

# IDENTITY OF THE PELEA SPECIES (RUTACEAE) DESCRIBED BY H. LÉVEILLÉ

STUDIES IN HAWAIIAN RUTACEAE, VIII

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After obtaining material of the plants collected in the Hawaiian Islands by Abbé Urbain Faurie, Hector Léveillé described a considerable number of new species. Although a critique of Léveillé's work was long ago published by J. F. Rock (1913, 1914), the species of *Pelea* were often interpreted wrongly by Rock, so that, although his disposition of many of Léveillé's 'novelties' is correct, a revision of the published identities of the species of *Pelea* is needed. This work is not undertaken here as an isolated project, but is a summary drawn from a revision of the entire genus, parts of which have been published (Stone 1962a, 1962b, 1962c, 1963, 1966) and the bulk of which will appear as a generic monograph.

Léveillé's new species of *Pelea* were published in Fedde's Repertorium Species Novarum as parts of his series "Plantae Novae Sandwicensis, II" (1911) and "Decades Plantarum Novarum, LXXX-LXXXVI. Plantae Sandwicensis (nos. 845-860)" (1912). All of these species were based on Faurie specimens as types. In those cases where only one specimen is cited, it is of course the holotype; in other cases, I have chosen lectotypes. The present location of each holotype is cited, but some specimens have not been located; their whereabouts remain unknown.

I have to express my gratitude to a number of institutions and persons who have been of assistance in this work. Here I should like to thank the curators of all the herbaria mentioned hereafter, especially J. E. Dandy of the British Museum (Natural History) and Alicia Lourteig of the Museum d'Histoire Naturelle, Paris. I thank also H. R. Fletcher, of the Royal Botanic Garden, Edinburgh, for his interest and encouragement.

## LIST OF SPECIES WITH SYNONYMY AND COMMENTARY

It is not necessary to discuss Léveillé's methods or species concepts; it is already well known that he worked hastily and carelessly. No real progress in our understanding of the genus *Pelea* can be said to have resulted from Léveillé's work; indeed, the often excessively brief and noncommittal descriptions simply led to later confusion. As pointed out above, even Rock's critique did little to help. As could have been expected, however, the rather large number of species described did in fact include some which were not synonyms. This fact has long been obscured by the basic difficulty of classification of the species, which demands a knowledge of mature fruit; and most of Léveillé's species were based on specimens lacking fruit. Now that the fruits are known for nearly all species it has been possible to show that some of the names proposed by Léveillé must be taken up.

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1. *Pelea acutivalvata* Lévl. in Rep. Sp. Nov. 10: 153 (1911).

A synonym of *P. macropus* Hillebr. (Sect. Megacarpa), correctly reduced by Rock.

Type: KAUAI: Robinson's summer house, 800 m, ii 1910, *Faurie* 172 (A, BM, P). A full description of *P. macropus* is given in Stone, 1963.

2. *Pelea fauriei* Lévl. in Rep. Sp. Nov. 10: 153 (1911).

A recognisable taxon, now ranked as *P. clusiifolia* var. *fauriei* (Lévl.) St. John & Hume, *Lloydia* 7: 265 (1944).

Type: MOLOKAI: Kamola, 1000 m, v 1910, *Faurie* 104. This is a member of Section *Pelea*. Correctly placed (but the varietal combination not made) by Rock.

The collection number may be an error since *Faurie* 204 is the same and from the same locality.

3. *Pelea feddei* Lévl. in Rep. Sp. Nov. 10: 442 (1912).

A valid species, but because of the lack of fruit in the *Faurie* specimen, this species has received two later names: *P. resiniflora* Skottsb. in *Acta Horti Gotob.* 10: 118 (1936); and *P. punctata* St. John & Hume in *Lloydia* 7: 267 (1944).

Type: KAUAI: Kauhao, 800 m, ii 1910, *Faurie* 194 (A, BM, P).

This was wrongly reduced to *P. oblongifolia* Gray by Rock. Léveillé's diagnosis was (for him) unusually long, running to 75 words; it was even pointed out that *P. oblongifolia* and *P. macropus* were related species, which, in a rather broad way, is quite true; they are all members of Section *Megacarpa*.

