

Key to the species of *Ramaria* known from Fennoscandia



KEY TO THE SPECIES OF RAMARIA KNOWN FROM FENNOSCANDIA

Key to the subgenera of Ramaria

Note: spore ornaments should be seen at x 1000 after heating in Cotton blue.

1. Spores echinulate; saprobes growing on conifer needles or leaves, rarely on thin branches (fruitbodies often rather tough and thin-fleshed with ±brownish or greenish colours).

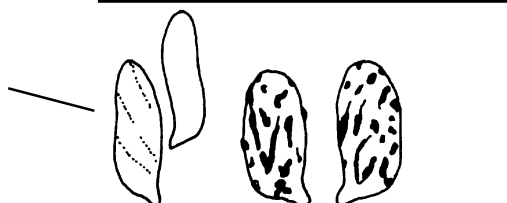
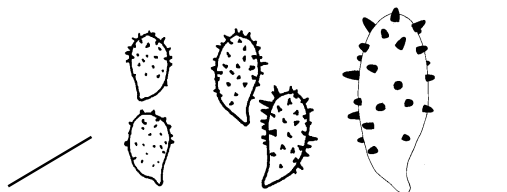
Subgen. Echinoramaria, page 10

Spores smooth, striate or verrucose; saprobes or mycorrhizal 2

2. Rhizomorphs dimitic or fruitbodies growing on wood; saprobes; fruitbodies often rather tough and thin-fleshed.

Subgen. Lentoramaria, page 8

Rhizomorphs, if present, monomitic; mycorrhizal or rarely saprobes, growing on needles or leaves; fruitbodies often soft and ±fleshy. **Subgen. Ramaria, page 2**



Key to the species of Ramaria subgen. Ramaria

1. Spore ornament of helical stripes. (*The R. botrytis group*) 2
Spore ornament of isolated to ±fused warts or rarely absent 3



2. Branches pinkish-buff (5A3), towards the tops pale flesh pink (7A2); tops ±red (about 9-10C6-7). Fruitbodies to 20 × 20 cm; clamps present, spores 12-15-18 × 4.5-5.3-6.0 μm, with helical stripes, Q = 2.8-3.1.

R. botrytis (Pers.: Fr.) Rick.

Branches cream, warm buff, pinkish buff to salmon (4-5A3-4,6A2-3), tops pale chrome, lemon chrome, buff yellow to orange yellow (3A3-8, 4A5-7). Fruitbodies to 20 × 20 cm; clamps present, spores 10.7-12.5-15.6 × 3.8-4.5-4.9 μm, smooth or with faint helical stripes, Q = 2.4-3.1.

R. obtusissima var. incarnata Corner



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3. Stem coral to brownish red (9B8, 9E7-8) in 10-20% KOH; branches of fresh, mature fruitbodies generally ±brown or violet to lilac (*the R. fennica group*) 4

Stem unchangeable or slightly darker in 10-20% KOH; branches pale (whitish, cream to pinkish buff) or intensely coloured (±yellow, orange, salmon or pink) 7

4. Stem and rhizomorphs with numerous, rod-shaped, 10-40 µm long crystals; surface and flesh quickly turning vinaceous when bruised; taste distinctly bitter. Fruitbodies to 11 × 8 cm; clamps present, spores 10.5-12.6-15.0 × 4.1-5.0-5.7 µm, Q = 2.3-2.6. **R. testaceoflava (Bres.) Rick.**

Stem with both small irregular and double-pyramidal crystals, rhizomorphs with small irregular crystals; not quickly turning vinaceous when bruised; taste mild to spicy, but probably never bitter 5



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5. Clamps absent; 10% H₂SO₄ on stem negative or slightly more brown; spores with an ornament of rows or lines of isolated to fused warts or ridges; hyphae in base and especially in the rhizomorphs with encrustations of small, irregular crystals. Fruitbodies to 12 × 7 cm; spores (8.0-) 9.0-11.5-13.0 × 5.0-5.6-6.2 µm, Q = 1.8-2.2.

R. spinulosa (Pers.: Fr.) QuéL.

Clamps present; 10% H₂SO₄ on stem pale orange (5A6) to flame scarlet (7B8); spores with an ornament of ±isolated warts; double-pyramidal and irregular crystals present in the base, small, irregular crystals numerous in the rhizomorphs 6



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6. Tops either violet to lilac or light vinaceous grey (5D4-9D3); branches with rather grey-brown colours, often with clear violet to lilac coloured areas at the axils. Fruitbodies to 12 × 7 cm; clamps present, spores 9.0-11.3-13.0 × 4.5-5.1-5.7 µm, Q = 2.0-2.3.

