

Pacific Northwest Spring *Ramaria* Species: Subgenera *Laeticolora* and *Ramaria*

Trial Key by Michael Beug March 2009

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In this key I ignore the small thin-fleshed coral species in the subgenera *Echinoramaria* and *Lentoramaria* – the corals that my mentor Kit Scates Barnhart knew as the “loggers and duffers.” This leaves just 13 spring species, 2 of which are probably confined to California. Most of these species are only found in the spring, but *Ramaria caulifloriformis*, *Ramaria rubripermanens*, *Ramaria rasilispora* var. *scatesiana* and *Ramaria vinosimaculans* are also found in the fall.

All of the spring *Ramaria* species in the subgenera *Laeticolora* and *Ramaria* have large to massive fleshy stipes. Many are very meaty and fruit in great abundance, providing tempting fare for the mycophagists among us. The two tastiest species are *Ramaria rubripermanens* and *Ramaria vinosimaculans*. Like Kit, however, I prefer to study these beautiful mushrooms and seek other species like morels and spring kings for my mushroom meals. While none of the spring *Ramaria* species are known to be poisonous, members of the *Ramaria magnipes/rasilispora* complex have been known to

cause gastric upset in some sensitive individuals.

While there are only a few spring *Ramaria* species to deal with, identifications can still be challenging. Most of the spring species are found above 3,000 feet (1,000 meters) in elevation in generally dry areas where they often just form lumps under the duff and are difficult to find. For the most part, these species stay quite pallid until exposed to light and thus a given species growing in a wetter area where the mushroom emerges from the duff can look somewhat different from a mushroom growing in the driest parts of its range where it stays largely hypogeous.

The chemicals needed for best use of this key are either Melzer’s Reagent (MI) or Lugol Solution (IKI – 1 part elemental iodine (I₂), 2 parts KI in 150 parts water). Either of these chemicals can be used to test whether or not the flesh of the stipe is amyloid (changes to a color resembling a bruise on human flesh) or is non-amyloid (color stays the same iodine color as the applied solution). Melzer’s reagent shows the color change the most clearly, but can be difficult to obtain.

References

- Petersen, R.H. and C. Scates, “Vernally Fruiting Taxa of *Ramaria* from the Pacific Northwest”, *Mycotaxon* 33: 101-144 (1988)
- Exeter, R. L., L. Norvell & E. Cázares, *Ramaria of the Pacific Northwestern United States*, U. S. Department of the Interior, Bureau of Land Management, Salem, Oregon

Key to Spring *Ramaria* Species

1a Outer branches and tips of exposed branches greenish yellow to yellow to brown or orange to deep orange (tips still covered with duff may be white).....4

1b Outer branches and tips of exposed branches white to pale pink to buff to blood red or purple2

2a Exposed branch tips white to cream to pale pink or purple, stipe bruising brownish to reddish-brown; strong reaction with IKI or MI; (spores striate)....
.....Figures 1, 2, and 3.....Three Undescribed species

In the spring of 1976 and in spring 1978 with Kit Scates Barnhart, I photographed three different collections, one with pale pink tips, one with creamy white tips, and one with creamy tips that slowly turn purple before fading as the branches elongate. All three had striate spores and were amyloid to strongly amyloid, placing them in the subgenus *Ramaria*. Ron Peterson said that the 1976 pink-tipped species (Figure 1) was near *R. crassipes*. The other two were unique. Kit made the vouchers. These three species are not mentioned in the 1988 *Mycotaxon* article and remain undescribed. Both the pink and the purple-tipped species could easily be confused with *Ramaria rubripermanens* (3b). The white to cream species is most similar in macroscopic appearance to *Ramaria rubrievanescens*, a fall species.

2b Exposed branch tips pale pink to buff to wine-red to blood red; (spores striate or not; use this choice if stipe bruises and the spores are not striate).....3

3a Texture fibrous and stringy in lower branches; stipe and branches very slowly brunnescent or bruising dull bluish violet; flesh at base of stipe with brown hyphae forming a (sometimes indistinct) "rusty root" that shows as a roughly triangular area of brownish flesh at the base of the stipe; inamyloid; (spores not striate; true clamps absent but false clamps present).....

