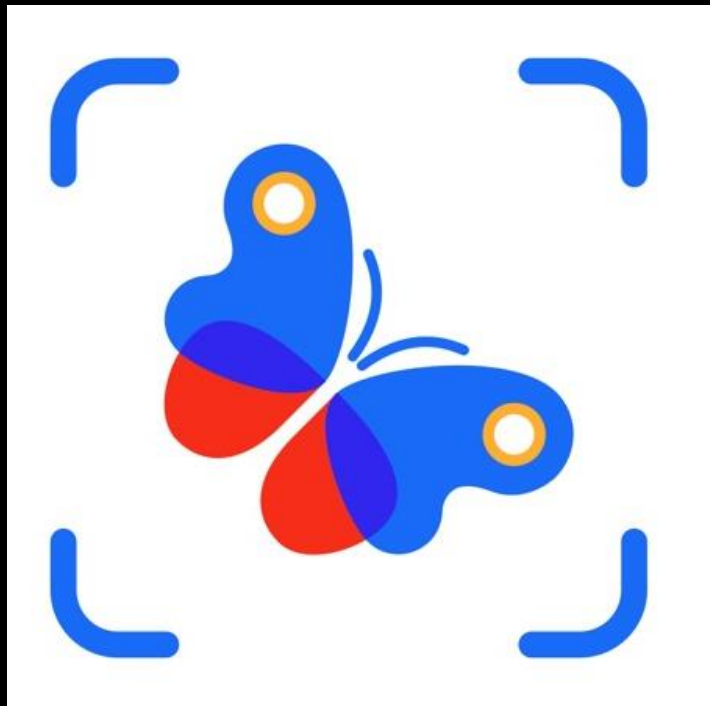


Which Pest ID Apps Should You Use?



Eric Middleton
UCCE IPM Advisor
10/15/2024



Need for Scopes: Pictures

Need good pictures for good ID

Phones, other cameras rarely up to the task

Inexpensive and accessible options:

Phone Camera Scope

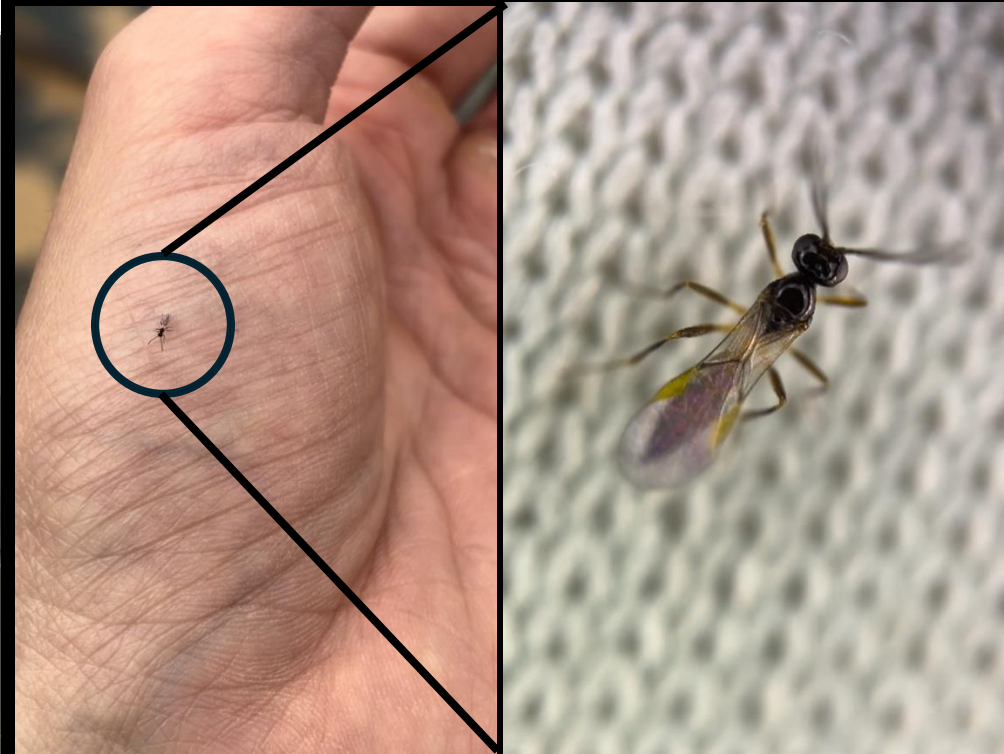
\$20-\$40. Clip onto phone

Handheld Digital Scope

~\$200 for decent model

Connects to computer

Take picture through
microscope, hand lens



Pest ID Resources

UC IPM Website

Best place to start

Broken down by crop and common pests

You will usually find your pest, gives management info



BugGuide

Good place to go for confirmation

High quality photos, can compare to others



Insect ID Apps and Services

Several different insect ID apps available

How good are they?

Tested **5** different common options



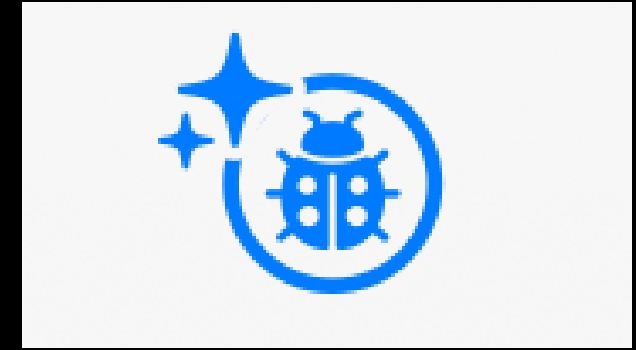
Seek by iNaturalist

Free, take pictures or import photos
Gives 1 ID option usually



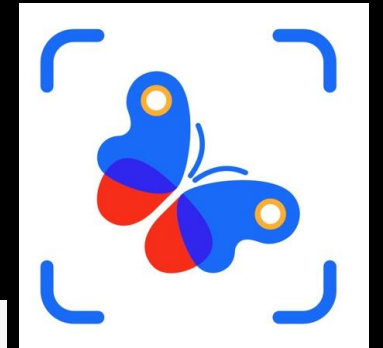
Visual Look Up (iPhone)

