Mycological Notes - 31

Notes on *Gymnopus* (including *Micromphale*), *Rhodocollybia* & *Mycetinis*

Jerry Cooper, July 2015

Like my previous treatment for *Mycena* these notes are a preliminary attempt to put known species into some kind of order, and to provide a draft key. Many of the species are undescribed and known from just a few collections. Making these notes available will may help in the identification of species, and so hopefully provide more collections.

Gymnopus, like *Mycena*, is represented by many species and it is difficult, if not impossible, to distinguish them on the basis of macro-morphology only. Examination of micro-features is necessary for accurate identification.

In older books the generic name *Collybia* is used for many of the fungi considered in these notes. That genus now restricted to a small group of fungi within the Clitocybaceae generally growing on other fungi, and not present in New Zealand. Most of the species historically referred to *Collybia* are now treated in *Gymnopus* in the family *Omphalotaceae*. In New Zealand the family is represented by the genera *Gymnopus*, *Lentinula*, *Anthracophyllum*, *Marasmiellus*, *Mycetinis*, *Rhodocollybia* and *Setulipes*. In addition the peculiar *Calyptella totara* is related to *Anthracophyllum* but yet to be moved into an appropriate genus. Sequences of recent collections identified as *Marasmius pusio* also indicate it belongs in the Omphalotaceae.

Here I focus on the core group of 'Gymnopoid' species including mainly *Gymnopus* and *Rhodocollybia*. Until recently no species of *Rhodocollybia* were known in NZ, and few in the southern hemisphere. Now we know that we have a number of undescribed species. Species of *Rhodocollybia* are easily recognised microscopically because of the partial dextrinoid reaction of the spores deposited on the stem or cap. Macroscopically however, many species in *Gymnopus*/*Rhocodollybia* are rather similar. Phylogenetic studies tell us we have several species which cannot easily be separated using known morphological features, even with a microscope. This key is a first attempt to unravel the group in New Zealand based on phylogenetic evidence, and I'm hoping will lead to more robust and reliable morphological characters to separate some of the more similar species.

A number of our species were first described by Greta Stevenson in the 1960's and treated under several different genera. I have recently re-examined many of Stevenson's type collections and tried to apply a modern interpretation to them, and to connect her names to more recent collections made over the last fifteen years (many associated with the fungal foray). This exercise was also carried out by Egon Horak in the 1970's, but today we have many more well documented collections for comparison. Some of Stevenson's collections were from urban habitats and it is unsurprising to find these species are exotic and already had names, like *Gymnopus subprinosus* (described by Stevenson as *Marasmius kidsoniae*). In this respect *Gymnopus villosipes* is particularly interesting having being first described by Cleland in Australia in 1934 associated with *Pinus radiata* litter (but now more broadly distributed), and only subsequently recognised many years later in its home

range of California. Stevenson described this species under the name *Crinipellis readiae*. Recently it seems this species was misidentified by Mata et al who introduced the combination *Gymnopus readiae.* Examination of material with identical sequences shows it to be *G. rimutaka*, another of Stevenson's species.

Finally, it is likely that a number of species for which I have introduced 'tag names' will turn out to have been described elsewhere.

References

Mata, J.L.; Hughes, K.W.; Petersen, R.H. 2007: An investigation of omphalotaceae (Fungi: Euagarics) with emphasis on the genus Gymnopus. Sydowia 58(2): 191-289].

Preliminary Key

1	Frb marasmioid, associated with black rhizomorphs (Section Androsacei)	Gymnopus JAC10695
1’	Frb not associated with black rhizomorphs	2
2	All spores inamyloid and consistently thin-walled. Lamella edge not lacerate. If pileus red in KOH then try *Callistosporium*.	3
3’	Frb small to large. Spores showing total or partial dextrinoid (and cyanophilous) reaction, often restricted to spores deposited on pileus or stipe and less frequently on lamellae or print. Dextrinoid reaction of spores accompanied by collapsing around apiculus and appearing truncate and thick-walled. Fleshy members often with enlarged and fragile hollow stipe base and lacerate edge to lamella. Spore print pinkish cream to yellow/cream. (Genus Rhodocollybia)	20
3	Frb small, marasmioid. Pileipellis an ornamented hymeniderm. Smelling of garlic when crushed, often on stems of standing trees	Mycetinis curraniae
3’	Frb small to large. If smelling of garlic when crushed then pileipellis without an ornamented hymeniderm structure. Frb marasmioid or not.	4
4	With voluminous cheilocystidia, thin-wallled, collapsing. Morphology crepidotoid or tricholomatoid, on wood	5
4’	Without voluminous cheilocystdia, on wood, soil, or litter	6
5	Pileus > 2cm, tricholomatoid, stem central	G. JAC12385
5’	Pileus < 1cm, stem lateral	G. JAC10294
6	Pileipellis of relatively narrow hyphae arranged in a simple radial structure. (Section Vestipedes)	7
6’	Pileipellis composed of inflated hyphae, with a lobed or coralloid branching structure (Dryophila structure), not a simple radialstructure. (Section Levipedes)	13
7	Pileus < 1cm, stem eccentric, on twigs, lamellae with frosted edge	G. ‘Ahurriri’
7’	Stem central	8
8	Stem smooth, polished	9
8’	Stem pruinose or twisted striate	10
9	In litter	G. rimutaka
9’	On wood (standing trees?)	G. ‘Milnethorpe’
10	Stem > 5mm diam. twisted striate, not tomentose, relatively thick fleshed	G. luxurians
10’	Stem < 5mm diam, stem tomentose/pruinose, thin fleshed	11
11	Pileus flattened, not radially streaked, becoming upturned, in litter	12
11’	Pileus convex, radially streaked, on soil or wood (woody litter)	G. subpruinosus
12	Stipe densely tomentose. Pileus not rugulose/sulcate towards margin	G. villosipes
12’	Stipe pruinose but not tomentose. Pileus rugulose/sulcate towards margin	G. subnudus
13	On wood, smelling foetid when crushed, often associated with waxy layer on the substrate. (Micromphale)	14
13’	On wood or litter, not smelling foetid when crushed	16
14	Frb eccentric stemmed. Growing in imbricate tiers. Pileus pale tan, striate	G. imbricata
14’	Frb centrally stemmed. Not growing in imbricate tiers. Cap darker	15
15	Stem entirely smooth	G. hakaroa