...."Elsie's Stringy Pinky".....Figures 4 and 5.....*R. coulterae* Scates

COLOR: tips deep dull fleshy red to fleshy beige, quickly fading to light vinaceous cinnamon (fleshy pink), in age concolor with branches but very tips brown; branches white to ivory below then pale yellow to pale beige darkening to buffy flesh (pinkish buff); base white to off white, slowly brunnescent to pallid purple-gray where handled or bruised. **FLESH:** base watery but not gelatinous, usually with a +/- "rusty root"; upper branches very brittle and crisp, lower branches stringy, fibrous, ripping longitudinally; taste mildly nutty; odor negligible. **FORM:** Small to medium, up to 12 cm H x 10 cm W; stipe large to massive, up to 8 cm H x 6 cm W, single, deeply lined or channeled, not pruinose or tomentose; very cauliflower-like tips when young, expanding to knobby in age. **HABITAT:** Intermountain area of Northern and West-central Idaho, rare in Oregon but found in Sierra Nevada range. **EDIBILITY:** since *R. coulterae* is readily confused with the edible *R. rubripermanens* (3b), it has probably been eaten frequently (and unknowingly) without known ill effect. I had about 30 people try it at an OMS foray and all liked the mushroom. **SPORES:** essentially smooth, 8.3-12.6 x 2.9-4.0 μm , Em 2.81, Lm 9.95.

- 3b Texture firm and hard when young, becoming soft and fleshy in age; stipe and branches not bruising; no “rusty root;” IKI or MI slowly deep purple-brown or red-brown; (spores striate; basidia clamped)...

...“Perma Pinky”...Figure 6.....*R. rubripermanens* Marr and D.E. Stuntz

COLOR: Tips before emerging dark reddish brown, color diluting and becoming paler with age, mostly seen in light dull winy shades, fading with age but never white before turning pale tan in old age; branches white to pale cream; base white. **FLESH:** White; texture fleshy; taste and odor mild. **FORM:** Medium to large, 9-30 cm H x 9-20 cm W; long remaining cauliflower-like; base usually single and massive, about ½ total height, taller than broad, tapering downward or equal; tips and branches usual in shape after elongation. **HABITAT:** On the ground in conifer forests, spring, occasionally fall. **EDIBILITY,** usually choice and very nutty (but in some areas the flavor is quite awful). **SPORES:** Striate, 10.4-15.5 x 4.0-5.0 µm, Em 2.58, Lm 12.2. Basidia clamped. **NOTE:** Marr and Stuntz (1973): spores 8-13 x 3.5-4.5 µm, Lm 10.3; clamped. *R. rubripermanens* has a non-staining stipe while *R. rubrievanescens* bruises drab brownish violet and is only known from fall collections. There is also an undescribed spring *Ramaria* that is amyloid, has striate spores and has branch tips that slowly turn purple and thus was nick-named the “Slow-Purpler” by Kit Scates Barnhart.

- 4a (1a) Branches pale yellow to bright yellow or light salmon to salmon to orange with the region where branches merge with stipe sometimes yellow (faint to distinct yellow “bellyband”).....6

- 4b Branches buff to light tan, light brown, branch flesh tan or cocoa colored.....5

- 5a Branches pale buff to light tan, numerous abortive branchlets; (spores distinctly verrucose, short and wide ~9.3 x 5.2 µm, Em 1.8; clamped basidia; vernal collections known only from Northern California)

...Figure 7.....*R. caulifloriformis* (Leathers) Corner

COLOR: branches pale buff to pale pinkish buff, tips pale pinkish buff, often turning dark brown where exposed or dried in the field, off-white where protected, browning only slightly. **FLESH:** white to off-white, with stipe context watery-marbled; often brittle; non-amyloid. **FORM:** stipe single to falsely fasciculate with numerous abortive branchlets and clusters. **HABITAT:** Coniferous forests fall (rarely spring in California). **EDIBILITY:** Unknown. **SPORES:** distinctly verrucose to verrucose; 8.3-10.4 µm, Lm 9.3, Em 1.8. Clamped. Microscopically extremely close to *Ramaria cartilaginea* but distinguished mainly by color.

- 5b Branches cocoa-colored and bruising brown to watery brown; lacking abortive branchlets; (spores almost smooth to obscurely roughened, slightly longer and not as fat as above ~9.85 x 4.9 µm, Em 2.1; basidia not clamped).....

