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Orchidaceae of archipelagos Tuamotu and Gambier (Polynesia Française)

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ABSTRACT

Checklist of Orchidaceae of Tuamotu and Gambier (French Polynesia) are gathered and presented. Presence of 3 genera, 3 native species of Orchidaceae are confirmed from the archipelago. Photographs of each of them are added.

Key words: Flora, Orchidaceae, Tuamotu, Gambier, French Polynesia

INTRODUCTION

Polynesia Française has an area exceeding 2.5 million km² and lies between latitudes 7° and 28° south and longitudes 134° and 155° west. It comprises about 120 islands and atolls, of total land area approximately 4000 km², contained in the archipelagos of the Society Islands, Marquises, Tuamotu, Gambier and Austral. Geographical situation within the equatorial and tropical climatic zones, specific geological and hydrological conditions, together with its biological isolation have obviously influenced the disparate character of the flora and fauna of these areas. The islands are coral and volcanic origin and never had connections to the main/continental land. The natural migration of living organisms took place mostly by marine currents and partially by air (seabirds or the so-called aeroplankton). It was quite rapid and occurred not that long ago (Chew 1975). Since the beginning of settlement in these regions human influence on the flora of individual islands has been very significant. The Pacific Islands and archipelagos have been settled in several human migratory waves since the beginning of

our era. The primary colonization of Polynesia Française probably took place through the northern migratory route, through Micronesia, its SE branch. Migration routes are not only important for the development of local cultures, but also for the introduction of many species of animals and plants - taken on a trip more or less consciously from starting points or islands visited on the way. In the 17th century, "western" trade and missionary activity began to take on the intensity of, among others resulting in the intensity of introductions (conscious or not) of many species of organisms, a strong impact on the local habitat.

Although the flora does become poorer one heads east it does on the other hand, become more distinct. Over French Polynesia as a whole approximately 60% of about 960 vascular plant species are endemic. Îles de la Société with their approximately 620 species of vascular plant are particularly floristically rich while the Tuamotu Islands have 80 species and Marqueses 300 (Florence 1997).

Archipelago Tuamotu (Îles Tuamotu) contains a triple chain of 78 low coral atolls surrounded by shallow sea with very sea e.g. along southern border Makatea, Niau and Anaa, along the northern line Mataiva, Tikehau, Ahe, Manihi and middle chain Rangiroa (the biggest), Arutua, Apataki, Kaukura, Aratika, Toau, Fakarava, Raroia, Faaite and Tahanea. The atolls are characterized by barren soil and poor vegetation.

Gambier (Archipel des Gambier) are a kind of south-eastern extension of archipelago Tuamotu and consists of 14 volcanic islands closed by a ring of coral atoll origin: Mangareva (up to 441 m alt.), Taravai (up to 250 m alt.), Akamaru (up to 246 m alt.), Aukena (up to 198 m alt.), Agakauitai (up to 139 m alt.), Kamaka (up to 166 m alt.), Makaroa (up to 136 m alt.), Makapu (65 m alt.), Mekiro (up to 58 m alt.), Manui (up to 54 m alt.), Motu Teiku (up to 20 m alt.), Motu coralliens (all up to 3 m alt.). The archipelago's atoll, on NW side, is accompanied by several little atolls like Morane, Maria, Matutea (the biggest), Matureivavao, Tenarunga, Vaenga and Tenararo (the northeast one).

CONCLUSIONS

Orchidales species of Polynesia Française are not dominant element of the local flora, they form a crucial and extremely interesting part of it. The unique species composition that has developed on individual islands, sometimes with a very small area, often resulting from extremely complicated natural history and conditions, has always been subject to strong anthropopressure. At archipelagos like Tuamotu and Gambier the destruction of one stand of the species may be synonymous with the recognition of it as extinct throughout the archipelago. Orchidales of Gambier and Tuamotu belongs to as many as 3 subfamilies: Epidendroideae Lindl. (Subtribe Oberoniinae Averyanov), Vandoideae Endl. (Tribe Nervilieae Dressler), Vanilloideae (Lindl.) Szlach. (Tribe Nervilieae Dressler). Each genera are represented by only just one species. The most of the orchid species are recognized as rare (known from single or just a few stands) also through they are very highly endangered plants.

Surprising is the lack of any representatives of the genus *Dendrobium* Sw. These plants like e.g. *Dendrobium biflorum* (G.Forst.) Sw. is very easily spread with various transports. Probably, even if these orchids ever got on these archipelagos, then they have not found the right conditions to survive here. Also *Spathoglottis plicata* Bl., species referred as naturalized at many Polynesia Française islands have not been confirmed here.