15’	Stem pruinose	G. ceraceicola
16	Frb < 1cm, crepidotoid, on twigs, lamella distant, pinkish tan	G. subsupinus
16’	Frb larger, not crepidotoid	17
17	On wood, twigs etc	18
17’	In litter	G. ‘Craigieburn’
18	Frb gymnopid, pileus > 1cm, stem > 3mm diam.	G. ‘Oparara’
18’	Frb marasmioid, < 1cm, stem < 3mm diam	19
19	Pileus cream, orange tomentum at stem base	G. cockaynei
19’	Pileus brown, no hyphal tomentum at stem base	G. JAC10979
20	On wood (standing stems), often clustered, sometimes covered with water droplets. Pileus pinkish tan and minutely fibrillose.	R. ‘Mt Holdsworth’
20’	In litter	21
21	Pileus pure white	R. ‘McClean’
21’	Pileus coloured	22
22	Pileus colour consistently dark	23
22’	Pileus colour lighter, and variable	24
23	Pileus with dark purple colouration, cap often frosted, stipe pruinose or bald, lamella edge without resinous exudate	R. purpurata
23’	Pileus tan/brown. Stem pruinoise (recalling G. villosipes), lamellae with milky droplets on the edge, droplets drying brown and resinous.	R. ‘Monowai’
24	Cap pinkish tan, somewhere with warm colours	25
24’	Cap without warm colours, tan, pale orange/yellows	26
25	Stipe with fine silky fibrillose patches	R. JAC11306
25’	Stipe without silky fibrillose patches	R. incarnata
26	Stipe yellow	R. JAC10374
26’	Stipe other shades	R. ‘rimutaka’

Key to crepidotoid/lateral stemmed group

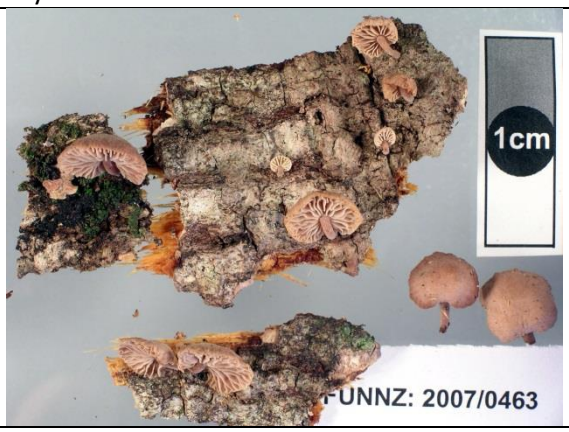
1	Pileus cream. Lamellae with frosted edge	G. ‘Ahuriri’
1’	Pileus not cream	2
2	Foetid smell when crushed	G. imbricatus
2’	Not foetid smell when crushed	3
3	Lamellae distant. On twigs	G. subsupinus
3’	Lamellae not distant. On bark	G. JAC10294

Representative Images

Gymnopus JAC10695

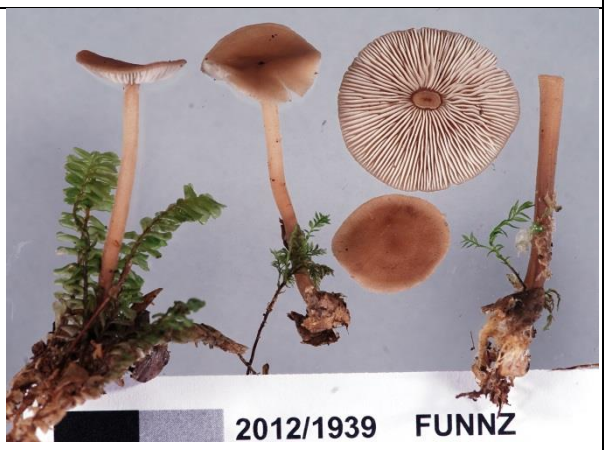
Mycetinis curraniae

G. JAC12385



G. JAC10294

G. ‘Ahuriri’



G. rimutaka

G. ‘Milnethorpe’

G. luxurians

G. subpruinosus

G. villosipes

G. subnudus

G. imbricatus

G. hakaroa

G. ceraceicola

G. subsupinus

G. ‘Craigieburn’

G. ‘Oparara’

G. cockaynei

	
G. JAC10979	R. purpurata
	
R. JAC11306	R. incarnata

R. jac10374

R. ‘Mt Holdsworth’

R. ‘McClean’

R. ‘Monowai’

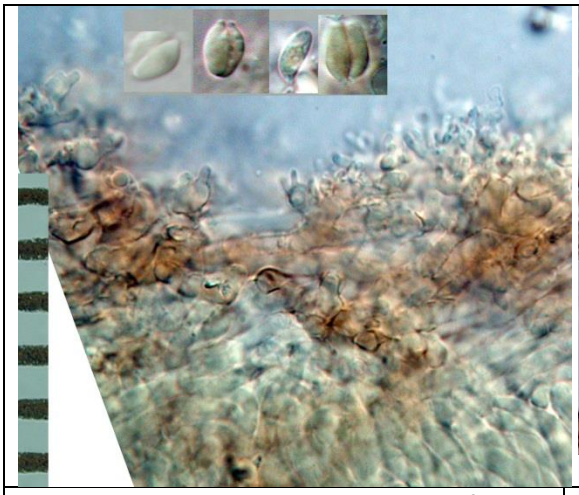
R. ‘Rimutaka’

Notes on the species

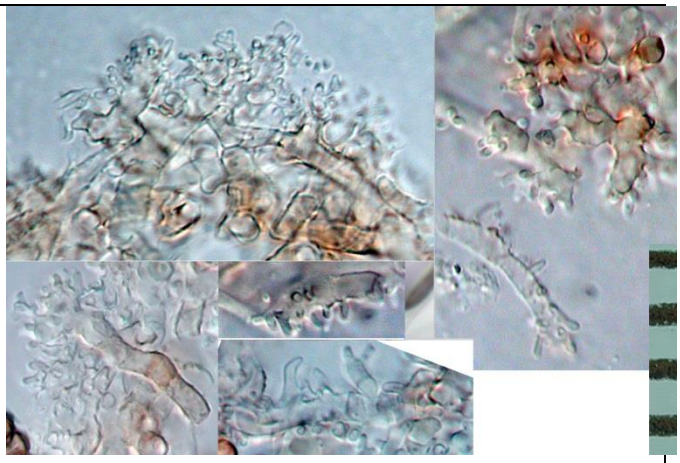
Gymnopus JAC10695

A fungus with abundant rhizomorphs (a horse-hair blight) from which fruitbodies arise, and are relatively short stemmed. The black rhizomorphs have occasional nodes which are random- not consistently v-shaped . Stipe 1-1.5cm with caulocystidia along entire length but dominant at apex. Cap 2-3mm grey/cream and without fuscous papilla. Cheilocystidia and pleurocystidia not observered. Caulocystidia diverticulate. Stipe cortical hyphae brown encrusted. Spores 10-10.6(10.3) SD0.2 n=6 x 4-5(4.7) SD0.4 n=4. Cap with hymenial sub-pellis but surface hyphae strongly siccus broom. Stem hyphae dextrinoid and lamella trama not dextrinoid.

