

THE ARCHAEO+MALACOLOGY GROUP NEWSLETTER

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Current and previous issues of the *Archaeo+Malacology Group Newsletter* are available at <http://triton.anu.edu.au/> and <http://home.earthlink.net/~aydinslibrary/AMGnews.htm>, with thanks to Kat Szabo of the ICAZ Archaeomalacology Working Group and to Aydın Örstan, respectively. The Coordinator would also like to thank all past and present contributors to the *AMG Newsletter*, and to encourage everyone to submit short articles, abstracts of publications, book reviews, research news, conference reports, etc., for the next (**copy date mid-June 2011**) and future issues. For the purposes of this newsletter, archaeomalacology is interpreted in its widest sense: the interaction of man and molluscs from earliest times to the recent past; palaeoenvironmental reconstruction; studies on diet, ancient trade routes, ornaments and jewellery, ritual and symbolism – the choice is yours! Please share your interests and research projects with the greater archaeomalacological community. All items and correspondence should be sent as Word documents to JRS at the email address above.

Contents

Records of <i>Papillifera papillaris</i> in continental Spain.	1
<i>Papillifera papillaris</i> : a second colony is discovered in England.	4
Snails from the ‘Cloaca Maxima’ of Caesarea, Israel.	6
Land and freshwater molluscs from Yavneh-Yam, Israel.	8
Shells from Byzantine and Early Islamic Bat Galim, Israel	11
Ancient metal ‘weights’ in the form of bivalve shells.	13
Abstracts	14
Palaeobiodiversity mapping.	17
Conferences	17

Records of *Papillifera papillaris affinis* in continental Spain and their connection with walls and ruins from the Roman period

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The terrestrial snail *Papillifera papillaris* (Müller, 1774), Fam. Clausiliidae, is restricted in its natural distribution to Italy, Sicily and Malta. However, this species was introduced unintentionally during the Hellenistic and Roman periods to coastal towns around almost all of the Mediterranean.

The ribbed Sicilian subspecies, *Papillifera papillaris affinis* (Philippi, 1836), has been recorded as an allochthonous element not only from North Africa (Mienis and Gümüş, 2009)

but also from the south of France (Falkner *et al.*, 2002). In addition, Mienis and Gümüş (2007) mentioned several localities in Spain based on material in the collection of the Hebrew University of Jerusalem. Almost simultaneously, Beckmann (2007) presented data concerning the presence of *Papillifera papillaris affinis* on Mallorca and Minorca, where this subspecies seems to occur quite commonly.

In this report we are dealing only with the presence of *Papillifera papillaris affinis* in continental Spain. The presented data are based on the literature available to us and on samples preserved in the National Mollusc Collection of the Hebrew University of Jerusalem (HUJ) and the Mollusc Collection of the Zoological Museum of Amsterdam (ZMA).

Systematic data: *Papillifera papillaris affinis* (Philippi, 1836)

- Clausilia papillaris*: Graells, 1846: 8.
Clausilia bidens var. *virgata*: Bofill, 1879: 154 (=23).
Clausilia virgata: Servain, 1880: 122.
Clausilia bidens: Kobelt, 1882: 75.
Clausilia catalonica: Fagot, 1884: 184.
Clausilia cathalonica: de Chia, 1887: 12.
Clausilia bidens var.: Bofill, 1888: 60.
Clausilia catalonica: Paetel, 1889: 320.
Clausilia catalonica: Westerlund, 1890: 70.
Clausilia catalonica: Fagot, 1892: 105.
Clausilia (Papillifera) virgata var. *barcinensis*: Westerlund, 1893: 129.
Clausilia catalonica: Westerlund, 1901: 138.
Clausilia catalonica forma *barcinensis*: Westerlund, 1901: 138.
Clausilia catalonica: Couturier, 1903: 53.
Clausilia (Euclista) bidens: Bofill i Poch, 1917: 545.
Clausilia (Papillifera) bidens: Bofill i Poch, 1919: 218.
Clausilia (Papillifera) bidens: Bofill and Haas, 1920: 763 (=387).
Papillifera catalonica: Coen, 1945: 41.
Papillifera bidens: Vilella, 1967: 19.
Papillifera papillaris: Bech, 1990.
Papillifera bidens bidens: Vilella Tejedo *et al.*, 2003: 5, 14, 27.
Papillifera bidens affinis: Mienis and Gümüş, 2007: 5.

