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A Study on Olive Shells: How Accurate Is Our Knowledge of the Genus *Oliva* Bruguière, 1789? The Case of *Oliva lacertina*.

Giorgio Strano
Museo Galileo – Institute and Museum of History of Science
Piazza dei Giudici 1, 50122 Florence, Italy
g.strano@museogalileo.it

INTRODUCTION

During the last fifty years, five monographs on Olive shells have appeared: Zeigler & Porreca, 1969; Petuch & Sargent, 1986; Tursch & Greifeneder, 2001; Sterba, 2003; Hunon, Hoarau & Robin, 2009. For these monographs, the average date of the names associated to the taxa tends to shift towards the present. Such a shift outlines that the authors are inclined to create new names or to accept recent names as valid. The last remarkable action in the opposite direction—shifting the average date towards the past—was made by William Healey Dall (1847-1927) in the 1910s. Dall recovered the many names, until then unknown, introduced by Peter Friedrich Röding (1767–1846) in the second part of his *Museum Boltenianum* (1798) [Dance, 1986: 87]. In the case of Olive shells, Dall dethroned several Lamarckian names in favor of Röding's. Since then, only Tursch & Greifeneder made another thorough re-evaluation of old names. These two, however, labeled many of them as *nomina dubia* and *nomina nuda*. Again, the result was a shift forward of the average date of the valid names.

The modest interest for old publications is balanced by the acceptance of the principle of authority. As a basis for further studies or to identify their findings, scholars and collectors rely upon the opinion of a few authors. As for the genus *Oliva*, the so-called "splitters" refer to Petuch & Sargent, 1986, and the "lumpers" accept Tursch & Greifeneder, 2001, while the other monographs are often considered out of date or by-products of these two. Of course, criticisms to the acceptance of the principle of authority are nonsense: not everyone has the time to re-check the historical sources in order to verify what taxon an old name indicates. Seventeenth- to nineteenth-century publications are not easily available; they are often written in Latin, German, French and Italian; the specimens pictured in the engraved plates are either missing or hard to access in museum collections scattered all over the world.

The scrutiny of historical sources—type material, first descriptions and early iconography—is a job, however, that any reviser cannot overlook. In this essay, I will examine the case of *Oliva lacertina*, a prime example on how much work must still be done to fix the taxonomy of Olive shells.

Oliva inflata lacertina Tryon, 1883, not Quoy & Gaimard, 1824.

At present, *Oliva lacertina* Quoy & Gaimard, 1824 (usually miswritten 1825) is placed in the synonymy of *Oliva bulbosa* (Röding, 1798). As for the five cited monographs:

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• Zeigler & Porreca, 1969: *O. lacertina* is not mentioned. The monograph is mostly based upon Tryon, 1883; Burch & Burch, 1960; and Burch & Burch, 1967.

• Petuch & Sargent, 1986: *O. lacertina* is a form of *O. bulbosa*: "Uniform greenish-brown or gray with large, dark brown or black, widely-spaced, longitudinal, undulating zig-zags. The name is derived from the pattern, which reminded the authors [Quoy & Gaimard] of the pattern exhibited by certain species of European lizards of the genus *Lacerta*" [pp. 75-76]. Two figures represent a loose zigzag patterned and sub-adult specimen of *O. bulbosa* [pl. 5, figs. 19-20]. The bibliography contains Tryon, 1883; Burch & Burch, 1960; but not Quoy & Gaimard.

• Tursch & Greifeneder, 2001: *O. lacertina* is a junior synonym of *O. bulbosa*, according to Burch & Burch, 1960; Wagner & Abbott, 1978; Petuch & Sargent, 1986 [p. 450]. The extensive bibliography also contains Tryon, 1883, and Burch & Burch, 1967. Quoy & Gaimard, 1924, is replaced by Quoy & Gaimard, 1834-1835, which, however, does not contain any *O. Lacertina*.

