The predatory family Streptaxidae is comprised of five species occurring in Thua Thien Hue Province, central Vietnam. The present paper provides an assessment of the literature data relevant to these species and the description of two new species. *Haploptychius bachmaensis* sp. nov. has an oblique-heliciform shell with elevated spire. The aperture is subcircular, peristome discontinuous, thick and slightly expanded, apertural dentition with one strong parietal lamella. *Perrottetia namdongensis* sp. nov. has a rounded and protruded shell periphery. The aperture is subcircular, peristome is discontinuous, thick and expanded, apertural dentition with one large, strong parietal lamella, one small upper palatal lamella, one large palatal lamella, one large basal lamella, and one large strong columellar lamella.

**Introduction**

The species-rich carnivorous family of the Streptaxidae is widely distributed in the tropical regions of Asia and Africa [Schileyko, 2000, 2011; Siriboon *et al.*, 2013, 2014; Benthem Jutting, 1961]. In Vietnam, streptaxid diversity was thought to comprise only ten genera and about 48 species and subspecies [Jaeckel, 1950; Schileyko, 2011; Varga, 2012; Thach, 2016, 2017; Do, 2017]. The streptaxid fauna of central Vietnam is as rich as that of northern Vietnam, but is relatively little-known. Only six species were discovered from Central Vietnam in the last decades: *Discartemon discus* (Pfeiffer, 1853), *Perrottetia aberrata* (Souleyet, 1852), *Haploptychius deflexus* (Souleyet, 1852), *Oophana diplodon* (Möllendorff, 1900), *Oophana pachyglostis* (Möllendorff, 1900), and *Indoennea irregularis* (Möllendorff, 1900), and a species added in recent years (*Discartemon pallgergelyi* Thach, 2017) [Schileyko, 2011; Do, 2017; Thach, 2017].

Thua Thien Hue Province is situated in the center of Vietnam, which was formed in the Pliocene. It covers a 5,033.2 km² area, with mountains, covering more than a half of the surface of Thua Thien Hue along the western and south-western border; they belong to the Northern of Truong Son mountainous range. Mountains’ height is 500–1,480 m. In the south-east of province, limestone areas are mainly in Nam Dong District, close to the Bach Ma National Park (natural conservation zone). In addition, the topography is divided into three different zones: mountainous hills, plains and lagoons.

The aim of this paper is to provide a comprehensive and updated checklist of land snail family Streptaxidae by consolidating data from literature and collected specimens, including photographs of all species, in order to present a baseline species inventory for future land snail studies.

**Material and methods**

Streptaxids were surveyed throughout Thua Thien Hue Province, central Vietnam from different habitats (primary forest, depleted primary forest, densely vegetated limestone hill, riparian fringe, cave).

Identification of streptaxid species were based on descriptions in Pfeiffer [1853, 1854], Eydoux, Souleyet [1852], Kobelt [1906], Siriboon *et al.* [2014] and comparison with type specimens from several museums. Shell width (D), shell height (H), whorl counts, shell angle (SA) and H/D ratio were measured and calculated.
Collected material has been deposited in the Vietnam National Museum of Nature, Laboratory of Zoology – Hue University of Education, Thua Thien Hue, Vietnam and private collections.

**Abbreviations**
BTC – Private collection Bui Thi Chinh (Thua Thien Hue, Vietnam);
DDS – Private collection Do Duc Sang (Son La, Vietnam);
LZ–HUE – Laboratory of Zoology, Hue University of Education, Vietnam;
NHMUK – The Natural History Museum, London, UK;
RMNH – Naturalis Biodiversity Center, Leiden, Netherlands;
SMF – Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany;
D – shell width;
H – shell height;
SA – shell angle.

**Systematic part**
Family Streptaxidae J. Gray, 1860
Genus *Discartemon* Pfeiffer, 1856

Pfeiffer, 1856: 173.

Type species – *Streptaxis discus* Pfeiffer, 1851 (by subsequent designation by Ancey [1884]).

**Diagnosis.** Shell medium sized, flattened to globose-heliciform, white and translucent. Shell surface is smooth and glossy, transverse ridges may be present. Whorls 4–7, with spire flattened to conical. Last whorl rounded to angular, regularly expanded. Aperture regularly semi-ovate or triangular. Peristome discontinuous, thick and expanded. Apertural dentition always have one parietal lamella, other lamellae (upper palatal, palatal, basal, columellar and supracolumellar lamellae) may be present or absent. Umbilicus very widely open.

