



First record of an intermediate snail host; *Thiara scabra* (O. F. muller, 1774) of the lung (Paragonomus) and intestinal (Haplorchris) Flukes in Qena Province, Egypt.

Ahmed S. Moustafa and Elamier H. M. Hussien*

Zoology Department, Faculty of Science, South Valley University, 83523 Qena, Egypt

*Corresponding author: elameer.hussien@sci.svu.edu.eg (E. H. M. Hussien)

ARTICLE INFO

Article History:

Received: March 9, 2018

Accepted: May 1, 2018

Available online: June, 2018

Keywords:

Gastropoda

Thiaridae

Thiara scabra

Intermediate host

lung fluke

Intestinal fluke

Egypt

ABSTRACT

This research establishes a new record of the freshwater Thiarid snail, *Thiara scabra*, collected from the River Nile and its branches at Qena governorate, Upper Egypt. The shell varies in size and form, pale brown in color with reddish - brown patches or spots arranged on the whole whorls. It has an elongated turreted shell with a high spire of 8½ whorls that regularly increase in size and descending step - like with distinct sutures. Whorls are often shouldered from above and rounded from below. A row of spines, sculptured with vertical ribs, bearing prominent spines directed obliquely outward are found at the beginning of each whorl. Its surface shows a rough spiral striation. On the body, a whorl near the umbilical region striation of strong ridge can be seen. The umbilicus is closed. The most proximal three spires are found to be eroded. Aperture is almost vertical, oval, pointed above, and rounded below. The peristome is not continuous. The two ends are connected by a white callus against the penultimate whorl; exterior margin sinuous projects forward with a round curve in the middle; it recedes in the upper end and lower part and its basal margin is somewhat channeled. Operculum is a horny dark brown; the nucleus is eccentric as it is at the left lower corner. Growth lines fan out to the tip and to the side of the operculum. The soft parts show the usual parts of the gastropod body, which are the head, foot and the visceral mass. The head and foot of the active snail can be seen protruding out of the shell. The pallial organs are typically like thiarids in form and position.

INTRODUCTION

A review of the recent literatures of the freshwater snail fauna in Egypt has shown that genus *Thira* (Roding, 1798) was not considered to be represented in the molluscan fauna of Egypt (Starmühlner, 1982, van Damme, 1986; Neubert, 1998; Brown, 2005; Ibrahim *et al*, 2006; Thompson, *et al.*, 2009; Hussein *et al.*, 2011; Abd Elwakeil *et al.*, 2013; Choubisa and Sheikh, 2013; Abdel - Gawad & Mola, 2014; Lotfy & Lotfy, 2015). This was also indicated by Davis & Yannmaguchi (1969); Pace (1973); Brandt (1974); Starmühlner (1976 – 1984); Burch (1980); Subba Rao

(1989); Glaubrecht *et al.* (2009); Dunga *et al.* (2010); Budha (2012); Gloer and Pesic (2012); and GBIF (2014).

The present species is autochthonous to India, on the Indo-Pacific coast, East Africa, Madagascar, East African islands, Ceylon, south and south-east Asia and east Australia. It has been introduced in the Mediterranean areas of Jordan and Israel (Neubert, 1998; Nasmann *et al.*, 2007; Nasarat *et al.*, 2014).

To the best of the present authors' knowledge, it is the first time to record this genus in Upper Egypt, mainly in Qena city. It may reach Egypt by the Nile stream or it may be introduced by any way, but the date of its introduction is unknown. It is initially represented with only one species, *Thira scabra* (Muller, 1774).

According to Starmühlner (1976) and Brown (2005), the present species was firstly described as *Baccinum scabrum* by (Muller, 1774), *Melania spinulosa* (Lamarck, 1842), *M. granum* (Vondum Bush, 1847), *M. pagoda* (Reeve, 1859), *Tiara (Plotia) scabra* (Preston, 1915); *Thira scabra* (Riech, 1937); *Thira scabra* (Bentham-Jutting (1962); *Thira scabra*, (Mendis & Fernando (1962); *Thira scabra* (Riech, 1937 and Starmühlner, 1974, 1976 & 1983).