R. fennica (P.Karst.) Rick.

Tops for a long time cream to pinkish buff (4-5A3); branches yellowbrown to orangebrown, never with violet colours. Fruitbodies to 11 × 9 cm; clamps present, spores 9.0-9.9-11.1 × 3.7-4.3-4.9 µm, Q = 2.2-2.3.

R. fasciculis nom. prov.



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7. Mature fruitbodies uniformly whitish, cream to pinkish buff 8
 Mature fruitbodies at least locally ±yellow, orange, salmon to pink 11

8. Stem less than 1 cm thick; fruitbodies small, up to 6 (-8) × 4 (-5) cm; clamps present; spore average length < 10 µm; probably a saprobe, growing on needles of *Juniperus*, conifers or under *Salix* in the subarctic/subalpine zones. Spores 8.2-9.3-10.5 × 3.3-4.1-5.0 µm, Q = 2.1-2.5.

R. suecica (Fr.: Fr.) Donk

Stem mostly 1-5 cm thick; fruitbodies normally larger; clamps present or absent; spore Lm > 11 µm; probably mycorrhizal, growing on soil in woods. 9

9. Clamps present; spores 12-15.3-18 (-20) × 4.8-6-7.5 µm, Q = 2.3-2.7, older specimens often slowly turning fawn to vinaceous brown (about 7C4 to 10E4-5) when touched or bruised. Fruitbodies to 12 × 9 cm; spores Q = 2.3-2.7.

R. megaspora nom. prov.

Clamps absent; spores smaller; unchangeable when bruised but often with pale violet spots around soil-particles, etc. 10

10. Fruitbodies ±cream to pinkish buff; smell strong, spicy; taste somewhat bitter; hyphae of basal tomentum or in base often with gelatinous coating. Fruitbodies to 25 × 20 cm; spores 10.5-12.5-13.5 × 4.9-5.7-6.6 µm, Q = 1.9-2.3.

R. pallida (Schaeff.) Rick.

Fruitbodies whitish to pale pinkish buff; smell probably weak; taste mild or slightly bitter; hyphae of basal tomentum or in base probably without gelatinous coating. Fruitbodies to 22 × 12 cm; spores 9.0-12.2-13.0 × 4.5-5.2-6.0 µm, Q = 2.0-2.4.

R. paludosa (Lundell) Schild ÷
 (possibly conspecific with *R. pallida*)

11. All parts ±clear yellow (straw yellow, pale yellow, lemon yellow, light chrome to lemon chrome (2-4A3-8) or dark pinkish buff (5B3-4)); branches often slowly darkening when bruised (possibly over night). (*The R. flava group*) 12
 Branches or tops more orange to pink (pinkish buff, peach, saffron, apricot-orange, orange to ochraceous (5-6AB2-8, 7A4-5)); branches generally unchangeable when bruised 18



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12. Tops with dense, subcristate branching, more clear yellow than the branches; spores smooth. see *R. schildii* p. 6
 Tops not subcristate, not more clear yellow than the branches; spores ornamented 13

13. Spores 5-7.5 µm broad; mature specimens dark pinkish buff (5B3-4), older specimens often slowly turning fawn to dark vinaceous (about 7C4 to 10E4-5) when bruised.
 see *R. megaspora* p. 4
 Spores narrower; mature specimens ±ochraceous (5B4-5) to ±yellow, unchangeable or turning brownish to vinaceous when bruised 14

14. With brownish red (10DE7-8) spots at the base. Fruitbodies to 15 × 12 cm; clamps absent, spores (7.0-) 8.0-10.5-12.0 (-13.1) × (3.5-) 4.0-4.5-5.5 µm, Q = 2.0-2.4.
R. sanguinea (Pers.) Quéf.
 Never with reddish discolorations 15



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15. Clamps present; branches turning dark vinaceous when bruised. Spores 10-13.2-16.5 × 3.7-4.6-6.0 µm, Q = 2.8-2.9.
R. flava (Schaeff.) Quéf.
 Clamps absent; branches unchangeable 16



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16. Spore Q = 2.3; branches and tops uniformly pale chrome, cream to warm buff (3-4A3-4); stem often with abortive branches. Fruitbodies to 12 × 11 cm; spores 9.4-10.2-11.0 × 4.1-4.4-4.9 µm.
R. lutea (Vitt.) Schild
 Spore Q = 2.5-3.5; branches of mature specimens warm buff, dark pinkish buff to ochraceous (4A4, 5B4-5 (-6B4)) sometimes remaining ±pale cream ((3-)4A2) at unexposed areas of the upper stem/lower branches, tops pale cream (4A2); stem without abortive branches 17



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17. Spores 9.0-15 × 3.7-6.0 µm, Q = 2.5-2.9; branches warm buff (4A4) or only slightly pinkish-buff (5A4 (6A3)).
R. corneri var. *corneri* nom. prov.
 (syn.: *R. subtilis* ss. auct.)
 Spores 12.3-16.0-18.0 (-20) × 4.1-4.7-5.5 µm, Q = 3.1-3.5; branches of mature specimens dark pinkish buff to ochraceous with a shade of clay pink (5B4-5 (-6B4)).
 Fruitbodies to 14 × 14 cm.