*Discartemon discus* (Pfeiffer, 1853)
(Figs 1, 2A–B)

*Streptaxis discus* Pfeiffer, 1851: 252; Pfeiffer, 1853: 289; Pfeiffer, 1854: 394, 395, Taf. 145, Figs 15–17; Ancey, 1884: 399; Tryon, 1885: 66, Taf. 16, Figs 77–79; Gude, 1902: 226.


*Discartemon paradiscus* Möllendorff, 1900: 117; Ancey, 1904: 289, 290; Fischer, Dautzenberg, 1904: 2.


*Odontartemon (Discartemon) paradiscus*. – Kobelt, 1906: 97, 98, Taf. 55, Figs 8, 9.

*Discartemon discus*. – Benthem Jutting, 1954: 79; Zilch, 1961: 82, Taf. 5, Fig. 3; Schileyko, 2011: 22, 23.

**Type locality:** Phuoc Son, Da Nang, Vietnam

**Type material:** Holotype NHMUK 20130684, [Siriboon et al., 2014: fig. 4A].

**Material examined.** LZ–HUE 3101, BTC/03, DDS/01, Vietnam, Thua Thien Hue Province, Nam Dong District,
Streptaxidae (Gastropoda: Pulmonata) from Thua Thien Hue, Vietnam

Thuong Quang Commune, Limestone mountain, 16°08.06′N, 107°36.47′E, 351 m, leg. T.C. Bui, 01 October 2017.

**Diagnosis.** Shell medium sized, flattened, white and translucent. Shell surface glossy with thin transverse ridges. Whorls 6–6½, spire flattened with distinct suture. Last whorl angular, regularly expanded. Umbilicus very wide but shallow. Aperture semi-ovate, peristome discontinuous, thickened and expanded; apertural dentition with only one parietal lamella.

Measurements (mm): D 12.5–16.2, H 4.4–5.8 (n = 20).

**Distribution.** In Vietnam, known from Da Nang, Thua Thien Hue Provinces. Elsewhere, in Laos? [Schileyko, 2000, 2011; Inkhavilay et al., 2016].

**Remarks.** The species is a variable in terms of shell size. This appears to be the first record of the species from Thua Thien Hue Province. *Discartemon discus* has previously been recorded from Laos, but uncertainly [Schileyko, 2000, 2011].

**Genus Huttonella** Pfeiffer, 1856

Pfeiffer, 1856: 174.

Type species – *Pupa bicolor* Hutton, 1834: 93 (by subsequent designation by Stoliczka, [1871]).
**Diagnosis.** Shell small, elongated cylindrical, white or pale yellow, transluscent to opaque. Whorls 7–8, convex, weakly rounded, with relatively deep suture. Aperture rectangular, peristome discontinuous and expanded. Apertural dentition with one parietal lamella, one supraparietal, one columellar lamella, and one basal lamella. Umbilicus very narrow.

*Huttonella bicolor* (Hutton, 1834)  
(Figs 1, 2F)

*Pupa bicolor* Hutton, 1834: 86, 93; Pfeiffer, 1854: 115, Taf. 32, Figs 15–17.

*Ennea bicolor.* – Mörch, 1872: 315; Tryon, 1885: 104; Fischer, 1891: 18; Fischer, Dautzenberg, 1904: 2.


*Huttonella bicolor.* – Benthem Jutting, 1961: 8; Schileyko, 2000: 822, fig. 1075A; Schileyko, 2011: 27; Simone, 2013: 47–58, Figs 1–6; Do, Do, 2015: 42, fig. 3H.


**Type locality:** Mizrapure and Agra, India.

**Type material:** Not seen.

**Material examined:** LZ–HUE 3401 (14 shells), Vietnam, Thua Thien Hue Province, Nam Dong District, Huong Giang Commune, Limestone mountain, 16°06.56′N, 107°38.32′E, 217 m, leg. T.C. Bui, 29 April 2017. Paratypes LZ–HUE 3501 (5 shells), Vietnam, Thua Thien Hue Province, Nam Dong District, Limestone mountain, 16°06.56′N, 107°38.32′E, 217 m, leg. T.C. Bui, 01 October 2017, LZ–HUE 3502 (7 shells), DDS/01, same data as holotype.