Free with newer iPhones, icon in center below
Automatically identifies existing photos
Gives 2 ID options, pictures below



Picture Insect

7 day free trial, \$29.99 a year
Asks for location, gives other info, 3 ID options



Insect Identifier

3 day free trial, \$2.99 a week
Gives other info, gives 1 ID option and pics



Seek by iNaturalist

Free, take pictures or import photos

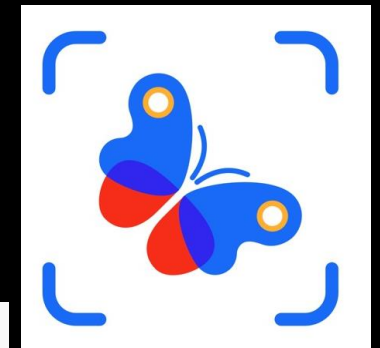
Criteria for Comparing

1. Accuracy
2. False certainty?
3. Ease of use
4. Price

Insect Identifier

3 day trial, \$2.99 a week

Gives other info, gives 1 ID option and pics



Pictures for Comparison

Range of insects and sizes

Range of probable difficulty

All apps work better for big bugs
(and butterflies, bees especially)

Pests: Usually fewer
pictures for AI to pull from

Easy

Hard



*Rhynchophorus
palmarum*
Palm Weevil



Hoplia sp.




Aphidius sp.



*Frankliniella
occidentalis*
Western Flower
Thrips

Seek by iNaturalist (Free)




WE BELIEVE THIS IS A MEMBER OF THE ORDER


Snout And Bark Beetles

But Seek couldn't identify the exact species

You can try a different angle, zoom in, or get a clearer shot of the organism.



TAKE ANOTHER PHOTO



WE BELIEVE THIS IS A MEMBER OF THE GENUS


Hoplia

But Seek couldn't identify the exact species

You can try a different angle, zoom in, or get a clearer shot of the organism.



TAKE ANOTHER PHOTO




WE BELIEVE THIS IS A MEMBER OF THE ORDER


Narrow-waisted Wasps, Ants, And Bees

But Seek couldn't identify the exact species

You can try a different angle, zoom in, or get a clearer shot of the organism.



TAKE ANOTHER PHOTO




WE BELIEVE THIS IS A MEMBER OF THE CLASS

Winged And Once-winged Insects

But Seek couldn't identify the exact species

You can try a different angle, zoom in, or get a clearer shot of the organism.



TAKE ANOTHER PHOTO

Only ok results. Helpful in limited situations, but also free

I appreciate how it doesn't give false certainty


Might be useful to have, but almost never to rely on


Visual Look Up (iPhone)

(Free with newer iPhones)



