

Supplementary information

Origin of gall-inducing from leaf-mining in *Caloptilia* micromoths

(Lepidoptera, Gracillariidae)

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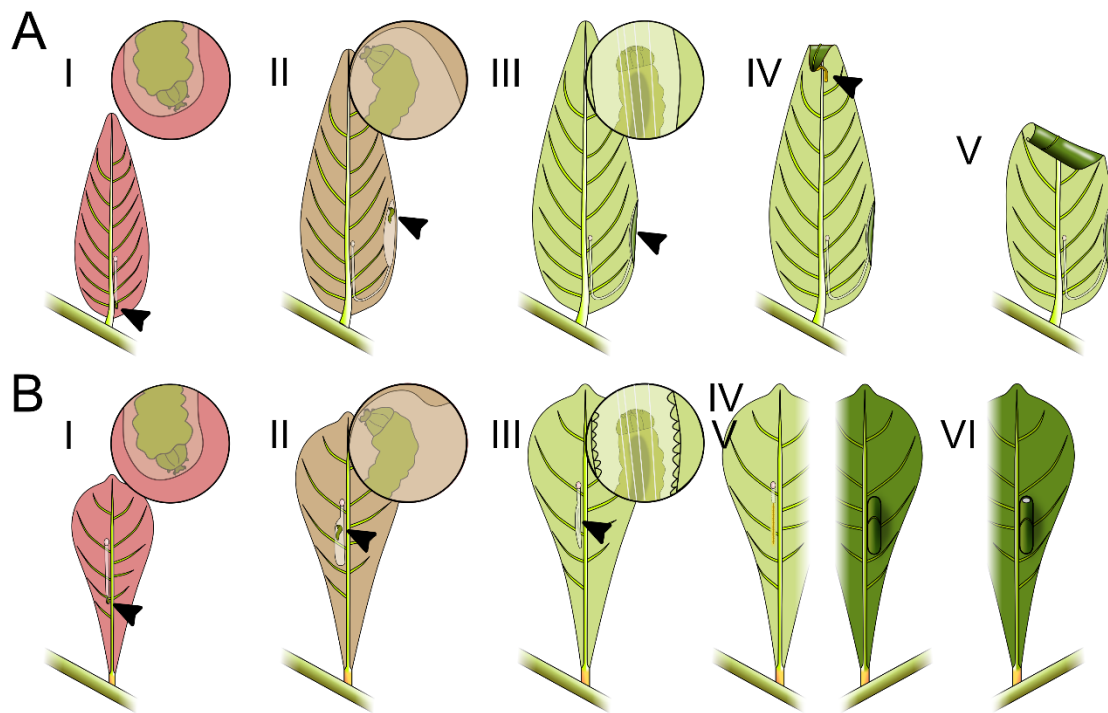


Figure S1.

Caloptilia ryukyuensis life-style (A) compared to *Caloptilia cecidophora* life-style (B). Both species make a serpentine mine at first instar, a blotch mine at second instar and a tentiform mine at third instar. *C. cecidophora* starts to induce a gall inside this mine and will stay inside it until sixth instar and pupation, whereas *C. ryukyuensis* leaves its mine at fourth instar to build a leaf-roll in which it will complete its larval development.

Movie S2.

Movie showing *Caloptilia cecidophora* development on *Glochidion obovatum*.

Movie S3.

Movie showing *Caloptilia ryukyuensis* development on *Glochidion lanceolatum*.