...“Brown Baga”.....Figure 8.....*R. marrii* Scates

COLOR: tips deep fleshy tan when young, fading somewhat at maturity; branches pallid tan below, upwards light brown or flesh tan, often with pinkish buff tints; base white to off-white, bruising chocolate brown to

watery brown on exterior, hardly bruising on interior. **FLESH:** solid, soft-spongy in large stipes, off-white; often minutely marbled; taste mildly bitter to weakly astringent; odor negligible to slightly agaricoid. **HABITAT:** On soil and duff in mixed coniferous forests including Pine and True Fir. **EDIBILITY:** Unknown. **SPORES:** obscurely roughened, uniguttulate, 8.6-11.6 x 4.3-5.4 µm, Em 2.08, Lm 9.85. Basidia unclamped. **NOTE:** *R. marrii* is one of the few spring ramarias lacking clamp connections. *R. spinulosa* var. *diminutiva* is a similar, less bulky, species that fruits in the fall.

- 6a (4a) Branches pallid orange to bright orange, tips orange to deep orange, often yellow where protected by duff; non-amyloid; (basidia not clamped)...
...“Spring Apricot”..... Figure 9.....*R. armeniaca* R.H. Petersen and Scates

COLOR: Tips dark orange, branches pallid pastel orange below, pallid orange to bright orange above; base white to off-white. **FLESH:** White, firm; base flesh white, watery but not slippery; taste mild, odor negligible. **FORM:** subcircular to broadly egg-shaped in outline up to 12 cm H x 8 cm W; base up to 4cm H x 6 cm W, single, smooth, usually without abortive branchlets, broadly tapering to a point; tips coarse, bluntly minutely knobby at maturity. **HABITAT:** on the ground in the spring, reported only from Northern Idaho. **EDIBILITY:** Unknown. **SPORES:** smooth to minutely warted; 8.6-11.5 (12.6) x 3.6-4.3 µm, 1-3 guttulate. Basidia unclamped. See also *R. rubricarnata* var. *verna* (8a) which has salmon-orange branch flesh; clamped basidia and finely warted spores.

- 6b Branches white or yellow to buff or salmon to salmon-orange or orange, tips may be yellow-green to rich yellow and tinged reddish, but not orange; stipe and branches usually weakly amyloid to amyloid; (basidia clamped).....7

- 7a Branches white to pale yellow or maize yellow.....9

- 7b Branches buff to salmon, bright salmon-orange, orange, or peach to light red.....8

- 8a Salmon to orange branches; light yellow belly band; tips yellow to rich yellow; branch context bright salmon or salmon-orange...
.....Figure 10.....*R. rubricarnata* var. *verna* R.H. Peterson and Scates

COLOR: tips as above; branches salmon orange to light salmon above and light yellow at ground level; base and protected abortive branchlets white, often wine-red around soil particles. **FLESH:** salmon-orange; weakly amyloid. **FORM:** Small to medium, broad, 9 cm H x 7 cm W; base single, large, with clusters of abortive branchlets, minutely pruinose in some areas. **HABITAT:** known from NE Washington and the Idaho Panhandle, spring. **SPORES:** delicately but distinctly roughened; 10.4-12.2 x 4.0-5.0 µm, Em 2.55, Lm 11. Basidia clamped. **NOTE:** *R. armeniaca* (6a) is distinguished by white, non-amyloid stipe flesh; absence of clamps; shorter, narrower spores that are more smooth.

- 8b Buff to pale yellow branches with a hint of salmon; lacking yellow belly band; tips light yellow to greenish-yellow; sometimes weakly brunnescent; branch context streaked off-white to pinkish-buff.....

.....*R. rubricarnata* var. *pallida* R.H. Petersen and Scates

COLOR: tips as above maturing to light yellow; branches buff to pallid buffy yellow with a hint of salmon; base white. **FLESH:** muted pinkish-buff, weakly or not bruising red-brown; weakly amyloid. **FORM:** Medium, broad 13 cm H x 10 cm W; base single, usually with some recurved stumps but not branchlets, smooth to pruinose where protected. **HABITAT:** Spring. **SPORES:** 9.7-14.4 x 4.0-4.7 μm , Em 2.68, Lm 11.44. Basidia clamped. **NOTE:** *R. thiersii* (10a) is non-amyloid, has longer spores and white rather than salmon –orange branch flesh.

9a (7a) Branches ivory to cream with burgundy colored stains, especially on the stipe where it was pressed against the substrate; (long finely ornamented spores ~12.5 μm)..."Pale Winey Base".....Figure 11.....*R. vinosimaculans* Marr and D.E. Stuntz

COLOR: Tips and branches pale cream to pale yellow or pale orange; base whitish except where stained as above (any part stains), stains usually present when found. **FLESH:** colored like surface; texture fleshy to softly stringy; taste mild; odor musty-sweet. **FORM:** Medium to large, broad, 12-19 cm H x 9-19 cm W; base usually single, tapering or bulbous; 4-6 cm H x 4-5 cm W; branches and tips usual. **HABITAT:** On the ground under Western hemlock, fall or spring. **EDIBILITY:** Probably edible. **SPORES:** some smooth, some warty, 9-13.5 x 3.5-5 μm , Em 2.93, Lm 12.0. Basidia clamped but clamps otherwise often absent.