Results


 **Rhynchophorus palmarum**
Species of beetle
Wikipedia


 **Rhynchophorus cruentatus**
Species of beetle
Wikipedia

Similar Web Images



Results

 **Hoplia**
Genus of scarab beetles
Wikipedia


 **Hoplia trivialis**
Species of insect
Wikipedia


Similar Web Images



Results

Siri Knowledge

 **Prenolepis imparis**
Species of insect
Wikipedia

 **Aphidius colemani**
Species of insect
Wikipedia

Similar Web Images



Results

Siri Knowledge

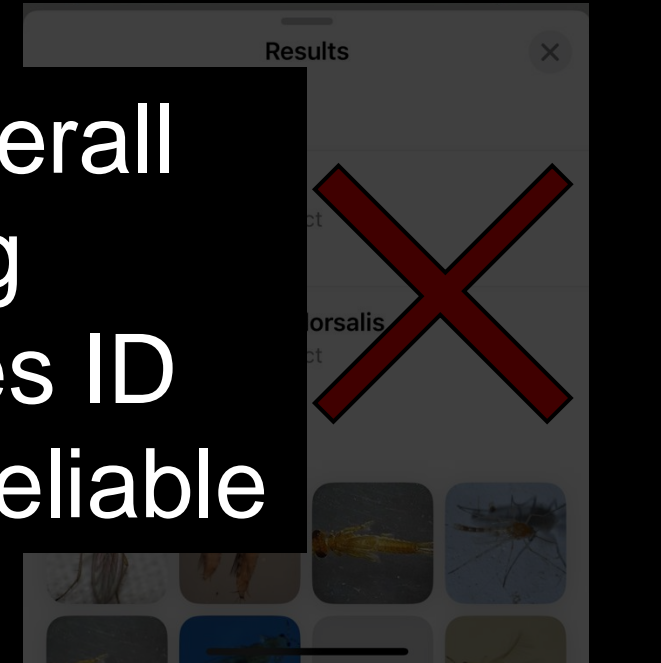
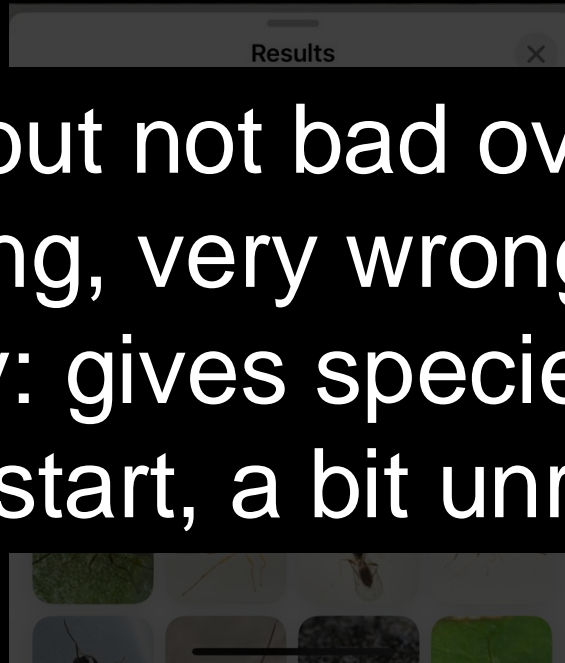
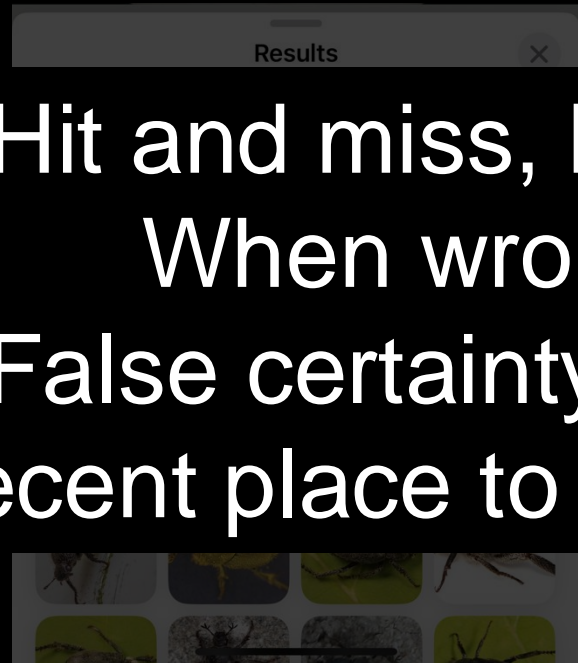
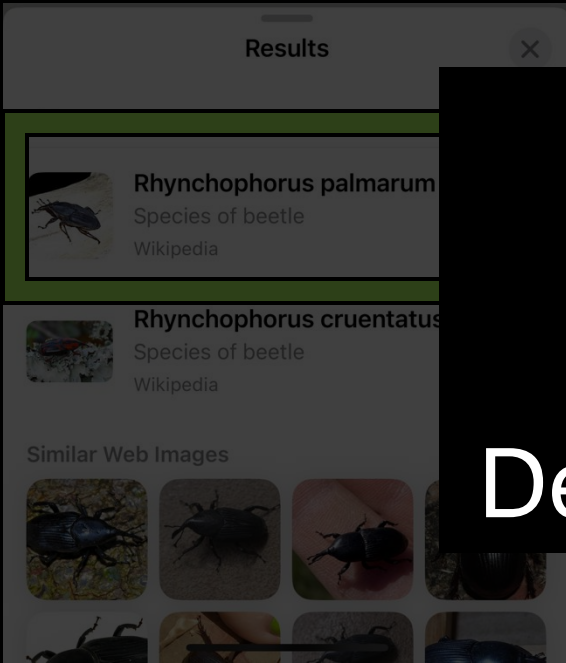
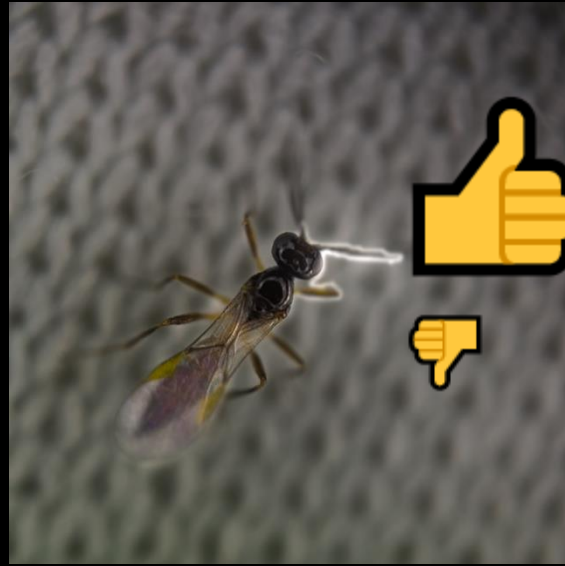
 **Argia alberta**
Species of insect
Wikipedia

 **Scirtothrips dorsalis**
Species of insect
Wikipedia

Similar Web Images

Visual Look Up (iPhone)

(Free with newer iPhones)



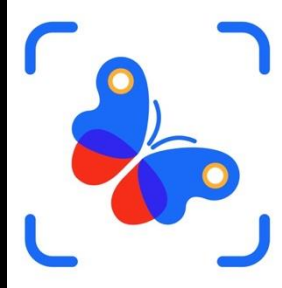
Hit and miss, but not bad overall
When wrong, very wrong
False certainty: gives species ID
Decent place to start, a bit unreliable

Picture Insect

(\$29.99 a year)



Palm weevil



Palmetto weevil, a species of Palm weevils(Dryophthoridae)

Also known as: **Giant palm weevil**

Scientific name: **Rhynchophorus cruentatus**

Non-invasive **Harmful to plants**

Basic info Effects Observation

Images of Palmetto weevil

Ask me anything

A large red 'X' is overlaid on the 'Non-invasive' and 'Harmful to plants' tags.

South American palm weevil, a species of Palm weevils(Dryophthoridae)

Also known as: **Palm weevil, Palm-marrow weevil, American Palm Weevil, Palm mar** More

Scientific name: **Rhynchophorus palmarum**

Harmful to plants

Basic info Effects Observation

Ask me anything

Banana stem weevil, a species of Palm weevils(Dryophthoridae)

Also known as: **Banana stem-boring weevil, Banana stem-borer weevil**

Scientific name: **Odoiporus longicollis**

Harmful to plants

Basic info Effects Observation

Ask me anything

A large red 'X' is overlaid on the 'Harmful to plants' tag.

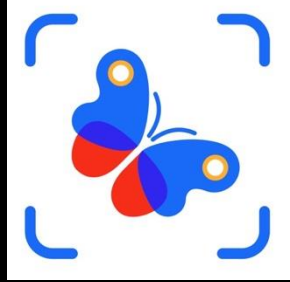


Picture Insect

(\$29.99 a year)



Hoplia beetle



Hoplia argentea, a species of Melolonthidae

Non-toxic Harmful to plants

Basic info Effects Observation

Images of Hoplia argentea

Ask me anything

Melolontha papposa, a species of Melolonthidae

Genus: Melolontha, commonly called Cockchafer or May bugs.

