

A TAXONOMIC HISTORY OF AND INTRASPECIFIC VARIATION IN *IPSA CHILDRENI*.

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Abstract: A taxonomic history of *Ipsa childreni* (Gray, 1825) is traced and copies of the original descriptions of the species and its subspecies are given. It is shown that the Schilders separated three subspecies of *Ipsa childreni* but later treated them as synonyms.

Intraspecific variation in *Ipsa childreni* is studied using 231 shells in the author's collection including two batches of shells from French Polynesia: 118 shells from Tuamotu Archipelago and 101 shells from Society Islands (Huahine and Tahiti). It is shown that the shell size of *Ipsa childreni* in the Polynesian populations is substantially lesser than in other populations of the species and this fact is confirmed by the data published in the malacological literature and on the Internet.

A conclusion is drawn that this difference in shell characteristics of *Ipsa childreni* is of a subspecific level.

Key words: Mollusca, Gastropoda, Cypraeidae, *Ipsa childreni*, intraspecific variation, distribution.

1. A taxonomic history

In 1884 Jousseume designated the genus *Ipsa* in the family Cypraeidae with *Cypraea childreni* Gray, 1825 as the type species of this genus.

Later in 1938 the Schilders treated *Ipsa* as a subgenus of the genus *Pustularia* Swainson, 1840: *Pustularia (Ipsa) childreni* (Gray, 1825).

In this study *Ipsa* is treated as a genus.

1.1. The original descriptions

1.1.1. *Cypraea childreni* Gray, 1825.

“91. *Cypraea Childrini*.-Mr. Childrens's Cowry.

Testa ovata, subcylindrica, palida costata; striata-linea dorsali, sub impressa, indistincta; basi planâ; extremitatibus subrostratis compressis, infra carinatis.

Icon. *Zool. Journ.* t. f.

Mus. Brit.

Shell ovate, somewhat cylindrical, white or yellowish, with an irregular fulvous spot just over the spire, and another on the hinder part of the back, covered with ribstriae, which meet in the middle of the back in an obscure dorsal line; base flat, the extremities rather produced and compressed, so as to have a keel on each side of the base; aperture narrow, slightly dilated in front; columella deep, plaited, and concave in front.

Axis 8/12, diameter 5/12 of an inch.

I take the opportunity of dedicating this curious species to my excellent friend J. G. Children, Esq. whose extensive acquirements and zeal in science need not my feeble praise.”

The holotype of *C. childreni* is unknown according to Schilder (1966).

1.1.2. *Pustularia (Ipsa) childreni lemurica* Schilder & Schilder, 1938.

“We have seen but few specimens of the Western *lemurica* (22.64.35.25), so that we can only suggest it to be larger, more cylindrical, with the labial teeth less numerous than in the rather frequent Pacific *childreni* (17.67.39.25).”

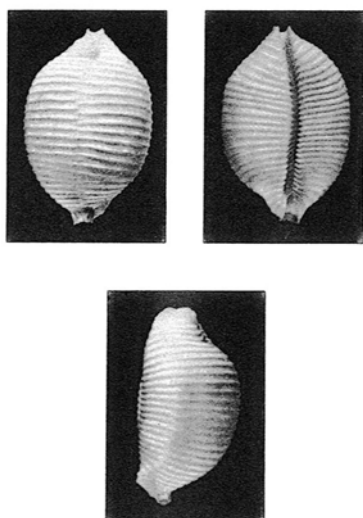
1.1.3. *Pustularia (Ipsa) childreni samurai* Schilder & Schilder, 1940.

“...*childreni* von Japan sind größer und breiter als die pazifischen Stücke und seien, da die Verbreitungsgebiete beider Formen nicht zusammenhängen, als *ch. samurai* abgetrennt (die uns unbekanntes Stücke des südchinesischen Meeres gehören wohl dazu);”

1.1.4. *Pustularia (Ipsa) childreni novaecaledoniae* Schilder & Schilder, 1952.

