

TWO NEW SPECIES OF EUPHRASIA (SCROPH.) FROM CELEBES AND CERAM

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In the course of the study of the Scrophulariaceae of the Alpine Regions of New Guinea (Botanische Jahrbücher 90, 2, 1972, in press) I had to study the *Euphrasias* of areas surrounding New Guinea as well, with the result that two new species had to be described from areas where none were known.

The remarkable fact about the two species is that the one from Ceram is more related to the Bornean *Euphrasia borneensis* Stapf than to the New Guinean species, whilst the new Celebes species is clearly related to New Guinean species. However all species are closely related to each other and form part of the group of *Euphrasia* species that had its origins clearly in the southern hemisphere.

1. *Euphrasia celebica* van Royen, *n.sp.* – Fig. 1

Herba parva, usque as 8 cm alta, paucerramosa, probabiliter decumbens vel repens. Caules in sicco nigrescentes, sparse pilosi pilis brevibus albis adpressis curvatis. Folia obovata, 2–4 mm longa, 1.5–2.5 mm lata, 3- raro 4-lobata, basi cuneata, nervo mediano supra sulcato, subtus prominente, cum nervo laterali in utroque latere costae, conspicuo subtus solum, lobo apicali obovata-pandurato apiculato vel acuto, lobis lateralibus ovatis acutis, lobis omnibus secus margines paulo incrassati glabris. Petioli sensim decurrentes glabri. Flores solitarii, axillares in partibus apicalibus, pedicellis c. 1.2 mm longis, pilis sparsis brevibus retrorsis adpressis curvatis. Calyx infundibuliformis, 2.5–3 mm longus, lobis ovato-lanceolatis, acutis, marginibus costatis, nervo mediano prominente, tubo 8-costato, extus glabro, tubi basi atque marginibus loborum paucipilosis exceptis, intus glandulis numerosis brunneis rotundis. Corolla 8–12 mm longa fere recta, tubo 4–4.5 mm longo sensim dilatato versus lobos, labio inferiore 3-lobato, lobis lateralibus irregulariter trapezoideis, lobo mediano magis rectangulari atque plusminus aequilongo, lobis omnibus apice retusis; corollae pili in pagina superiore tubi solum, ubi retrorsi, ei cuculli antrorsi, insuper pili ad margines loborum omnium atque in parte inferiori faucis. Stamina 4–5 mm longa, antheris per paria arcte adherentibus, brunneo-nigrescentibus nitidis, aristis basalibus late dilatatis, per paria antherarum aristis inaequalibus, una e quattuor longiore, filamentis pilis brevibus albis. Ovarium obovoideum vel oblongum, glabrum, stylo sigmoideo, in parte apicali pilis sursum curvatis albis. Capsula a me non visa.

Small herb, up to 8 cm, with few stems only, probably decumbent or even creeping. Stems not or hardly branched, blackish when dry, with scattered, short,

white appressed-curved hairs. *Leaves* obovate in outline, 2–4 by 1.5–2.5 mm, 3-, rarely 4-lobed, cuneate at base, midrib grooved above, prominent below, lateral nerves 1 on either side of midrib, visible on underside only, apical lobe obovate-pandurate, c. 0.7–1 by 0.5–0.9 mm, apiculate or acute, lateral lobes ovate, less than 0.5 mm long, acute, all lobes slightly thickened along margin, glabrous. *Petioles* 1–1.5 mm long, gradually passing into the petiole, glabrous. *Flowers* solitary, axillary, in the apical parts of the plant, pedicels c. 1.2 mm long, with scattered, short, downward appressed-curved hairs. *Calyx* funnel-shaped, 2.5–3 mm long, lobes ovate-lanceolate, c. 1 by 0.3 mm, acute, margins ribbed, midrib prominent, tube c. 2 mm long, 8-ribbed, glabrous except for some hairs at base of tube and along margins of lobes, with numerous brown round glands on inside. *Corolla* 8–12 mm long, almost straight, tube 4–4.5 mm long, gradually widening into the lobes, upper lip hooded, 2-lobed, 5–6 mm long, the two lobes not curving upwards against the hood, lower lip 3-lobed, 5–7 mm long, lateral lobes irregularly trapeziform, 4–6.5 by c. 2.5 mm, median lobe more rectangular and about the same size, all lobes retuse at tip; pubescence on corolla only on upper side of tube and the hairs downward directed, on the hood hairs forward directed, hairs also along margins of all lobes and on underside of throat. *Stamens* 4–5 mm long, anthers closely adhering in pairs, c. 1.2 mm long, brownish black, glossy, with widely flaring basal awns, in each pair of anthers one of these awns longer than the other 3, orifices with numerous white hairs, filaments with short white hairs. *Ovary* obovoid-oblong, c. 1 by 1 mm, glabrous, style sigmoid, with white upward curved hairs in apical half. *Capsule* not seen.

