SOME NOTES ON A COLLECTION OF AQUATIC PHANEROGAMS FROM THE NETHERLANDS WEST INDIAN ISLANDS, AND FROM VENEZUELA AND COLOMBIA

by

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In the year 1930 Mr P. WAGENAAR HUMMELINCK, Utrecht, made a trip to the Netherlands West Indian Islands of Curaçao, Bonaire and Aruba with the intention of collecting zoological objects and of gathering data of zoogeographical interest (see lit. 8). In the years 1936—37 he again collected in these islands and, moreover, visited the islands of Margarita and Los Testigos off the coast of Venezuela, the Venezuelan peninsula Paraguaná and the Colombian peninsula La Goajira. To get a better impression of ecological circumstances in pools and puddles of which a zoological inventory was made, he also gathered Algae and floating and submerged Phanerogams occurring in the collecting stations. On the collector's request the present author made a study of the aquatic Phanerogams, which gave rise to some critical notes. As, moreover, several new localities were discovered and a series of ecological particulars were given by the collector, a complete enumeration of the collected specimens may follow. The specimens were preserved in small collecting bottles in alcohol and in formaline and are now inserted both in the Rijksherbarium at Leiden and in the University Herbarium at Utrecht.

1. On the variability of Najas guadalupensis (Spreng.) Morong.

This species mentioned by RENDLE (6, 7) as *Najas microdon* A. BR., occurs in the southern United States, in Central America, where it is known from Mexico, Guatemala and Nicaragua, in the West Indian Islands and in South America, as far south as Uruguay and Argentina. According to RENDLE it was collected in Venezuela near Caracas; KNUTH (5) cites a specimen from Carabobo. It is, according to RENDLE, a species of variable habit, the branches of it are usually long, slender and weak; the leaves are linear, 1—2.5

cm, generally about 1.5 cm long and 0.4—1 mm, generally about 0.5—0.75 mm broad, the leaf margins are minutely toothed with 20—45 microscopical teeth at each margin. Besides typical *N. microdon* RENDLE mentions a var. *curassavica* A. BR. [1]), based on plants of a more robust, suberect habit, with the leaves 1.2—2.7 cm, generally about 2 cm long and 1—1.75 mm, generally about 1.5 mm broad, with 30—50 teeth at the margins. Of this variety RENDLE cites specimens from Florida, Mexico, Porto Rico, Cuba and Venezuela. It was originally described by BRAUN (2) on a specimen from Curaçao, collected by SEEMANN at El Hato. In the collection of Mr WAGENAAR HUMMELINCK there are some specimens from Paraguaná peninsula and from the island of Margarita [2]), which fairly well agree with typical *N. guadalupensis* as to the general habit and the dimensions of the leaves. They are the following:

Venezuela, Paraguaná, Poza Supideo, E. of Carirubana, water stagnant, prob. permanent; connected with limestone; 190 mgr Cl′ per l (station 107), 16.II.1937; Paraguaná, Estanque de Moruy, water stagnant, permanent; connected with limestone; 50 mgr Cl′ per l (station 108), 18.II.1937; island of Margarita, Estanque Lato, W. of Boca del Rio, Macanao, water stagnant, permanent; unconnected with limestone; 70 mgr Cl′ per l (station 13), 20.V.1936; island of Margarita, Laguna Honda, S.E. of Juan Griego, in stagnant water, prob. only rarely dry; unconnected with limestone; 150 mgr Cl′ per l (station 18), 16.V.1936.

It is, however, remarkable that in these specimens the number of teeth at the leaf margins amounts to about 50, or even to 52, 55 or 60.

Other specimens have the leaves slightly longer and broader and resemble those which BRAUN called var. *curassavica*. Here again we find a difference in the number of teeth; in var. *curassavica* in the sense of RENDLE (including also var. *Gollmeriana* A. BR.), there are 30—50 teeth at each margin, in our plants the number amounts to 60—65:

Venezuela, Paraguaná, Poza de la Compañía, Carirubana, in stagnant water, prob. only rarely dry; connected with limestone; 140 mgr Cl′ per l (station 105), 15.II.1937; Paraguaná, Estanque de Sante Fé, N.E. of Moruy, water stagnant, permanent; connected with limestone; 120 mgr Cl′ per l (station 109), 18.II.1937; Paraguaná, Estanque de Santa Ana, water

[1] **N. guadalupensis** (SPRENG.) MORONG var. **curassavica** (A. BR.) VAN OOSTSTR.; *N. flexilis* ROSTKOV. et SCHMIDT var. *curassavica* A. BR. in Journ. of Bot. II, 1864, p. 277; *id.* var. *Gollmeriana* A. BR. l.c.; *N. microdon* A. BR. *var. curassavica* (A. BR.) RENDLE in Transact. Linn. Soc. 2nd series, Bot., V, 1899, p. 407.

