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A New Genus and a New Subspecies of Olive Shell (Olividae: Olivinae) from the Eastern Pacific Ocean

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ABSTRACT A new genus of olivine olivid, *Felicioliva* n. gen., is described from the Panamic and Peruvian Molluscan Provinces. This new Eastern Pacific endemic genus contains three species: *F. peruviana* (Lamarck, 1811), which ranges from northern Peru south to southern Chile (Peruvian Molluscan Province); *F. kaleontina* (Duclos, 1835), which ranges from the Gulf of California south to northern Ecuador and the Galapagos Islands (Panamic Molluscan Province); and a new subspecies, *F. kaleontina chimu* n. subsp. (described here), which is confined to southern Ecuador and northern Peru (extreme southernmost Panamic Molluscan Province).

KEY WORDS Olividae, *Felicioliva*, Eastern Pacific, Ecuador, Peru, Panamic Molluscan Province, Peruvian Molluscan Province

INTRODUCTION

Based upon research conducted over the past four years (Petuch, 2013; Petuch and Myers, 2014; Petuch and Berschauer, 2017), the Panamic and Peruvian Molluscan Provinces of the Eastern Pacific Ocean are now known to contain, altogether, one of the richest olivine olivid faunas found anywhere in the world's oceans. This new biodiversity data will be summarized in an upcoming book on tropical marine molluscan biogeography (Petuch, Berschauer, and Myers, in press). To date, 28 species of olivine gastropods are known from this area and were found to belong to five separate genera. These higher taxa include: *Porphyria* Linnaeus, 1758 (type: *Porphyria porphyria*); *Americoliva* Petuch, 2013 (type: *Americoliva sayana*); *Strephonella* Dall, 1909 (type: *Strephonella undatella*); *Vullietoliva* Petuch and Berschauer, 2017 (type: *Vullietoliva splendidula*); and *Felicioliva* Petuch and

Berschauer, new genus, (type species: *Felicioliva kaleontina*). Of these, *Porphyria*, *Vullietoliva*, and *Strephonella*, are restricted to the Panamic Molluscan Province, and with only *Felicioliva* being found in both the Panamic and Peruvian Molluscan Provinces. The fifth genus, *Americoliva*, is found in both the Eastern Pacific (Panamic Molluscan Province) and western Atlantic (Carolinian, Caribbean, and Brazilian Molluscan Provinces) and comprises the largest complex, with 20 species being found in the Panamic Province and over 30 species in the western Atlantic (see Petuch, 2013). The new olivid genus *Felicioliva* is described here.

SYSTEMATICS

(taken from Bouchet and Rocroi, 2005)

Class Gastropoda
Subclass Orthogastropoda
Superorder Caenogastropoda
Order Sorbeoconcha
Suborder Hypsogastropoda

Infraorder Neogastropoda
 Superfamily Olivoidea
 Family Olividae
 Subfamily Olivinae

Genus *Felicioliva* Petuch and Berschauer,
 new genus

Diagnosis: Shells small for family, fusiform or inflated, with rounded and sloping shoulders and proportionally low spires; although glossy, shell finish characteristically is softer than typical olivine olivids and often has slightly dull appearance; shell colors generally subdued, with base color being pale tan, orange, or grayish-tan, overlaid with variable amounts of tan zig-zag flammules, irregular spots, and longitudinal lines; edge of filament channel bordered with large, prominent, irregularly-spaced amorphous brown flammules; columella only partially lined with teeth and plications, with being absent on posterior 1/4 to 1/3; columellar teeth, when present, proportionally small and closely-packed, sometimes bifurcated; protoconchs proportionally very large, rounded, domelike, composed of 2 ½ whorls.

Type Species: “*Oliva*” *kaleontina* Duclos, 1835 (Figure 1B), from the Panamic Molluscan Province of the Eastern Pacific Ocean.

Other Species in *Felicioliva*: Besides the type species, other taxa within the new genus include: *Felicioliva kaleontina chimu* Petuch and Berschauer, new subspecies, which ranges from southern Ecuador and northern Peru (described in the following sections; Figure 1A); *Felicioliva peruviana* (Lamarck, 1811), which ranges from northern Peru south to southern Chile (Figure 1C).

Range: The new genus ranges from Cabo San Lucas, Baja California del Sur, Mexico and the Gulf of California south to Lambayeque District,

northern Peru and the Galapagos Islands. It is restricted to the Panamic and Peruvian Molluscan Provinces. Members of the genus occur in depths ranging from intertidal to more than 50 m.

Etymology: Named for Felicia Weisbrot Berschauer, of Laguna Hills, California, wife of the junior author and patient supporter of our research on molluscan systematics and biogeography.

Discussion: We recently (Petuch and Berschauer, 2017) placed the type species of *Felicioliva* (“*Oliva*” *kaleontina* Duclos, 1835) in our genus *Vullietoliva*, along with the widespread Panamic Province *V. splendidula* (Sowerby I, 1825) (type species) and the Cocos Island endemic *V. foxi* (Stingley, 1984). Further study has now shown that “*Vullietoliva*” *kaleontina* does not belong in that genus, but is actually much closer, conchologically, to the Peruvian and Chilean “*Oliva*” *peruviana* (Lamarck, 1811) and is now considered to be congeneric with its southern relative. They are both here placed in our new genus *Felicioliva*. Having more robust and thicker shells with proportionally larger and more rounded protoconchs, *Felicioliva* species differ significantly from either of the two known species of *Vullietoliva*. The columellar plications of *Vullietoliva* species are much coarser, proportionally larger, and line almost the entire length of the columellar area. Those of *Felicioliva* species are finer in structure, are often reduced or almost obsolete, and are present only on the anterior part of the columellar area. Members of *Vullietoliva* also typically exhibit two broad bands of dark brown that are marked with numerous small triangles and “tent markings”. These bands and triangular markings are absent on members of *Felicioliva*.

