

This is an introduction to the information that needs to be added to an iNat observation to make it useful for analysis of the phenology of the inducer. See [this document for an introduction](#) to using Microsoft PowerAutomate to make this process more efficient. This is just a summary of the desired outcome and how to interpret various cases.

Annotations (note that there are keyboard shortcuts to add these in the Identify window):

The screenshot shows the iNaturalist 'Identify' window for the genus *Amphibolips*. The 'Annotations' tab is selected, displaying a table of attributes to be annotated. A 'Keyboard Shortcuts' overlay is visible, listing shortcuts for adding various annotations.

Attribute	Value	Agree	Disagree
Alive or Dead	Select ▾		
Evidence of Presence	Gall	👍	👎
Evidence of Presence	Select ▾		
Life Stage	Select ▾		
Sex	Select ▾		

Keyboard Shortcuts

x	Organism Appears Captive / Cultivated	a then a	Add "Alive or Dead: Alive" annotation
r	Mark As Reviewed	a then d	Add "Alive or Dead: Dead" annotation
c	Comment	a then c	Add "Alive or Dead: Cannot Be Determined" annotation
a	Agree	e then o	Add "Evidence of Presence: organism" annotation
i	Add ID	e then s	Add "Evidence of Presence: scat" annotation
f	Add to Favorites	e then g	Add "Evidence of Presence: gall" annotation
z	Zoom Photo	e then t	Add "Evidence of Presence: track" annotation
←	Previous Observation	e then m	Add "Evidence of Presence: molt" annotation
→	Next Observation	l then a	Add "Life Stage: Adult" annotation
SHIFT + ←	Previous Tab	l then p	Add "Life Stage: Pupa" annotation
SHIFT + →	Next Tab	l then l	Add "Life Stage: Larva" annotation
ALT/CMD + ←	Previous Photo	l then e	Add "Life Stage: Egg" annotation
ALT/CMD + →	Next Photo	l then j	Add "Life Stage: Juvenile" annotation
?	Show Keyboard Shortcuts	s then f	Add "Sex: Female" annotation
ALT/CMD + ↑	Increase Brightness	s then m	Add "Sex: Male" annotation
ALT/CMD + ↓	Decrease Brightness	s then c	Add "Sex: Cannot Be Determined" annotation

At the bottom of the window, there are checkboxes for 'Add to Favorites', 'Captive / Cultivated', and 'Reviewed'.

If an observation contains a gall, add **Evidence of Presence: Gall**

If it contains a cross section showing a Larva or Pupa, or Adult, or a free-living adult, add **Evidence of Presence: Organism** as well as **Life Stage: Larva or Pupa or Adult** as needed. If the observation contains organisms in multiple stages, you can ask the uploader to duplicate the observation; otherwise, pick the most advanced stage. There will probably never be an egg observation on iNat for a gall inducer but if there is, it would be tagged EoP: Organism and Life Stage: Egg.

Observation Fields:

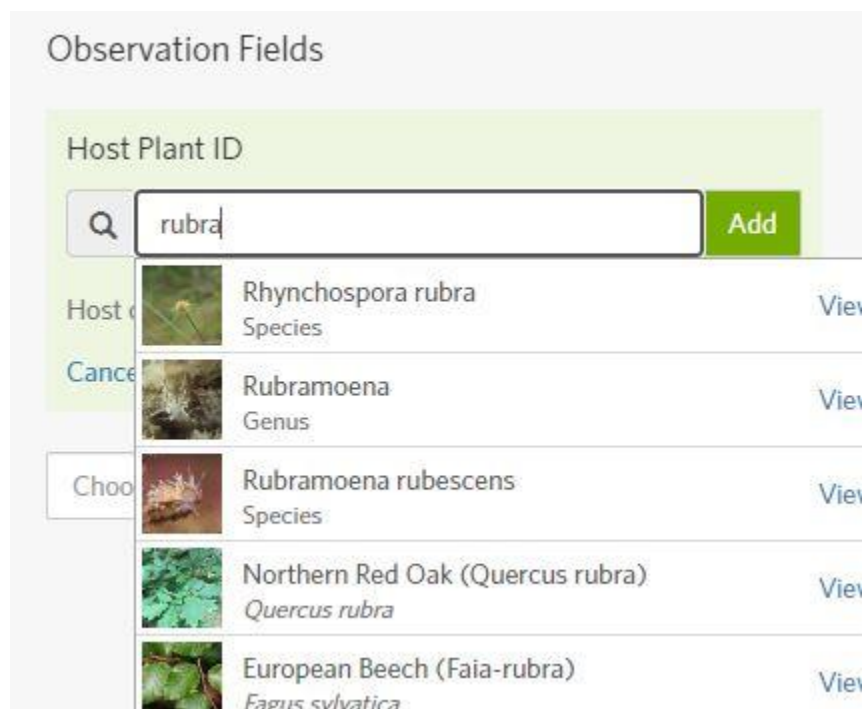
Host plant ID (added to all observations where species-level info is available, otherwise blank):

If the user has noted the host plant anywhere on the observation (in the observation notes, comments, or observation fields), try to find that info and make sure it's added as "Host Plant ID: [host latin name]". Note that often the host plant is given in a different Observation Field, like Host, Host Plant, EwA - Associated Plant, etc. These are not usable in our current workflow and need to be duplicated as Host Plant ID.

If the host species is not listed by the user, or if you happen to have reason to believe their ID is wrong or dubious, either leave the Host Plant ID field blank (ie delete it if it's wrong) or, if you can confidently make the call, add the correct species yourself.

Current workflow only accepts these at the species level; section or genus is not worth adding.

