Malaxis Salazarii Catling, sp. nov. Figs. 8,9

Herba terrestris perennis, 3-23 cm alta, base fibris, nervis vaginae folii serrulatis vel laevibus, folio 15-45 mm longo, anguste ovato ad ellipticum, floribus viridibus vel flavovirentibus, 3-5 mm longis, pedicellis 5-11 mm longis, labio deltato carnoso 1.9-3 mm longo, lobis tribus apicalibus, lobis duobus basilibus, lobis apicalibus extremis conniventibus, columna 0.5-0.8 mm longa, 0.16-0.20 mm lata ad apicem rostelli, pollinis duobus seorsis.

Erect, terrestrial **herb**, prominently fibrous at the base, 3-23 cm tall. **Scape** arising from a bulbous corm covered basally by apparently 2-4 leafless **sheaths**, the lower scurfy-pubescent with groups of tortuous hairs arising from small papules, lower sheaths breaking down to coarse, persistent fibres, the upper sheath smooth except on the keels, concealing the base of the leaf sheath. **Leaf sheath** serrulate-keeled, especially basally, to smooth-winged on the veins. **Leaf** narrowly ovate to more commonly ovate, broadly ovate, occasionally elliptic, obtuse to acute, 15-45 mm long, 7-28 mm wide. **Inflorescence** subindeterminate, racemose, initially subcorymbose, becoming elongate, more or less densely-flowered, especially toward the top. **Floral bracts** subulate, 1-1.8 mm long. **Flowers** green or yellowish-green, 3-5 mm long. **Pedicels** including pedicellate ovary 5-11 mm long. **Lateral sepals** oblong-elliptic, obtuse, 1-3-nerved, with the margins somewhat revolute, with slight callus near apex on the outer side, 1.3-2 mm long, 0.8-1 mm wide. **Dorsal sepal** oblong-elliptic, obtuse, 1-3-nerved, with margins strongly revolute, 1.3-2 mm long, 0.7-0.9 mm wide. **Petals** narrowly linear, strongly recurved-downward, 1.3-1.6 mm long, 0.3-0.4 mm wide. **Lip** 5-veined, with an overall deltoid or rhomboid-deltoid shape, 1.9-3 mm long, 2-2.5 mm wide, widest across the two-lobed base, somewhat fleshy in the bowl-shaped centre and with two circular pockets near the base on the upper side, trilobed at the apex, the median lobe smaller than the lateral lobes and with a rugose callus, the apical lateral lobes convergent, the basal lateral lobes 0.6-1 mm long, apical lateral lobes 0.5-1(1.2) mm long. **Column** 0.5-0.8 mm long, with the rostellum very broad at the apex and at that point about 1/2 the width of the column and 0.16-0.3 mm across. **Anther** cap trilobed at the apex, 0.2-0.3 mm long, 0.3-0.4 mm wide. **Pollinaria** two, yellow, 0.5-0.6 mm long, each with 2 pollinia, each pollinarium separate and not convergent near the tip, each with a more or less circular liquid viscidium approximately 0.05 mm across, near but not at the acute apex. Ripened **ovary** obovoid, 4-6.5 mm long, with irregular ridges between the six ribs. **Seeds** 0.2-0.3 mm long, 0.1-0.12 mm wide, with a transparent unicellular testa 6-8 cells in length and 7-9 cells in width, embryo ovoid, approximately 0.1 mm long.

HOLOTYPE: **MEXICO**: JALISCO: Municipio de Talpa, entre Cuale y Cumbre Blanca, bosque