Locality data: Catalonia

- Catalonia region: Catalonia (Vilella Tejedo *et al.*, 2003: 14); Alta Catalunya (=Upper Catalonia) (Graells, 1846: 8).
Barcelona province: Barcelona, leg. Martorell y Peña (ZMA/6, ex-coll. Heukelom); idem, leg. J. Civia (ZMA/4, ex-coll. J.G.J. Kuiper); idem (Bofill, 1888: 60; Paetel, 1889: 320; Haas, 1929: 329; Coen, 1945: 41; Bech, 1990); idem, walls of the Old Citadel (Bofill, 1879: 23; Servain, 1880: 122; Kobelt, 1882: 75; Fagot, 1884: 184; de Chia, 1887: 12; Westerlund, 1890: 70; Westerlund, 1893: 129; Westerlund, 1901: 138; Couturier, 1903: 53; Bofill and Haas, 1920: 763; Mienis and Gümüş, 2007: 5); idem, ex. del Prete (HUJ 50985/1); idem, castle of Montjuich (Bofill and Haas, 1920: 763); idem, castle of Gelida, leg. I. de Sagarra, October 1918 (Bofill i Poch, 1919: 218; Bofill and Haas, 1920: 763); mountain ridge of Las Ermitas, Sta. Coloma de Gramanent, March 1963 (Vilella, 1967: 19).
Tarragona province: Tarragona, ex. Kobelt (ZMA/2, ex-coll. Schepman); idem, ex. Champ (HUJ 50984/6, ex-coll. Blok 3109A); idem, leg. J. Ruttlant, 2 August 1945 (ZMA/6, ex-coll. J.G.J. Kuiper); idem, leg. C. Altimira, April 1957 (ZMA/7); idem (Haas, 1929: 329; Bech, 1990; Mienis and Gümüş, 2007: 5); idem, on the gigantic walls, leg. A. Bofill, 19 March 1917 and 9 April 1917 (Bofill i Poch, 1917: 545); Vendrell (Bofill, 1888: 60).

Lérida province: Lleida (Lérida), leg. P. Jansen, April 1934 (ZMA/4).

Remarks

Graells (1846: 8) was the first to mention the presence of *Papillifera papillaris* s.l. in continental Spain: Upper Catalonia, but he did not mention a more specific locality. We know now that *Papillifera papillaris affinis* has been recorded from at least four different towns in Catalonia: several different localities in and around Barcelona in Barcelona province, Lleida (or Lérida) in Lérida province, and Tarragona and Vendrell in Tarragona province. Lleida (Lérida) is here recorded for the first time as a locality for this introduced species.

No recent records are known to us from Tarragona, Vendrell or Lleida, and Menez (2007) did not find this exotic clausiliid in Barcelona in spite of the fact that Vilella (1967) collected this species and found it abundant in the Barcelona area in March 1963.

Most of the *Papillifera* specimens from Barcelona, Tarragona and Lleida were found on old walls or ruins of buildings dating to the Roman period. In spite of the fact that similar Roman remains are present elsewhere, in numerous other parts of the country, Catalonia is the only region where populations of *Papillifera papillaris affinis* have been found in continental Spain (see also Menez, 2007).

Acknowledgement

We would like to thank our colleague Robert G. Moolenbeek for giving one of us (HKM) the opportunity to study the samples of the *Papillifera papillaris* complex in the Mollusc Collection of the Zoological Museum of Amsterdam.