An interesting fact is that for all species recorded on these islands, autogamous phenomena have been found. This is a beneficial feature, both for "new arrivals" or those located on the edge of their plant ranges, because it makes them conditionally independent from the lack of "proper" pollinators.

Therefore, any information about them is valuable from the scientific point of view and can affect the state of their condytion, forms of protection etc.

ALPHABETIC CHECKLIST OF GENERA WITH SPECIES

Nervilia Comm. ex Gaud.-Beaupre, *nom. cons.* Voy. Uranie Phys. Frey, Bot.: 422. 1829.

GENERITYPE: *Nervilia aragoana* Gaudich. *typ. cons.*

Nervilia aragoana Gaudich, Voy. Uranie Phys. Frey, Bot.: 422. 1829. (Phot. 1)

DISTRIBUTION: Africa, S and SE Asia, Australia, Oceania - Marian Islands, Solomon Islands, Vanuatu, New Caledonia, Horne Islands, Fiji, Niue, Tuamotu, Samoa, the Society Islands.

DISTRIBUTION AT TUAMOTU: Makatea, Niau, Anaa, Rangiroa, Takapoto, Tikehau, Motutunga (rare).

ECOLOGY: Terrestrial; forming more or less scattered colonies; in wet to moist humus, usually covered by leaf litter; in shaded to deeply shaded scrub to rainforest; species recorded from nearly sea level up to few hundred (on the another archipelagos up to 600) m alt. Autogamy has sometimes been observed.

NOTE: It is possible that the plant could brought along with arable ground, imported from more fertile islands / atolls or useful plant cuttings. Then, it has already settled itself in some ecosystems that meet its ecological requirements.

OBERONIA Lindl. *nom. cons.*, Gen. Sp. Orch. Pl.: 15. 1830.

GENERITYPE: *Oberonia iridifolia* (Roxb.) Lindl., *typ. cons.* (=Cymbidium iridifolium Roxb. =*Oberonia mucronata* (D.Don) Ormerod & Seidenf.).

Oberonia equitans (G.Forst.) Mutel., Soc. Roy. Centr. Agric. Sci. Arts Dépt. Nord: 84. 1837. (Phot. 2).

DISTRIBUTION: Oceania - Solomon Islands, Vanuatu, New Caledonia, Fiji, Tonga, Samoa, Cook Islands, Tuamotus, the Society Islands, The Austral Islands.

DISTRIBUTION AT TUAMOTU: Makatea (at the archipelago recognized as rare).

ECOLOGY: Epiphytic, usually growing spirally around tree trunks; usually directly on bark, on tree trunks and branches and on bushes; found in hot, humid and shady conditions as well as in cool, wet and sunny places. The orchid noted from teens m up to few hundred (on the another archipelagos up to 1240) m alt. Autogamy has sometimes been observed.

NOTE: It is difficult to say whether the species of this orchid is a native plant for Makatea and due to the degree of degradation of natural habitats of the atoll it could be treated as their relic. It is more likely, however, that the plant was brought by early Polynesian or later to the atoll

along with eg. transport of tree trunks or another wood material and acclimatized in a few habitats.

Taeniophyllum Bl., Bijdr. Fl. Ned. Ind. 7: 355. 1825.

GENERITYPE: *Taeniophyllum obtusum* Bl. (= *Taeniophyllum pusillum* (Willd.) Seidenf. & Ormerod).

Taeniophyllum fasciola (G.Forst.) Seemann, Syn. Pl. Vit. (Viti: Acc. Gov. Miss. Fijian Isl. 1860-61, 443) 13. 1862 & Bonplandia 10: 297. 1862. (Phot. 3).

DISTRIBUTION: Oceania - Marian Islands (Guam), Solomon Islands, Vanuatu, New Caledonia, Fiji, Tonga, Pitcairn, Horne Islands, Samoa, Cook Islands, Tuamotu, Gambier, the Society Islands, The Austral Islands. Alt.: 0-1100 m.

DISTRIBUTION AT TUAMOTU: Makatea (rare).