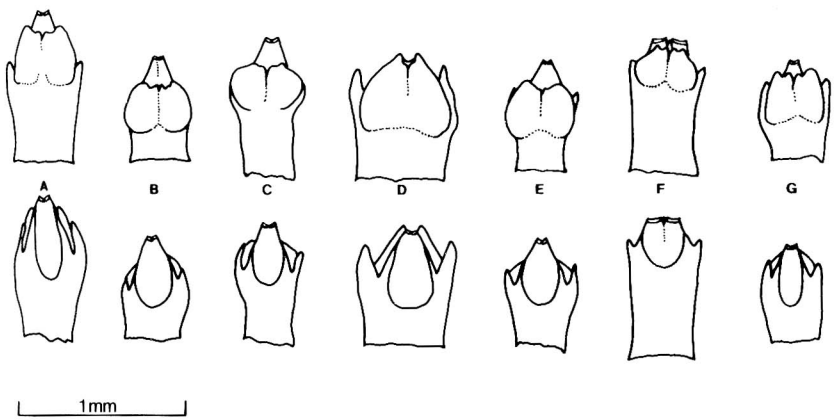

Fig. 7. Columns from flowers from types of various names in *Malaxis*. **a**, *Malaxis unifolia* Michaux (*Michaux*, P). **b**, *Malaxis ophioglossoides* Muhlenberg ex Willdenow (*173*, PH - Muhlenberg herbarium). **c**, *Microstylis ophioglossoides* var. *mexicana* Lindley (*Dr. H.H.J.*, K - Lindley Herbarium). **d**, *Malaxis thlaspiformis* Richard & Galeotti (*Ghiesbreght*, P). **e**, *Malaxis Grisebachiana* Fawcett & Rendle (*Harris 7743*, BM). **f**, *Malaxis Bayardii* Fernald (*J.M. Fogg jr. 4851*, AMES). **g**, *Malaxis Salazarii* Catling (*González Tamayo 923*, AMO). Camera lucida drawings by P.M. Catling.

pino y encino, 30 agosto 1973, *Roberto González Tamayo RGT 923* AMO. ISOTYPES: AMES, ENCB.

ADDITIONAL MATERIAL EXAMINED: **EL SALVADOR**: road to La Palma-Roezli-Felsen, 1000 m, terrestrial in full sun on rocks between grass, 1 July 1970, *F. Hamer 244* (MO). **GUATEMALA**: 1800 m, 27 June 1882 (BM). JALAPA: Metaquescuintla, Finca Concepción, 3 July 1986, *P.M. Catling G7080* (AMO). **MEXICO**: CHIAPAS: Mt. Ovando, 1-16 July 1940, *E. Matuda 4217* (MEXU, MICH). DURANGO: W of Guanaceví, 25° 55.N, 105° 57.W, 2580 m, pine forest in sandy, limy soil, *Juan G(onzález) sub Oestlund 6227* (MO). Sierra Madre Occidental, El Salto (Aserraderos), 2570-2600 m, moist, open pineland, 28 August 1934, *F.W. Pennell 18323* (PH). Sierra Madre Occidental, 5.1 miles by hwy 40 SW of El Salto at Arroyo de Agua, approx. 23° 45.N, 105° 24.W, approx. 8000 ft., pine forest with rocky slopes about stream, 20 Aug. 1982, *R.D. Worthington 8895* (NY, UTEP). 73 km by road S of Durango to La Flor and 8 km from La Flor, approx. 23° 33.N, 104° 42.W, 2706 m, open pine forest with small oaks and patches of bunchgrass on a slope, 18 Aug. 1982, *R.D. Worthington 8860.5* (NY, UTEP). HIDALGO: on ridge near Tutotepec, 5300 ft., 27 Aug. 1945, *A.J. Sharp 45851* (MEXU). JALISCO: Municipio de Talpa, Palomas, cerca de Cuale, *Guadalupe Pinzón s.n.* (AMO). Cerro de la Venta, 25 Julio 1975, *Salvador Rosillo y Roberto González Tamayo s.n.* (AMO). Municipio Zapopan, Fracc. El Palomar, 21 Agosto 1975, *Salvador Rosillo s.n.* (AMO). MORELOS: Lakes of Zempoala, damp slopes, 11 Aug. 1940, *I.K. Langman 2641* (PH). Parque Nacional Lagunas de Zempoala, 9750 ft., 8 August 1949, *J.G. Teer 53*, (MEXU, TAES). Lagunas de Zempoala; 10,000 ft., pine-fir, 29 July 1957, *R. M. Straw, D.P. Gregory 1057* (MEXU, MICH). Municipio Huitzilac, Laguna Tonatiahua, 3000 m, bosque de pino, 23 julio 1988, *A. Espejo 3315* (AMO). OAXACA: km 25.6, Río de la Y, 2220 m, pine-oak forest on limestone, 5 July 1977, *E.W. Greenwood and O. Suárez G430*