The fungus clearly has morphological affinities with *Marasmius* sects Androsacei (*Setulipes*), Rhizomophigena, and *Rhizomarasmius* (Physalacriaceae). However, sequence data clearly indicate this taxon is closely allied to Rhodocollybia. Unfortunately it is known from a single collection and I have little practical experience with this group of fungi.



Spores and section through pileus surface

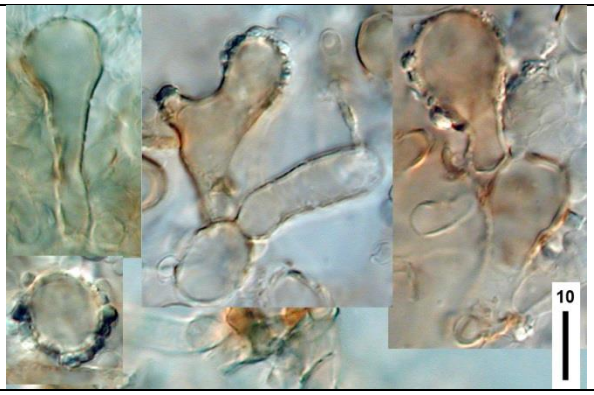


Pileus terminal elements

Mycetinis curraniae

A small marasmoid fungus smelling of garlic when crushed and likes growing in large groups on standing stems of living trees.

Spores and two forms of cheilocystidia



Pileipellis cells

Gymnopus sensu stricto (section levipedes)

G. subsupinus

An unusual 'crepidotoid' *Gymnopus* on twigs. Whether this species is conspecific with the Australian type remains to be determined.

G. ceraceicola

A typical 'Micromphale' smelling foetid when crushed. All the NZ 'Micromphale' species appear to be associated with a waxy layer on the substrate, often permeated by algal cells. A very common species.

G. hākaroa

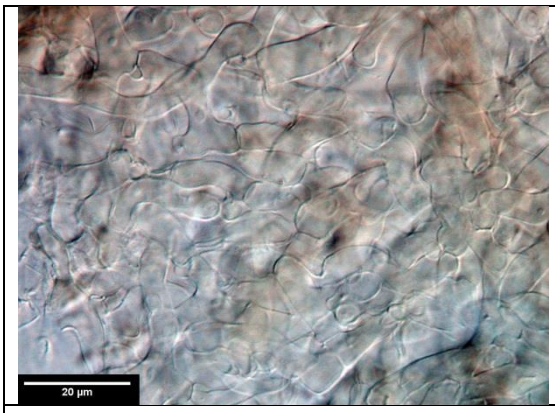
Very similar to *G. ceraceicola* but genetically distinct and known from few collections

G. imbricatus

Another 'Micromphale'. Quite small and forms characteristic clusters of overlapping fruitboides on twigs. Very common

G. cockaynei

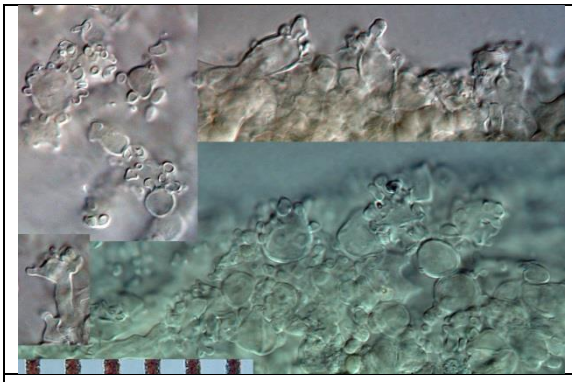
Known from relatively few collections, and yet to be determined if the orange colour of the basal tomentum is a good character. This has a typical 'dryophila' cap structure under the microscope.



'Dryophila' structure of pileipellis

G. JAC10979

Looking like a typical *Marasmius* but without the ornamented cap hyphae of that genus. The cheilocystidia have nodular outgrowths.



Cheilocystidia

G. sp. 'Craigieburn (PDD95664)'& G. sp. 'Oparara (PDD87100)'

The phylogenetic data suggests a close relationship between these two species and with *G. sepiiconicus* described from Java

G. *luxurians/gibbosus* group (vestipedes pp)

G. sp. 'Milnethorpe Park (PDD105713)

Growing on living standing trees (*Eucalyptus*). Possibly an introduction.

G. luxurians

Sequenced material from a hot house, but other records suggest also in urban habitats, and likely introduced.

G. subpruinosus

Described by Stevenson under the name *Marasmius kidsoniae*. Is present in modified and native habitats and probably indigenous.

G. *dichrous/peronatus* group

G. JAC12385 & **G. JAC10294**

Phylogenetically these two species form an isolated clade with *G. lodgeae*, *G. termiticola* and *G. dichrous*. *G. lodgeae* and *G. termiticola* possess distinct pleurocystidia. The two NZ species in this clade do not possess obvious pleurocystidia but do have large thin-walled cheilocystidia which, together with gross morphology, may serve to separate them. They are insufficiently characterised at present.

G. biformis/confluens group (vestipedes 3)

G. rimutaka

This is the most commonly encountered species in the genus.

G. sp. 'Ahuriri (PDD87323)'

The frosted, crepidotoid fruitbodies suggest a *Resinomycena*/*Panellus.* There are undescribed NZ species like this. However, they are readily separated by amyloid spores.

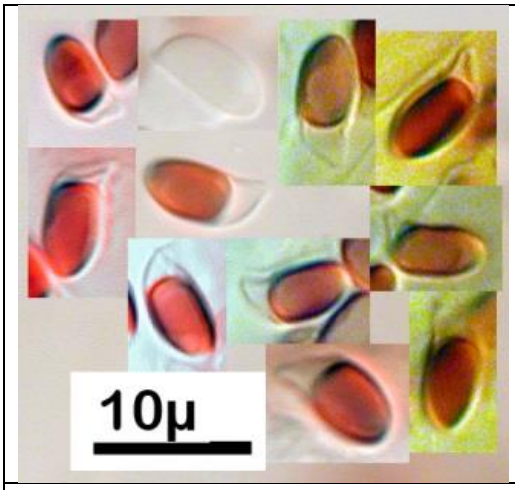
G. villosipes

In NZ this occurs in multiple habitats but not remote undisturbed bush/forest and so assumed to be an introduction. The taxon is identical with Stevenson's *Crinipellis* (*Gymnopus readii*) = *Collybia stevensonii*. As noted in the introduction, material identified as *G. readii* in the publications by Mata et al, and in GenBank, appear to be a misidentification of the common *G. rimutaka*.