• Sterba, 2003: *O. lacertina* is a form of *O. bulbosa* [p. 66]. The twelve illustrated specimens display loose or tight zigzags on greenish-gray or ivory white backgrounds [pl. 20, figs. 1-12]. The bibliography includes Burch & Burch, 1960; Petuch & Sargent, 1986; Tursch & Greifeneder, 2001; but not Quoy & Gaimard.

• Hunon, Hoarau & Robin, 2009: *O. lacertina* is a variety of *O. bulbosa*: "The background is yellowish green overlaid with vertical brown zigzag lines. The authors [Quoy & Gaimard] noted that the coloration of this variety reminded them of the coloring of certain European lizards of the genus *Lacerta*" [p. 68]. The three illustrated specimens display a zigzag pattern, as well as two orange or light brown bands [p. 69]. The bibliography includes Tryon, 1883; Burch & Burch, 1960; Wagner & Abbott, 1798; Petuch & Sargent, 1986; Tursch & Greifeneder, 2001; Quoy & Gaimard, 1834-1835 (which does not contain *O. lacertina*); but not Quoy & Gaimard, 1924.

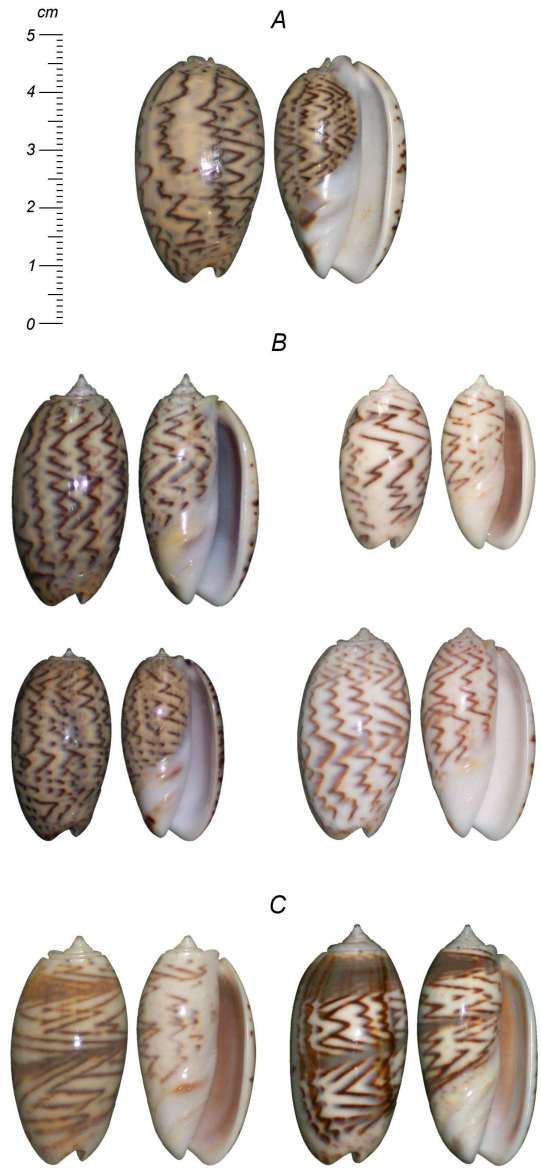

Figure 1. Alleged specimens of *Oliva lacertina*, according to the descriptions by: a) Petuch & Sargent, 1996; b) Sterba, 2003; c) Hunon, Hoarau & Robin, 2009.

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This somewhat pedantic review is indispensable to point out the present uncertainty on what *O. bulbosa lacertina* is (fig. 1). The disagreement among authors is, of course, not an exception for species. Why should we expect agreement for color forms or varieties? Any discrepancy, however, when combined to peculiarities of the bibliographic records, rises the suspect that some mistake might occur.