The original distribution of *Thiara scabra* includes a large area of the Indo - Pacific coasts and its adjacent islands from Central East Africa to South Asia and North-East Australia (Davis & Yannmaguchi, 1969, Pace, 1973; Brandt, 1974; Starmühlner, 1976-1984; Burch, 1980; Subba Rao 1989; Nasmann *et al.*, 2007; Glaubrecht *et al.* 2009; Dunga *et al.*, 2010, Budha, 2012; Gloer and Pesic, 2012; GBIF, 2014).

Over the recent years, there has been an increasing interest in the Thiaridae snails not only among malacologists but also among parasitologists for harboring numerous species in this family, which serve as intermediate hosts of severe human and animal diseases. *Thiara scabra* acts as an intermediate host for at least cercaria of 4 trematode species. The most dangerous one is the lung fluke of genus *Paragonomus* and intestinal fluke (Davis *et al.*, 1994; Ukong, *et al.*, 2007; Jayawardena *et al.*, 2010; Krailas *et al.*, 2011; Chontananarth *et al.*, 2017).

In Egypt, to the best of the present authors' knowledge, this species was collected for the first time in great numbers from River Nile at Qena province and because of its medical and veterinary importance; the present paper deals with its structure.

MATERIALS AND METHODS

The present study was carried out in the Faculty of Science at Qena, South Valley University, Upper Egypt. The snail under investigation was collected throughout a period of one year (January - December 2017). It was regularly collected in great numbers the whole year round from the Nile and certain freshwater courses such as Elkalabia drainage and irrigation canals in Qena province 26° 51' N / 32° 43' E, Upper Egypt. *Thiara* snails were most commonly found crawling on the bottom of small ponds or the slow running parts of the River Nile and its branches. Some specimens were also found embedded, either partially or completely in mud along the bank of freshwater courses. In nature, the snails were found in common association with one or more other molluscan genera such as *Physa*, *Bellamya*, *Melanoides*, *Lanistes*, *Bulinus*, *Neritina*, *Mutela*, *Cleopatra* sp. and rarely *Lymnaea*. Some physical factors were recorded at the collecting sites as pH where it ranged between: 6.75 to 7.8, dissolved oxygen ranged between: 5.5 to 7.6 ppm, conductivity ranged between: 0.22 to 0.98 mS, TDS ranged between: 150 to 890 mg / L.

Collected specimens were taken to the laboratory in separate containers with labels indicating the locality and date. The snails of *Thira* were sorted out, cleaned and reared in large plastic aquaria provided with dechlorinated tap water and some water plants as *Ceratophyllum demersum*. The snails were fed on fresh lettuce leaves which were added to the aquaria after the removal of excess food and feces during changing water at the end of the suitable intervals of four or seven days. The snails were observed daily and the dead specimens were removed. This technique was found to be adequate in avoiding water pollution, which may cause death of snails.

Full grown specimens used in this investigation for dissection, examination and drawings, ranged in length between 18.3-23.3 mm. in the average shell height, and 0.75-0.9 mm width. All measurements given in the following description comply to these sizes and were taken by an eyepiece micrometer. Drawings of the shell and the soft parts of the snails were done with the help of camera lucida. The terms "proximal" and "distal" used in this text designate the relative position of the part concerned with the head region of the snail, i.e. the proximal part is the nearest one to the latter region.

For dissection of the soft parts; the body whorls of the shell were carefully broken; the columellar muscle was dislodged and the soft parts were gently twisted out of the remaining nuclear whorls. It is worth mentioning that fresh *Thiara* specimens were more suitable for the dissection and examination of the soft parts than the preserved ones. This is because preservation in 70% alcohol or 10% formalin solutions makes the color of the soft parts pale and causes their rigidity.

Thira scabra belongs to genus: *Thira* (Roding, 1798); Family: Thiaridae; Superfamily: Cerithioidea; Order: Cerithiomorpha; Sub-class: Caenogastropoda; Class: Gastropoda; Phylum: Mollusca.

