

Yellow Starthistle



Status of Biological Control Agents of Yellow Starthistle

Biological control agent	Common name	First release	Status
<i>Urophora jaculata</i>		1969	Never established in USA.
<i>Urophora sirunaseva</i>	YST ¹ gall fly	1984	Widely established, present at most YST infestations in CA & OR; a few sites in WA, ID.
<i>Bangasternus orientalis</i>	YST bud weevil	1985	Widespread in CA, OR, WA & ID, but low numbers.
<i>Chaetorellia australis</i>	YST peacock fly	1988	Prefers bachelor button; established at a few sites in CA; widespread in OR, WA, ID.
<i>Eustenopus villosus</i>	YST hairy weevil	1990	Well established in CA; widespread in OR, WA; a few sites in ID, UT.
<i>Larinus curtus</i>	YST flower weevil	1992	Established at a few sites in CA, WA, ID; widespread in OR.
Unapproved accidental introduction:			
<i>Chaetorellia succinea</i>	YST false peacock fly	1991	Widely established in CA & OR, and spreading into WA, ID & NV. Currently being evaluated for nontarget impacts.

1 YST = yellow starthistle



Urophora sirunaseva



Bangasternus orientalis



Eustenopus villosus

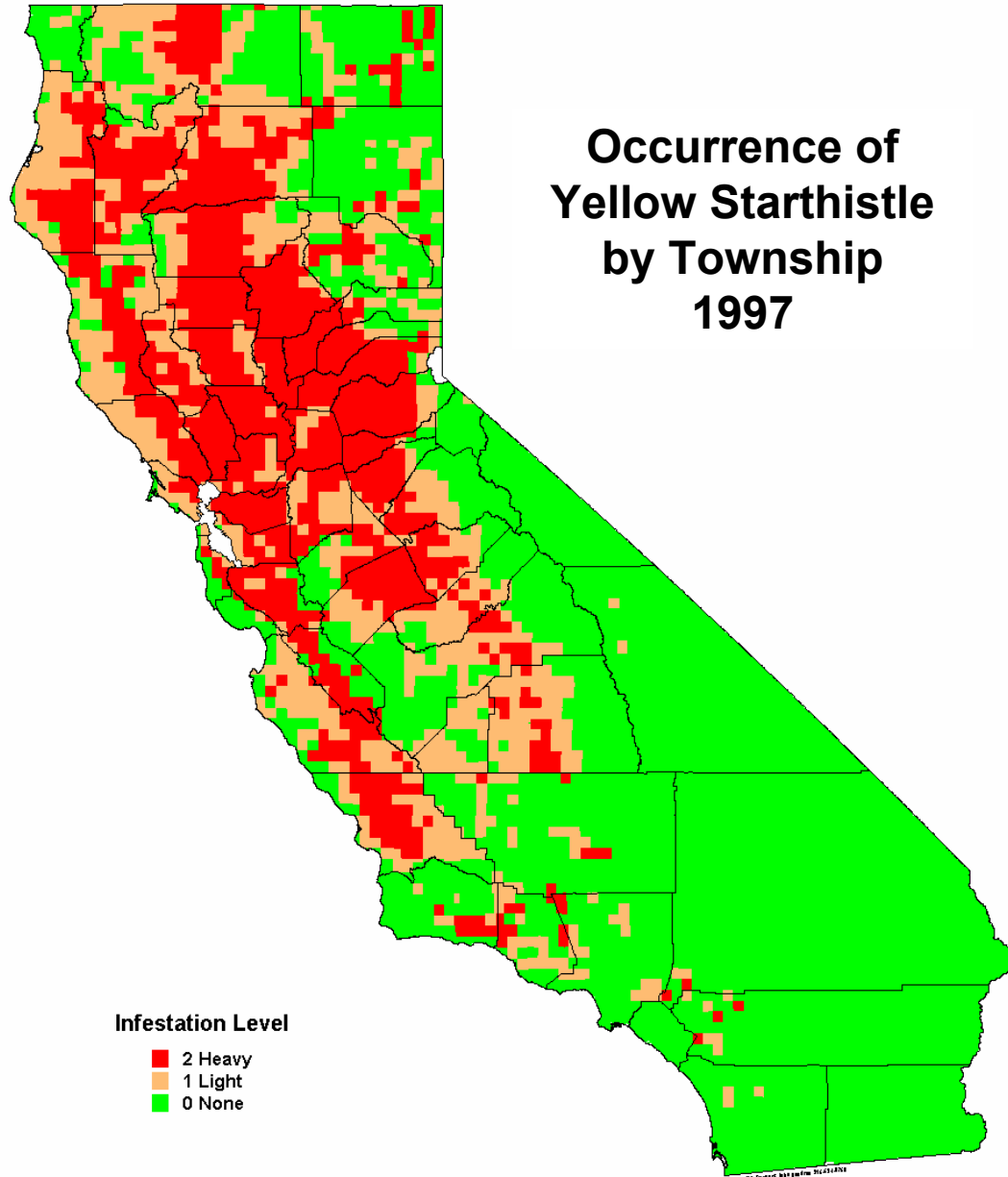


Larinus curtus



Chaetorellia succinea

Occurrence of Yellow Starthistle by Township 1997





*Eustenopus
villosus*

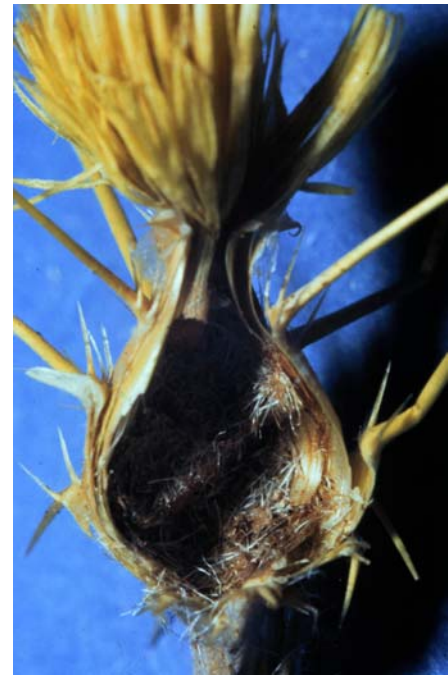
**yellow starthistle
hairy weevil**

Chews into unopened flower buds and lays egg

Larvae eat developing seeds & receptacle

One generation per year

Adults emerge from seedhead in 4 weeks





Chaetorellia succinea false peacock fly

UNAPPROVED INSECT

Can oviposit and develop on safflower in laboratory.

Did not attack safflower plot near dense fly population in Napa county.

Found in 1 of 47 private safflower fields (on Cargill 44; 0.2 - 5.0% infestation).

Not found in survey of 25 species of native thistles.

Balciunas and Villegas. 2001. *Environ. Entomol.* 30: 953-963.

Balciunas and Villegas. in press.