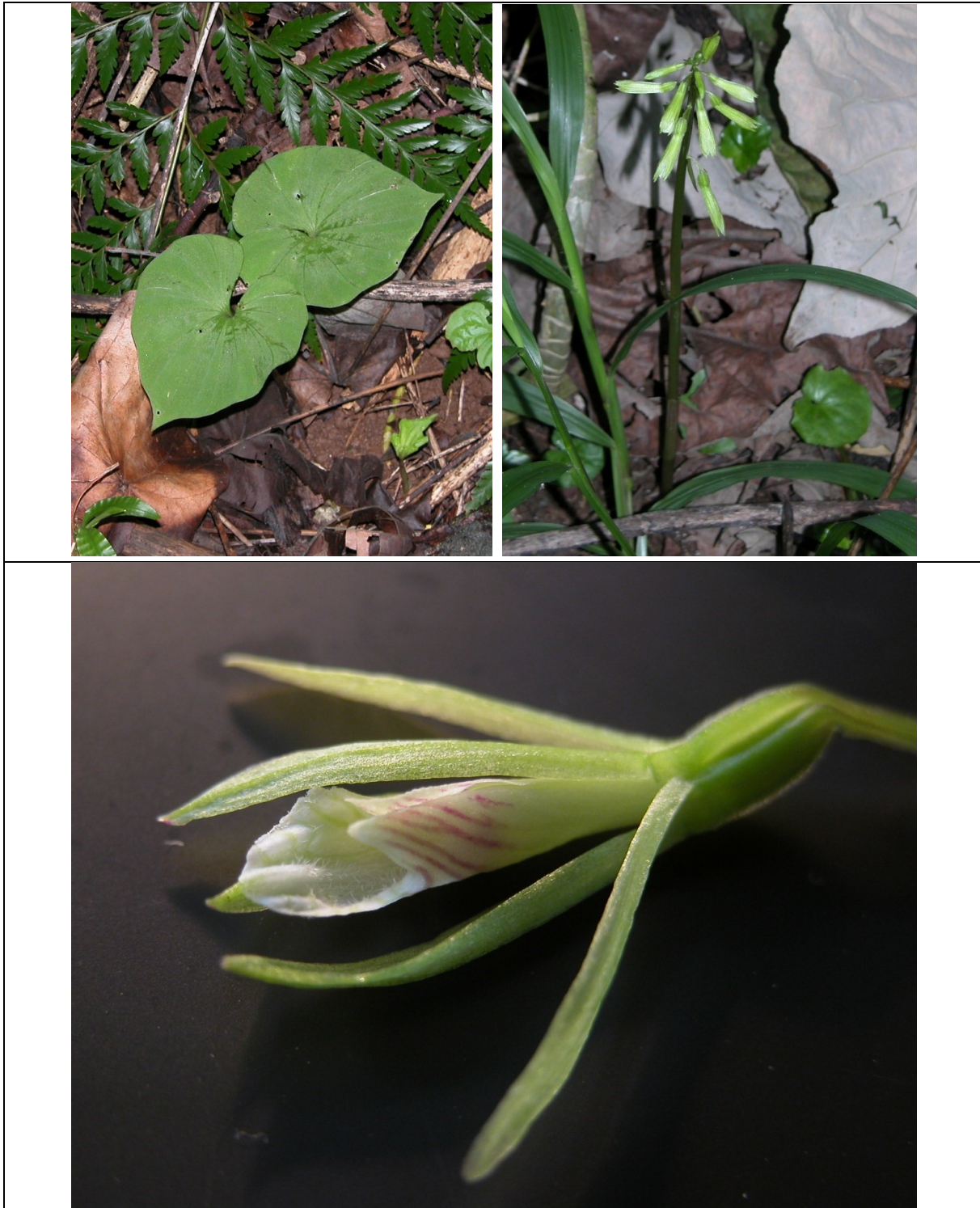
DISTRIBUTION AT GAMBIER: Mangareva (locally common).

ECOLOGY: Epiphytic, on tree trunks and branches, directly on bark, in cooler, wet to moist, shady to dark conditions, usually at higher elevations - in valleys, on crests and slopes but sometimes also on sea level; in wet forests or scrubs. Autogamy has sometimes been observed.

NOTE: Also in the case it is difficult to say whether the species of this orchid is a native plant for Makatea and due to the degree of degradation of the atoll natural habitats. The plants could be treated as their relic but it is also possible, that the plant was brought by early Polynesian or later to the atoll along with eg. transport of tree trunks or another wood material.

References

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Phot. 1. *Nervilia aragoana* Gaudich. – A: Sterile plant in natural habitation. – B: flowering plant in natural habitation. – C: flower. (Margońska ©).



Phot. 2. *Oberonia equitans* (G.Forst.) Mutel. – A: colony of plants in natural habitation. – B: inflorescence. (Margońska ©).



Phot. 3. *Taeniophyllum fasciola* (G.Forst.) Rechb.f. – A: colony of plants in natural habitation. – B: flower in natural habitation. (Margońska, ©).