NEW SOUTHERN SUBSPECIES

Preliminary faunal surveys have shown that the area extending from Manta, Manabi Province, Ecuador south to Lambayeque District, Peru contains a distinct and highly endemic molluscan fauna. Some of the more important gastropods that are endemic to this extreme southernmost end of the Panamic Province include the muricid *Homalocantha multicrispata* (Dunker, 1869) and the olivids *Americoliva polpasta radix* (Petuch and Sargent, 1986), *Americoliva mcleani* Petuch and Myers, 2014, *Strephonella undatella ecuadoriana* Petuch and Sargent, 1986, and a new subspecies of the widespread Panamic Province *Felicioliva kaleontina* (Duclos, 1835). This new taxon is described here and the holotype is deposited in the molluscan type collection of the Department of Malacology, Los Angeles County Museum of Natural History, Los Angeles, California and bears an LACM catalog number.

Felicioliva kaleontina chimu Petuch and
Berschauer, new subspecies
(Figure 1A)

Description: Shell characteristically larger than nominate subspecies, elongate and fusiform, cylindrical, with sloping shoulder; spire proportionally low, broadly subpyramidal, with large, thickened, rounded callus covering individual spire whorls; shell base color pale tan or grayish-tan, overlaid with numerous closely-packed, small, pale tan irregular flammules and spots; shoulder and edge of filament channel marked with wide, prominent alternating dark brown and cream white irregular patches and flammules; aperture proportionally narrow, widening toward anterior end, pale violet or purple within interior; columella teeth fine, proportionally small, bifurcated, absent on posterior half of columella;

Type Material: HOLOTYPE: length 33.3 mm, width 15.3 mm, from off Isla Lobos de Afuera, northern Peru, LACM 3477; Other material examined: length 37 mm, width 17 mm, from the same locality as the holotype, in the research collection of the senior author; length 35.4 mm, width 15.8 mm, same locality as the holotype, in the research collection of the junior author; 3 specimens, lengths 41 mm to 42 mm, from Mancora, dto Piura, north Peru, in the research collection of Pierre Recourt, Egmond aan Zee, Netherlands.

Type Locality: Trawled by fishermen from 30-40 m depth north of Isla Lobos de Afuera, Piura District, northern Peru.

Range: Known only from the extreme southernmost limit of the Panamic Molluscan Province, from Manta, Manabi Province, Ecuador south to Isla Lobos de Afuera, Piura District and Lambayeque District, Peru.

Ecology: *Felicioliva kaleontina chimu* lives in deeper water areas, in depths of 30-50 m, offshore of southern Ecuador and northernmost Peru, where it is found on coarse sand seafloors and cool, high-productivity waters.

Etymology: The new taxon honors the Chimu Civilization, which flourished along the coast of northern Peru (in the area where the new olive subspecies occurs) between the 12th and 15th centuries. With their great advances in technology, agriculture, art, and governance, the Chimu heavily influenced the subsequent Inca Civilization.

Discussion: The new southern subspecies differs from the nominate subspecies in being a larger and more elongated shell with a proportionally longer body whorl and in having a less-sloping shoulder and proportionally much lower spire. The nominate subspecies is also a

more colorful shell, with vivid patterns of large dark reddish-brown zig-zag flammules and longitudinal lines, overlying a background color of pale orange and pink. The new subspecies, on the other hand, is a much less colorful shell, with a base color of pale drab grayish-yellow or pale yellow tan, overlaid with small, widely scattered pale brown longitudinal flammules and speckles. The spire whorls also differ between the two subspecies; with the nominate subspecies having narrower and more protracted spire whorls that are only partially covered with a thin whitish callus, while *chimu* has broader and lower spire whorls that are almost completely covered with a thick, rounded, whitish callus.

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Callipara africana pumila Bail & Aiken, 2017

Taxonomic Note:

A new volute subspecies *Callipara africana pumila* Bail & Aiken, 2017 was recently described from the southern waters of Natal, South Africa, in the KwaZulu-Natal Province. These small pale volutes are geographically isolated from the nominal species by 120 km. (P. Bail & R. Aiken, 2017. A new subspecies of *Callipara* (*Callipara*) (Gastropoda: Volutidae) from the southern coast of Natal, South Africa. *Novapex* 18(1-2):35-39.)



Figure 1. Members of the new olivid genus *Felicioliva* Petuch and Berschauer.

A= *Felicioliva kaleontina chimu* Petuch and Berschauer, new subspecies. Holotype, length 33.3 mm, from 30-40 m depth north of Isla Lobos de Afuera, Piura District, Peru, LACM 3477; **B=** *Felicioliva kaleontina* (Duclos, 1835), length 28 mm, from 20 m depth off Mazatlan, Sinaloa, Mexico, in the research collection of the senior author (type species of the new genus *Felicioliva*); **C=** *Felicioliva peruviana* (Lamarck, 1811), length 45.2 mm, from 6-8 m depth off Quintero, Chile, in the research collection of the junior author.