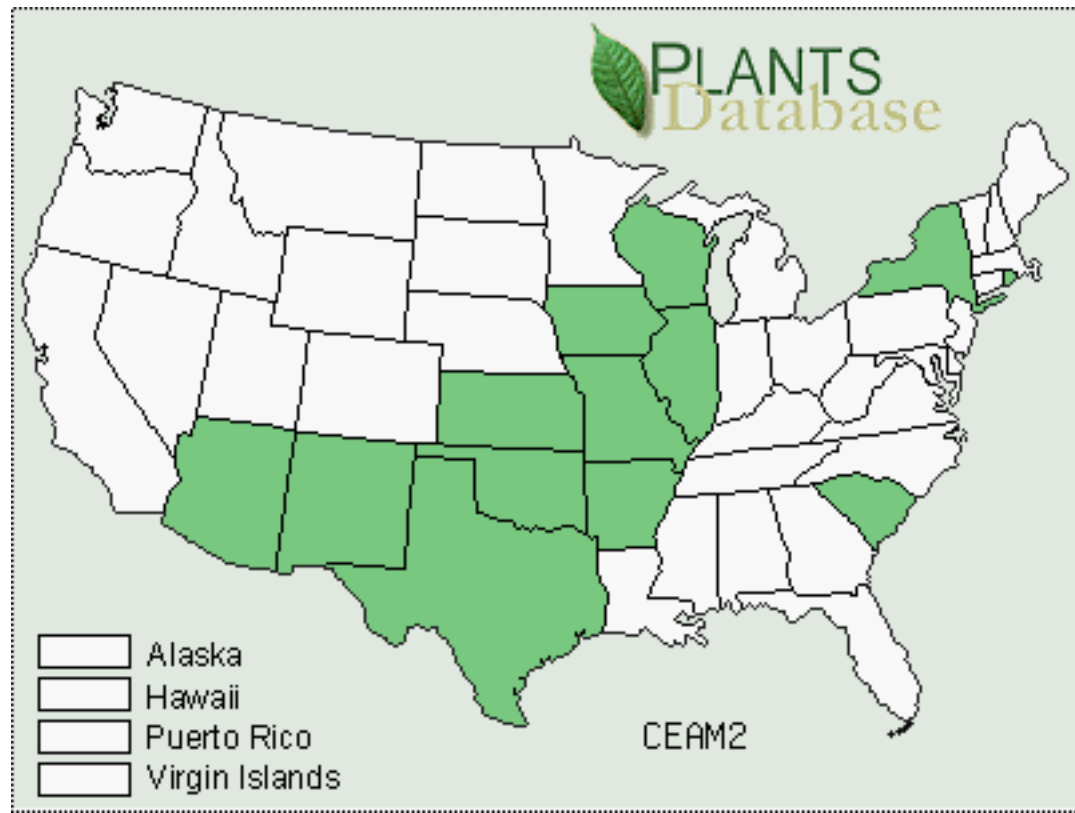


Chaetorellia succinea false peacock fly

UNAPPROVED INSECT

Can develop on
native plant
Centaurea americana

Balciunas and Villegas. in press.



Yellow Starthistle, Myrtle Creek, OR, 6/91



grazed by cattle

Yellow Starthistle, Myrtle Creek, OR, 7/95



Eustenopus villosus
no grazing

Oregon (E. Coombs)

At sites near Medford, The Dalles, and Umatilla County the weed is nearly gone.