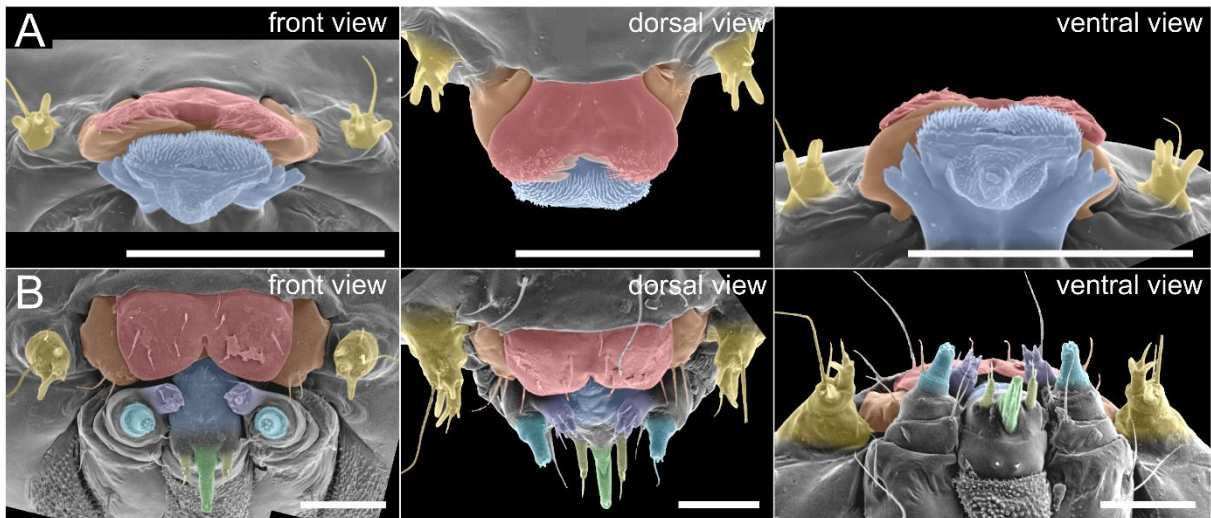


Figure S4.

Mouthparts of *Caloptilia cecidophora* second (A) and third instars (B) as seen in scanning electron microscopy. Legend, red: labrum, yellow: antenna, orange: mandibles, purple: galea, dark blue: labium, light blue: maxillar palpi, dark green: labial palpi, light green: spinneret. Scale: 100 μ m.

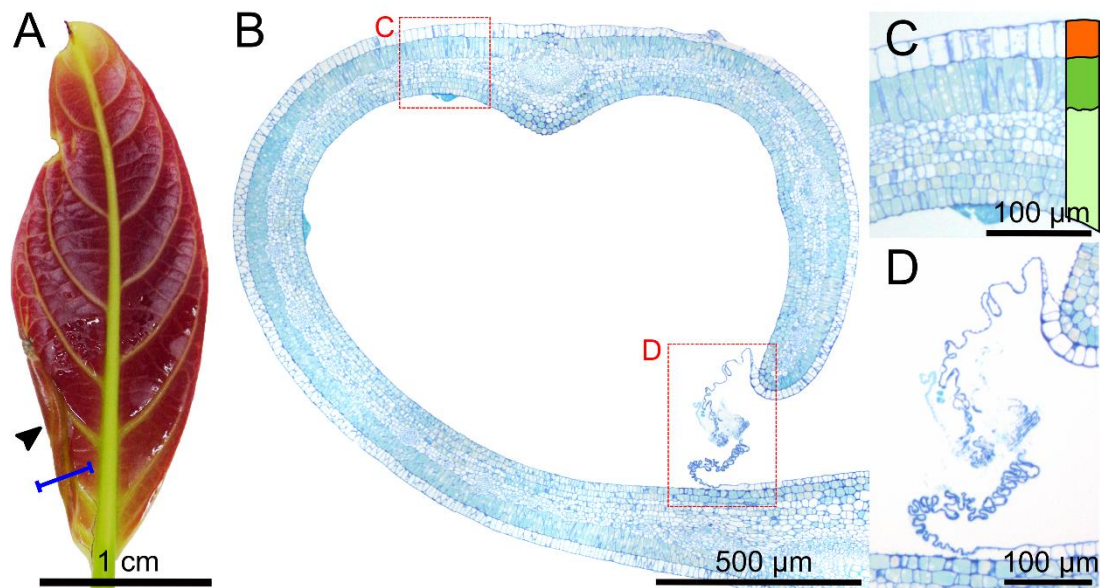


Figure S5.

Tentiform mine of *Caloptilia ryukyuensis* third instar, indicated with black arrow on *G. lanceolatum* (A). Blue line indicates the region cross-sectioned. (B) Histology section of the tentiform mine. (C) Detail of mined leaf. (D) Detail of folded upper epidermis cuticle. Legend, see figure 1. Staining: Toluidine blue.