Harmful to plants

Basic info Effects Observation

Images of Melolontha papposa

Ask me anything

Garden chafer, a species of Rutelidae

Also known as: Bracken clock, Garden foliage beetle, Bracken chafer, Garden chafer beetle

Scientific name: Phaedon ornithicola

Non-toxic Harmful to plants

Basic info Effects Observation

Ask me anything

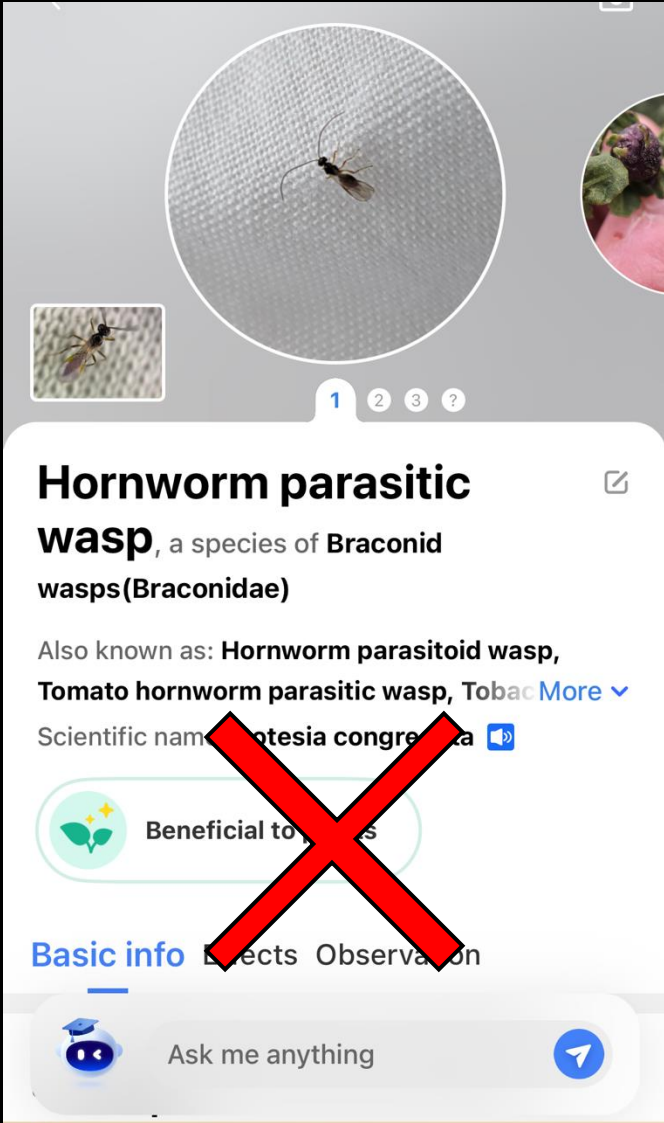
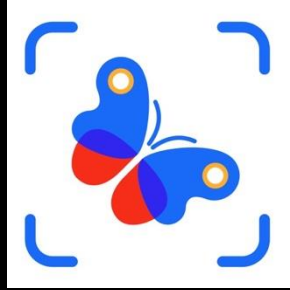


Picture Insect

(\$29.99 a year)



Aphidius sp.



The screenshot shows a circular image of the wasp from the top right. Below it, the app has identified it as a "Hornworm parasitic wasp, a species of Braconid wasps (Braconidae)". A large red 'X' is drawn over the text. The "Beneficial to plants" tag is highlighted in green. At the bottom, there is a "Basic info" section and a "Ask me anything" chat bubble.

Hornworm parasitic wasp, a species of Braconid wasps (Braconidae)

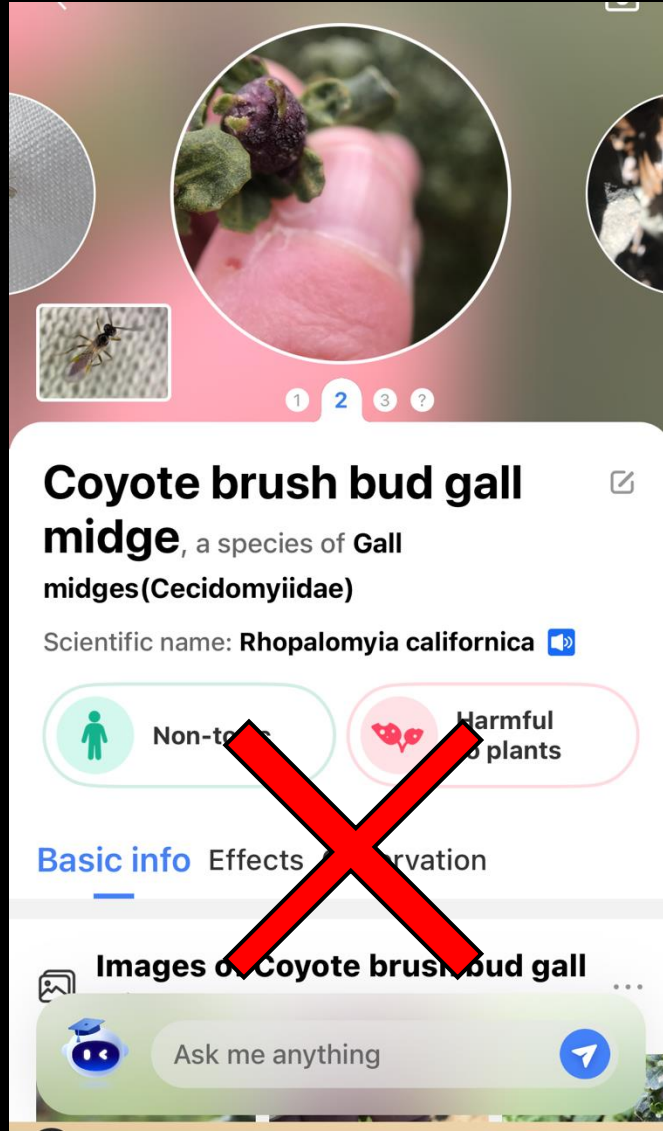
Also known as: Hornworm parasitoid wasp, Tomato hornworm parasitic wasp, Tobac [More](#) ▾

Scientific name: *Phaenocarpa congregata* 🔊

Beneficial to plants

Basic info Effects Observation

Ask me anything



The screenshot shows a circular image of a pink flower bud with a gall. Below it, the app has identified it as a "Coyote brush bud gall midge, a species of Gall midges (Cecidomyiidae)". A large red 'X' is drawn over the text. The "Harmful to plants" tag is highlighted in pink. At the bottom, there is a "Basic info" section and a "Ask me anything" chat bubble.