[2] This is probably the first record of this species from the island of Margarita; JOHNSTON (4) does not mention the species from this island.

stagnant, permanent; unconnected with limestone; 110 mgr Cl′ per l (station 110), 16.II.1937; island of Margarita, Rio Asunción, W. of La Asunción, quiet pool in quickly streaming brooklet, permanently containing water; unconnected with limestone; 120 mgr Cl′ per l (station 22), 3.VII.1936.

Curaçao, Pos di Wanga, water stagnant, permanent; connected with limestone; 260 mgr Cl′ per l (station 81), 9.XI.1936; Tanki Mamaja, Hato, water stagnant, permanent; connected with limestone; 450 mgr Cl′ per l (station 75), 6.X.1936.

Finally the collection contains four specimens from Curaçao, characterized by a still larger number of teeth and at least partly by larger leaves, being 25—30 mm long and 1.5—2 or sometimes up to 3 mm broad; the number of teeth amounts to 70—80, a number never found in any other species of *Najas*.

Curaçao, Tanki Koenoekoe Hatoen, Hato, in stagnant water, prob. only rarely dry; connected with limestone; 690 mgr Cl′ per l (station 70), 15.X.1936; Tanki Mamaja, Hato, water stagnant, permanent; connected with limestone; 450 mgr Cl′ per l (station 75a), 11.X.1936; Well Wandongo, Hato, pool in quickly streaming rivulet, permanently containing water; connected with limestone; 230 mgr Cl′ per l (station 76A), 6.X.1936; Bak Rincón, Hato, slowly streaming watertrack, prob. permanently containing water; connected with limestone; 160 (?) mgr Cl′ per l (station 77A), 11.X.1936.

The same number of teeth is found in the following specimens:

Curaçao, St. Peter, in pond, BRITTON and SHAFER 3083, March 20—27, 1913 (in herb. Utrecht); Hato, BOLDINGH 5348a (in herb. Utrecht).

The latter number has been mentioned by BOLDINGH (1) under *Ruppia maritima* L. It consists, however, of *Najas guadalupensis* (SPRENG.) MORONG mixed with *Chara zeylanica* WILLD.; this *Chara* was kindly identified by Mr J. S. ZANEVELD, Leiden.

2. A new locality of Najas Wrightiana A. Br.

This species, originally described from Cuba and also known from Brazil, was discovered by Mr WAGENAAR HUMMELINCK in the Colombian Peninsula of La Goajira.

Colombia, La Goajira, Laguna del Pájaro, south of El Pájaro, in a large pool, presumably permanently containing water; unconnected with limestone; 820 mgr Cl′ per l (station 114), 21.I.1937.

3. Ruppia maritima L. ssp. rostellata Koch in Curaçao, Aruba and Bonaire.

Fruiting specimens of this species, collected in the island of Klein Bonaire, having very short peduncles, up to 6 mm and pedicels 25—28 mm long, most probably belong to the ssp. *rostellata* KOCH:

Bonaire, Klein Bonaire, Tanki Calbas, pool on limestone plateau, stagnant, prob. permanently containing water; 1000—2000? mgr Cl′ per l (stations 63d and 63c), 17.X. and 27.XI.1930.

Specimens from Curaçao, Aruba and Bonaire mentioned by BOLDINGH (1) under *R. maritima* L., without indication of the ssp. are identic, with exception of n. 5348a which consists of a mixture of *Najas guadalupensis* (SPRENG.) MORONG and *Chara zeylanica* WILLD. (see above under *Najas guadalupensis*).

4. Thalassia testudinum Sol. from Bonaire.

This species mentioned by BOLDINGH (1) only from Curaçao was collected by Mr WAGENAAR HUMMELINCK in Bonaire.

Bonaire, Lac, 26.X.1930.

5. Lemna paucicostata Hegelm. in Los Testigos.

This species mentioned by KNUTH (5) from Venezuela, without indication of the exact locality, was collected in the island of Los Testigos off the Venezuelan coast.

Venezuela, island of Los Testigos, Poza del Morro de la Iguana, pool with stagnant water, probably only rarely dry; unconnected with limestone; 460 mgr Cl′ per l (station 30), 14.VI.1936.

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