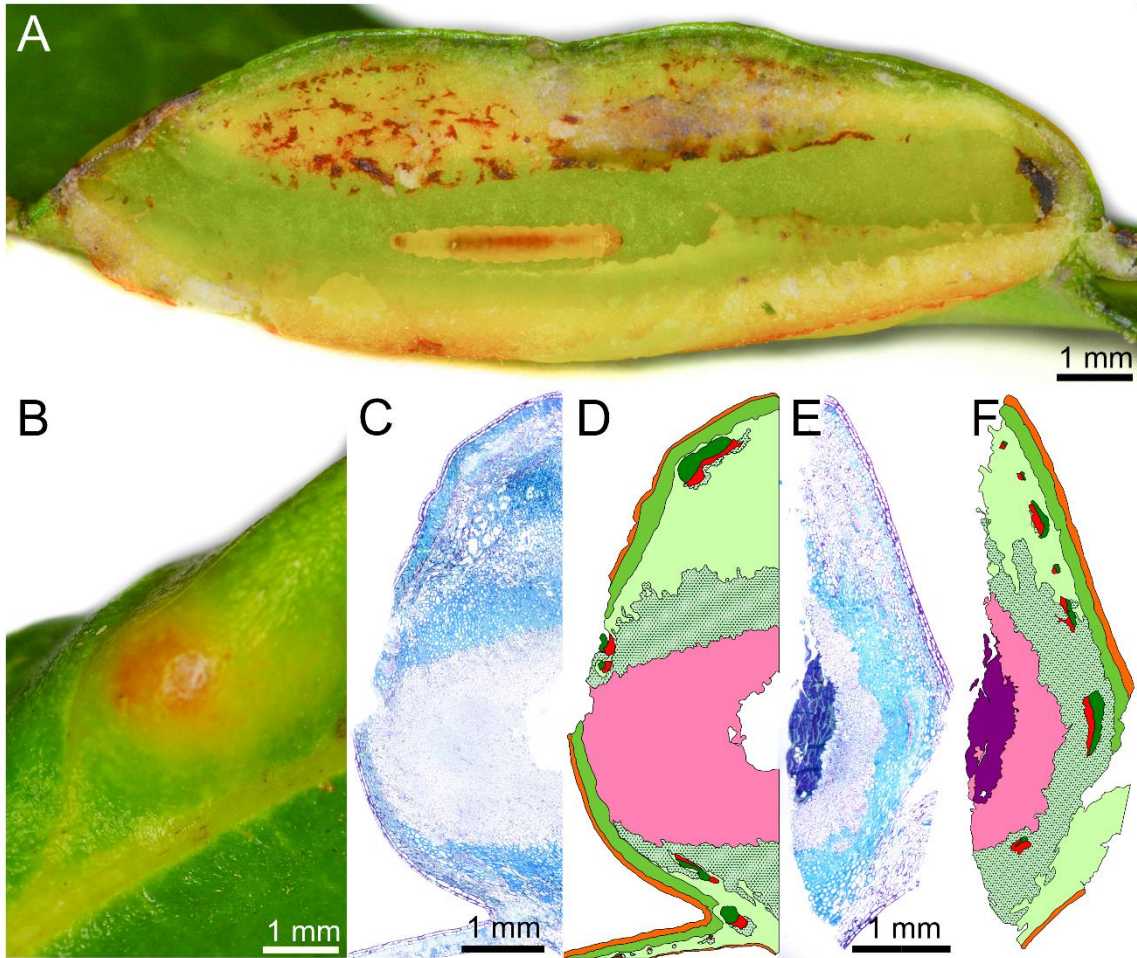


Figure S6.

(A) Sagittal section of *Caloptilia cecidophora* late instar gall on *Glochidion obovatum*. (B) Detail of the anterior part of the gall. (C) Histology sagittal section of the anterior part and (D) the interpretation drawing. (E) Histology sagittal section of the posterior part and (F) the interpretation drawing. Legend, see figure 1 and 3.

