8 mm
3rd Instar = 11 mm

Adult = 38-51 mm (1.5-2 inches)

Identifying Features

- Antenna longer than body length
- White strip on thorax in nymphal stages

Tips for Finding

In cool temps

- Look in and under sage brush
- Look under debris
- Look under dry manure

In warm temps

- Look on top of sage brush
- Look on high points of rocks

Color Variations

ALL NYMPHAL STAGES HAVE WHITE STRIPE ON THORAX.

Typical Mottled Coloration

Light gray, blueish tint coloration

Green Coloration

Bronze, red coloration

Jet black coloration

- First and second instars are usually black in color.
- Instar 3 to adult can have various mottling and color variation.
- Nymphs can have a black body with green or bronze tinted legs.
- Adults can be mottled various colorations or entirely one colored.
- No stripes on abdomen like the Jerusalem cricket (*See Look-a-likes section*).
- Pronota does NOT have lateral bands or black stripes. (*See Look-a-likes section for "Katydid"*)