“6. *Pustularia (Ipsa) childreni* Gray, 1825.

Races:	<i>childreni</i> Gray, 1825	<i>novaecaledoniae</i> nov.	<i>samurai</i> Schil. & Schil. 1940	<i>lemurica</i> Schil. & Schil. 1938
Distribution:	Sam. Oce. Mic. Pol. Haw.	Mel.	Java, Sulu, Jap. (rare)	Lem. Sum. (rare)
Formula:	16(66)38:26	21(67)38:24	22(70)37:26	22(63)35:25
General size:	small	large	large	large
General shape:	rather broad	rather broad	rather broad	often subcylindrical
Labial teeth:	numerous	numerous	numerous	less numerous
Colum.teeth :	numerous	less numerous	numerous	less numerous



In Schilder & Schilder (1952) the authors added:

“Dautzenberg’s shells confirm the characters of the Japanese race recently separated as *samurai*. Besides, the specimens of *childreni* coming from Melanesia (New Britain to New Caledonia) are larger than the Eastern *childreni* (Tuamotu to Wallis I. and Palau Is.), so that we think them to be separable as geographical race too, called subsp. *novaecaledoniae* nob.; the largest specimen from Pomme may be designated as type; its formula is 26(66), lab. dent. 38.

The Micronesian shells geographically separating the two large races *samurai* and *novaecaledoniae*, belong to the small Eastern *childreni*. We hope, that some more characters separating the four races of *childreni* will be found by future investigations; in *novaecaledoniae* the columellar teeth are evidently less numerous than in the other Eastern races.”

2. - *Pustularia childreni novaecaledoniae* SCHIL. & SCHIL.

A picture of *Pustularia (Ipsa) childreni novaecaledoniae* in a work Schilder & Schilder (1952) can be seen above.

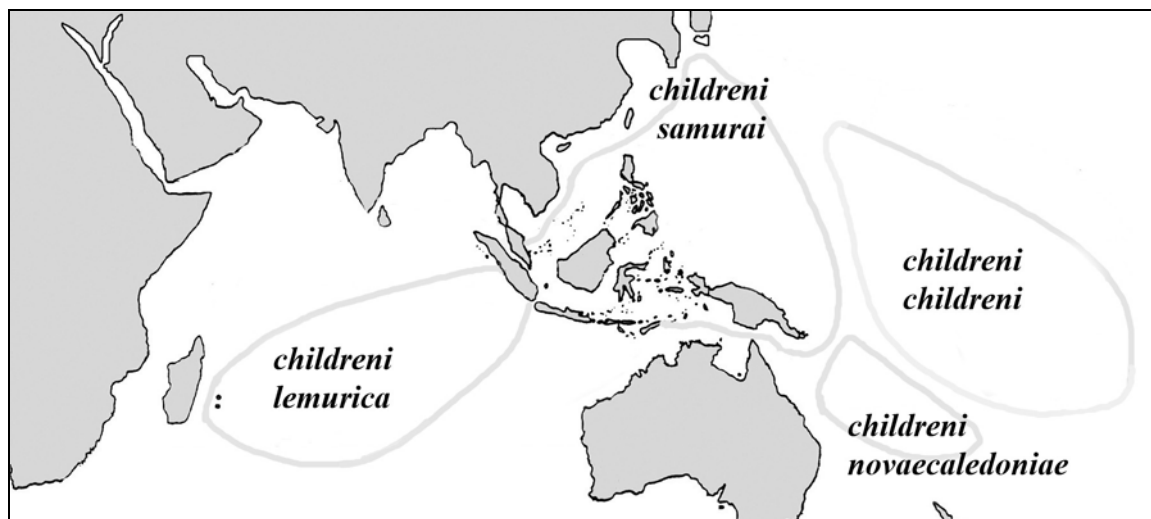
1.2. Works by the Schilders

In the Prodrôme-Schilder & Schilder (1938)-two subspecies of *childreni* are distinguished: *Pustularia (Ipsa) childreni childreni* (Gray, 1825) and *Pustularia (Ipsa) childreni lemurica* Schilder & Schilder, 1938.