Coyote brush bud gall midge, a species of Gall midges (Cecidomyiidae)

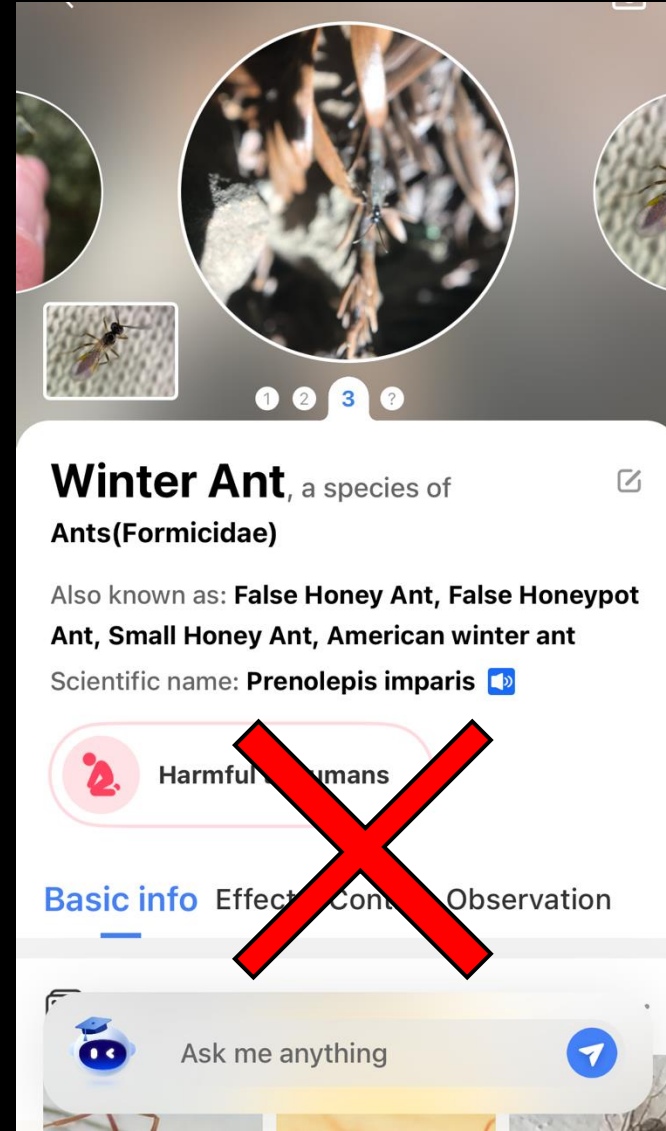
Scientific name: *Rhopalomyia californica* 🔊

Non-toxic to humans Harmful to plants

Basic info Effects Observation

Images of Coyote brush bud gall

Ask me anything



The screenshot shows a circular image of an ant on a leaf. Below it, the app has identified it as a "Winter Ant, a species of Ants (Formicidae)". A large red 'X' is drawn over the text. The "Harmful to humans" tag is highlighted in pink. At the bottom, there is a "Basic info" section and a "Ask me anything" chat bubble.

Winter Ant, a species of Ants (Formicidae)

Also known as: False Honey Ant, False Honey Ant, Small Honey Ant, American winter ant

Scientific name: *Prenolepis imparis* 🔊

Harmful to humans

Basic info Effects Observation

Ask me anything

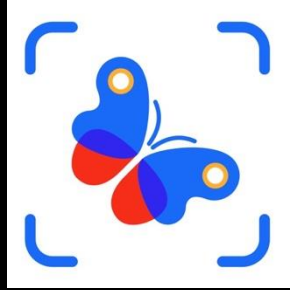


Picture Insect

(\$29.99 a year)



Western Flower Thrips



Western flower thrips, a species of **Common thrips(Thripidae)**

Also known as: **Western flower thrip, Alfalfa thrips, Western grass thrips**

Scientific name: **Frankliniella occidentalis**

Non-toxic **Harmful to plants**

Basic info Effects Observation

Ask me anything

A pointwinged fly, a species of **Spear-winged flies(Lonchopteridae)**

Also known as: **Small grass fly**

Scientific name: **Lonchoptera bifurcata**

Basic info Observation

Fun Facts

A pointwinged fly is known for its remarkable wing maneuverability, capable of performing extreme banking turns to evade predators

Ask me anything

Predator-Prey Relationship

Tricholauxania praeusta, a species of **Lauxaniid flies(Lauxaniidae)**

Basic info Observation

Images of Tricholauxania praeusta

Ask me anything



Picture Insect (\$29.99 a year)