Not all sites are being controlled. But, those spots where there is good competition from native species and where the ground has remained undisturbed are starting to show good control.

Idaho (L. Wilson, T. Prather, C. Kuykendall)

All insects are established and spreading.

Chaetorellia succinea is the most common fly.

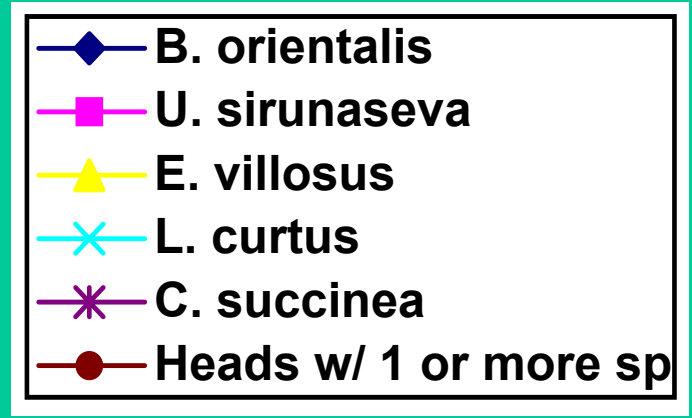
Eustenopus villosus is the most abundant weevil.

About 70% of susceptible seedheads are infested.

Washington (G. Piper)

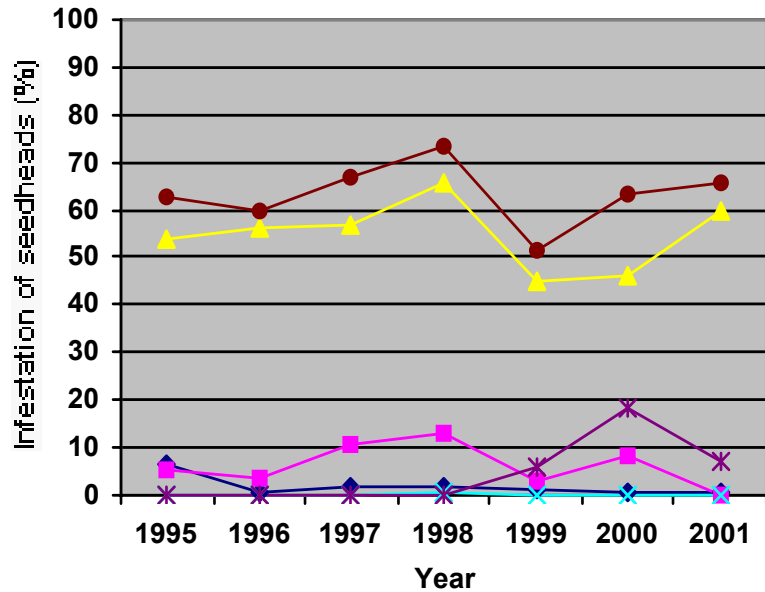
Eustenopus villosus is being distributed.