4. *Pelea foetida* Lévl. in Rep. Sp. Nov. 10: 152 (1911).

This is a synonym of *P. molokaiensis* Hillebr., a species of Section *Megacarpa*. It was wrongly reduced to *P. mannii* (itself a synonym) by Rock.

Type MAUI: Haleakola, 1200 m, viii 1909, *Faurie* 193 (BM, P).

The specimens are very imperfect, but there is little doubt as to their synonymic relationship to Hillebrand's species.

5. *Pelea grandipetala* Lévl. in Rep. Sp. Nov. 10: 443 (1912).

The *Faurie* specimens are a mixture of material of two species, *P. honoluluensis* St. John (Sect. *Megacarpa*) and *P. peduncularis* Lévl. (Sect. *Cubicarpa*). The greater part of the description fits the latter species, so it may be best considered a synonym of *P. peduncularis*. Rock reduced this to *P. sandwicensis*, incorrectly.

Type: OAHU: Kalihi, x 1909, *Faurie* 4 (BISH).

6. *Pelea hillebrandii* Lévl., Rep. Sp. Nov. 10: 152 (1911).

This is a synonym of *P. anisata* Mann (Sect. *Cubicarpa*).

Lectotype: KAUAI: Hanapepe & Waimea, 1000 m, xii 1909, *Faurie* 184 (P, iso. A, BM).

Léveillé also cited *Faurie* 183, from the same locality collected on the same day.

*Faurie*'s nos. 196 (A, BM), 231 (A, BM), and 182 (A, BM) are also *P. anisata*.

**7. *Pelea leveillei*** *Faurie* ex *Lévl.* in *Rep. Sp. Nov.* 10: 442 (1912).

This is a thoroughly distinct species of Section *Apocarpa*.

Type: KAUAI: Hanapepe, xii 1909, *Faurie* 1. Loc.?

Wrongly reduced to *P. elliptica* by Rock.

**8. *Pelea nodosa*** *Lévl.* in *Rep. Sp. Nov.* 10: 443 (1912).

Perhaps a synonym of *P. anisata*, but somewhat doubtful. Rock reduced it to *P. sandwicensis* "var.", a meaningless determination.

Type: KAUAI: Holokele (i.e. Olokele), iii 1910, *Faurie* 5.

**9. *Pelea oahuensis*** *Lévl.* in *Rep. Sp. Nov.* 10: 442 (1912).

This is a good species of Section *Cubicarpa*. It had long been confused with *P. wawraeana* Rock, which belongs to Section *Megacarpa*.

Syntypes: OAHU: Kalihi, x 1909, *Faurie* 11, 217, 217-bis.

The present location of these specimens is unknown; hence a neotype has been chosen.

Neotype: OAHU: Waianae Mountains, Kunia trail, 26 iii 1960, *Stone & Pearsall* 3282 (BISH). Cf. *Pac. Sci.* 17: 420. 1963.

Rock erroneously determined this species as *P. sandwicensis* (for *Faurie* 11) and *P. molokaiensis*  $\beta$  var. *Hillebr.* (for *Faurie* 217). The determination of the former may mean it is *P. honoluluensis* (the species called *P. sandwicensis* by Rock); but I have not located specimens. In any case, the lectotype if ever located, should be 217, which is, according to Rock, *P. molokaiensis*  $\beta$  var., which is the same taxon; but it deserves species status.

**10. *Pelea peduncularis*** *Lévl.* in *Rep. Sp. Nov.* 10: 443 (1912).

A valid species of Section *Cubicarpa*; it has long been confused with *P. sandwicensis* sensu A. Gray, non Hook. & Arn., which is *P. honoluluensis* St. John of Sect. *Megacarpa*; and with *P. wawraeana* Rock of the same section. The full synonymy is as follows (see also the emended description in *Stone*, 1963). This was wrongly reduced to *P. sandwicensis* by Rock.

*P. sandwicensis* var.  $\beta$  sensu *Hillebrand*, *Fl. Haw. Is.* 66 (1888). (Not *P. sandwicensis* (Hook. & Arn.) A. Gray).