On the one hand, an information chain runs from one author to the other. The chain becomes looser and looser as more time passes from the point of origin of the transmitted information. As for this, all points back to Burch & Burch, 1960, and, before them, to the monograph of the family *Olividae* published by George Washington Tryon (1838-1888) in volume 5 (1883) of his *Manual of Conchology*. On the other hand, notwithstanding the correctness, but for the year, of specific references to "Quoy & Gaimard, 1825, 432, pl. 72, figs. 4-5" [Tursch & Greifeneder, 2001: 450], the source for *O. lacertina*, which is Quoy & Gaimard, 1824, is missing in all of the bibliographies, occasionally being replaced by Quoy & Gaimard, 1834-1835. This makes it apparent that our present knowledge is based on second-, third- and also fourth-hand information. In order to establish what *O. lacertina* is, it is therefore indispensable to re-examine Tryon's and Quoy & Gaimard's original works.

Tryon writes the following about *Oliva inflata* Lamarck, 1811—the name used to identify *O. bulbosa* before Dall's revision: "The variability of this species in coloring is exceedingly great. When old, the best characters are derived from the inflated form, sunken spire, callous thickenings and columellar ridge; but less developed specimens are so close to some of the succeeding species that their distinction appears to be somewhat doubtful. *O. lacertina*, Quoy (figs. 75, 76), is a somewhat peculiarly colored young shell of this species; I have a similar specimen before me" [Tryon, 1883: 75].

O. lacertina is the only form or variety of *O. inflata* mentioned in the *Manual of Conchology*. The figured specimen is somewhat puzzling, with an odd slender shape for *O. bulbosa*, with broken extremities and no "columellar ridge" [Tryon, 1883: pl. 20, figs. 75-76] (fig. 2). As Tryon suggests, the figure itself may point at a form of *O. bulbosa* or to another species.

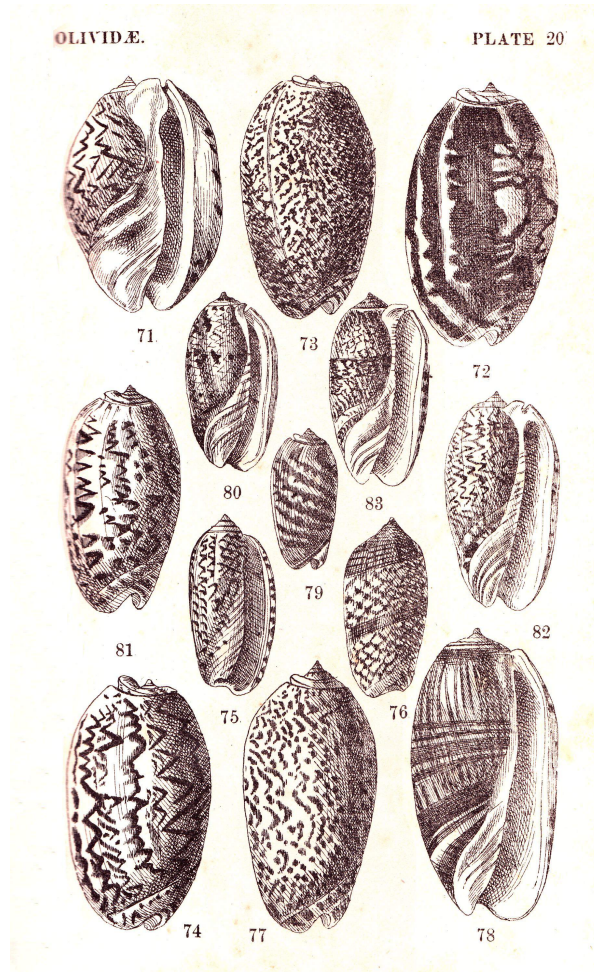

Figure 2. Tryon's plate, which includes various forms of *Oliva inflata* Lamarck, 1811, and, in particular, at figs. 75-76, *Oliva inflata lacertina* (Tryon, 1883: pl. 20).