YST seedhead insects

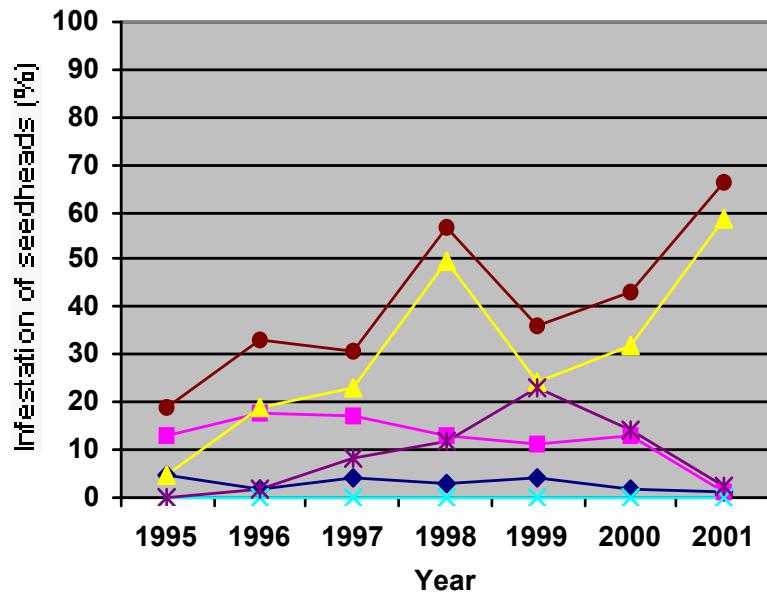


CDFA data

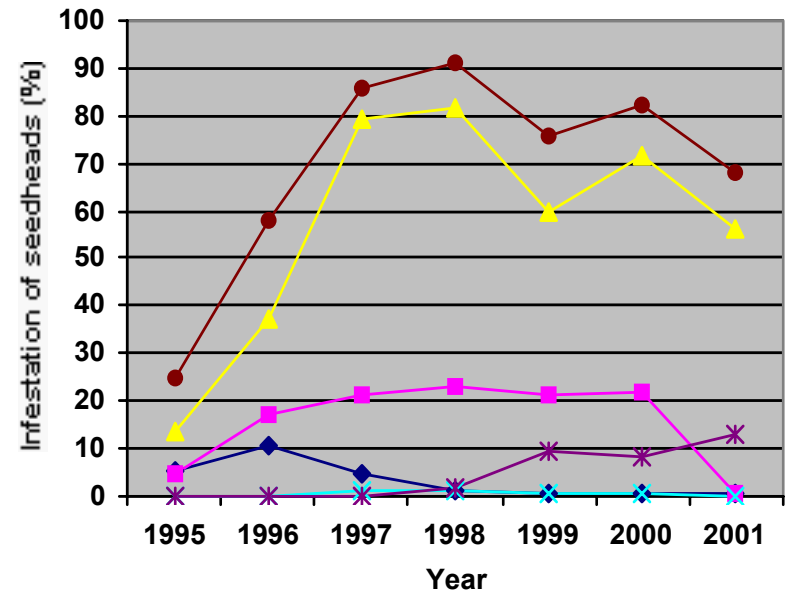
Placer County



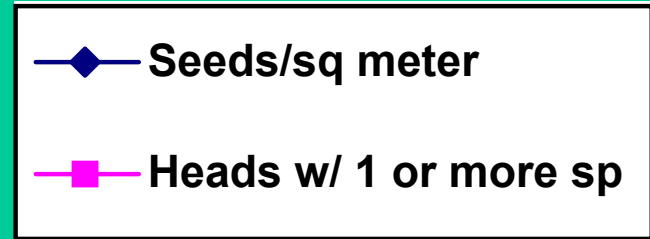
Yolo County



Sonoma County

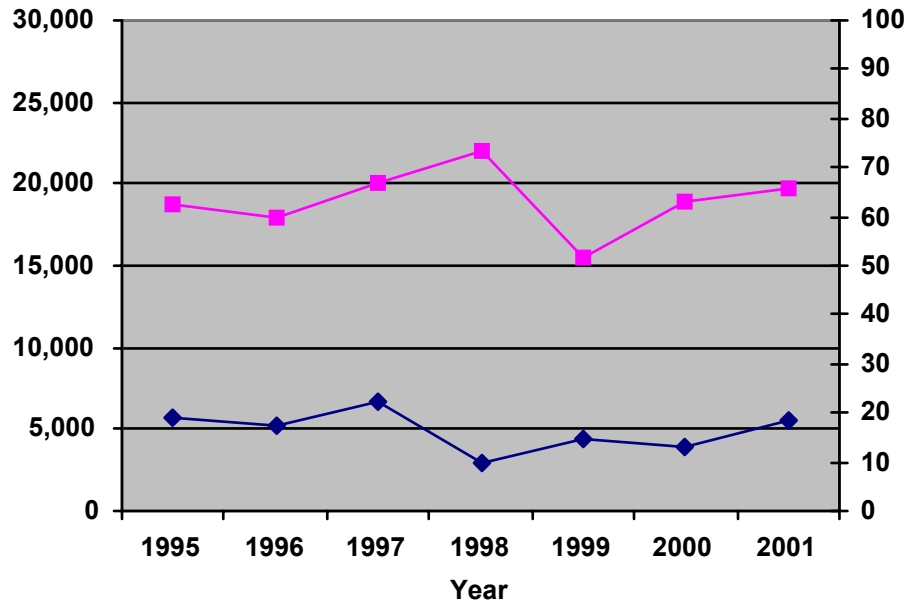