*P. sandwicensis* var. *macrocarpa* *Hillebr.* ex *Rock* in *Bot. Gaz.* 65: 265 (1918).

*P. grandipetala* *Lévl.* (in part): see no. 5 above.

*P. penduliflora* *Lévl.* See no. 11 below.

*P. singuliflora* *Lévl.* (in part): see no. 13 below.

*P. rockii* *St. John* in *Lloydia* 7: 271 (1944).

In my previous listing of synonyms (Stone, 1963) I erroneously included *P. nodosa* Lévl. Since this is from Kauai, and *P. peduncularis* is endemic to Oahu, it obviously cannot be the same. I have referred it to *P. anisata*, in agreement with Rock, on the basis of the description, though with doubt.

Type: OAHU: Koolau Range, Kalihi, x 1909, *Faurie* 189 (BM, P).

**11. *Pelea penduliflora* Lévl. in Rep. Sp. Nov. 10: 442 (1912).**

This is a synonym of *P. peduncularis* Lévl.

Type: "Sandwich" i.e. Sandwich (Hawaiian) Islands, locality unknown (but from the identification almost certainly from Oahu), 1910, *Faurie* 9. Location of specimens unknown. Determined from the description and from Rock. (Rock determined this as *P. molokaiensis*  $\beta$  var. Hillebr., which = *P. oahuensis*.)

**12. *Pelea sessilis* Lévl. in Rep. Sp. Nov. 10: 152 (1911).**

This is now considered a variety of *P. parvifolia* Hillebr. of Section Megacarpa: *P. parvifolia* var. *sessilis* (Lévl.) B. C. Stone, *comb. nov.* This was wrongly reduced to *P. lydgatei* by Rock.

Type: MOLOKAI: Kamolo, 1000 m, vi 1900, *Faurie* 173 (A, BM, P).

**13. *Pelea singuliflora* Lévl. in Rep. Sp. Nov. 10: 443 (1912).**

This is a synonym of *P. peduncularis* Lévl.

Lectotype: OAHU: Konahuanui, v 1910, *Faurie* 194 (A, BM, P).

*Faurie* 224, one of the syntypes of this species, is *P. wawraeana* Rock.

**14. *Pelea subpeltata* Lévl. in Rep. Sp. Nov. 10: 442 (1912).**

This is a synonym of *P. anisata* Mann, of Section Cubicarpa.

Type: KAUAI: Hanapepe, xii 1909, *Faurie* 209. Location unknown.

Rock wrongly reduced this to *P. sandwicensis*.

**15. *Pelea waianaensis* Lévl. in Rep. Sp. Nov. 10: 442 (1912).**

The specimens, though under a single collection number of *Faurie*'s are a mixture of two species. One of these is *P. clusiaefolia* Gray, var. *crassiloba* B. C. Stone; the whorled leaves of this species account for the part of the description that states "folia ternata vel 4-verticillata". The rest of the description applies chiefly to the other species, *P. peduncularis* with opposite leaves. This was incorrectly reduced to *P. sandwicensis* by Rock.

Type: OAHU: Waianae (as Waianai), v 1910, *Faurie* 215 (BISH).

## DETERMINATIONS OF PELEA COLLECTIONS MADE BY FAURIE

Faurie 1. Type of *P. leveillei* Faurie ex Lévl. Loc. ?