9b Branches cream to light yellow or maize yellow, pale salmon to buff in age but not found with burgundy red stains.....10

10a Branches white to pale yellow, pale greenish-yellow where exposed; found above 2500 feet (900 meters) in Idaho or 5000 feet (1,800 meters) in Sierra Nevada Mountains, mixed conifers with true firs, spring; non-amyloid; (spore length averages 13.3 μm).....*R. thiersii* R.H. Petersen and Scates

COLOR: White to pale yellow overall; tips white where protected, pallid greenish-yellow or straw-yellow where exposed; weakly to strongly brunescent where rubbed or handled. **FORM:** Medium, 15 cm H x 8 cm W; base usually single, +/- massive, tapering downward to a narrowed rounded bottom, without abortive branchlets. **HABITAT:** As above. **EDIBILITY:** Unknown. **SPORES:** 11.6-15.8 x 4.0-5.0 μm , Em 3.13, Lm 13.3; basidia clamped. **NOTE:** see also *R. rubricarnata* v. *pallida* (8b) which can be similarly colored but has clamped basidia and significantly shorter spores.

10b Tips and upper branches pale yellow or greenish yellow or maize yellow (may have pinkish or reddish blush in cold, dry spring weather); (spore length averages <12 μm ; weakly amyloid).. *R. magnipes*/*R. rasilispora* complex11

11a Base with a soft white coating that easily rubs off; base wide, measured below branches wider than tall; (spore length averages 11.5 μm)
....*Ramaria magnipes* varieties.....13

11b Base lacking the white paint-like coating; base usually not wider than tall; (spore length averages $\leq 10.6 \mu\text{m}$) ...
....*Ramaria rasilispora* varieties.....12

12a Young branches and tips cream to light yellow, sometimes with a hint of pink, and tips sometimes quite intensely yellow green; maturing pale dull orange or buff; non-amyloid to slowly and weakly amyloid; (average spore length ~ 10.6 µm) ... "Kit's Creamy Coral"...

...Figure 12.....*R. rasilispora* var. *scatesiana* Marr and D.E. Stuntz

COLOR: Tips and branches cream to pale yellow to pastel greenish, sometimes aging pinkish or turning pinkish red when frosted or exposed to cold, dry air; base white. **FLESH:** white, texture fleshy to softly stringy; taste mild; odor none or fungoid; amyloid reaction to MI or IKI slow and weak or negative. **FORM:** Medium to large, broad, 5-20 cm H x 6-20 cm W; cauliflower-like when young; base single, tapering downward; branches and tips usual. **HABITAT:** On the ground in mixed conifer woods with true Firs, mainly spring, but also summer and fall. **EDIBLE. SPORES:** smooth, 9.4-11.9 x 3.2-4.3 µm, Em 2.85, Lm 10.62. Basidia clamped, but clamps otherwise often absent. **NOTE:** see also *R. rasilispora* v. *rasilispora* (12b) and *R. magnipes* (13a). While generally the branches of *R. magnipes* v. *magnipes* are more intensely colored than either variety of *R. rasilispora*, the tips of *R. rasilispora* v. *scatesiana* can be the most intense yellow-green of the all. This is the only member of the *R. rasilispora/magnipes* complex that fruits spring and fall.

12b Young branches and tips pale dull orange-yellow to deep soft orange-yellow, maturing pale dull orange; IKI or MI slowly deep blue-green with yellow tints; (average spore length ~10.0 µm)... "Northwest Spring Coral".....