**Diagnosis.** Shell medium sized, oblique-heliciform with elevated spire; aperture oblique, wide, and subcircular; peristome discontinuous, thickened, and slightly expanded; apertural dentition with one strong parietal lamella.

**Description.** Shell medium in size, thick, oblique-heliciform, white and transluscent. Whorls 7, spire conical with suture distinct. Shell surface glossy, with thin transverse ridges that diminish below periphery. Embryonic shell large, about 2½ whors, smooth; following whors regularly expanded. Penultimate whorl rounded; last whorls slightly rounded and axially deflected. Aperture subcircular; peristome discontinuous, parietal callus thin; lip thickened and slightly expanded. Apertural dentition with one slightly strong parietal lamella. Umbilicus narrowly open and shallow (Figs 3D–F).


**Distribution.** This species is known from several primary forest areas in Thua Thien Hue Province, central Vietnam.

**Etymology.** The specific epithet is derived from the type locality of this new species, the Bach Ma National Park, Thua Thien Hue Province, Vietnam.

**Remark.** This new species is similar to *Haploptychius fischeri* (Morlet, 1886) (from Quang Ninh Province, Northern Vietnam), however it differs in its larger shell, subcircular aperture, weak parietal lamella, and the left periphery of penultimate whorl not extended beyond the diameter of the last whorl. *Haploptychius bachmaensis* sp. nov. can be distinguished from *H. anceyi* (Mabille, 1887), *H. blaisei* (Dautzenberg et Fischer, 1905), *H. costulatus* (Möllendorff, 1881), *H. diespiter* (Mabille, 1887), and *H. dorri* (Dautzenberg, 1893) in having a larger shell and less deviated last whorl. Compared with
91Streptaxidae (Gastropoda: Pulmonata) from Thua Thien Hue, Vietnam

FIG. 3. A–C. *Perrottetia namdongensis* sp. nov., A. Holotype VNMN_IZ 000.000.158, B, C. Paratype LZ–HUE 3301; D–F. *Haploptychius bachmaensis* sp. nov., D. Holotype VNMN_IZ 000.000.157, E, F. Paratype LZ–HUE 3501.

РИС. 3. A–C. *Perrottetia namdongensis* sp. nov., A. Голотип VNMN_IZ 000.000.158, B, C. Паратип LZ–HUE 3301; D–F. *Haploptychius bachmaensis* sp. nov., D. Голотип VNMN_IZ 000.000.157, E, F. Паратип LZ–HUE 3501.
H. porrectus (Pfeiffer, 1863) (from northeastern and central Laos), this species differs in its larger and thicker shell, depressed spire, stronger parietal lamella, and opener umbilicus [see Inkhavilay et al., 2016]. To date no living specimens have been found.

Genus Perrottetia Kobelt, 1905

Kobelt, 1905: 91 (Odontartemon subgenus)

Type species – Helix peroteti Petit, 1841, by subsequent designation of Forcart [1946].

Diagnosis. Shell small, oblique-heliciform, white and translucent. Shell surface smooth and glossy or with transverse ridges. Whorls 5–7, spire conical with suture distinct. Shell periphery is usually rounded and last whorl axially deflected. Aperture regularly semi-ovate, peristome expanded with reflected lip. Apertural dentition usually have one or two parietal lamellae; palatal, upper palatal, basal, supra-columellar, and columellar lamellae are usually present. Umbilicus open and deep.

Perrottetia aberrata (Souleyet, 1852)

Figs 1, 2C–E

Helix aberrata Eydoux, Souleyet, 1852: 505, Taf. 28, Figs 32–34.

Streptaxis aberrata. – Pfeiffer, 1854: 24, Taf. 102, Figs 27–30; Crosse, Fischer, 1863: 355; Tryon, 1885: 77, Taf. 15, Figs 65–67; Fischer, 1891: 17; Möllendorf, 1898: 66; Gude, 1902: 221; Fischer, Dautzenberg, 1904: 1.


Type locality: Touranne (Da Nang), Vietnam

Type material: Not seen.

Material examined. LZ–HUE 3201 (3 shells), Vietnam, Thua Thien Hue Province, Phu Loc District, Bach Ma National Park, Primary forest, 16°11.385’N, 107°51.11’E, 1255 m, 06 May 2017; LZ–HUE 3202 (6 shells), BTC/02, Vietnam, Thua Thien Hue Province, Phu Loc District, Hai Van Pass, Steep limestone slope with disturbed forest, 16°11.147’N, 108°07.515’E, 122 m, 22 July 2018.