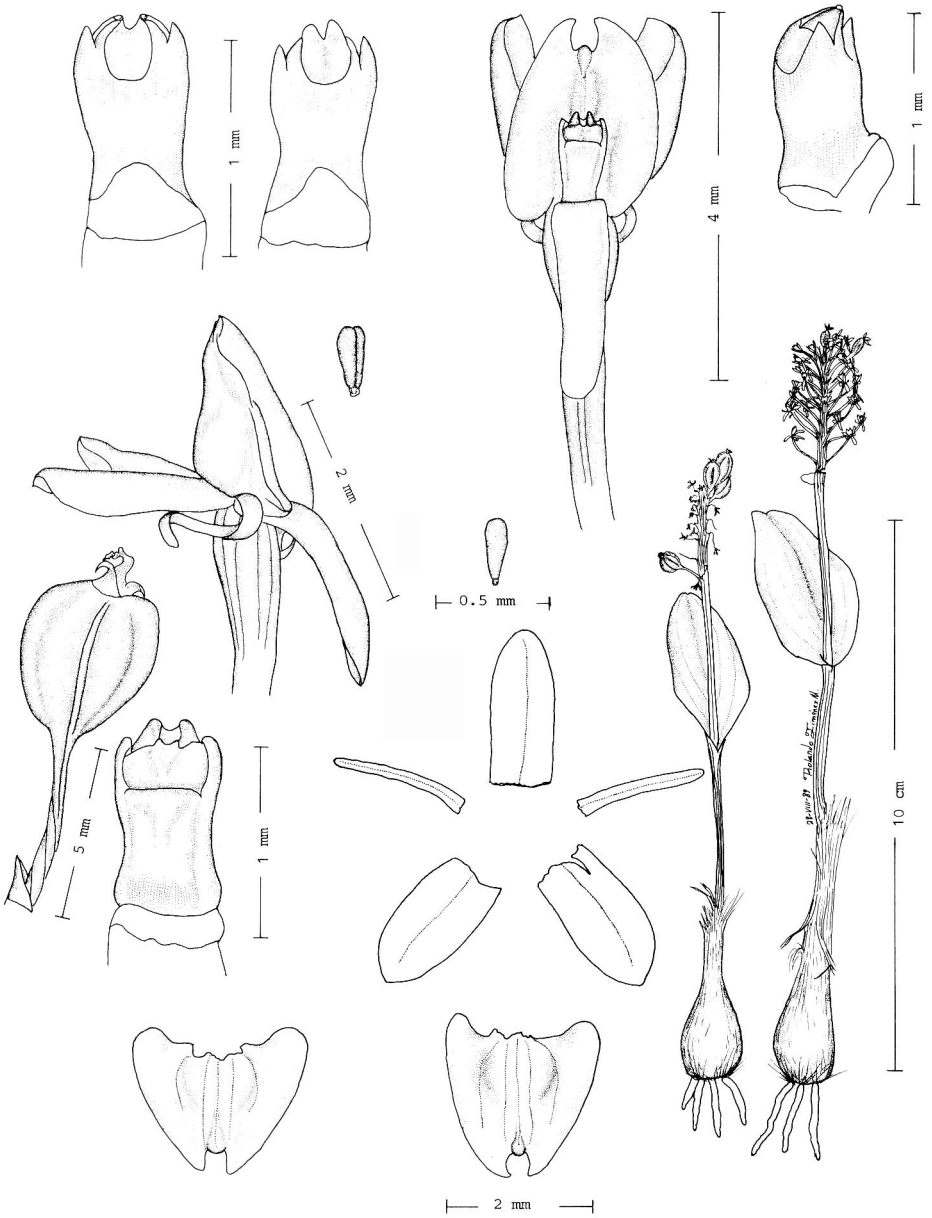

Fig. 8. ***MALAXIS SALAZARII*** Catling.
Drawing by Rolando Jiménez (*G. y G. Salazar 4388*).

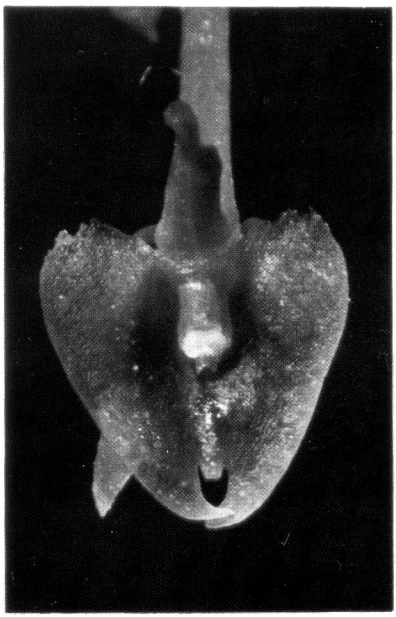

Fig. 9. Flower of *Malaxis Salazarii* viewed from above. Photograph by E.W. Greenwood (*G-867*).

(AMO). Upper E path, Cerro San Felipe, 1930 m, infrequent on steep bank in shade, 11 July 1976, *E.W. Greenwood G223* (K). PUEBLA: Tesmalaquilla to Atzitzintla, 9000', shade of pine forests, 21 Aug. 1938, *E.K. Balls 5310* (K). SAN LUIS POTOSI: San Luis Potosí, 22° N, 6,000 - 8,000 ft., 1878, *C.C. Parry and Ed Palmer 859* (BM, K, MO, PH). SINALOA: Municipio de San Ignacio, La Cebolla a 40 km al N de San Ignacio, 1500 m, bosque de pino con encino, ladera pedregosa, 20 Agosto 1980, *Rito Vega A. y JSPN 811* (AMO). VERACRUZ: Municipio de Atzalán, La Florida, 1710 m, bosque de encino, ladera de cerro, 4 julio 1972, *F. Ventura A. 5652* (MICH). Municipio de Jalacingo, Ocotepec, 1850 m, ladera de cerro, vegetación de bosque de pino, 18 agosto 1971, *F. Ventura A. 4097* (MICH).