RESULTS AND DISCUSSION

Vernacular Etymology:

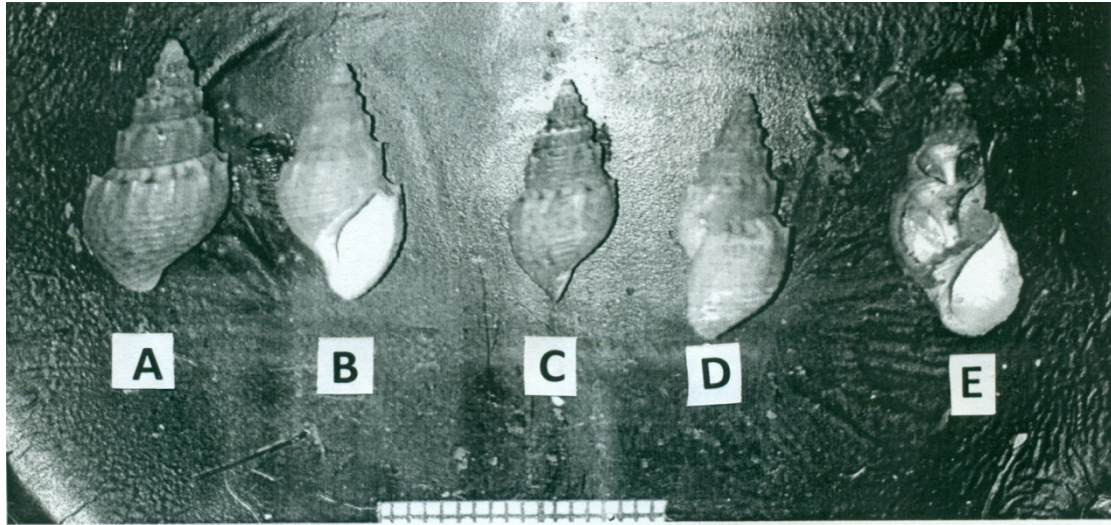
Thompson *et al.* (2009) stated that Reeve (1860 Pl 26 Fig. 182) mentioned that the vernacular name of the present species is taken from a name he proposed for a common form of this species. Tiara comes from the generic name Thiara, which is derived from Persian and before that classical Greek and means a tiara. *Thiara scabra* possesses a corona of spines on the shoulder of the whorls reminiscent of a tiara. Type Locality: India, *Thiara scabra* under investigation like other typical mollusks that consists of a shell and soft parts.

(A) - The Shell (Figures. 1 - 3)

The shell of the present species varies in size and form; it is pale brown in color with reddish-brown patches or spots arranged on the whole whorls. It is an elongated turreted shell, with high spire of 8½ whorls. It regularly increases in size and descends a step-like with distinct sutures. Whorls are often shouldered above and rounded below. Row of spines, sculptured with vertical ribs, bearing prominent spines directed obliquely outward are found at the beginning of each whorl. The surface is covered with rough spiral striations. On the body whorl near the umbilical region, a striation of strong ridge can be seen. The umbilicus is closed. The most proximal three spires are found to be eroded (Figure. 1).

Aperture is almost vertical and oval and pointed above and rounded below. The peristome is not continuous, the two ends are connected by a white callus against the penultimate whorl; the exterior margin is sinuous and projects forward with a round

curve in the middle, it recedes in the upper end and lower part, the basal margin is somewhat channeled (Figures. 1 & 2).



Scale bar 1.8 cm

Figure (1): A photograph of the shells of *Thiara scabra*.
A - Dorsal view B - Ventral view C & D - Lateral views E - Internal structure (collumella)