In Schilder & Schilder (1952) another two subspecies are mentioned: *Pustularia (Ipsa) childreni samurai* Schilder & Schilder, 1940 and *Pustularia (Ipsa) childreni novaecaledoniae* Schilder & Schilder, 1952.

Approximate ranges of distribution of these four subspecies can be seen in Fig. 3 below.

In Schilder & Schilder (1971) *childreni* is listed as a monotypic species, the three subspecific names being listed as synonyms. This opinion was accepted by students of cowries after the Schilders, although sometimes certain populations of the species were named in dealers’ lists and conchological publications by their old subspecific names.



3. Approximate ranges of distribution of subspecies of *Ipsa childreni* according to the Schilders work

A question arises: why in 1971 the Schilders disregarded categorically the subspecies, which they described in 1938 and in 1952? We do not know the exact answer to this question.

Although, as can be seen in section 1.1.4 above, shell characteristics of the subspecies overlap if variability of the species is taken into consideration, at least one shell character deserves a more close examination: the difference between the subspecies sensu the Schilders in the shell size.

Why then the Schilders considered *childreni* a monotypic species?

One can assume the following possibilities:

- a) Shells of *childreni lemurica*, *childreni samurai*, and *childreni novaecaledoniae* were rare in the past; they are still uncommon and are not readily available. Descriptions of these subspecies were apparently based on small batches of shells.
- b) In the beginning, the Schilders have perhaps an intuitive feeling that all the four subspecies mentioned above are separable at a subspecific level, and that in the future they will obtain more shells for a study, which may confirm their opinion. This did not happened at the time these authors were about to finish "A catalogue of living and fossil cowries" and they previous decision was not well grounded.
- c) The Schilders included all populations of *I. childreni* from the Pacific Ocean in one subspecies *I. childreni childreni*. As a result, the shell characteristics of the Polynesian populations of the species were "masked" by characteristics of the other populations.
- d) It is possible also that the Schilders did not want to be based on the difference in the shell length alone. But length of a cowry shell is practically constant after the animal reaches maturity hence it may be a good diagnostic characteristic of a cowry population. Strangely, this shell characteristic is not popular even today. The dorsal blotch, the relative shell width or height, the teeth length, the spire blotch and other shell characters, which are often vary considerable, are accepted but the average shell length is not popular.

The conchological practice confirms that a difference between *childreni* populations does exist throughout a range of distribution of the species; hence it worth to check again intraspecific variation in the species.

2. A study of intraspecific variation in the Eastern group of populations of *Ipsa childreni*.

The shell characteristics of populations of *Ipsa childreni* from Polynesia can be seen in Table 2.1

Table 2.1

The details of statistical shell characteristics of the Eastern populations (N=231)

characteristics	L, mm	W/L %	H/L %
average	15	66	53
standard deviation S	2	3	3
range for the majority (68%); average $\pm S^2$	13-17	63-69	50-56
range for 95% of shells; average $\pm 2S^3$	11-19	60-72	47-59

Notes

1. As usually, it is accepted that the shell characters follow the so called normal law of statistical distribution.
2. The majority of shells (typical specimens) comprise about 68% of all shells.
3. This range includes large and small shells.
4. 118 shells of 229 examined are from Tuamotu Archipelago and the other are from Society Islands (Huahine-Tahiti area). The average L, W/L, and H/L are the same for the both batches of shells separately and for their summary.

As can be seen in Table 2.1, the average shell length in populations from French Polynesia taken alone, without data of populations from Melanesia, Micronesia and Oceania (as was made by the Schilders), is substantially smaller than in all the other populations of the species.

There are sporadic reports in the literature (including works by the Schilders already cited above) in which shell characteristics of the species, mostly the shell size, are given.