Type specimen. *Eyma 3615*, in L.

Distribution. Celebes.

Menado, Poso, between Camp III and IV on summit of Mt Lumut, c. 2980 m (*Eyma 3615*, Sept.).

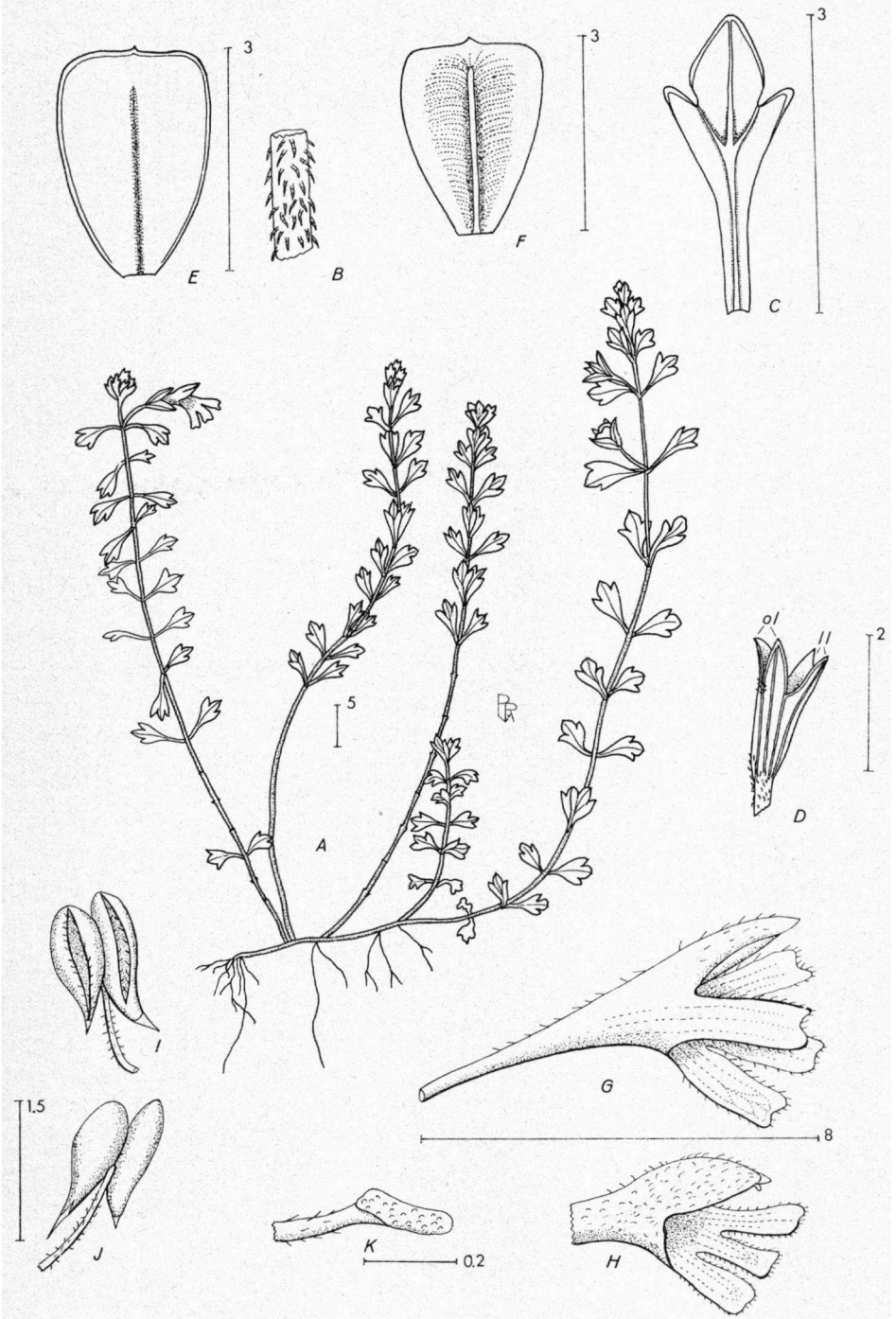
Ecology. No report has been made in what type of habitat this species was found.