Rhodocollybia

R. purpurata

A species so good that Stevenson named it twice; first as *Pluteus purpuratus* and again later as *Marasmius druceae*. *Pluteus purpuratus* was misinterpreted by Horak as a *Lepiota*. It varies in size considerably and frequently has a paler frosty coating.



Characteristic partially dextrinoid reaction of a portion of spores on stipe

R. incarnata

Closely related to the northern hemisphere *R. butyracea* but less robust, with a cream/yellow spore print, not pinkish, and no cheilocystidia . Presumably the same species occurs in Australia under the name *R. butyracea*. *R. 'rimutaka'* is similar but generally smaller in stature, with less distinct pinkish pigments and a less gelatinised cutis.

R. JAC11306

Looking like a robust *R. incarnata* but with a silky paler covering on the stipe, like some forms of *R. purpurata*. The species is insufficiently characterised.

R. sp. 'McCleans Island (PDD87681)'

The only small/white *Rhodocollybia* in NZ (or anywhere?).

R. sp. 'Mt Holdsworth (PDD87463)'

Possibly the only *Rhodocollybia* known to grow on wood

R. sp. 'Rimutaka (PDD95543)'

Very much like a small pale version of the rosy *R. incarnata*, and like the *R. 'craigieburn'* with dextrinoid spore reaction. Phylogenetically related to *R. dotae* from Costa Rica.

R. sp. 'Monowai (PDD96596)'

A peculiar *Rhodocollybia* which when fresh has milky droplets on the lamella edge which dry to a brown resinous deposit. Superficially looking like *G. villosipes*.

Rejected/re-disposed species in *Collybia*

***Collybia bubalina* -** has spores typical of a *Tricholoma*, but as yet not connected with any recent and better documented collections.

***Collybia butyracea* sensu NZ** = *R. incarnata*

Collybia druceae = *R. purpurata*

Collybia kidsoniae = *G. subpruinosus*

Collybia novae-zelandiae = *Lentinula novae-zelandiae*

Collybia readiae = *Calocybe carnea*

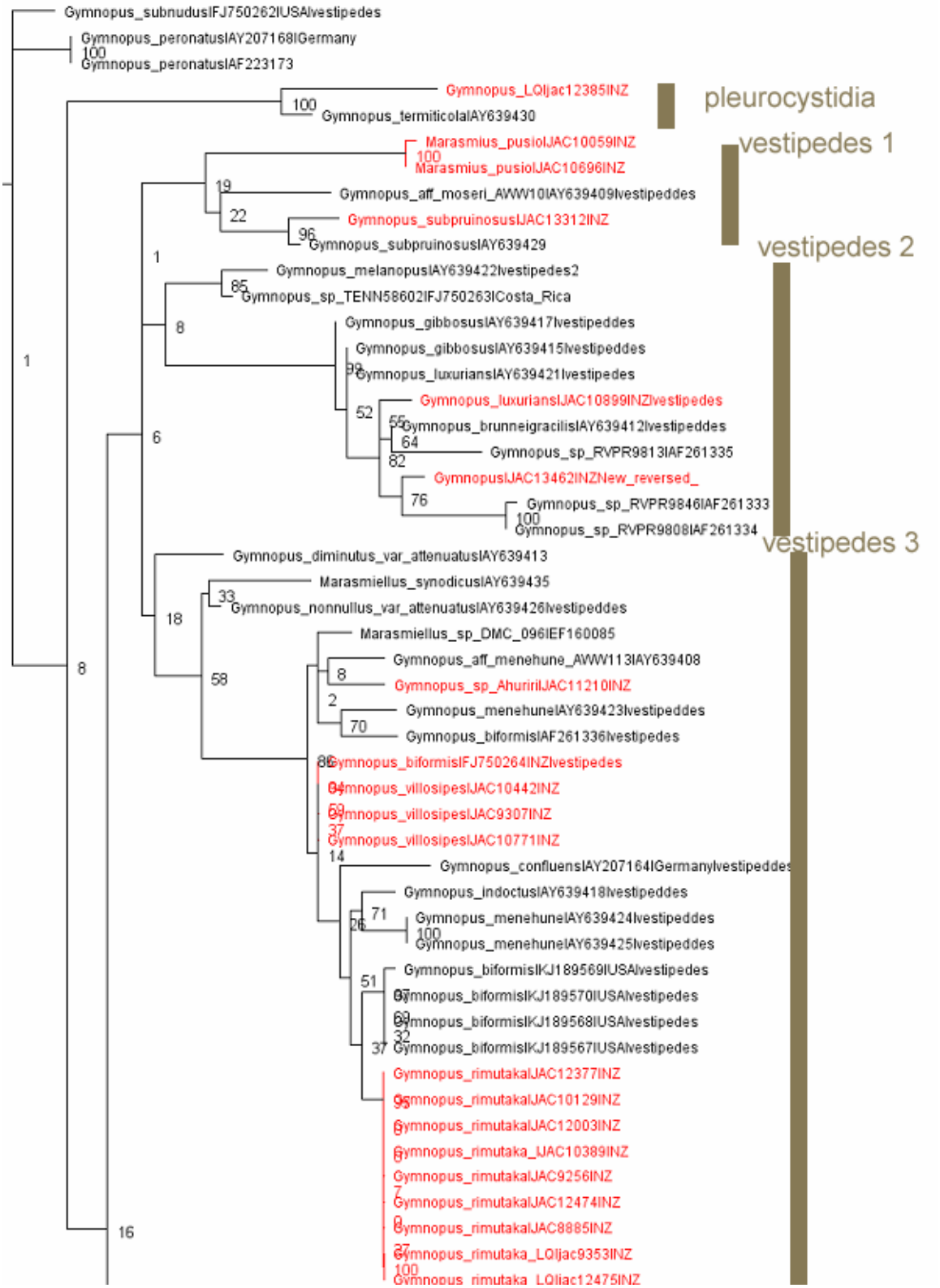
Collybia stevensoniae (based on Crinipellis readiae) = *G. villosipes*