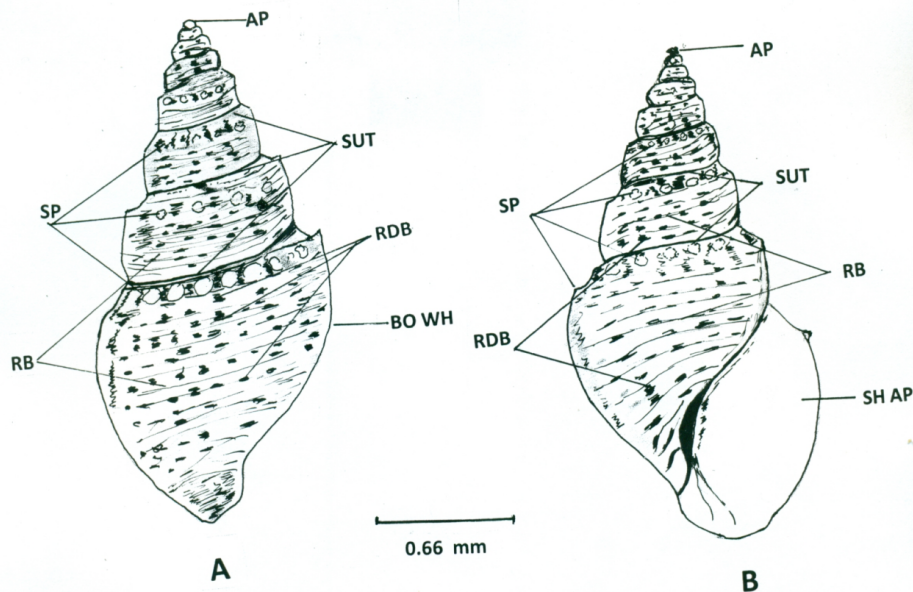


Fig. 2: A camera Lucida drawings of the same as in Figs. (1), A & B.
AP - apex, SUT - sutures, RDB , red brown patches, BO WH - body whorl, SP - Spires, RB - Ribs, SP- spines, SH AP - shell aperture.

Operculum is dark brown with horns of 4 mm- 4.2 mm. in the average long axis and 2.1 - 2.3 mm. in the broadest axis. Nucleus is eccentrically at the left lower corner, the growth lines fan out to the tip and to the side of operculum (Fig.3).

The present study has shown that the shell of *Thiara scabra* varies in its length of spines and the colors, which display a gradient of brown to dark brown.

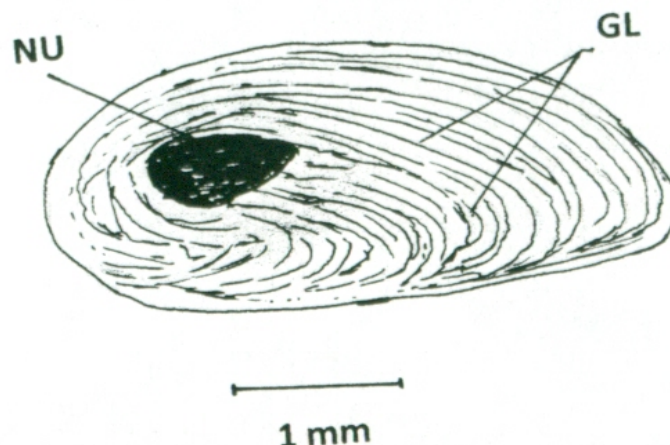


Fig. 3: A camera Lucida drawing of the upper surface of the operculum: Nu-nucleus, GL-growth lines.

The characters of the shell and its operculum coincide with those of genus *Thiara* (Roding, 1798) studied by Morrison (1954); Starmühlner (1974); Neubert (1998); Thompson *et al.* (2009) and Nasarat & Neubert (2014).

In addition to the shell characters of genus *Thiara*, the results agree with the findings of Starmühlner (1969) & (1974); Thompson *et al.* (2009) and Nasarat & Neubert (2014) in the number of whorls and the eroded apical whorls.

(B) - The soft parts (Figs. 4 & 5)

The soft parts of the investigated species shows the usual parts of the gastropod body, which includes the head, foot and the visceral mass. The head and foot of the active snail can be seen protruding out of the shell. The head is an elongated dorsally convex, oval mass lying anteriorly and dorsal to the foot, it is 2.1 and 0.5 mm in the long and short axis, respectively. During life, it may become prolonged anteriorly into a contractile, dorsoventrally compressed snout. The oral aperture takes the shape of a vertical slit and is situated at the anterior end of the snout. The head has a deep brownish basal color with minute yellow mottling scattered all over its dorsal side. A pair of moderately long triangular tentacles is carried dorsally on both sides of the head region. These are relatively thick at their basal ends and gradually taper toward their distal ends. They are brown in color with dark brownish transverse or longitudinal bands. Along the outer margin of the dorsal side of the basal broad part of each tentacle, there is a distinct black oval sessile eye.