R. corneri var. *cylindrospora* nom. prov.



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18. Tops of mature fruitbodies paler and more clear yellow than the branches (pale chrome to orange yellow – 3-4A2-7 (5A5-6)); branches often pinkish buff, salmon, flesh-pink to pale reddish orange (5A2-4, 6A3-5, 7A4-5), never(?) with a clear yellow colour band below; clamps present. (*The R. formosa group*) 19
Tops of mature specimens concolorous or more orange than the branches; branches of mature specimens saffron, apricot-orange, peach, orange to ochraceous (5-6AB5-8), often with a clear yellow colour band in the transition-zone between the pale stem and the coloured branches, especially in areas less exposed to light; clamps present or absent. (*The R. aurea group*) 23

19. Spores smooth 20
Spores ornamented (check in cotton blue) 21

20. Tops rounded to swollen see *R. obtusissima* var *incarnata*, p. 2
Tops with dense, subcrustate branching. Fruitbodies to 12 × 7 cm; branched 6-8 times, base/mainbranches and smaller branches sinuate with the tops pointing in various directions; branches pale pinkish buff to pinkish buff (5A2-3); tops pale chrome to cream (3/4A3); clamps present, spores 12-13.8-16/4-4.4-5.2 (-5.6) µm, smooth. **R. schildii R.H. Petersen**



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21. Stem large, up to 6 × 6 cm; young fruitbodies with yellowish branches; mature fruitbodies with pale pinkish buff to pinkish buff (5A2-4, 5B4) branches. Fruitbodies to 18 × 18 cm; clamps present, spores 9.8-12.0-13.5 × 4.1-5.1-6.2 µm, Q = 2.2-2.5. **R. flavescens (Schaeff.) R.H.Peters.**



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- Stem small, typically less than 2 × 2 cm or fruitbodies branching from the base; young fruitbodies with ±pink to reddish branches; mature fruitbodies with pinkish buff to salmon (5A4, 6A3-4) branches 22



22. Fruitbodies to 15 cm high; clamps present; flesh green in FeSO₄, chalky-friable when dry. Fruitbodies often dividing from the base into several main branches; spores 9.8-12.1-15.0 × 4.9-5.5-6.5 µm, Q = 2.1-2.4.

R. formosa (Pers.: Fr.) Qué.

- Fruitbodies rather small, up to 7 (-10) cm high; clamps absent; flesh not green in FeSO₄, not chalky-friable when dry. Fruitbodies with a small, up to 2.5 cm thick stem or branched from the base. Spores 7-13 (-16) × 3.0-4.5 (-5.7) µm; Q = 2.6-3.0.

R. fagetorum Schild ss.auct., non ss. Mass Geesteranus



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23. Clamps absent 24
 Clamps present, at least at the base of the basidia 25

24. Fruitbodies rather small, up to 7 (-10) cm high, with a small, up to 2.5 cm thick stem see *R. fagetorum*, p 6
 Fruitbodies medium-sized with a prominent, 2.5-6 cm thick stem; branches and tops yellow-orange to salmon, long with a clear yellow colour band at the upper stem/lower branches; spore Q = 2.3-2.6. Spores 10.0-13.0 × 4.0-6.0 μm.

***R. aurea* (Schaeff.) Quél.** ÷

25. Spores smooth to almost smooth. Fruitbodies to 14 × 11 cm; spores 10.0-11.1-13.0 × 3.5-4.0-4.5 μm, Q = 2.8.

***R. magnipes* Marr & Stuntz**

- Spores distinctly warted 26



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26. Spore Q = 2.7-3.0; clamps present at the base of the basidia, but not always at the other hyphae. Fruitbodies to 16 × 17 cm; upper branches pinkish buff, saffron, salmon to peach (5-6A3-6); tops apricot orange to orange (5-6A8); spores 11.0-13.9-15.6 × 3.5-4.8-5.7 μm, with distinct, up to 0.4 μm high, slightly fused warts and sinuous ridges.