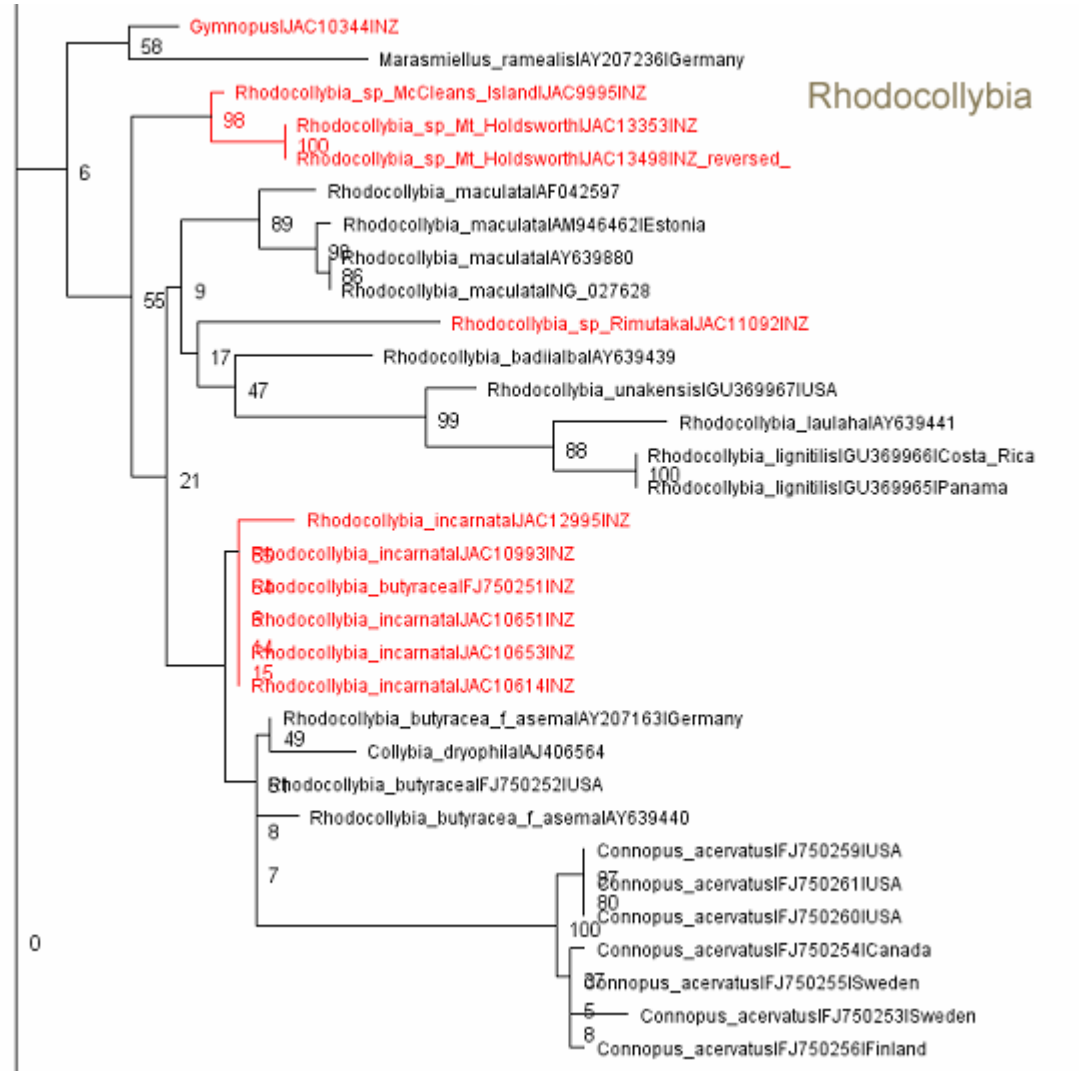
Collybia subclusilis = *Marasmius oreades*

Collybia vinacea - based on a mixed type. One component possibly = *G. ceraceiocola*