The foot forms the greatest soft part that protrudes outside the shell of the fully expanded snail. It is a highly muscular organ which is more or less triangular in outline in the dorsal view, with a broad and convex anterior margin 1.0 mm in the average width. It gradually tapers toward its posterior end which measures 0.65 mm wide.

The visceral mass is spiral, bulky, coiled and cone-shaped. It is covered with a thin and almost transparent integument, or mantle wall, which is supplied with dark green pigments. Through this pigmented mantle, most of the internal organs can be seen by the naked eye (Fig. 4).

Mature and immature males were not seen in the present study. In mature female specimens, the dorsal and right aspect of the first and second whorls of the visceral mass have a brown color due to the presence of a digestive gland which can be easily seen beneath the mantle wall (Figs. 4 & 5).

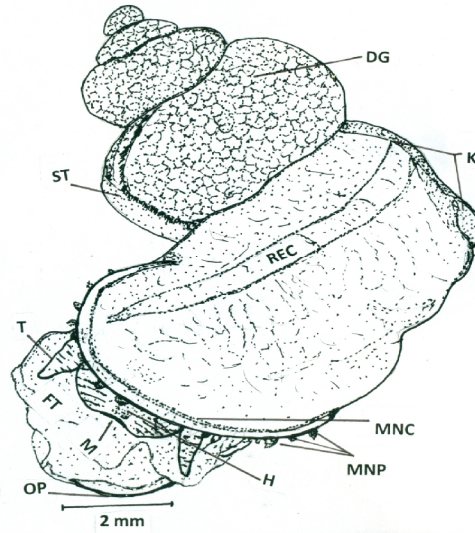


Fig. 4: A camera Lucida drawing of the dorsal aspect of the soft part of an adult specimen. DG - digestive gland, K - kidney, MNC - mantle collar, MNP - mantle collar papillae, H - head, M - mouth, FT - foot, OP - operculum, T - tentacle, REC - rectum, ST - stomach

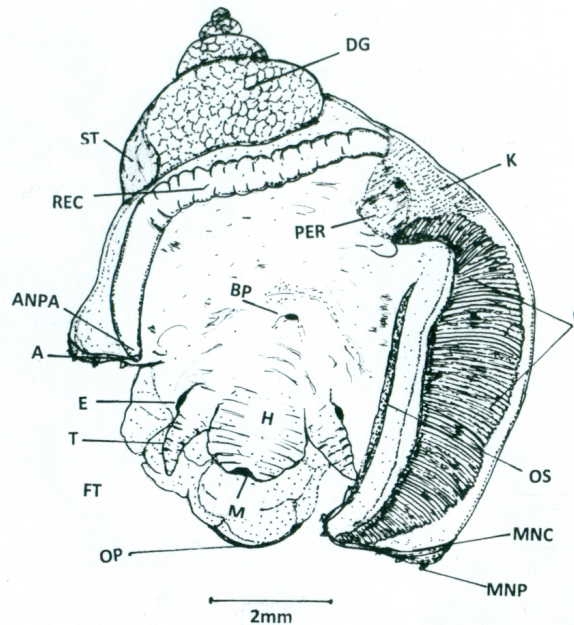


Fig. 5: A camera Lucida drawing of the dorsal aspect of the soft part of an adult specimen with the roof of the pallial cavity cut and opened to expose the pallial organs. DG - digestive gland, K - kidney, MNC - mantle collar, MNP - mantle collar papillae, H - head, M - mouth, FT - foot, OP - operculum, T - tentacle, REC - rectum, AN PA - anal papilla, A - Anus, ST - stomach, PER - Pericardium, E - eye.

The kidney appears under the dissecting binocular microscope as a flattened quadrate creamish- white organ on the left dorsal side of the penultimate whorl of the visceral mass (Fig. 5).

When making an oblique longitudinal incision in the roof of the mantle cavity, which then shows a side of the mantle flap, the mantle cavity and its pallial organs are exposed. These organs consist of the ctenidium, osphradium and rectum (Fig. 5).