***R. largentii* Marr & Stuntz**

- Spore Q = 2.3-2.6; clamps present at all septae 27



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26. Tops at mature specimens apricot orange to ochraceous (5AB7-8). Branches pinkish-puff, saffron to salmon (5A3-5,6A3), tops apricot orange to ochraceous (5AB7-8); clamps present at all septa. Fruitbodies to 20 × 28 cm; spores 10.0-11.6-13.0 × 4.0-4.4-5.0 μm, Q = 2.3-2.6.

***R. flavicingula* R.H. Petersen**

- Tops at mature specimens cream to warm buff (4A3).
 see *R. flavescens*, p. 6



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Key to the species of Ramaria subgen. Lentoramaria

1. Spores smooth; with a prominent, white basal tomentum; stem and branches of mature specimens pale yellowish. Fruitbodies to 6 × 4 cm; spores 7-11 × 3-4 μm.

Lentaria dendroidea (Fr.) J.H. Petersen

Spores ornamented with rounded warts; without prominent tomentum (but possibly with white, adpressed hyphae); colours of mature specimens often different 2



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2. With a pronounced smell of aniseed; fruitbodies uniformly whitish, pinkish buff to pale salmon; without colour change when bruised; all parts dimitic; on conifer needles. Fruitbodies to 9 × 3 cm; spores 5.5-6.3-7 × 3.3-3.8-4.5 μm; Q = 1.5-1.8.

R. gracilis (Pers.: Fr.) Qué.

Smell weak, spicy or spicy-sweet; fruitbodies yellowish, ±brown or green; often darker when bruised; stem and branches monomitic; on wood or at the base of grasses 3



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3. Fruitbody or flesh with ±green areas; on conifer wood 4
Fruitbody without green; on conifer wood, deciduous wood or at the base of grasses 5

4. Rhizomorphs monomitic, spores 8.2-12.3 × 4.1-5.5 μm, rough in outline, ornament cyanophilous. Fruitbodies to 10 × 10 cm; Q = 2.1-2.2.

R. apiculata (Fr.: Fr.) Donk

Rhizomorphs dimitic, spores 7.8-10.7 × 4.1-4.9 μm, finely rough to almost smooth in outline, ornament weakly cyanophilous to acyanophilous. Fruitbodies to 5 × 3 cm; Q = 2.0-2.1.

R. tsugina (Peck) Marr & Stuntz



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5. Spores $6.5-9 \times 4-5.5 \mu\text{m}$, $Q = 1.6-1.8$; rhizomorphs purple in 10% KOH; branches “salmon” to “red brown”. Fruitbodies to $10 \times 6 \text{ cm}$. **R. rubella (Schaeff.) R.H. Petersen** ÷

Spores longer, $Q = 1.9-2.2$; rhizomorphs unchangeable or slightly brown in 10% KOH; branches yellowish, pinkish buff to greyish brown 6



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6. On deciduous wood; young fruitbodies pale yellow (see cover picture); mature fruitbodies pinkish buff, clay pink, greyish brown to fawn (5AB3, 6BD3-4, 7E5); tops yellow. Fruitbodies to $11 \times 8 \text{ cm}$; spores $7.5-9-10.5 \times 4-4.4-5 \mu\text{m}$; $Q = 1.9-2.2$. **R. stricta (Pers.: Fr.) Quél.**

On conifer wood or at the base of *Ammophila arenaria*; young fruitbodies whitish to pinkish buff; mature fruitbodies pale pinkish-buff, clay buff to cinnamon (5A2-3, 6CD5-6); whitish towards the tops, but extreme tops sometimes abruptly pale chrome (3A3-4) 7



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6. On *Ammophila arenaria*; fruitbodies in all ages pale pinkish buff (5A2-3); extreme tops often pale chrome. Fruitbodies to $11 \times 7 \text{ cm}$; spores $8.2-9.1-10.3 \times 4-4.4-5 \mu\text{m}$; $Q = 2.0-2.2$.

R. ammophila nom. prov.

On conifer wood; mature fruitbodies clay buff to cinnamon (6CD5-6); extreme tops whitish or concolourous with the branches. Fruitbodies to $10 \times 7 \text{ cm}$; spores as *R. ammophila*.

R. concolor R.H. Petersen



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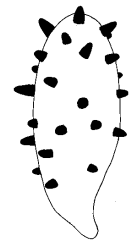
Key to the species of Ramaria subgen. Echinoramaria

(Note: All known taxa from the area (except the dubious *R. argentea*) are keyed out. Some of these may later prove synonymous).