Preliminary phylogenetic analysis

LSU

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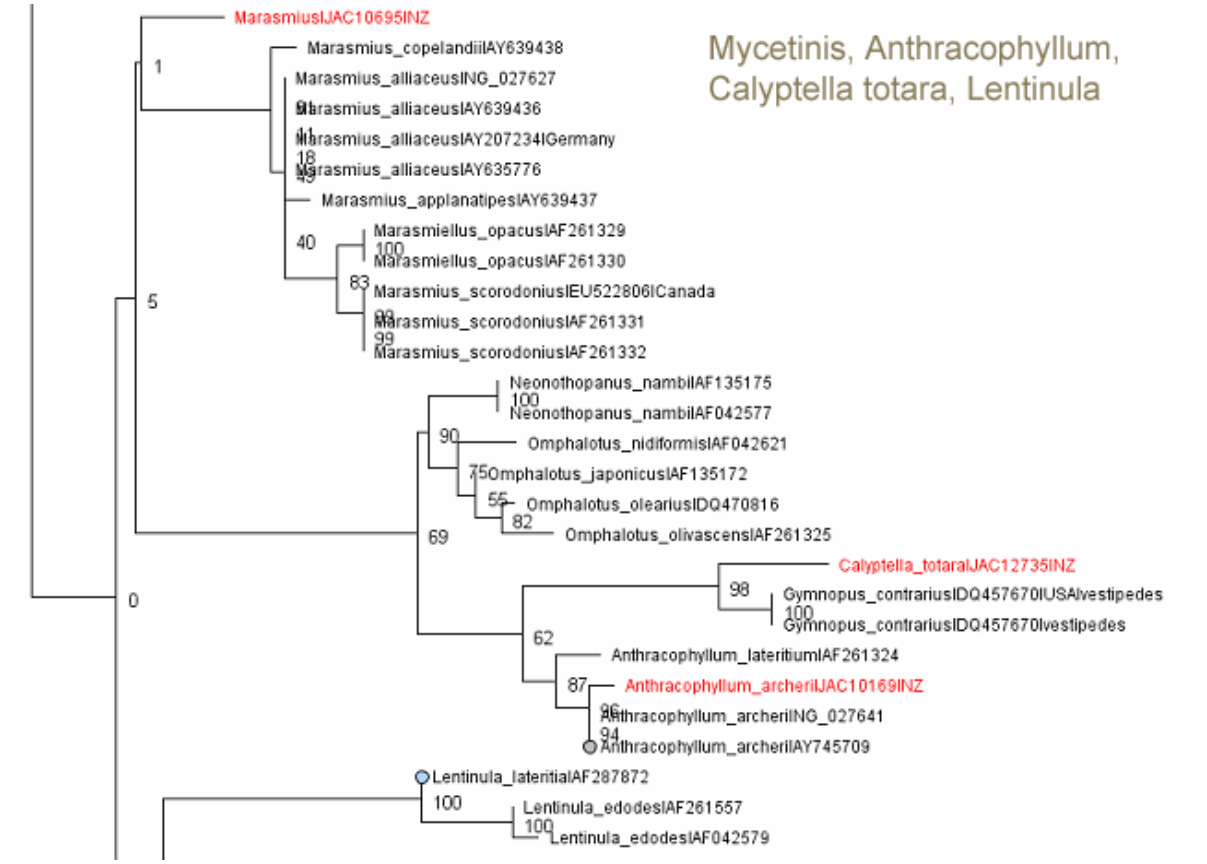
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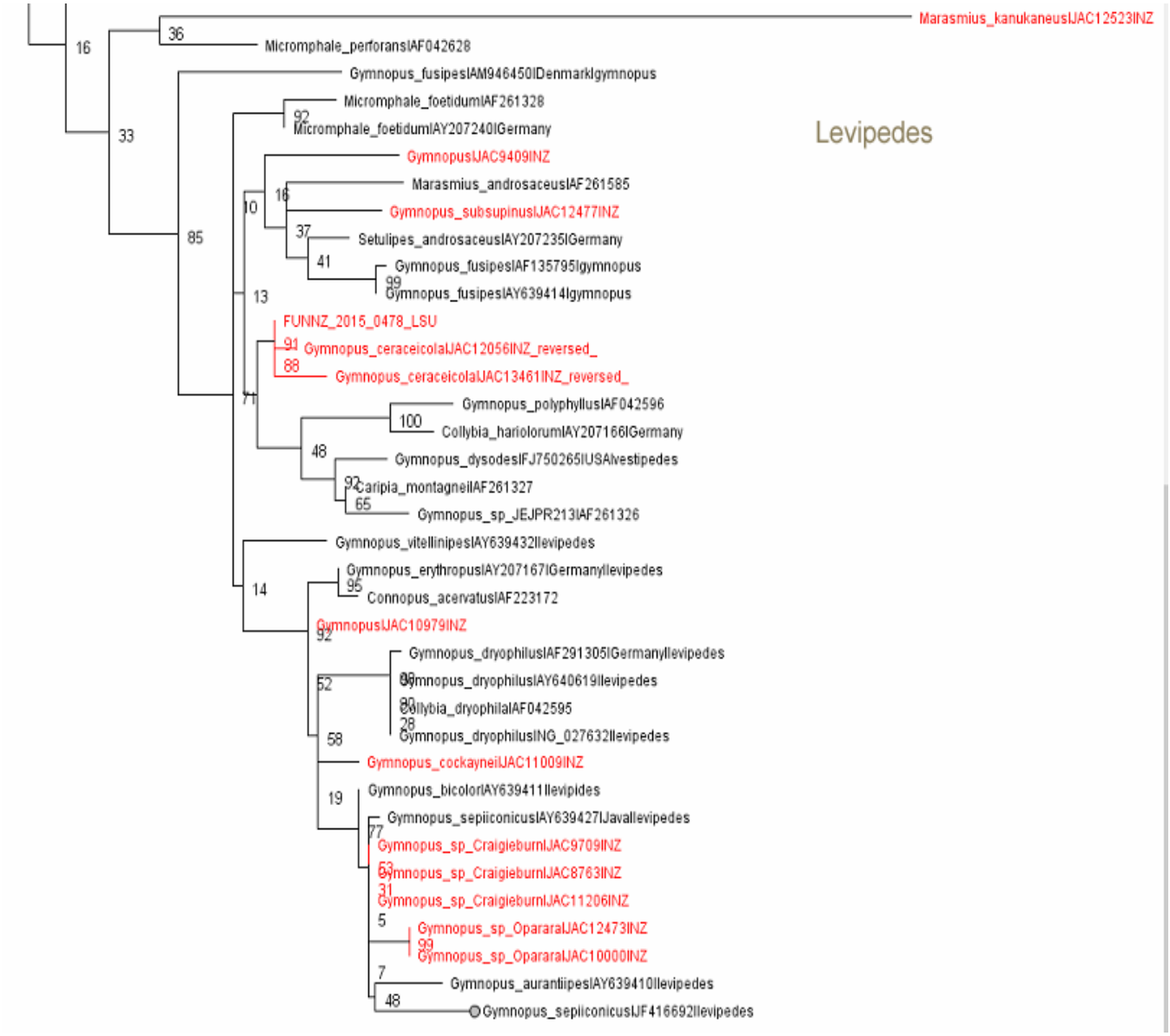