The mantle is probably the most specialized organ of the whole gastropod. In the present species, its anterior edge possesses a series of large projecting papillae, the farthest to the left being the largest, whereas the right ones are smaller (Figs. 4 & 5).

The ctenidium of the present species is elongated, being about 5 mm. long and it is monopectinate. The ctenidial axis is attached to the inner surface of the roof of the pallial cavity in an oblique manner starting from a point at the posterior left side and ending at a point on its anterior right one. The ctenidial axis is attached to 90 - 100 thin and roughly triangular leaflets. They attain the maximal width and length at the median region of the ctenidial axis and their dimension decreases gradually towards its two terminal ends, (Fig. 5).

The osphradium is projected along the inner surface of the mantle as an elongated finger - like structure of about 2.5 mm long. It runs more or less parallel to the left margin of the ctenidial axis and it ends anteriorly at a point of about 1.3 mm behind the mantle collar (Fig. 5).

The rectum exists as an oblique dark grey cylindrical duct and closes the right margin of the ctenidial axis. It is attached to the inner surface of the mantle and leads into the anal papilla, which opens into the mantle cavity at a point a little behind the right side of the mantle collar.

On comparing the characteristic features of the soft part of pallial organs of the present species with those of genus *Thiara* described by Rirch (1937); Abbot (1948); Brandt (1974); Stamuhlner (1974, 1976 & 1984), the results revealed that the pallial organs are in the same position described by the above mentioned authors.

ACKNOWLEDGMENT

The authors wish to present their deepest thanks to Prof. Dr. Eike Neubert, Naturhistorisches Museum, Bern, Schweiz, for identifying and assisting in the search of the literatures of the present investigated snail and for the references he provided.

REFERENCES

- Abbot, R. T.** (1948). Hand book of medically important mollusca of orient and western- pacific. Bull. Mus. Comp. Zool. Harvard, 100(3): 245.
- Abdel - Gawad, S. S. and Mola, H. R. A.** (2014). Macrobenthic invertebrates in the main channel of Lake Nasser, Egypt. Egypt. J. Aqu. Res., 40: 405 - 414.
- Abd El-wakeil, K. H., Obuid-Allah, A. H., Mohamed, A. H, and Abd El-aziz, F. E.** (2013). Community structure of molluscs in River Nile and its branches in Assiut Governorate, Egypt. Aquatic Research, 39: 193 - 198.
- Bentham - Jutting, W. S. S. van, (1956).** Critical revision of the Javanese freshwater gastropods. Treubia, 23 (2): 259 - 477.
- Brandt, R. A. M. (1968).** Description of new non-marine mollusks from Asia. Arch. Moll., 98 (5/6): 312- 290.