DISTRIBUTION AND ECOLOGY: *Malaxis Salazarii* occurs in mountainous terrain from

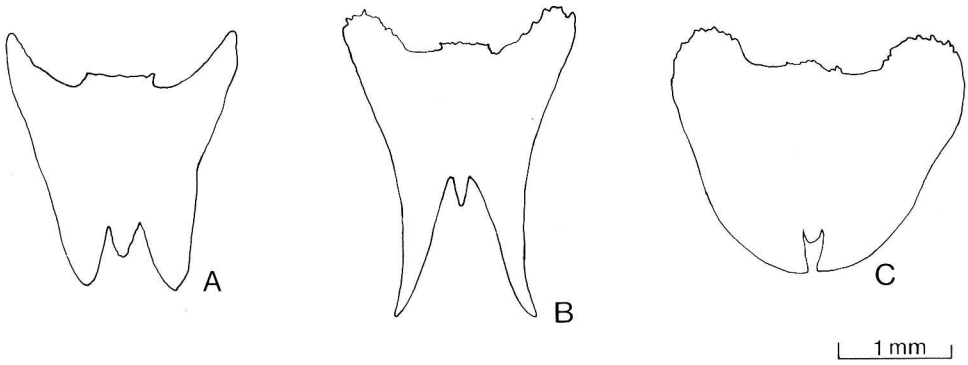

Fig. 11. Lip outlines of **a**, *Malaxis amplexicolumna* Greenwood & González Tamayo (HOLOTYPE - *Greenwood G-743*, AMO). **b**, *Malaxis Steyermarkii* Correll (Panama, *Folsom 4866*, AMO). **c**, *Malaxis Salazarii* Catling (Guatemala, *Catling G7080*, AMO). Camera lucida drawings by P.M. Catling.

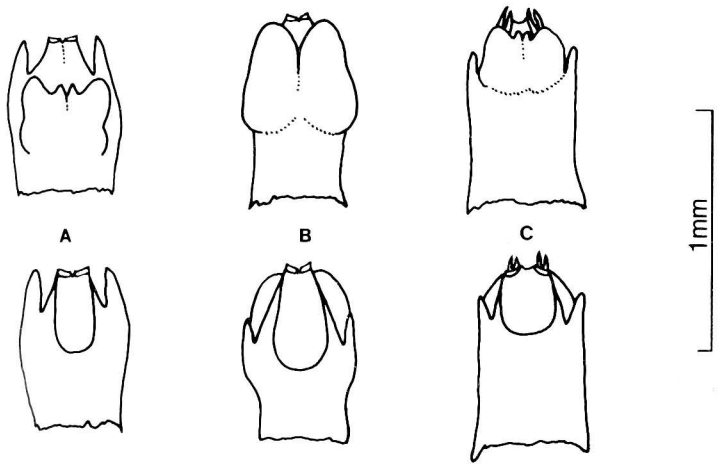

Fig. 12. Columns of **a**, *Malaxis amplexicolumna* Greenwood & González Tamayo (HOLOTYPE - *Greenwood G-743*, AMO). **b**, *Malaxis Steyermarkii* Correll (Panama, *Folsom 4866*, AMO). **c**, *Malaxis Salazarii* Catling (Guatemala, *Catling G7080*, AMO). Camera lucida drawings by P.M. Catling.

1000 to 3000 m elevation throughout much of Mexico, excepting the northern states, and extends south to Guatemala and El Salvador (Fig. 9). It has most often been found on rocky, seasonally moist slopes in pine, oak or mixed pine - oak forest. No voucher material was found to substantiate the report from Nicaragua (Hamer 1985).

PHENOLOGY: Flowering occurs from May to July. Capsules reach maximum size within a few months of pollination.

POLLINATION: No information currently available.

IDENTIFICATION: *Malaxis Salazarii* can be distinguished from other members of the *M. unifolia* group (i.e., species with flowers having a lip with three terminal lobes and two basal lobes, and a pedicel equalling or exceeding the length of the flower) with the key on page 104.

Plants of *M. Salazarii* from south of the Isthmus of Tehuantepec are without the serrulate-keeled leaf sheaths which are very characteristic of the plants found north of the Isthmus. However this observation is based on only a few specimens from south of the Isthmus so that it seems inappropriate at this time to recognize infraspecific taxa.

ETYMOLOGY: This species is named in honour of Gerardo Salazar Chávez, outstanding student of the Mexican Orchidaceae and curator of the herbarium of the Asociación Mexicana de Orquideología (AMO).

CONSERVATION: This species is widespread in Mexico and is apparently not threatened at the present time.