Overall, pretty decent

Correct ID on most

Other guesses often show consistency

Often close or useful even when wrong

Lots of other info

Useful for kids, the public

Some false certainty, but less

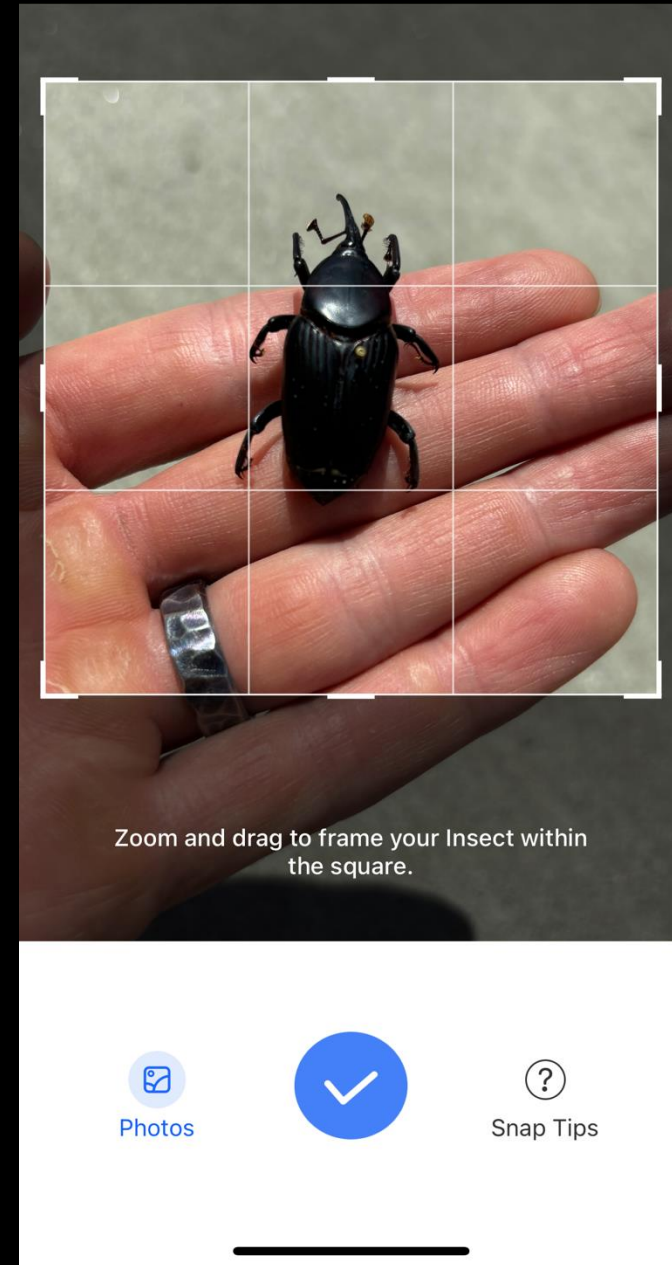
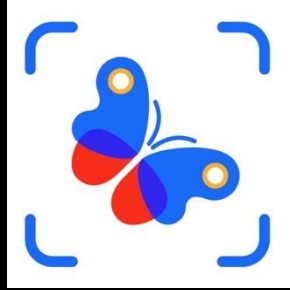
Multiple ID options help with this

Be careful though!

Some results got pretty weird

Costs \$30 a year. Not too bad

Decent starting point, can be useful



Insect Identifier (\$2.99 a week)



Result

European Stag Beetle

Lucanus cervus

Results

Wiki



Result

Black Vine Weevil

Otiorhynchus sulcatus

Results

Wiki



Result

Long-necked Seed Bug

Myodocha serripes

Results

Wiki



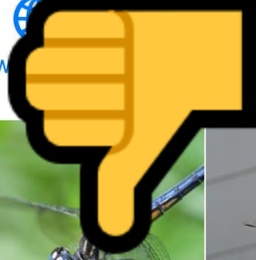
Result

Blue Dasher

Pachydiplax longipennis

Results

Wiki



Lucanus cervus, the European stag beetle, is one of the best-known species of stag beetle (family Lucanidae) in Western Europe. It is a pest of many garden plants.

Species **Lucanus cervus**

Genus **Lucanus**

Black vine weevil (*Otiorhynchus sulcatus*) is a species of weevil, a type of insect native to Europe. It is a pest of many garden plants, well. It is a pest of many garden plants.

Species **Otiorhynchus sulcatus**

Genus **Otiorhynchus**

Myodocha serripes, the long-necked seed bug, is a species of seed bug in the family Rhyparochromidae. It is a pest of many garden plants.

Species **Myodocha serripes**

Genus **Myodocha**

The blue dasher (*Pachydiplax longipennis*) is a dragonfly of the skimmer family. It is the only species in the genus *Pachydiplax*. It is very common in North America.