Apparently, Burch & Burch, 1960, and their followers accepted *O. lacertina* as a form or variety of O. *bulbosa* upon the principle of authority applied to Tryon's firm statement "I have a similar specimen before me".

***Oliva lacertina* Dufresne in Quoy & Gaimard, 1824**

It took a couple of years to find a copy of Quoy & Gaimard, 1824. During such a span of time, relying on previous authors, I also placed *O. lacertina* in the synonymy of *O. Bulbosa*.

The Latin description of the alleged new species of *Oliva* is as follows: "cylindrical, dark-violet, decorated with triangular whitish dots and a dark transversal band" [Quoy & Gaimard, 1824: 432; my translation]. The authors go on in French to write:

> "Mr. [Louis] Dufresne, chief of the zoolo gical laboratories of the Museum [of Natural History, Paris], gave this name to a species sent from Manila by Mr. [George Samuel] P errottet, and which we have found at the Ma rianas and can be at Timor as well.
>
> The shell is cylindrical, slightly inflated; the spire looks very short, but, for a singular incident, the specimens we took, as the one at the Museum, were rubbed worn and lost the extremity of the spire.
>
> The ground color of the lizard olive is dark violet, pointed with small whitish triangles, which seem to overlap like the scales of a lizard; their direction is from the columella towards the straight lip. The posterior part of the shell is surrounded by a large and dark transversal band; another small band, darker but narrower, crosses the dorsum somewhat obliquely. The aperture is white at the two anterior thirds; towards the back it displays the same variegations which are visible on the dorsum, but in a lighter way. Length, thirteen lines; wideness, seven lines.
>
> The color of the Olives is extremely subject to vary depending on the age and several incidents—like rubbing—so that it is possible that the lizard [olive] is the same as the tricolor [olive], deprived of the original greenish color." [Quoy & Gaimard, 1824: 432; my translation].

It is important to outline the following facts:

• The described shell comes from the Philippines and can be found at the Marianas and Timor. The three localities are outside the distribution range of *O. bulbosa*, but inside the distribution range of *Oliva tricolor* Lamarck, 1811 [Tursch & Greifeneder, 2001: 388, 378];

Figure 3. *Oliva lacertina* Quoy & Gaimard, 1824: pl. 72, figs. 4-5 (Biodiversity Heritage Library: www.biodiversitylibrary.org).

• The shell does not have a zigzag pattern, as that of some specimens of *O. bulbosa*, but rather a uniformly dark background regularly scattered with triangular white marks. With the only exception of the violet overall color, this pattern-including the two transversal dark bands below the shoulder and at the center of dorsumis typical of *O. tricolor*;

• The described shell is very worn. The text specifies that the spire is broken. In addition, the figures show that part of the anterior tip is missing, the lip is filed down, and the ventral part of the body whorl is decorticated [Quoy & Gaimard, 1824: pl. 72, figs. 4-5] (fig. 3). The poor state of preservation is partly responsible for the reduced size of the shell, which is only about 3 cm in length (one French inch of 12 lines corresponds to 27.07 mm); Quoy & Gaimard's final comment is revealing: *O. lacertian* may just be based on worn specimens of *O. tricolor*. In fact, it is noteworthy that the overall green pattern of *O. tricolor* is produced by the superimposition of a layer of yellow pigment on another layer of cyan pigment. If the yellow pigment is missing for some reason (abrasion), the result is a dominant cyan pattern. This may vary to violet as a consequence of the typical fading to red of dead Olive shells.