1. Spores $13-20 \times 5-8.2 \mu\text{m}$, with up to $1.5 (-2) \mu\text{m}$ long spines; all basidia two-spored; all parts quickly turning pink to deep brown when bruised (*sect. Dendrocladium*). Fruitbodies to $8 \times 4 \text{ cm}$. **R. broomei (Cotton & Wakef.) R.H. Petersen**
 Spores and spines smaller; basidia mostly four-spored; fruitbodies not brownish on bruising (*sect. Flaccidae*) 2



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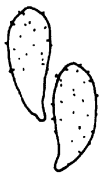


2. With green colours or bruising green 3
 Without greenish colours 4

3. Spores $6.5-10.5 \times 3.5-4.9 \mu\text{m}$, $Q = 2.0-2.4$; fruitbodies to 6 cm high and 4 cm broad, generally rather delicate with an up to 0.5 cm thick stem. Spore ornament to $0.5 \mu\text{m}$ high.



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R. abietina (Pers.: Fr.) Qué.

Spores $10.7-13.7 \times 4.5-6 \mu\text{m}$, $Q = 2.1-2.5$; fruitbodies to 13 cm high and 7.5 cm broad, generally rather stout with an up to 2.5 cm thick stem. Spore ornament to $0.5 \mu\text{m}$ high.

R. echinovirens Corner, Thind & Dev.



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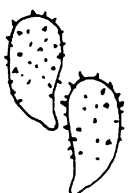
4. Rhizomorphs with irregular crystals or crystals absent 5
 Rhizomorphs with star-shaped crystals 8



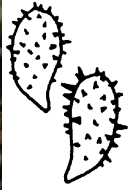
5. Tops pale lilac (16-17A2-3), flattened-subcristate; spores $6-9 \times 3-3.7 \mu\text{m}$; $Q = 2.0-2.4$; spore ornament to $0.5 \mu\text{m}$ high. Fruitbodies to $3.5 \times 3 \text{ cm}$. **R. subdecurrens (Coker) Corner**
 Without lavender colours 6



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6. Spores $7-12 \times 3.3-5 \mu\text{m}$, $Q = 2.0-2.1$; branches buff yellow, pinkish buff, ochraceous to yellowish brown; hymenium amphigenous; taste mild. Fruitbodies to $8 \times 5 \text{ cm}$; spore ornament to $1.2 \mu\text{m}$ high. **R. eumorpha (P. Karst.) Corner**
 Spores $5-9 \mu\text{m}$ long, $Q = \leq 1.9$; branches sometimes darker; hymenium unilateral; taste bitter or pepperish. 7



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7. Branches fuscous to deep olive; spores $5.2-8.9 \times 3.0-4.4 \mu\text{m}$, $Q = 1.7-1.9$. Fruitbodies to $16 \times 10 \text{ cm}$; spore ornament to $1 \mu\text{m}$ high. **R. mutabilis Schild & R.H.Petersen** ÷
 Branches ochraceous to cinnamon, at age fawn; spores $4.8-7.2 \times 2.8-4.0 \mu\text{m}$, $Q = 1.5-1.8$. Fruitbodies to $10 \times 5 \text{ cm}$; spore ornament to $1 \mu\text{m}$ high. **R. luteolus nom. prov.**



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8. On needles of conifers 9
 In deciduous forest or on the ground with mosses and lichens 10

9. Spores $3.2-6.4 \times 2.5-4 \mu\text{m}$, $Q = 1.5-1.9$, spore ornament to $0.3 \mu\text{m}$ high. Fruitbodies to $4 \times 3 \text{ cm}$.
R. corrugata (P.Karst) Schild
 (syn.: *R. myceliosa*)
 Spores $7.0-9.5 \times 3.6-4.9 \mu\text{m}$, $Q = 1.8-2.1$, spore ornament to $0.5 (-0.8) \mu\text{m}$ high. Fruitbodies to $5 \times 3 \text{ cm}$.



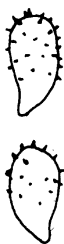
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- R. flaccida (Fr.) Bourd.**



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10. On the ground with mosses and lichens. fruitbodies up to 3,5 cm high and 2,4 cm broad but often smaller; spores 6.5-8.0 × 3.5-4.5 μm, Q = 1.7-2.0. **R. roellinii** Schild ÷
In deciduous forest 12



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11. Stem > 0.5 cm thick, fruitbodies up to 14 cm high; spores 5.2-6.7 × 3.0-4.1 μm, Q = 1.5-1.7. **R. decurrens** (Pers.) R.H.Petersen
Stem < 0.5 cm thick, fruitbodies less than 4 (-6) cm high; spores 6.5-9.0 × 2.9-5.0 μm, Q = 1.8-2.1. **R. elegans** nom. prov.



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