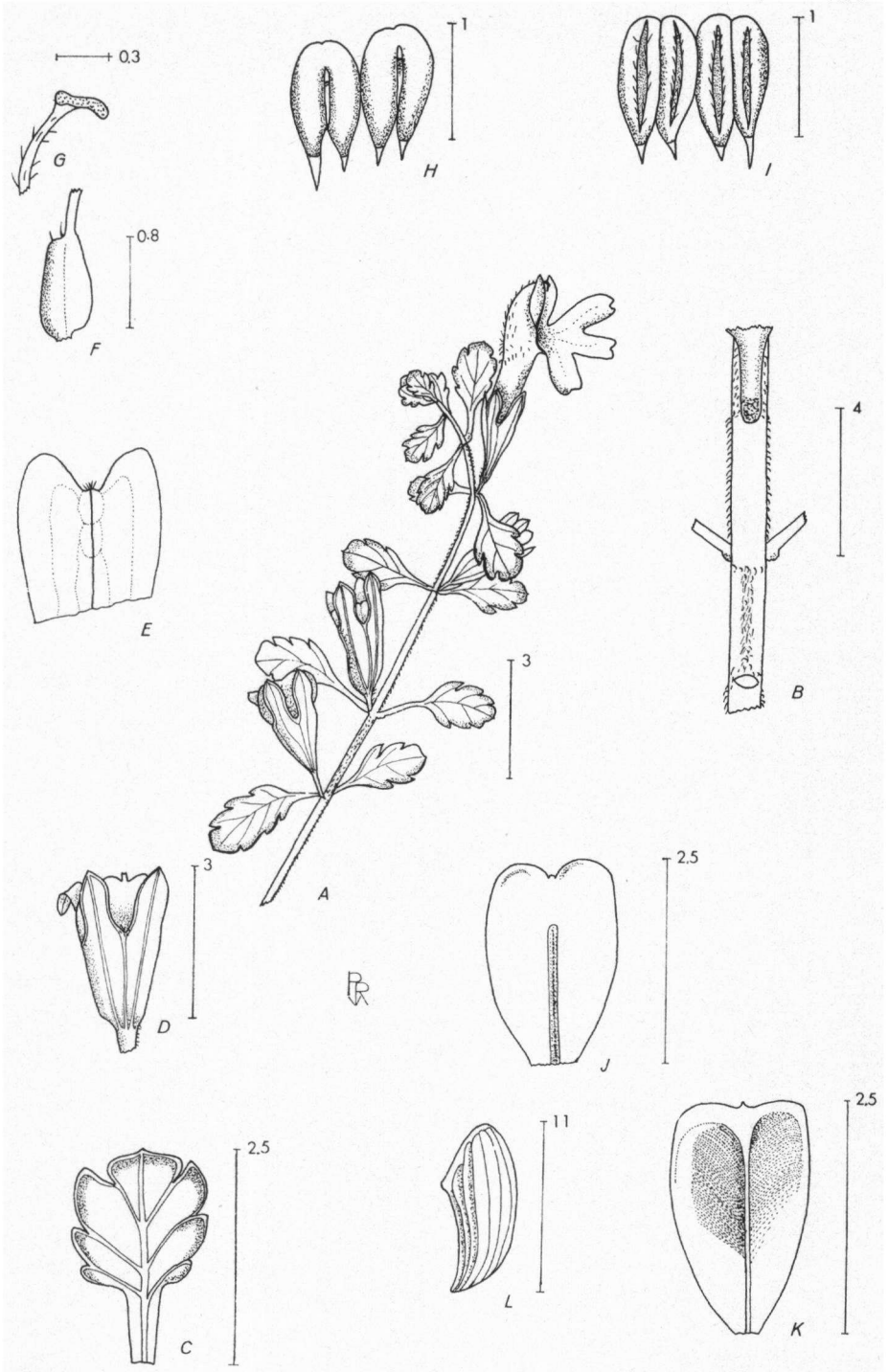
Note. This species is clearly related to *Euphrasia cucullata* Pennell and *E. mirabilis* Pennell, both from New Guinea, but differs from both in the glands on the inside of the calyx, and in the 2-lobed upper lip in which the lobes do not fold back against the hood. *E. celebica* also differs from both species in the small leaves. From *E. mirabilis* it differs usually also by the hardly thickened leaf-margins of the lobes. However, in several specimens of *E. mirabilis* leaves without thickened margins have been observed.