These data are compared in Table 2.2 with the results of measurements of 229 shells (in the author's collection) belonging to different populations of the species.

If one compares the shell length range of the eastern and other groups of populations of *I. childreni* a conclusion can be drawn that this difference is substantial.

Besides, the eastern group of populations is geographically separated from all the other populations of the species and can be treated as a subspecies.

A new map of distribution of subspecies of *Ipsa childreni* can be seen in Fig. 4. A description of a new subspecies is given in Heiman (2009).

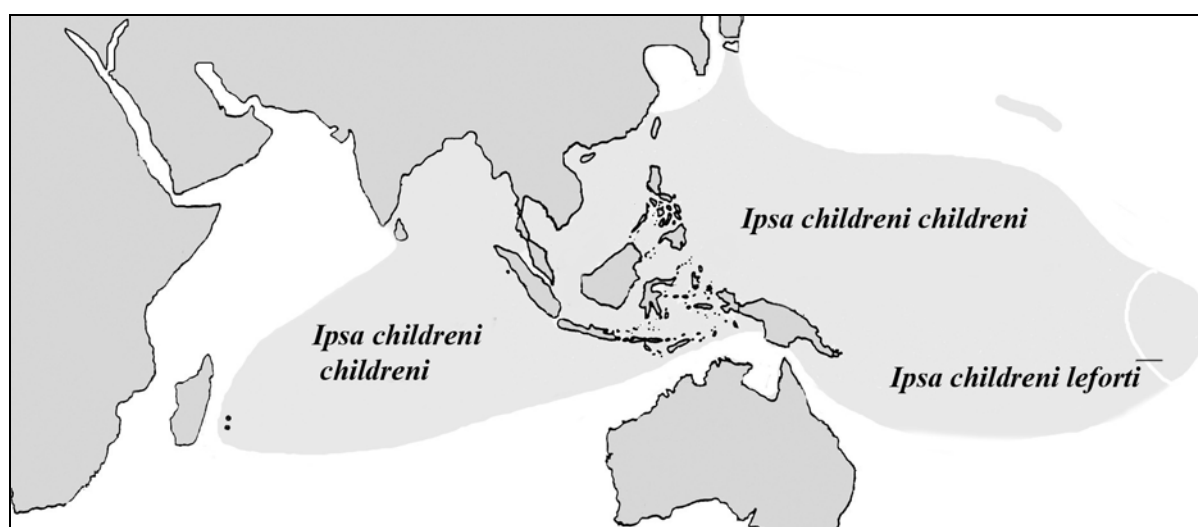
4. Approximate ranges of distribution of subspecies of *Ipsa childreni*

Table 2.2
Shell characteristics of batches of shells of *I. childreni* compared with the data published in works on regional faunas and other sources

shell characteristics→ area ↓	L, mm	W/Lav, %	source
Lemuria	22 23	63 60	Schilder & Schilder (1952) This study
Vietnam	15-20		Thach (2005)
Indonesia	17		Dharma (2005)
Philippines 22.7, 25	23.5-25.8		Springsteen & Leobrera (1986) Internet
Vanuatu	19.6		Internet
Hawaiian Is.	24.3-26.3 25		Cate (1965) Kay (1979)
Japan	25 22	68	Okutani (2000) Schilder & Schilder (1952)
Okinawa	16.3-21.4 20 20.1, 21.3		Cate (1967) This study Internet
Mariana Is. (average of 15)	18.6		Internet
Guam	14.9-22.3 18.8 aver		Cate (1970) This study
New Caledonia	17-25 21 30	67	Raybaudi (1988) Schilder & Schilder (1952) Lorenz & Hubert (2000)
Pacific Ocean	18	61	
French Polynesia	10-25 10-15		Richard & Hunon (1991b) Salvat & Rives (1975)
French Polynesia (219 shells)	15 average	66 average	this study

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