YST seedhead insects

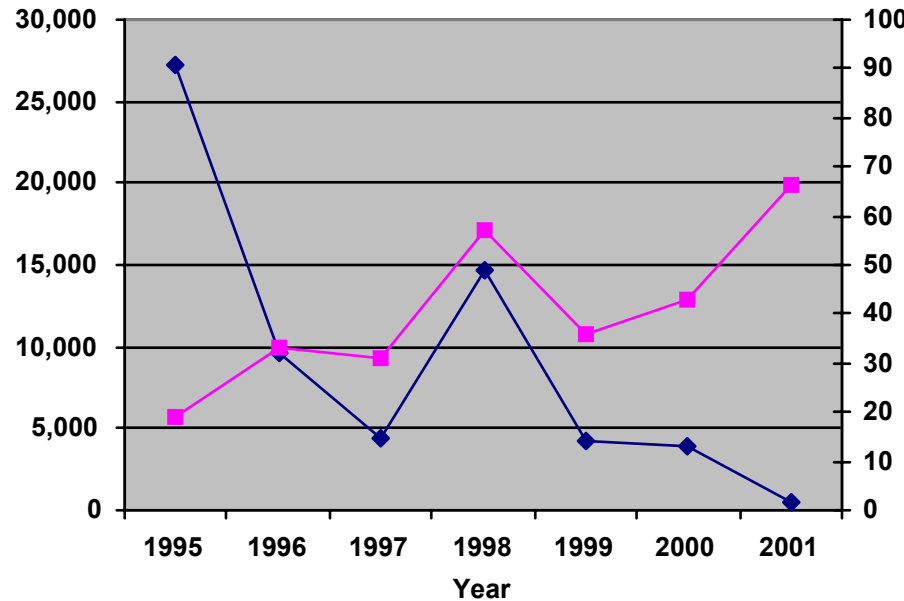


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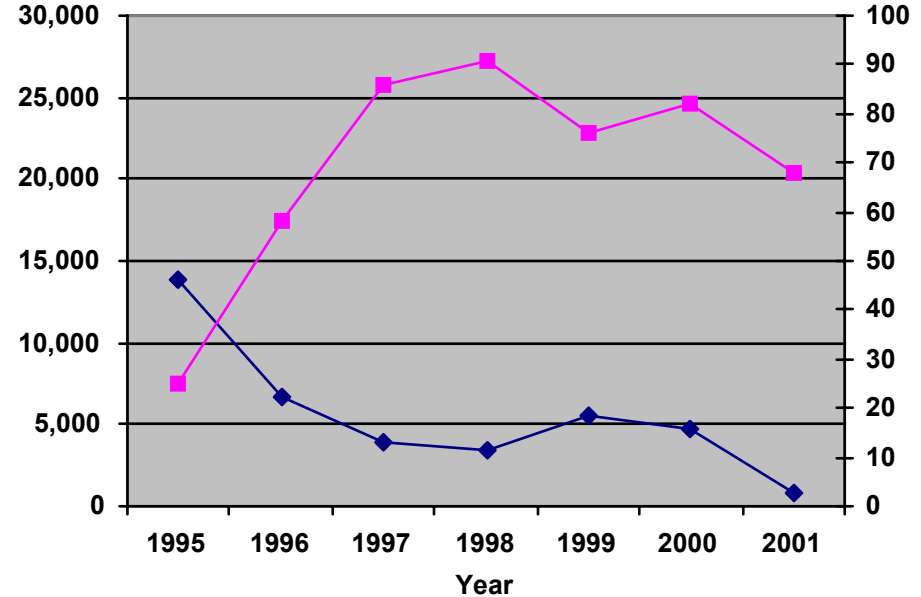
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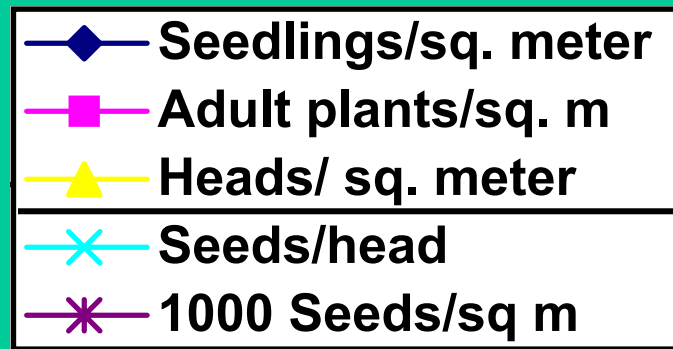
Yolo County