From *E. cucullata* it differs by the leaves having one pair of lateral nerves,

Fig. 1. *Euphrasia celebica* van Royen, A. entire plant, B. part of stem with pubescence, C. leaf, underside, D. calyx, lateral view, ol = upper lobes, ll = lower lobes, E. capsule, outside, F. valve of carpel, inside, G. flower, with 2-lobed lower lip, H. upper part of flower, with 3-lobed lower lip, I. anther, inside, J. anther, outside, K. stigma, lateral view. (*Eyma 3615*). Sizes in millimetres.

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those of the New Guinean species having two pairs of nerves. Also the calyx in *E. celebica* is almost entirely glabrous, while in *E. cucullata* all ribs of the calyx and the margins of the lobes are hairy.

In the type material one flower was found in which the hood is very small and has two narrow lobes folding back against the hood, while instead of 3 lobes in the lower lip there are 4, obviously the median one being split once again.

2. *Euphrasia ceramensis* van Royen, *n.sp.* – Fig. 2

Herba erecta fruticulosa, usque ad 25 cm alta, imprimis multiramosa in partibus apicalibus, interdum rami paulo decumbentes atque basi ad nodos radican-tes. Rami in sicco nigrescentes, subangulares, seriebus pilorum retrorsorum alborum duabus longitudinalibus latis, eis in utroque nodo alternantibus. Folia obovata vel spathulata, 2–3 mm longa, 1.5–2 mm lata, 5- vel 7-lobata, lobo apicali pandurato, rotundo, obtuso vel apiculato, lobis lateralibus oblique ovoideis obtusis, lobis omnibus apice solum paulo incrassatis subcucullatis, nervo medio supra sulcato, subtus prominente, cum nervis 2, raro 3 in utroque latere nervi mediani, glabris, basi late cuneata, sensim decurrentia versus petiolum, subtus prope basin saccata atque irregulariter verruculosa. Flores solitarii axillares in partibus apicalibus, pedicellis 0.5–1 mm longis, pilis retrorsis paucis. Calyx infundibuliformis, 3–4 mm longus, extus pilis paucis in sinu inter paria loborum inferiores et superiores, insuper tubi basi ad paginam superiorem solum, ceterum glaber, intus glaber, lobis panduratis, acutiusculis, margine paulo incrassatis, apice subcucullatis, vertice sub fructu recurvato, utroque lobo nervo mediano distincto atque costis 2 ad margines, tubo 8-costato. Corolla 6–8 mm longa, tubo recto, 3–4 mm longo, labio superiore paulo cucullato, partibus lateralibus obtusis excurvatis contra cucullum, labio inferiore 3-lobato, lobis lateralibus oblique trapezoideis, lobo mediano rectangulari, lobis omnibus apice retusis; pili adsunt ad basin cuculli solum atque ad eius apicem, pilis basalibus retrorsis, pilis apicalibus antrorsis, etiam adest fasciculus pilorum parvus in sinu inter lobos duos cuculli, ceterum pili desunt. Stamina c. 4–5 mm longa, antheris dilute brunneis, nitidis, per paria cohaerentia, utrisque thecis arista basali, per paria antherarum aristis inaequalibus, una e quattuor longiore. Ovarium oblongo-ovoideum, lateraliter compressum atque sulcatum, apice pilis paucis. Stylus sigmoideus, in parte apicali pilis patentibus sparsis, stigmatate obliquo. Capsula obcordata, c. 3 mm longa, 1.6 mm lata, dilute brunnea, lateraliter profunde sulcata, apiculata, glabra vertice paucipiloso excepto, valvis ultimo excurvatis. Semina fusiformia, alata, alis compluribus longitudinalibus angustis, dilute brunnea.

Fig. 2. *Euphrasia ceramensis* van Royen, A. part of branchlet with flower, B. part of branchlet showing pubescence, C. leaf underside, D. calyx, seen from above, E. upper corolla-lip, inside, F. ovary, lateral view, G. stigma, lateral view, H. anther-pair, outside, I. anther-pair, inside, J. capsule, outside, K. valve of capsule, inside, L. seed. (*Eyma 2026a*). Sizes in millimetres.