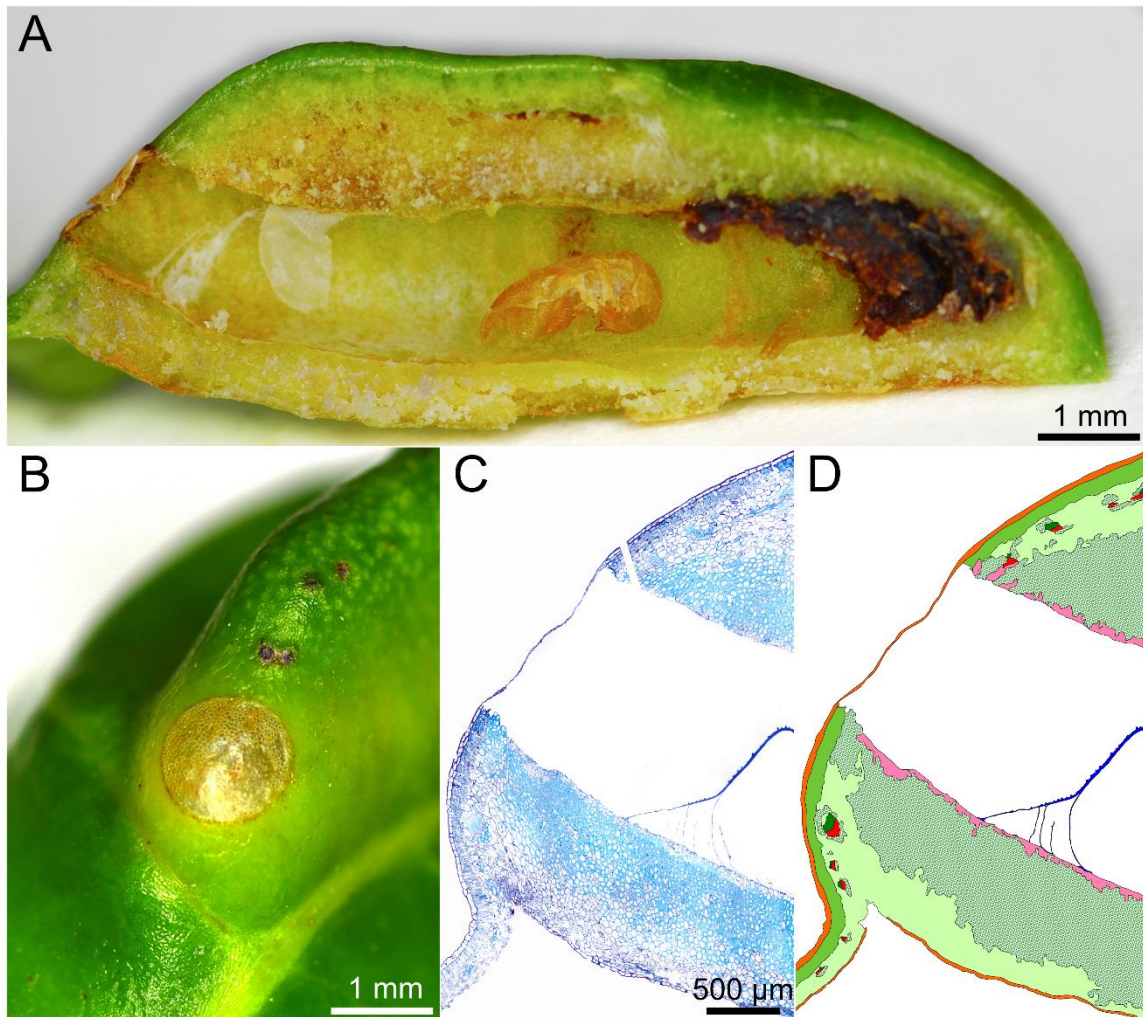


Figure S7.

(A) Sagittal section of *Caloptilia cecidophora* gall at pupa stage on *Glochidion obovatum*. (B) Detail of the anterior part of the gall. (C) Histology sagittal section of the anterior part and (D) the interpretation drawing. Legend, dark blue: silk, for remaining see figure 1 and 3.

Table S8.

Welch's t-test statistics for the comparison of *Caloptilia cecidophora* (Cc) and *C. ryukyuensis*

(Cr) head capsule widths. Numbers indicate the instars. Bold *p*-values are smaller than

N	<i>p</i> \ <i>t</i>	Cc1	Cr1	Cc2	Cr2	Cc3	Cr3	Cc4	Cr4	Cc5	Cr5	Cc6
9	Cc1		-1.1385	-2.1398	-15.217	-4.2468	-19.795	-23.81	-34.065	-35.752	-54.05	-50.749
8	Cr1	0.2752		-0.41456	-10.966	-1.9745	-16.775	-18.445	-30.768	-31.747	-50.249	-47.163
12	Cc2	0.0499	0.687		-16.495	-2.6701	-20.142	-26.365	-34.889	-37.056	-55.398	-51.938
14	Cr2	4.00E-11	2.17E-07	1.44E-14		15.248	-10.218	-11.136	-26.86	-27.976	-48.316	-44.928
22	Cc3	0.00094	0.07861	0.01308	2.05E-14		-19.243	-25.701	-34.319	-36.522	-55.063	-51.566
16	Cr3	8.76E-16	1.46E-13	1.13E-14	1.09E-09	9.40E-14		2.522	-15.864	-15.468	-36.33	-33.412
20	Cc4	2.20E-16	4.48E-11	2.20E-16	1.53E-12	2.20E-16	0.0185		-20.266	-20.528	-42.244	-38.954
18	Cr4	2.20E-16	2.20E-16	2.20E-16	2.20E-16	2.20E-16	2.35E-16	2.20E-16		1.455	-20.109	-17.513
11	Cc5	4.16E-16	2.20E-16	3.16E-14	2.56E-13	1.52E-13	2.09E-13	1.59E-12	0.1574		-22.446	-19.709
10	Cr5	1.32E-15	2.20E-16	4.26E-14	6.40E-14	1.15E-13	2.20E-16	4.27E-14	3.88E-15	4.25E-14		2.3539
6	Cc6	6.66E-10	4.02E-11	6.99E-09	8.58E-09	1.31E-08	3.88E-11	6.34E-09	2.72E-10	1.35E-09	0.03522	

p(adjusted)