Diagnosis. Shell suboblique-heliciform, white and translucent; whorls 6½, spire conical, with distinct suture. Shell surface dull, with fine transverse ridges that diminish below periphery. Last whorl shouldered, axially deflected, and expanded. Embryonic shell large, about 2½ whorls, with smooth surface; following whorls regularly expanding. Aperture subcircular, peristome discontinuous, thick and slightly expanded. Apertural dentition with one large, strong parietal lamella, one small upper palatal lamella, one strong palatal lamella, one basal lamella, one strong columnellar lamella, and one small supra-columellar lamella. Umbilicus widely open and shallow.

Measurements (mm): D 8.6–9.7, H 6.1–7.7 (n = 9)

Distribution. In Vietnam, known from Da Nang, Thua Thien Hue Provinces.

### Table 1. Shell measurements of the Streptaxidae species from Thua Thien Hue, Vietnam.

<table>
<thead>
<tr>
<th>Species and locality</th>
<th>No. of specimens</th>
<th>Ranges of:</th>
<th>Number of whorls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discartemon discus</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nam Dong</td>
<td>20</td>
<td>Shell height (mm)</td>
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<td></td>
<td></td>
<td>4.4–5.8</td>
<td>12.5–16.2</td>
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<td></td>
<td></td>
<td>0.35–0.37</td>
<td>42–46</td>
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<td></td>
<td></td>
<td>6–6½</td>
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<tr>
<td><strong>Perrottetia aberrata</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bach Ma</td>
<td>3</td>
<td>Shell width (mm)</td>
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<td></td>
<td></td>
<td>6.1–6.8</td>
<td>8.6–9.3</td>
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<td></td>
<td></td>
<td>0.71–0.73</td>
<td>33–35</td>
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<td>7</td>
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<tr>
<td>Hai Van</td>
<td>6</td>
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<td>6.3–7.7</td>
<td>9.0–9.7</td>
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<td></td>
<td></td>
<td>0.67–0.83</td>
<td>30–35</td>
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<tr>
<td><strong>Perrottetia namdongensis</strong></td>
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<tr>
<td>Nam Dong</td>
<td>26</td>
<td>Shell height (mm)</td>
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<td></td>
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<td>3.8–4.9</td>
<td>6.8–7.8</td>
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<td>0.60–0.63</td>
<td>31–37</td>
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<td>6–6½</td>
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<td>Bach Ma</td>
<td>7</td>
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<td></td>
<td></td>
<td>4.1–4.5</td>
<td>5.8–6.5</td>
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<td></td>
<td>0.69–0.71</td>
<td>33–37</td>
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<td></td>
<td></td>
<td>6–6½</td>
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<tr>
<td><strong>Haploptychius bachmaensis</strong></td>
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<tr>
<td>Nam Dong</td>
<td>6</td>
<td>Shell height (mm)</td>
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<td></td>
<td></td>
<td>9.9–10.7</td>
<td>12.5–12.9</td>
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<td>0.79–0.83</td>
<td>14–17</td>
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<td>7</td>
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<td>Bach Ma</td>
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<td>9.7–11.3</td>
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<td>0.77–0.86</td>
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<td>7</td>
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<tr>
<td><strong>Huttonella bicolor</strong></td>
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<tr>
<td>Nam Dong</td>
<td>14</td>
<td>Shell height (mm)</td>
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<td>6.1–7.3</td>
<td>1.8–2.2</td>
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<td>3.32–3.39</td>
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<td>7–8</td>
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<tr>
<td>Bach Ma</td>
<td>5</td>
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<tr>
<td></td>
<td></td>
<td>6.6–7.4</td>
<td>1.9–2.2</td>
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<td></td>
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<td>3.36–3.47</td>
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<td>7–8</td>
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<tr>
<td>Phu Loc</td>
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<td></td>
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<td>5.8–7.2</td>
<td>1.7–2.2</td>
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<td>3.27–3.41</td>
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Табл. 1. Промеры раковины видов Streptaxidae из Туа Тьен Хуэ, Вьетнам.
**Remarks.** This species was known only from Central Vietnam. New distribution records from Thua Thien Hue Province.

*Perrottetia namdongensis* Bui et Do V.N.

sp. nov.