Make sure to select the species from the dropdown; the field will sometimes just let you add the species name as text and this is usable but not ideal.



The screenshot shows a web form titled "Observation Fields". The "Host Plant ID" field is highlighted in light green. It contains a search bar with the text "rubra" and a green "Add" button. Below the search bar, a dropdown menu is open, displaying a list of search results. Each result includes a small thumbnail image, the species name, its taxonomic rank, and a "View" link.

Thumbnail	Species Name	Rank	Action
	Rhynchospora rubra	Species	View
	Rubramoena	Genus	View
	Rubramoena rubescens	Species	View
	Northern Red Oak (Quercus rubra)	<i>Quercus rubra</i>	View
	European Beech (Faia-rubra)	<i>Fagus sylvatica</i>	View

Gall generation (should be added for EVERY cynipini observation, not other taxa):

Only for inducer taxa with alternating generations (principally cynipini). Tag based on the organism inside the gall and emerging from it, not its parent or offspring. So eg a female laying eggs in a leaf should be tagged sexgen, and if she leaves visible oviposition scars these would need a separate observation tagged agamic.

Gall phenophase (ideally added to ALL gall observations, not free-living adult inducers):

Only for galls--observations of free-living adults don't get a value here UNLESS they are associated with an emergence event by the user, as in [Antoine's adult photos](#), in which case they will be marked "maturing".

A gall can go through 6 stages.

oviscar In the first, the egg has been laid but may not have hatched yet and no actual gall tissue is visible. This phase has only been confidently observed for [Belonocnema agamic galls](#). Closer observation should reveal them for other species. This is called an oviposition scar, shortened to oviscar for the Field.

developing This is when gall tissue is actively grown by the plant. Most "fresh" gall observations fall here. Definitely no evidence the inducer or other insects have exited yet. Dissections may show a developing-phase inducer is a larva, pupa, or adult, though strictly speaking pupae and adults indicate the development of the gall is over.

dormant In some galls, the inducer exits almost as soon as the gall is mature (typical for short spring sexgen galls). In those cases, skip this phase. In others (many but not all fall agamic galls), however, the gall will persist either on the plant or in the soil for many months before emergence (sometimes up to 2 years). Any gall that apparently still contains an inducer but is clearly not growing (either the plant tissue is senescing or it's no longer attached, or you happen to know something else about the development cycle that indicates it. Eg *Eurosta solidaginis*, development ceases by the time the plant flowers, so this can be used as a cue). Dissections may show a dormant-phase inducer is a larva, pupa, or adult.

maturing The day an inducer emerges from the gall. Be sure that the Date Observed for the observation matches that event (ie, not a few days later when the photos were taken in captivity or something). In Cynipini emergence occurs as an Adult, but this is not true for all taxa. If the inducer is pictured in the observation, also tag the EoP organism and life stage; otherwise, if the emergence is only clear based on other provided info, leave those blank. This could also be used for [rust sporulating](#) etc.

perimature Since we don't have a lot of observations to work with, we don't want to pass up any information. The perimature (word I made up for this purpose) phase indicates that there is evidence of recent emergence (usually emergence holes; for midges these may be

accompanied by exuviae), say within the past week or two. For polythalamous or numerous galls, even a single emergence hole means the entire observation is premature, because the emergence phase has begun. The ideal case is that you visit a gall one day and it has [no emergence holes](#) (ie developing), come back a few days later and the [inducers are all gone](#), obviously indicating the emergence happened in the intervening days. Otherwise there's more guesswork, and it's not uncommon for these to need to be recoded if they turn out to fall way later than other, more confidently dated observations. This would also be the appropriate tag for wasps found (dead or alive) in a rearing container when the date of emergence wasn't directly observed. The whole category is a fudge-factor for various kinds of uncertainty so don't hesitate to use it.

senescent This category is excluded from analysis. The principal use-case is that the inducers left the gall and it persisted on the ground or on the host. Usually but not always [visible](#) because the gall dries out, shrivels up, turns brown, etc. This category can also be used for anything that throws the developmental timeline of the gall into doubt, like predation damage or oviposition scars that failed to develop. Sometimes these will also not be apparent until the timeline is better-known, and often observations will need to be recoded here after the fact; err on the side of tagging something else if you're really not sure, or try to ask someone who might know the life cycle better if you're finding a lot of dubious cases.

[Rearing viability](#):

This category is designed to narrow down when galls can be collected to rear adults. This period is just before the end of the developing phase through the end of the maturing phase, but it seems worthwhile to specifically note dates for which we have proven results. This observation field should **ONLY** be applied to observations made in the field on the *collection* date, not captive observations for anything eventually reared from them (these should be tagged as outlined above). This tag obviously can't be added until you have some evidence whether an emergence will or won't occur, which can take quite a long time.

viable indicates you successfully reared at least one **inducer** from a gall collected on this date. This is the gold standard: proof that the timing is right for at least some galls at this location at this time of year. Tag this even if other species also emerge from the same collection. This tag could also apply to cases where the adult is dissected out a gall--the principle thing is that the inducer no longer needed to be attached to the host to complete its development as of the day of collection.

inquiline/parasitoid only indicates other kinds of insects emerged from this collection but no inducers.

too early it can be hard to judge, but eg if you collected on several dates and got emergences only from collections after a certain date, it would be reasonable to tag any prior collections with no emergences as "too early"

too late ditto but after emergences. Often means that you collected a perimature gall and the only remaining cells hadn't emerged yet because they failed for some reason.

failed collections apparently during the emergence window that just didn't happen to work for some reason; this is also a general category if you're not sure you were too late or too early.