....Figure 13.....*R. rasilispora* var. *rasilispora* Marr and D.E. Stuntz

COLOR: Tips pastel chartreuse-yellow, often blushing onion-skin pink when exposed to cold, dry air, and sometimes turning dark brown in age; branches buffy yellow, pale ochraceous yellow to fleshy buff when young. **FLESH:** white; texture fleshy when young, aging softly stringy; taste mild; odor none to +/- unpleasant. **FORM:** Medium to large, broad; 5-15 cm H x 6-15 cm W, often remaining cauliflower-like for a long time depending on weather conditions; base usually single, stout, tapering downward, 3-6 H x 2.5-5.5 cm W; lower branches thick; upper branches and tips usual. **HABITAT:** on the ground in mixed conifer woods, usually with true Fir present, spring and early summer, usually above 2500' (800m) elevation. **EDIBLE. SPORES:** entirely smooth to very finely warted; 8.3-11.5 x 3.6-4.3 µm, Em 2.57, Lm 9.95; hyphae clamped. *R. magnipes* (13a) is very similar but has longer spores (~11.5 µm)

13a (11a) Branches greenish yellow to maize yellow, tips white where protected otherwise bright yellow often blushed brick red...

..."Big Base Goldie" ...Figure 14....*R. magnipes* var. *magnipes* Marr and D.E. Stuntz

COLOR: Tips white where protected, bright yellow to chartreuse yellow where exposed (changing to brick red when crushed or frosted); branches of immature fruiting bodies deep yellow, becoming paler and browner in age; stipe surface weakly brunnescient; base off-white. **FLESH:** white; texture fleshy to softly stringy; taste mild; odor mild or +/- unpleasant; slowly and weakly amyloid (deep blue-green with yellow tints). **FORM:** large to very large 9-40 cm H x 14-40 cm W; base single, tapering downward; upper branches long remaining compressed in cauliflower-like form, finally elongating, shape usual; tips usual. **HABITAT:** On the ground in mixed coniferous forests, usually with true Firs, spring and summer. **EDIBLE.**

SPORES: almost smooth; 9.4-13.3 x 3.2-5.0 μm , Em 2.89, Lm 11.5. Basidia clamped. **NOTE:** *R. magnipes* var. *albidior*, known from the Sierra Nevada Mountains, is cream-colored and long remains underground. *R. rasilispora* (12 a,b) can be highly similar but has shorter spores.

- 13b Light cream to ivory branches with tips pale yellow when young, bright greenish yellow where unprotected, usually with a blush of muted pink where exposed; (known only from the Sierra Nevada mountains of California)...

.....*R. magnipes* var. *albidior* R.H. Petersen

COLOR: branches white where protected, cream to ivory where exposed, tips pale yellow when young, bright greenish yellow where unprotected, usually with a blush of muted pink where exposed; stipe white, browning weakly.

FLESH: white often mottled with small hygrophanous spots. Slowly and weakly *amyloid* (deep blue-green with yellow tints). **FORM:** Massive single base, abortive stumps common and recurved high on base. **HABITAT:** coniferous forests. **EDIBILITY:** not reported, probably edible. **SPORES:** smooth, 10.8-11.9 x 3.6-4.3 μm , Lm == 11.5; Em = 2.8. Basidia clamped. See also *R. magnipes* var. *magnipes* (13a). *R. rasilispora* var. *scatesiana* (12a) can be highly similar but has shorter spores.



Figure 1: Undescribed spring Ramaria near *Ramaria crassipes*, photo by Michael Beug



Figure 2: Undescribed creamy white spring Ramaria, photo by Michael Beug



Figure 3: Undescribed Ramaria, "Slow Purpler", photo by Michael Beug



Figure 4: *Ramaria coulterae* cut in half to reveal the "rusty root", photo by Michael Beug



Figure 5: *Ramaria coulterae* Scates, photo by Kit Scates Barnhart



Figure 6: *Ramaria rubripermanens* Marr and D.E. Stuntz, photo by Kit Scates Barnhart



Figure 7: *Ramaria caulifloriformis* (Leathers) Corner, photo by Michael Beug



Figure 8: *Ramaria marrii* Scates, photo by Kit Scates Barnhart



Figure 9:
Ramaria armeniaca R.H. Petersen & Scates, cut to show the white
 branch flesh, photo by Kit Scates Barnhart



Figure 10:
Ramaria rubricarnata var. *verna* R.H. Petersen and Scates, cut to
 show salmon-orange branch flesh, photo by Kit Scates Barnhart



Figure 11:
Ramaria vinosimaculans Marr and D.E. Stuntz, photo by Kit Scates
 Barnhart



Figure 12:
Ramaria rasilispora var. *scatesiana* Marr and D.E. Stuntz, photo by
 Kit Scates Barnhart



Figure 13:
Ramaria rasilispora var. *rasilispora* Marr and D.E. Stuntz, photo by
 Kit Scates Barnhart



Figure 14:
Ramaria magnipes var. *magnipes* Marr and D.E. Stuntz, photo by Kit
 Scates Barnhart