Species **Pachydiplax longipennis**

Genus **Pachydiplax**



Insect Identifier



Don't think I can say anything good about it

Wrong ID on basically everything

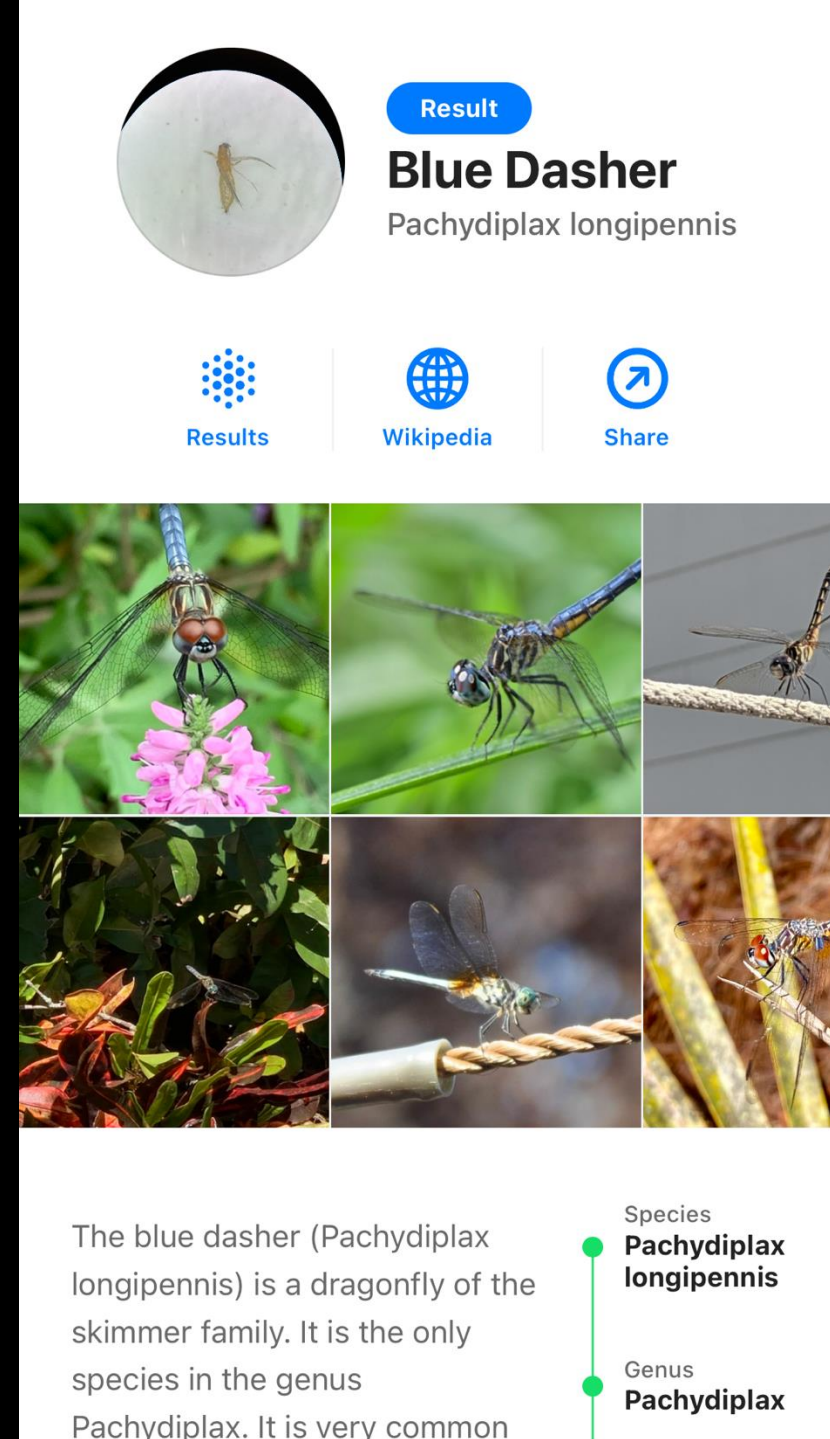
And IDs were very clearly wrong

Only one ID option, and gave false certainty
(Identified to species)

Costs \$3 a week (\$156 a year?!)

Can set it to \$30 a year, but not default

Do NOT use Insect Identifier!



The screenshot shows the app's interface for identifying a dragonfly. At the top, a circular image of a dragonfly is shown. Below it, a blue button labeled "Result" is visible. The identified species is "Blue Dasher" (*Pachydiplax longipennis*). Below the identification, there are three icons: "Results" (a cluster of dots), "Wikipedia" (a globe), and "Share" (a share icon). Below the main interface, there is a grid of six images showing the dragonfly in various natural settings. At the bottom, there is a text block providing information about the species and its classification.

Result
Blue Dasher
Pachydiplax longipennis

Results Wikipedia Share

The blue dasher (*Pachydiplax longipennis*) is a dragonfly of the skimmer family. It is the only species in the genus *Pachydiplax*. It is very common

Species
Pachydiplax longipennis

Genus
Pachydiplax

Insect ID App Review

Results vary a lot

Seek not the best

But did not give false certainty

Visual Look Up not bad half the time

Did give false certainty, some weird results

Picture Insect probably best

Decent results, some consistency, other info

Still some false certainty, costs \$30 a year

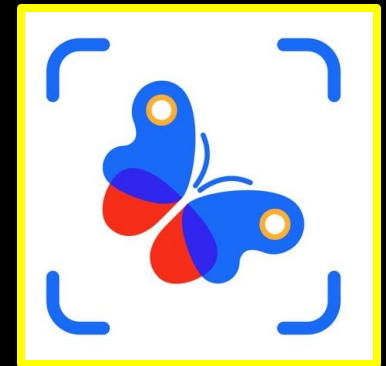
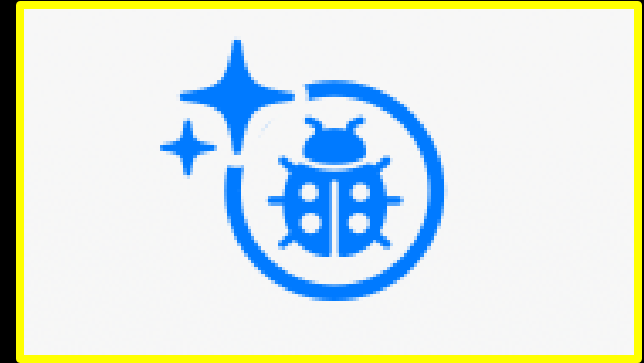
Note: gives “standard” answers sometimes!

Thrips= WFT, mealybug=Comstock mealybug

Insect Identifier is terrible

Do not use it

Visual Look Up, Picture Insect most useful...



Google Lens

Hadn't included this at first, but it's used by PCAs, growers Free, does a reverse image search and gives suggestions



Search interface for Rhynchophorus ferrugineus. The search bar contains a beetle image and the text "Add to search". Below the search bar are tabs for "All", "Products", "Visual matches", and "About this image". Three image results are shown: Rhynchophorus ferrugineus, Rhynchophorus palmarum, and a Dung beetle.

Detail view for Rhynchophorus ferrugineus. It includes a "Follow" button, a "Thumbs up" icon, and a "Thumbs down" icon. A large "Thumbs up" icon is overlaid on the image. At the bottom, there is a feedback prompt: "Are these results useful? Yes No X".

Search interface for Hoplia. The search bar contains a beetle image and the text "Add to search". Below the search bar are tabs for "All", "Products", "Visual matches", and "About this image". Two image results are shown: Hoplia and Rutelidae.

Detail view for Hoplia. It includes a "Follow" button, a "Thumbs up" icon, and a "Thumbs down" icon. A large "Thumbs up" icon is overlaid on the image. At the bottom, there is a feedback prompt: "Are these results useful? Yes No X".

Search interface for Aphidiinae. The search bar contains a wasp image and the text "Add to search". Below the search bar are tabs for "All", "Products", "Visual matches", and "About this image". Three image results are shown: Aphidiinae, Braconid wasps, and Wasp.

Detail view for Aphidiinae. It includes a "Follow" button, a "Thumbs up" icon, and a "Thumbs down" icon. A large "Thumbs up" icon is overlaid on the image. At the bottom, there is a feedback prompt: "Are these results useful? Yes No X".

Search interface for Thrips. The search bar contains a thrips image and the text "Add to search". Below the search bar are tabs for "All", "Products", "Visual matches", and "About this image". A "Follow" button is visible. Below the tabs are buttons for "Overview", "Life cycle", "Predators", and "Lower c". A large "Thumbs up" icon is overlaid on the image. At the bottom, there is a feedback prompt: "Are these results useful? Yes No X".