4. Type of *P. grandipetala* Lévl.=*P. peduncularis* (in part) and *P. honoluluensis* (in part). (BISH).
5. Type of *P. nodosa* Lévl.=*P. anisata*? (Doubtful). Loc. ?
9. Type of *P. penduliflora* Lévl.=*P. peduncularis*. Loc. ?
11. Cited syntype of *P. oahuensis* Lévl. Loc. ?
104. Type of *P. fauriei* Lévl.=*P. clusiaefolia* var. *fauriei* (Lévl.) St. John & Hume. Probably a mistake for 204 (q.v.).
171. *P. waialealae* Wawra. A, BISH, BM, P.
172. Type of *P. acutivalvata* Lévl.=*P. macropus*. A, BM, P.
173. Type of *P. sessilis* Lévl.=*P. parvifolia* var. *sessilis* (Lévl.) B. C. Stone. A, BM, P.
174. *P. rotundifolia* Gray. A, BISH, P.
175. ?*P. gayana* Rock. BM.
176. *P. wawraeana* Rock. BM.
177. *P. wahiawaensis* St. John. A, BM.
178. *P. cinerea* (Gray) Hillebr. A, BM.
179. *P. grandifolia* var. *montana* (Rock) St. John & Hume. A, BM.
180. *P. clusiaefolia* ssp. *sapotaefolia* (Mann) B. C. Stone. A, BISH, P.
181. *P. cinerea* var. *skottsbergii* B. C. Stone. A. (Holotype).
182. *P. anisata* Mann. A, BM.
183. Cited syntype of *P. hillebrandii* Lévl.=*P. anisata*. Loc. ?
184. Lectotype of *P. hillebrandii*=*P. anisata*. A, BM, P.
185. *P. barbigera* (Gray) Hillebr. A, BISH, BM, E.
186. *P. barbigera*. A, BM.
187. *P. clusiaefolia* var. *ecuneata* St. John. A, P.
188. *P. clusiaefolia* ssp. *sapotaefolia*. A, BISH, BM.
189. Type of *P. peduncularis* Lévl. BM, P.
190. *P. peduncularis* Lévl. A, BM.
193. Type of *P. foetida* Lévl.=*P. molokaiensis* Hillebr. BM, P.
194. (There are two specimens so numbered; they may be distinguished by locality). 194 (Oahu). Lectotype of *P. singuliflora* Lévl.=*P. peduncularis*. A, BM, P.
194. (Kauai). Type of *P. feddei* Lévl. A, BM, P.
195. Cited syntype of *P. singuliflora*=*P. peduncularis*. BM.
196. *P. anisata*. A, BM.
197. *P. cinereops* St. John. A, BM.
198. *P. honoluluensis* St. John. A, BM.
200. *P. clusiaefolia* Gray. A, BM, P.
201. *P. clusiaefolia* var. *cuneata* St. John & Hume. A, BM.
202. *P. clusiaefolia* ssp. *cookeana* (Rock) B. C. Stone. A, BM, P.
203. *P. clusiaefolia* var. *fauriei* (Lévl.) St. John & Hume. A, BM.
204. *P. clusiaefolia* var. *fauriei*. A, BM.
205. *P. clusiaefolia* ssp. *cookeana*. A, BISH, BM.
206. *P. clusiaefolia*. A.
207. *P. clusiaefolia*. A, P.
209. Type of *P. subpeltata* Lévl.=*P. anisata*. Loc. ?



213. *P. molokaiensis* Hillebr. BM.
214. *P. paniculata* St. John. A, BM.
215. Type of *P. waianaensis* Lévl. = *P. clusiaefolia* var. *crassiloba* B. C. Stone (in part) as to verticillate material; and *P. peduncularis* (in part) as to material with opposite leaves. BISH.
216. *P. molokaiensis* Hillebr. A, BM.
217. also 217-bis. Cited syntypes of *P. oahuensis* Lévl. Loc.?
219. *P. wawraeana* Rock. A, BM.
220. *P. wahiawaensis* St. John. A, BM.
221. *P. wawraeana*. A, BM.
222. *P. wawraeana*. BM.
223. *P. feddei*. A, BM.
224. *P. wawraeana*. Cited syntype of *P. singuliflora* Lévl. (= *P. peduncularis*). BM.
225. *P. anisata* var. *haupuana* B. C. Stone. A, BM.
226. *P. cruciata* Heller. A, BM.
227. ?*P. cruciata*. A, BM.
228. *P. cruciata*. A, BM, P.
229. *P. wahiawaensis*. A, BM.
231. *P. anisata*. A, BM.

Nos. 191, 192, 199, 210, 211, 212, 218 and 230, have not been located; from their position in the above sequence, it is possible they are specimens of *Pelea*, as it is clear that the numbers are not field numbers, but numbers assigned after sorting into genera. I have not cited a few clastotypes annotated by Rock at BISH.

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