Sonoma County

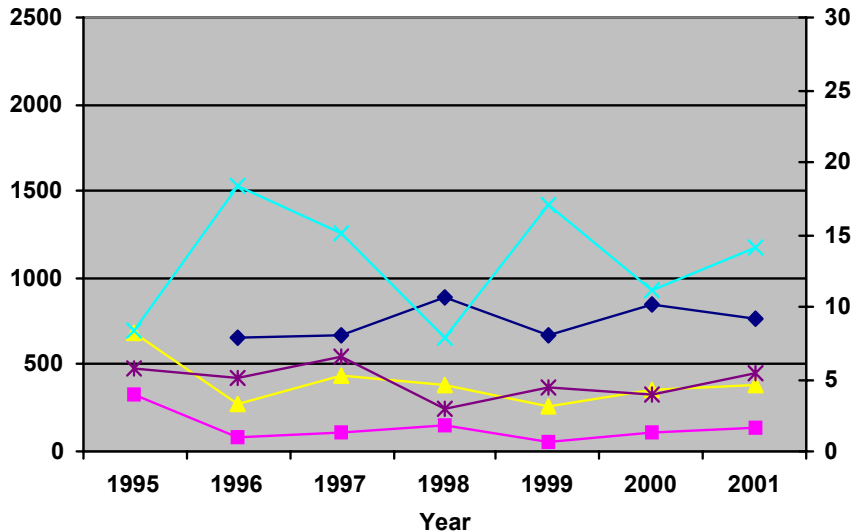


Impact of YST seedhead insects

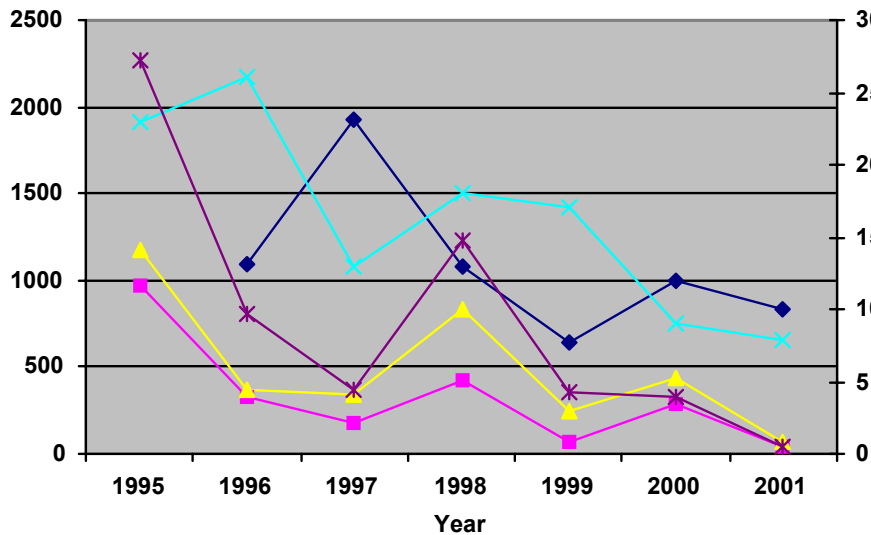


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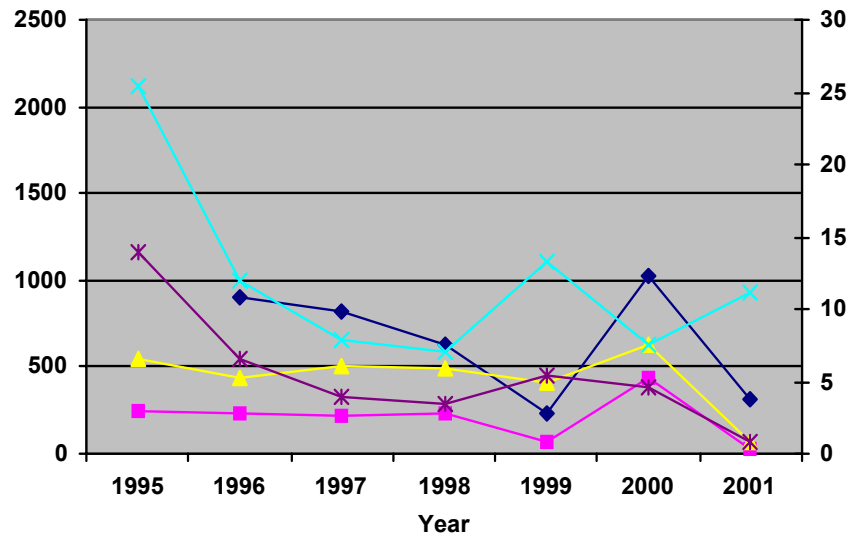
Placer County



Yolo County



Sonoma County



Future Agents for Yellow Starthistle

- Rust pathogen awaiting APHIS approval:
Puccinia jaceae var. solstitialis
- Quarantine testing of *Ceratapion basicorne*
- Foreign evaluation of agents that attack the roots and leaves of young plants:

Flea beetle - *Psylloides sp. nr. chalcomera* - Russia

Blister mite - *Aceria "solstitialis"* - Turkey

Rosette-boring fly - *Botanophila turcica* - Greece

Lace bug - *Tingis grisea* - Turkey

Seedhead weevil - *Larinus filiformis* - Turkey

Soil borne pathogens - France



root crown weevil

Ceratapion basicorne

Abundant in Turkey

Can oviposit on safflower
Does not prefer safflower
Poor development on
safflower
Field tests in Turkey &
Greece

L. Smith, USDA-ARS, Albany,
EBCL & collaborators





Ataturk University, Erzurum, Turkey (*Ceratapion* yellow starthistle field test) 3/7/02



Cat (1850 m), 3/29/02



Askale (1630 m), 4/27/02



Horasan (1500m), 5/27/02



YST
- Turkey
- California

Safflower
- oleic
- linoleic



Flea beetle - *Psylloides* sp. nr. *chalcomera* - Russia



Population from yellow starthistle in Russia attacks only yellow starthistle.


Blister mite - *Aceria "solstitialis"* - from Turkey



Rosette-boring fly
Botanophila turcica
from Greece

Attacks rosettes in late winter.

Same nominal species attacks *Carthamus lanatus* in France (CSIRO project).