- Brandt, R. A. M. (1974).** The non - marine aquatics mollusca of Thailand. Archiv fur Molluskenkunde, 105: 1- 423
- Brown, D. (2005).** Freshwater snails of Africa and their medical importance. Taylor & Francis publishers.
- Burch, J.B. (1980).** A guide to the freshwater snails of the Philippines. Malacological Review, 13(1-2): 121 - 143.
- Budha, P. B. (2012).** *Plotia scabra*. The IUCN red list of the threatened species Version 2014.3.
- Chontanarith, T., Thanawan. T., Napat, W., and Cherdachay, C. (2017).** Morphological characteristics and phylogenetic trends of Trematode cercaria in freshwater snails from Thailand. Korean J. parasitol. 55(1): 47 - 54.
- Damme, D. van (1984).** The freshwater mollusca of northern Africa, Distribution, biogeography and palaeoecology. Dr. W. Junk publishers.
- Davis, GM, Chen, C. E.; Kang ZB and Liu, yy (1994).** Snail hosts of Paragonomus in Asia and the America. Biomed Environ. Sci., 7(4): 369 - 382.
- Dung, B. T., Madsen, H. and The, D. T. (2010).** Distribution of the freshwater snails in family - based VAC ponds and associated waterbodies with special reference to intermediate hosts of fish - borne zoonotic trematodes in Nam Dinh province, Vietnam. Acta Tropica, 116(1): 15 - 23.
- Choubisa, S. L. and Sheikh, Z. (2013).** Freshwater snail (mollusca - gastropoda) as bio-indicator for diverse ecological aquatic habitats. Cibtech J. Zool., 3(3): 21- 25.
- Davis, G. M. and Yamaguchi, S., (1969).** The freshwater gastropoda of Okinawa. Venus, 28(3): 137 - 152.
- GBIF, (2014).** Global biodiversity information facility free and open access to biodiversity data.
- Glaubrecht, M.; Brinkmann, N. and Poppe, J. (2009).** Diversity and disparity "down under" systematics, biogeography and reproductive modes of the "marsupial" freshwater Thiaridae in Australia. Zoosystematics and evolution, 85 (2): 199 - 275.
- Gloer, P. and Pesic, V (2012).** The freshwater snails (gastropoda) of Iran, with description of two new genera and eight new species. Zookeys, 219: 11 - 61.
- Hussein, M. A., Obuid-Allah, A. H.; Mahmoud, A. A. and Fangary, H. M. (2011).** Population dynamics of freshwater snail (Mollusca: Gastropoda) at Qena Governorate, Upper Egypt. Egypt. Acad. J. Biology. Sci., 3(1): 11 - 22.
- Ibrahim, M. I. M.; Shalaby, I. M. I. and Salem, M. A. M. (2006).** Freshwater snails and larval trematode communities in Al-Salam irrigation canal. Egypt. J. Zoology, 47: 65 - 81.
- Jayawardena, U. A.; Rupika, S. R. and Priyanie, H. A. (2010).** Cercariae of the trematodes in freshwater snails in three climatic zones in Sri Lanka. Cey. J. Sci. (Bio. Sci.), 39 (2): 95 - 108.
- Krailas, D.; Suluck, N. and Rattanathai, P. (2011).** Human intestinal flukes *Haplorchris taichui* and *Haplorchris pumilio* , in their intermediate host, freshwater snails of the families Thiaridae and Pachychilidae, in southern Thailand. Zoosyst. Evol., 87(2): 349 - 360.
- Lotfy, W. M. and Lotfy L. M. (2015).** Synopsis of the Egyptian freshwater snail fauna. Folia Malacologica 23(1): 19 - 40.
- Mendis, A. S. and Fernando, C. H. (1962).** A Guide to the freshwater fauna of Ceylon. Bull. Fish. Res. Stn. Ceylon, Colombo, 12: Mollusca: 51.

- Morrison, J. P. E. (1954).** The relationship of old and new world melanians. Proc. U. S. Mus., 103(3325): 357- 394.
- Nasarat, H.; Amr, Z. and Neubert, E. (2014).** Two invasive freshwater snails new to Jordan (Mollusca: gastropoda. Zoology in the Middle East 60(1): 46 - 49.
- Nesemann, H.; Sharma, S.; Sharma, G.; Khanal, S. N.; Pradhan, B.; Shah, D. N. and Tachamo, R. D. (2007).** Aquatic invertebrates of the Ganga river system. 1 - Molluca, Annelida, Crustacea. Chandi press, Kathmando, 263 pp.
- Neubert, E. (1998).** Annotated checklist of the terrestrial and freshwater mollusca of the Arabian peninsula with a description of new species. Fauna of Arabia, 17: 333 - 461.
- Pace, G. L. (1973).** The freshwater snails of Taiwan (Formosa). Malacological Review, supplement 1: 118.
- Riech, E. (1937).** Systematische, anatomische, ökologische und tiergeographische untersuchungen übersussawasser mollusken Papasiens und Melanesiens. Arch. Naturg (N.S.), 6: 35 - 153.
- Starmuhlner, F. (1969).** Die Gastropoden der madagassischen Binnengewasser. Malacolo, 8(12): 434 -569 figs.
- Starmuhlner, F. (1974).** Results of the Austerian - Ceylonese hydrobiological mission 1970 of the 1st Zoological institute University of Vienna (Austria) and the department of Zoology of the University of Ceylon, Part IV: The freshwater gastropods of Ceylon. Bull. Fish. Res. Stn. Seri Lanka (Ceylon), 25(1& 2): 97 - 181.
- Starmuhlner, F. (1976).** Beitrage zur kenntnis der süsswasser- gastropoden pazifischer Inseln. Ann. Naturhistorischen mus. Wien, 80: 473- 656.
- Starmuhlner, F. (1982).** Occurrence, distribution and geographical rang of the freshwater gastropods of the Andaman Islands. Malcologia, 22 (1 - 2): 455 pp
- Starmuhlner, F. (1983).** Results of the hydrobiological mission1974 of the Zoological institute university of Vienna (Austria) part VIII. Ann Naturhistosch. Mus. Wien, 84 B: 127 - 249.
- Starmuhlner, F. (1984).** Results of the Austerian - Indian hydrobiological mission 1976 to the Andaman Island. Ann Naturhistosch. Mus. Wien, 86 (B): 145 - 204.
- Subba-Rao, N. V. (1989).** Freshwater molluscs of India. Zoological Survey of India, Calcutta, 298 pp.
- Thompson, G.T; Heyn, W. M. and Campbell, D. N. (2009).** *Thiara Scabra* (O. F. Muller, 1774). The introduction of another Asian freshwater snail into the United States. The nautilus, 123(1): 21 - 22.
- Ukong, S.; Krailas, D.; Dangprasert, T. and Channgarm, P. (2007).** Studies on the morphology of cercariae obtained from freshwater snails at Erwan waterfall, Erwan national park, Thailand. Southeast Asian J. Trop. Med. Public Health, 38 (2): 302-312.