CONCLUSION

Unfortunately no type material of *O. lacertina* can be found at the National Museum of Natural History of Paris for the final check. Nevertheless, it is possible to confirm with absolute certainty that *O. lacertina* is not an *O. bulbosa*. It is instead, with a high degree of reliability, a junior synonym of *O. tricolor* (fig. 4), based on worn, faded and somewhat juvenile specimens of this species. For this same reason, *O. lacertina* cannot be considered a violet color

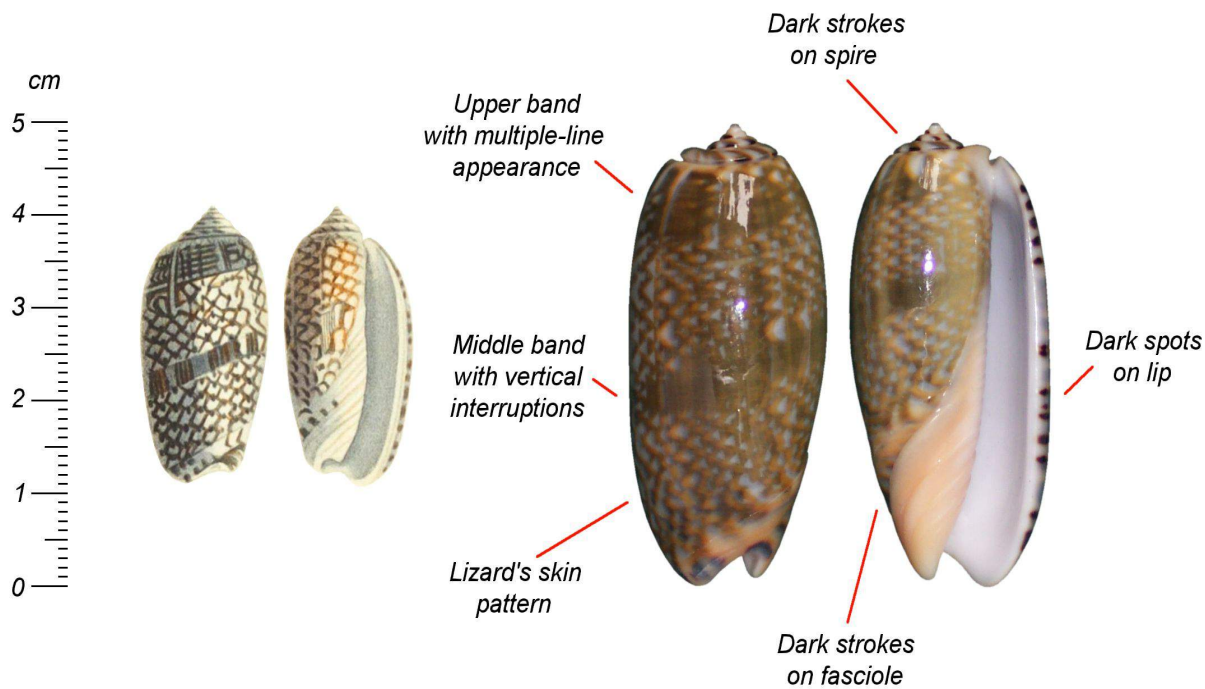

Figure 4. Side by side comparison between *Oliva lacertina* Quoy & Gaimard, 1824, and a specimen of Oliva *tricolor* Lamarck, 1811, form Marinduque, Philippines.

form of *O. tricolor*, unless someone would pretend that abrasion and discoloration are distinctive characters to create a valid taxon.

Evidence suggests that, up to now, Tryon was the only author to read Quoy & Gaimard, 1824. Tryon's figures 75-76, plate 20, are a derivation of Quoy & Gaimard's figures 4-5, plate 72. Regrettably, in the urge of preparing his monumental work on shells, Tryon did not spend much time examining *O. lacertina* in detail, and quickly opted for a form of *O. bulbosa*. The graphic ambiguity of Tryon's figures, their presence in the same plate of *O. bulbosa*, and the determination with which Tryon had brought forth his conclusion, guided Burch & Burch, 1960, to accept *O. lacertina* as a form of *O. bulbosa*. From this point onward, as Burch & Burch, 1960 is a constant presence in the recent monographs on Olive shells, the original mistake about the existence of some *O. bulbosa lacertina* was revived and transformed into an urban legend.

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