Botanophila turcica Hennig (Anthomyiidae); det. V. Michelsen, 2001.
Reared from larvae feeding on root crowns of YST (*Centaurea solstitialis*); from vicinity of Kilkis, N. Greece. [photo: E. Fisher 2001]

Lace bug - *Tingis grisea* - from Turkey



***Seedhead weevil - Larinus filiformis* - from Turkey**





Russian thistle

Salsola tragus

(type A, B, C)

S. australis

S. iberica

S. kali

S. pestifer

Barbwire thistle

Salsola paulsenii

lax and spinosa

Chenopodiaceae

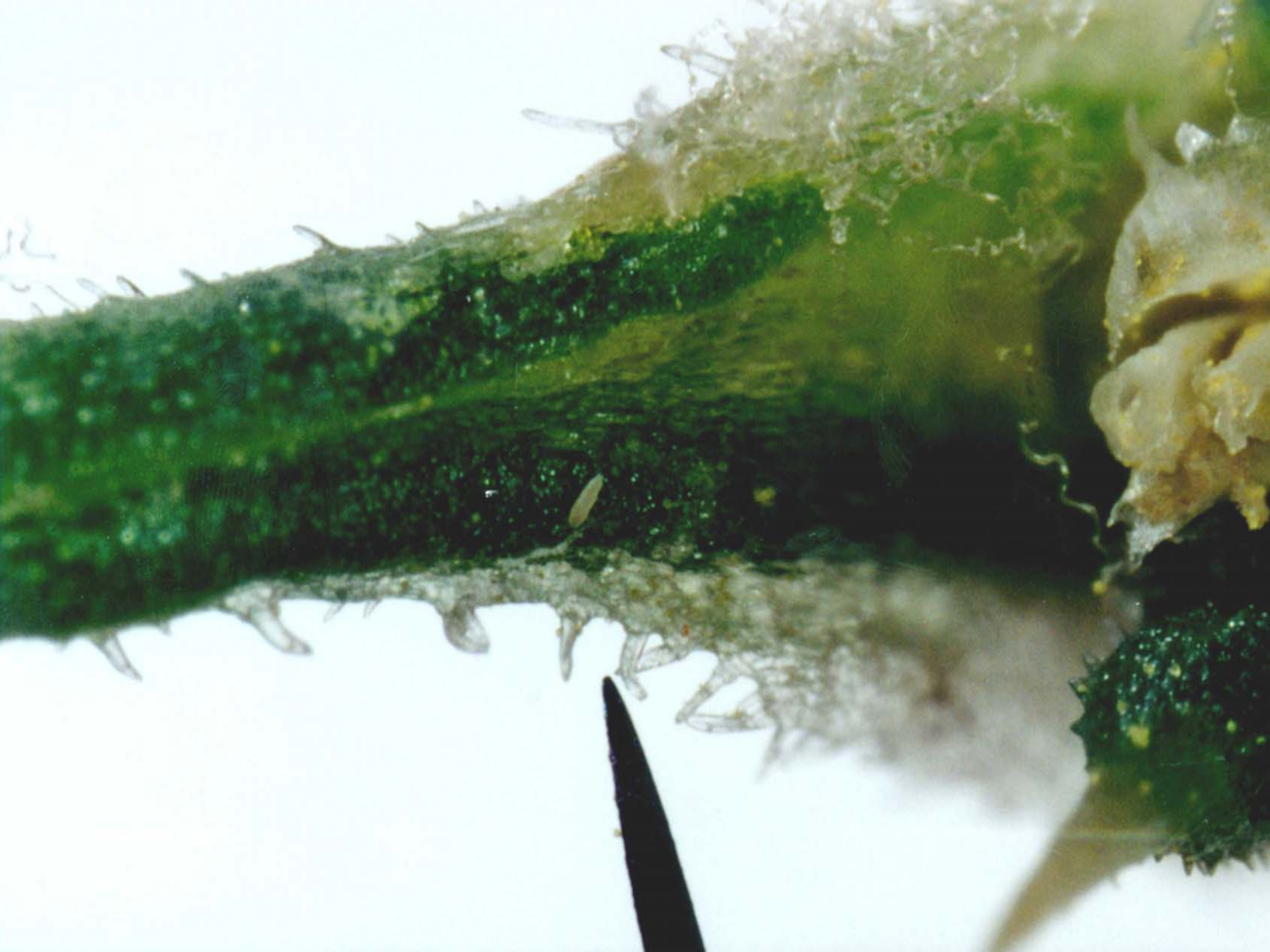
***Aceria salsolae*
on *Salsola tragus***



Healthy cutting

**Infested plant
from Greece**





Future Agents for Russian thistle

- Blister mite, *Aceria salsolae*
- Gall midge, *Desertovelum stackelbergi*
- Seed-feeding caterpillar, *Gymnancyla canella*
- Plant bug, *Piesma salsolae*

- Fungus, *Colletotrichum gloeosporioides*
- Rust fungus, *Uromyces salsolae*

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