(Figs 3 A–C, Table 1)

urn:lsid:zoobank.org:act:AC3CB61F-5CA0-4F35-A24F-FD2373204BE9

**Type material.** Holotype VNMN IZ 000.000.158, Vietnam, Thua Thien Hue Province, Nam Dong District, Thuong Quang commune, Depleted primary forest, 16°06.56’N, 107°38.32’E, 217 m, leg. T.C. Bui, 16 September 2017. Paratypes LZ–HUE 3301 (8 shells), Vietnam, Thua Thien Hue Province, Bach Ma National Park, Primary forest, 16°11.459’N, 107°51.457’E, 1380 m, leg. T.C. Bui, 06 May 2017, LZ–HUE 3302 (15 shells), BTC/03, DDS/03, same data as holotype.

**Diagnosis.** Shell small, oblique-heliciform with slightly convex spire; aperture subcircular, peristome discontinuous, thickened and expanded; apertural dentition with one large, strong parietal lamella, one small upper palatal lamella (sometimes absent), one large palatal lamella, one large basal lamella, one small upper palatal lamella (sometimes absent), one large basal lamella, one large strong columellar lamella, absent supracolumellar lamella.

**Description.** Shell small, slightly thickened, oblique-heliciform, white and translucent. Whorls 6–6½, spire slightly convex with distinct suture. Shell surface glossy, with reduced transverse ridge. Embryonic shell large consisting of about 2½ whorls, surface glossy, with reduced transverse ridge. Embryonic shell large consisting of about 2½ whorls, with smooth surface; following whorls regularly expanding. Shell periphery shouldered, last whorl axially deflected. Aperture subcircular, peristome discontinuous, thickened and expanded; parietal calulus thin. Apertural dentition with one large, strong parietal lamella, absent second parietal lamella, one small upper palatal lamella (sometimes absent), one large palatal lamella, one large basal lamella, one large strong columellar lamella, absent supracolumellar lamella. Umbilicus widely open and shallow (Figs 3 A–C).


**Distribution.** This species is known from several primary forest areas in Thua Thien Hue Province (Nam Dong and Phu Loc Districts), central Vietnam.

**Etymology.** The specific epithet is derived from the type locality of this new species, Nam Dong District, Thua Thien Hue Province, Vietnam.

**Remark.** This new species differs from *P. cristatella* (Möller dorff, 1881), *P. daedalea* (Bavay et Dautzenberg, 1908), *P. dugasti* (Morlet, 1892), *P. gudei* (Fulton, 1915), *P. mabillei* (Bavay et Dautzenberg, 1908), *P. oppidulium* (Bavay et Dautzenberg, 1908) from north Vietnam in its larger shell and larger, strong parietal lamella. *P. aberrata* (Souley et al, 1852) differs from the new species in its fine transverse ridge at the suture, the larger palatal lamella, and one supracolumellar lamella. *Perrottetia namdongensis* sp. nov. is superficially similar to *P. unidentata* Inkhavilay et Panha, 2016 (from Houaphan Province, eastern Laos), however it differs in its smaller shell, subcircular aperture, and weak parietal lamella.

**Acknowledgements**

We sincerely thank Dang Ngoc Thanh Nhan, Nguyen Huu Chuyen, Duong Ngoc Tuong for assistance during fieldwork. We are grateful to two anonymous reviewers and Yuri I. Kantor for suggesting improvements to the manuscript.

**References**


Stoliczka F. 1871. On the land shells of Penang, with descriptions of the animals and anatomical note; part first, Cyclosteomacea. *Journal of the Asiatic Society of Bengal*, 16(2): 261–271.


Наземные моллюски семейства Streptaxidae J. Gray, 1860 из Туа Тьен Хуэ, Вьетнам, с описанием двух новых видов (Gastropoda: Pulmonata)

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РЕЗОМЕ. Семейство хищных брхоногих Streptaxidae в провинции Туа Тьен Хуэ, центральный Вьетнам, представлено пятью видами. В настоящей работе приведен обзор, основанный на опубликованных и оригинальных данных, а также описание двух новых видов. *Haploptychius bachmaensis* sp. nov. имеет скончено-хелициферную раковину с приподнятым завитком. Устье округлое, перистом прерывистый, утолщенный и слегка отвернутый. Устьевая арматура с одной сильной париетальной складкой. У стье округлое, перистом прерывистый, утолщенный и слегка отвернутый. Устьевая арматура с одной сильной париетальной складкой, одной небольшой верхней палатальной складкой, одной крупной палатальной складкой и крупной колумellarной складкой.