ARABIC SUMMARY

تسجيل جديد لقوقع المياه العذبة *Thiara scabra* (مولر 1774) العائل الوسيط لديدان الرنة (*Paragonomus*) والأمعاء (*Haplorchris*) في محافظة قنا ، مصر

أحمد سيد مصطفى - الامير حسين محمد حسين

قسم علم الحيوان - كلية العلوم - جامعة جنوب الوادي - قنا 83523 - مصر

في هذا البحث تم تسجيل قوقع المياه العذبة *Thiara scabra* لأول مرة في مصر حيث جمع من مياه نهر النيل وأفرعه المختلفة بمحافظة قنا، مصر. وأظهرت صدفة هذا القوقع تفاوتاً من حيث الحجم والشكل من اللون البني الباهت والذي تميزه بقع حمراء اللون على جميع لفات الصدفة والتي تتميز بتدرج لقاتها وتزداد في حجمها بشكل منتظم كدرجات السلم ويبلغ متوسط عدد لقاتها ٨.٥ لفة يمينية الالتفاف كما تتميز لفات هذه الصدفة بفواصل واضحة ويوجد طوق من الأشواك الجبرية يميز نهاية كل لفة من لفات هذه الصدفة ومتجهه بميل إلى الخارج وسطح لفات الصدفة يظهر خطوط متعرجة وخشنة ، هذه الخطوط تظهر بشكل واضح قرب منطقة السرة التي تكون مغلقة في هذا النوع. كما ظهرت أعلى ثلاث لفات متآكلة وفتحة الصدفة عمودية وبيضاوية الشكل مدققة من الناحية العليا ودائرية من الناحية السفلي وتجويها غير متصل وترتبط نهايتها بالعويميد في عكس اتجاه اللفة الرئيسية والحافة الخارجية لها تبرز للأمام بشكل دائري في المنتصف وتنحسر في الناحية العلوية والسفلية كما تتميز الحافة القاعدية بأنها قنوية إلى حد ما. الغطاء كيتيني بني غامق والنواة غير مركزية وتقع في الركن الأيسر من الناحية السفلية وخطوط النمو في الغطاء تتحد إلى أعلى وإلى الجوانب. والأجزاء الرخوة لهذا القوقع تشبه مثيلاتها في أجسام بطنيات القدم والتي تتكون من منطقة الرأس قدم والكتلة الحشوية ويمكن رؤية الرأس والقدم في العينات الحية بارزة من الصدفة ، وتوزيع الأجهزة المختلفة تشبه مثيلاتها في الشكل والتركيب للثياريدي.