Bushy, erect herb, up to 25 cm high, mainly branched in the upper parts of the many stems, sometimes stems slightly decumbent and rooting on the nodes at base. Stems blackish when dry, subangular, with 2 broad, in each node alternating, longitudinal rows of white, retrorse hairs. *Leaves* obovate-spathulate in outline, 2–3 by 1.5–2 mm, 5- or 7-lobed, apical lobe broadly pandurate, c. 0.5 by 0.7 mm, rounded, obtuse or apiculate, lateral lobes 0.4–0.7 by 0.3–0.6 mm, obliquely ovoid, obtuse, all lobes only slightly thickened at tip, subcucullate, midrib grooved above, prominent below, with 2, rarely 3 nerves on either side of midrib, glabrous, at base broadly cuneate, tapering into petiole, the latter 0.5–0.8 mm long, on underside near base saccate and irregularly warty. *Flowers* solitary, axillary in upper part of stems, pedicels 0.5–1 mm long, with few retrorse hairs. *Calyx* funnel-shaped, 3–4 mm long, glabrous except for a few hairs in the sinus between upper and lower pair of lobes and the base of the tube on upper side only, inside glabrous, lobes pandurate, c. 1.2 by 0.7 mm, acutish, margin slightly thickened, slightly cucullate at tip, the latter curving backwards in fruit, each lobe with a distinct midrib and 2 ribs in the margins, tube with 8 ribs. *Corolla* 6–8 mm long, tube straight, 3–4 mm long, upper lip only slightly hooded, 3.5–4 mm long, lateral parts curved outwards against the hood and these lobes obtuse, lower lip 3-lobed, lateral lobes obliquely trapezoid, median one rectangular, all lobes 2–3 by 1–1.5 mm, retuse at tip; with hairs only at base of hood and on the hood itself, the former retrorse, the latter antrorse, with a small bundle of hairs in the sinus between the two lobes of the hood, otherwise glabrous. *Stamens* c. 4–5 mm long, anthers light brown, c. 1 mm long, glossy, in coherent pairs, each cell with a basal awn and one of the 4 awns of each pair of anthers longer than the other 3, orifices with scattered hairs. *Ovary* oblong-ovoid, c. 0.8 by 0.3 mm, laterally flattened and grooved, with a few hairs at tip. Style sigmoid, 7–8 mm long, with a few scattered patent hairs in apical half, stigma oblique, c. 0.3 mm long. *Capsule* obcordate, c. 3 by 1.6 mm, light brown, laterally deeply grooved, apiculate, glabrous, except rarely a few hairs at tip, the valves curving outwards ultimately. *Seeds* fusiform, c. 1.5 mm long, with several narrow longitudinal wings, light brown.

Type specimen. *Eyma* 2026, in L.

Distribution. Ceram Island.

Mt Oeeimpuku, 3000 m (*Eyma* 2026a, Nov.); Moerkéle Besar (*Eyma* 2026, Nov.).

Ecology. Nothing is known about this.

Notes. This species resembles in its bushy habit and 5–7-lobed leaves *Euphrasia papuana* F. Mueller from Mount Victoria in Papua, and *E. borneensis* Stapf from Mount Kinabalu in Borneo, Luzon and Formosa. Its leaves, however, are more deeply lobed than those of *E. borneensis* and resemble much more the upper leaves of *E. papuana*. In both *E. papuana* and *E. borneensis* the lower leaves are 3-lobed, a character never found in *E. ceramensis*. The flowers of *E. ceramensis* are closer to those of *E. borneensis* than to those of *E. papuana*, as the latter are more straight, have narrower lateral lobes of the upper lip, and have a much wider spread pubescence than *E. ceramensis*. In *E. borneensis* these lateral lobes,

however – as large as in *E. ceramensis* – are curving backwards together with the hood, which in *E. ceramensis* remains hooded and curved forward, similar to what is found in *E. papuana*.

The stems of *E. papuana* are glabrous, those of the Ceram and Borneo species pubescent, while in all three species the stems dry up in a blackish colour. The anthers in all three species are awned at their base, the awns of *E. papuana* all being equal, while those of the other two species are unequal.

E. ceramensis can be distinguished from all species in New Guinea by the fact that on the inside of the upper lip below the sinus of the two lateral lobes no hairs are found, but only a few in the sinus itself. From the Bornean species it differs in the much more deeply lobed leaves and the pubescence of the stems, which in *E. borneensis* is all around the stem, and in *E. ceramensis* in two longitudinal lines.