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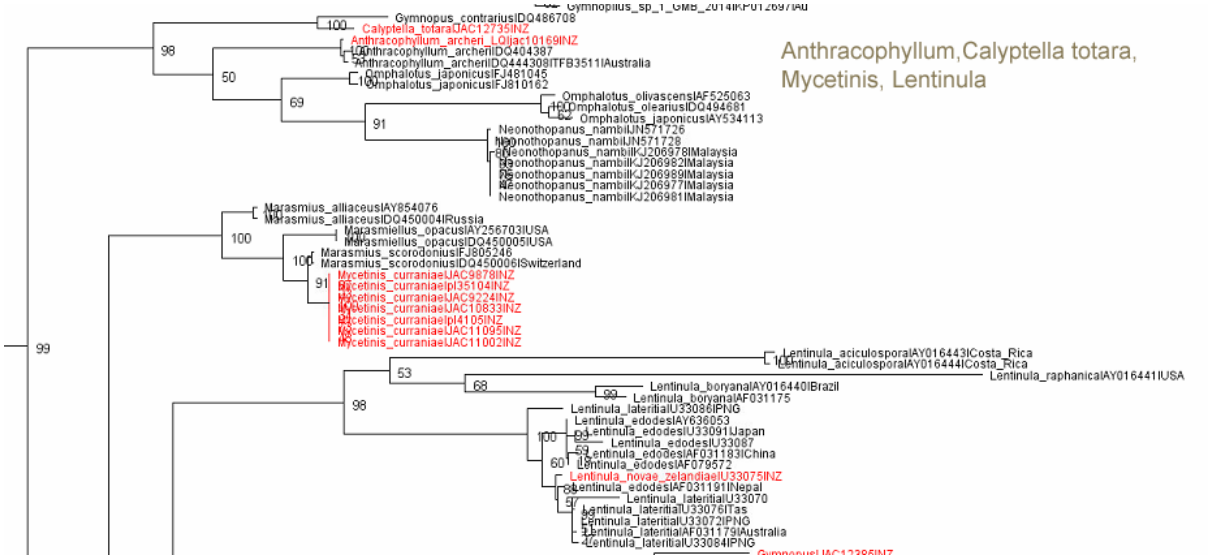
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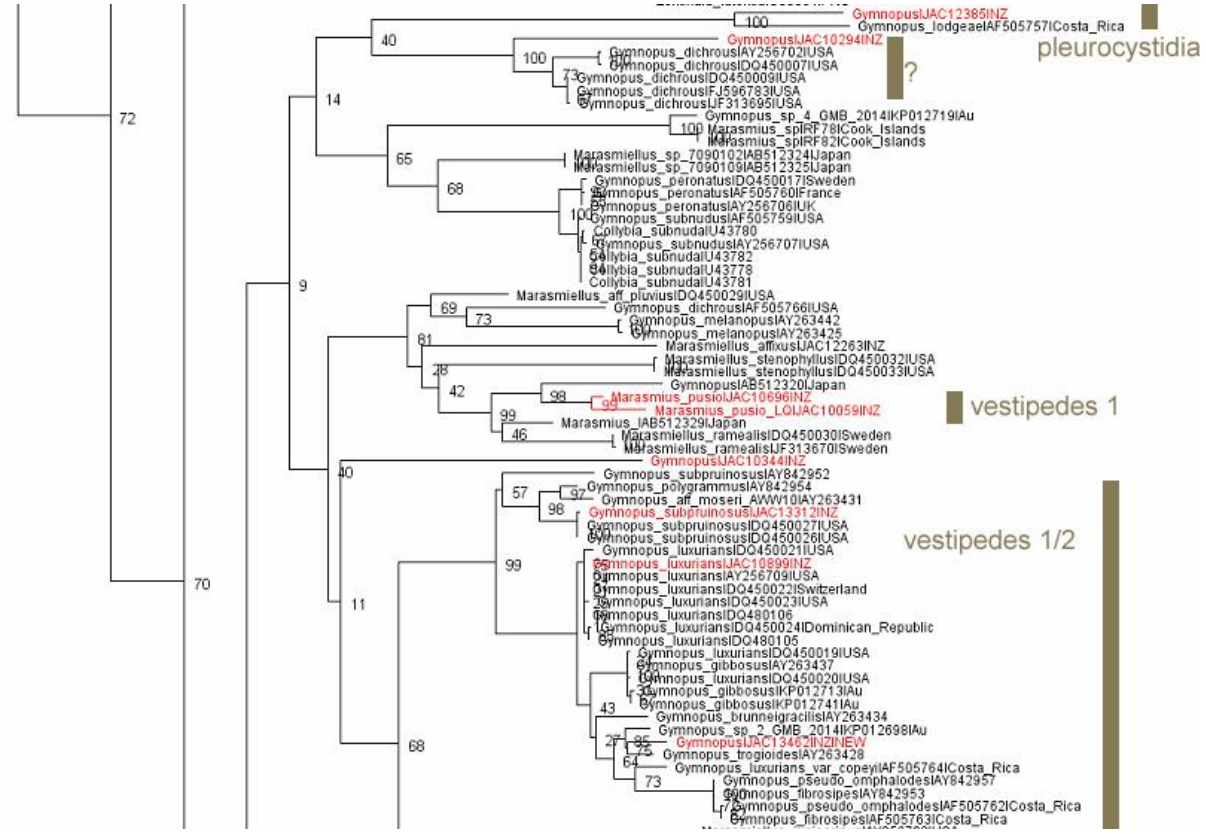
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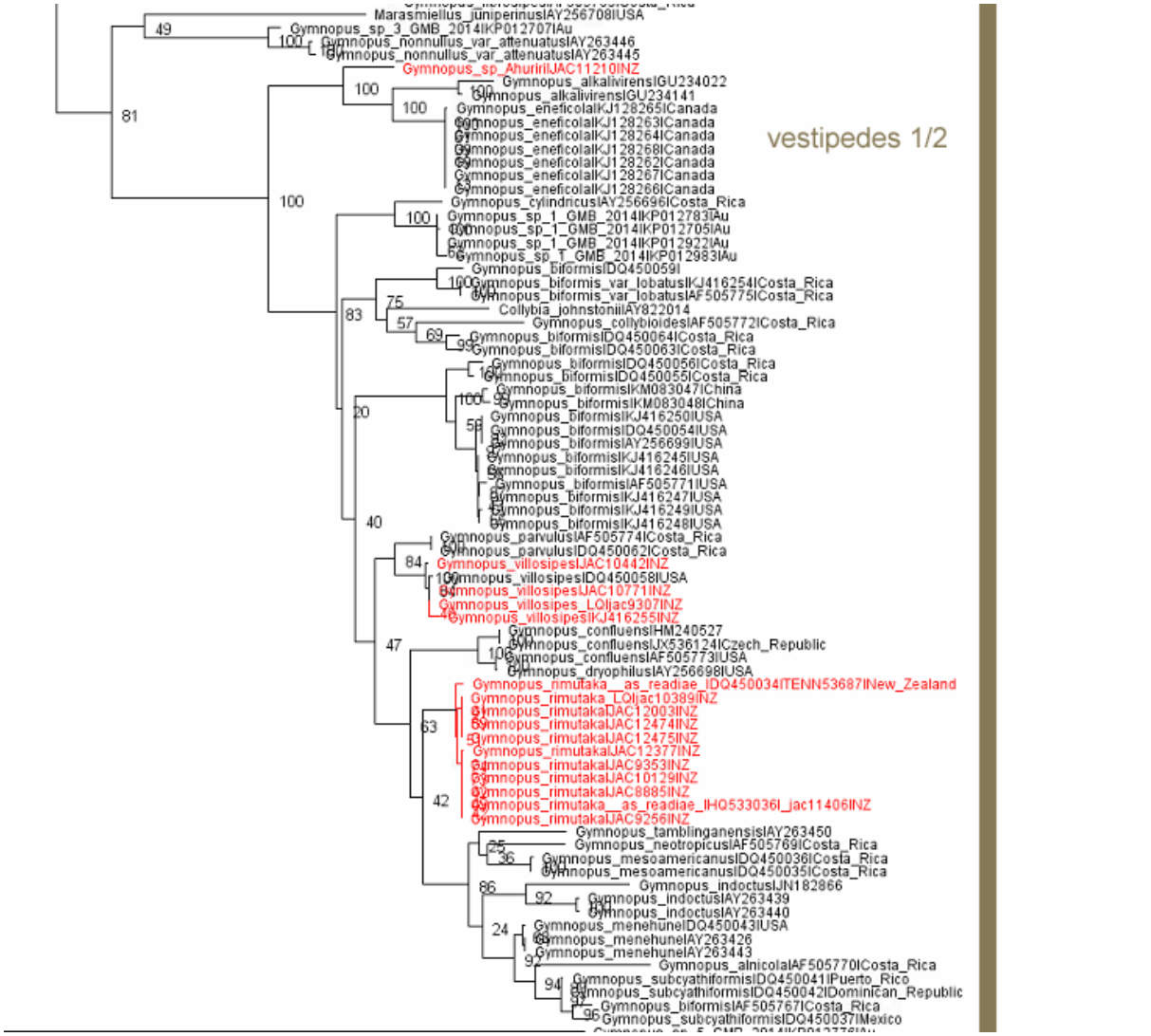