Google Lens



Hadn't included this at first, but it's used by PCAs, growers
Free, does a reverse image search and gives suggestions

Overall, Google Lens seems best

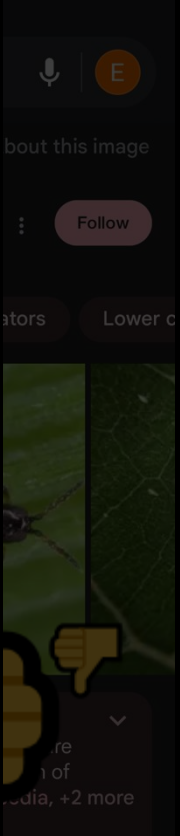
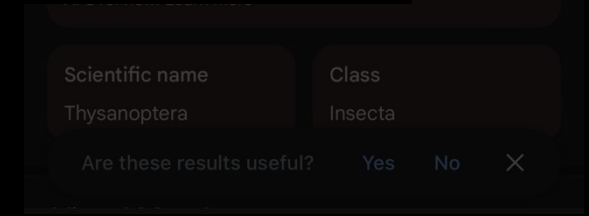
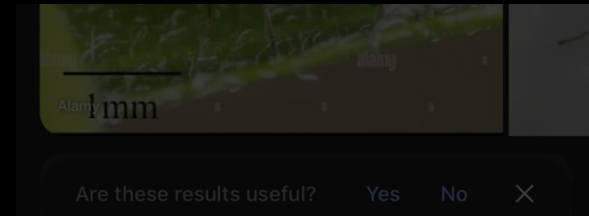
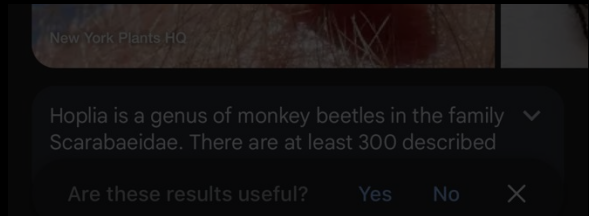
Has most good attributes of other apps

Pretty accurate results

Did not provide false certainty (mostly)

Doesn't only do species ID

I'd now recommend Google Lens most

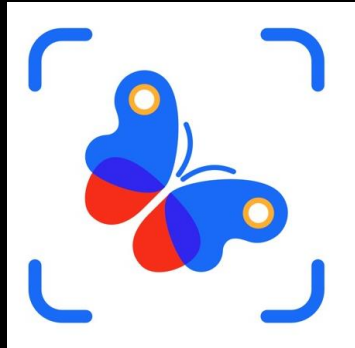
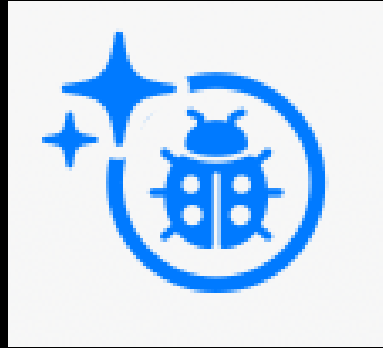


Good

Bad



Google Lens
Best Overall



Visual Look Up
Picture Insect
Both Decent
False Certainty



Seek
Not Great
But Not Dangerous



Insect Identifier
Actively Bad

Insect ID App Considerations

Almost always requires magnification

The better the picture, the better the outcome

The apps identify similar pictures, not similar insects

Be aware of this, helps explain incorrect results

Take picture in natural context, avoid multiple species

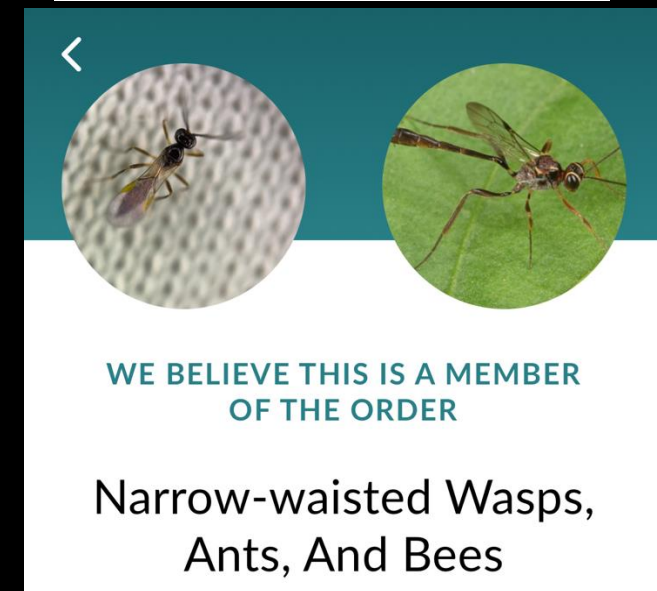
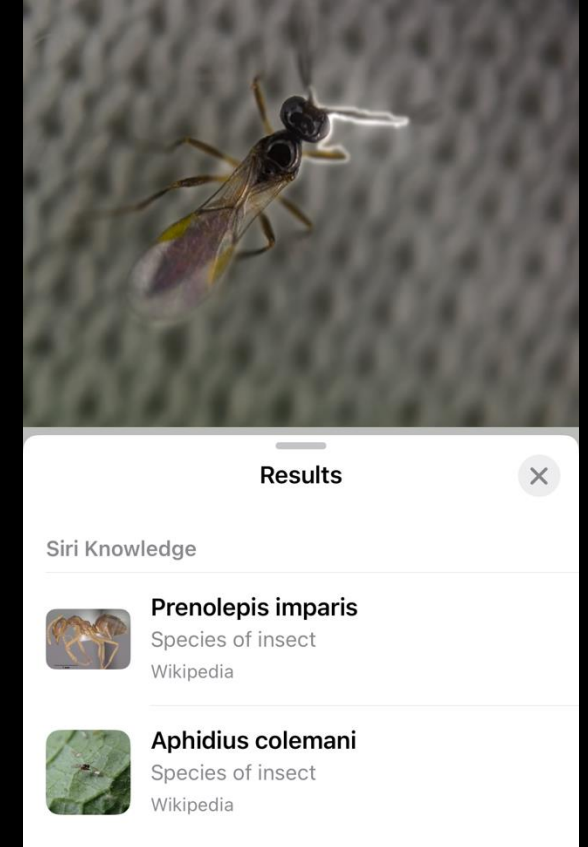
Use these as a starting point to learn more

Don't rely on results, especially for management decisions

Don't rely on results that are too specific

Be skeptical when using these!

They are useful tools, not reliable identifiers





Questions?

egmittleton@ucanr.edu