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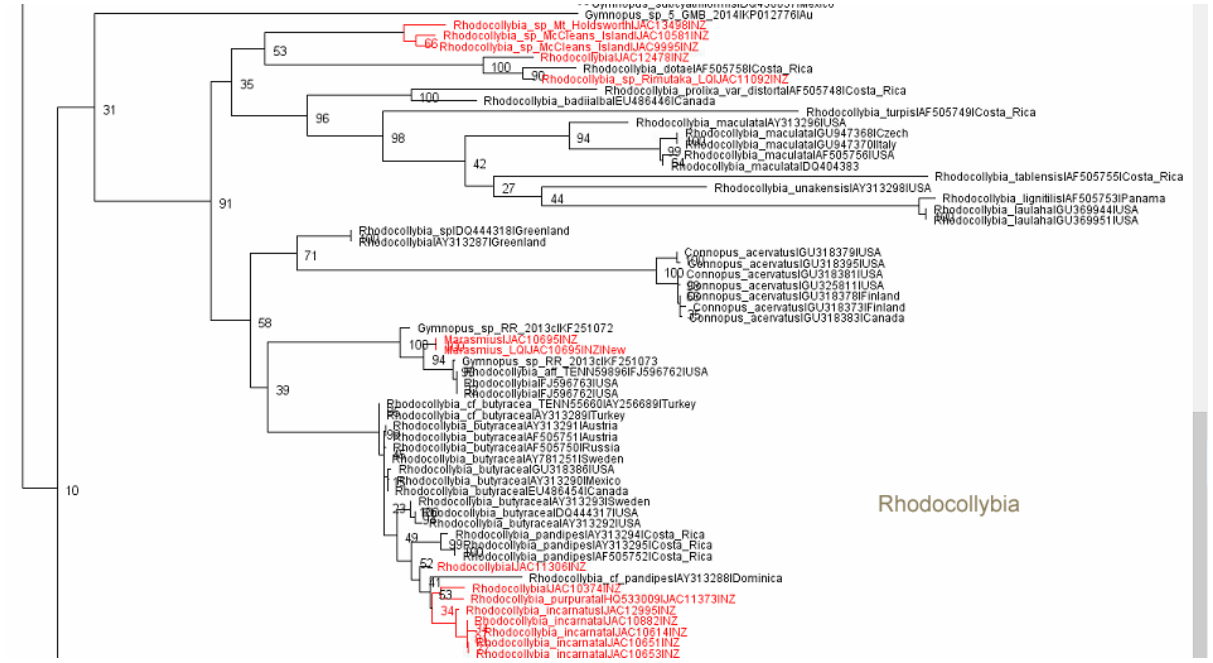
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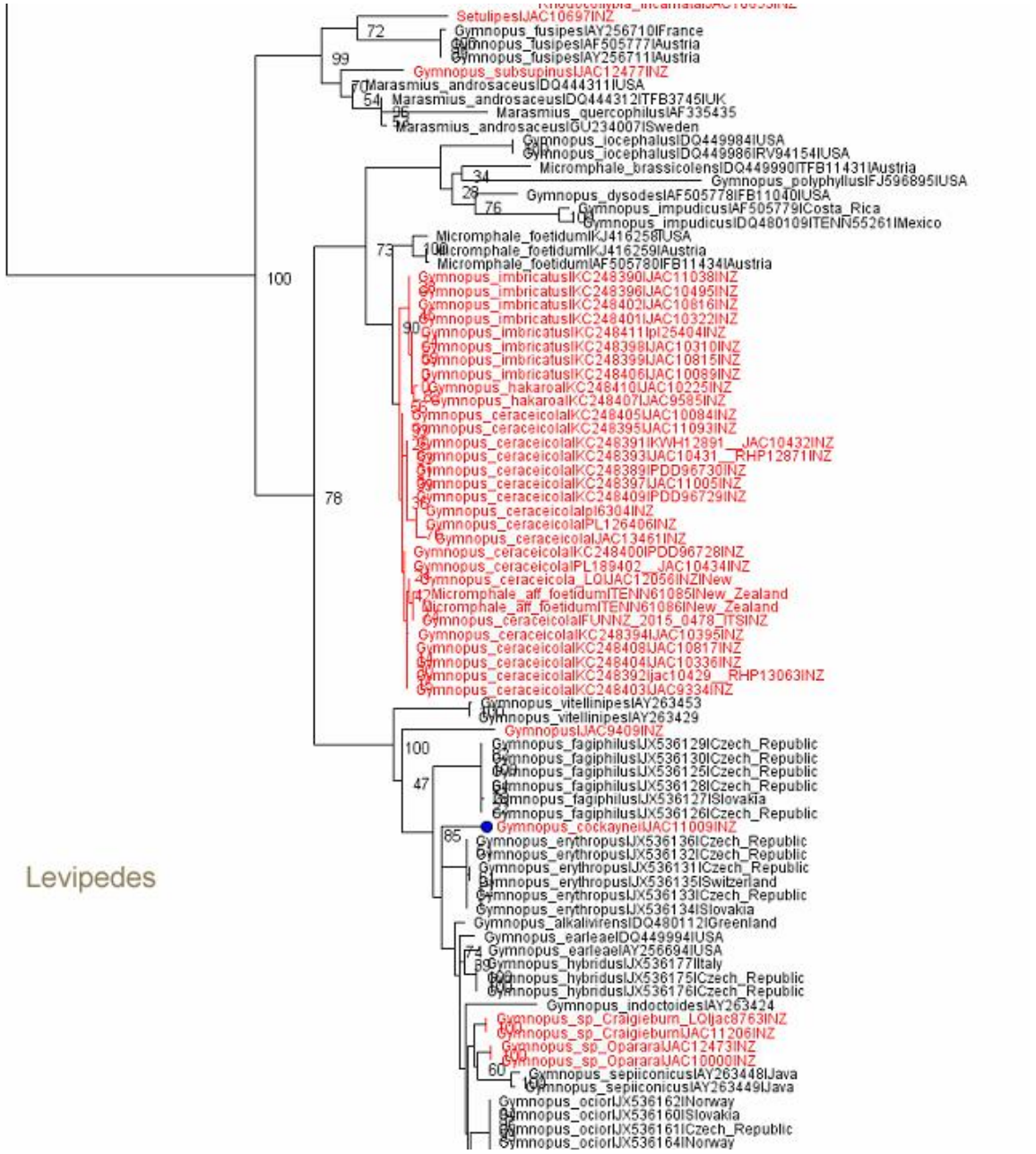
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Levipedes