References

- Bech, M., 1990.** Fauna malacologica de Catalunya. Molluscs terrestres i d'aigua dolça. *Treballs de la Institució Catalana d'Història Natural, Barcelona*, 12: 1-229.
- Beckmann, K.-H., 2007.** *Die Land- und Süßwassermollusken der Balearischen Inseln*. 255 pp. Hackenheim, ConchBooks.
- Bofill, A., 1879.** Catálogo de los moluscos testáceos terrestres del Llano de Barcelona. *Publicaciones de la Crónica Científica*, 3: 1-24 (reprint pagination).
- Bofill, A., 1888.** *Catálogo de la colección conchiológica que fué de D. Francisco Martorell y Peña legada por dicho señor á la Ciudad de Barcelona y existente en el Museo Martorell de la propia ciudad*. 94 pp. Barcelona, N. Ramíres y Ca.
- Bofill i Poch, A., 1917.** Moluscos ingressats en el museu desde el mes de juny de 1916. *Anuario de la Junta de Ciències Naturals de Barcelona*, 2: 533-549 (reprint edition 3-19).
- Bofill i Poch, A., 1919.** Report dels treballs efectuats en la secció malacològica des de 1.er de juliol de 1917, fins a 31 de desembre de 1918. *Anuario de la Junta de Ciències Naturals de Barcelona*, 3: 199-224 (reprint edition 1-26).
- Bofill, A. and Haas, F., 1920.** Estudi sobre la malacologia de les Valls Pirenaiques i Conca del Llobregat. *Treballs del Museu de Ciències Naturals de Barcelona*, 3: 381-831, Plts. 1-4 (reprint edition 455 pp.).
- Coen, G.S., 1945.** Catalogo dei gasteropodi pulmonati della collezione Coen. *Pontificiae Academiae Scientiarum Scripta Varia*, 3: 1-99.
- Couturier, M., 1903.** Catalogue des coquilles paléarctiques de la collection Hagenmüller. *Annales du Musée de Marseille*, 8: 19-67.
- de Chia, M., 1887.** *Nota de los moluscos terrestres y de agua dulce de los alrededores de Barcelona*. 14 pp. Gerona, Imprenta y Librería de Paciano Torres.
- Fagot, P., 1884.** Contribution à la faune malacologique de la Catalogne. *Annales de Malacologie*, 2: 169-194.
- Fagot, P., 1892.** Histoire malacologique des Pyrénées françaises et espagnoles. *Bulletin Société de Ramond*, 26: 1-156. Bagnères-de-Bigorre.
- Falkner, G., Ripken, Th.E.J. and Falkner, M., 2002.** Mollusques continentaux de France. Liste de référence annotée et bibliographie. *Patrimoines naturels*, 52: 350 pp.
- Graells, M.P., 1846.** *Catálogo de los moluscos terrestres y de agua dulce observados en España, y descripción y notas de algunas especies nuevas o poco conocidas del mismo país*. 3+23+1+1 pp., 1 plt. Madrid, Librería de los Señores Viuda é Hijos de Don Antonio Calleja, and Lima, Casa de los Señores Calleja, Ojea y Compañía.

- Haas, F., 1929.** Fauna malacológica terrestre y de agua dulce de Cataluña. *Trabajos del Museo de Ciencias Naturales de Barcelona*, 13: 1-491.
- Kobelt, W., 1882.** Excursionen in Spanien. *Jahrbuch der Deutschen Malakologischen Gesellschaft*, 9: 73-90, 143-170.
- Menez, A., 2007.** *Papillifera papillaris* (Müller, 1774) in Gibraltar. *Mollusc World*, No. 13: 6-7, 9.
- Mienis, H.K. and Gümüş, B.A., 2007.** More notes on the extra-territorial distribution of *Papillifera papillaris*, a species often associated with archaeological sites. *Archaeo+Malacology Group Newsletter*, No. 11: 4-7.
- Mienis, H.K. and Gümüş, B.A., 2009.** Records of the *Papillifera bidens*-complex from ancient sites on North Africa (Mollusca, Gastropoda, Clausiliidae). *Archaeo+Malacology Group Newsletter*, No. 15: 3-6.
- Paetel, F., 1889.** *Catalog der Conchylien-Sammlung*, 2: 12 + 505 pp. Berlin, Gebrüder Paetel.
- Servain, G., 1880.** *Étude sur les mollusques recueillis en Espagne et en Portugal*. 176 pp. Saint Germain.
- Vilella, M., 1967.** Notas malacológicas. *Miscelánea Zoológica*, 2 (2): 17-21.
- Vilella Tejedo, M., Tarruella Ruestes, A., Corbella Alonso, J., Prats Pi, L., Alba, D.M., Guillén Mestre, G. and Quintana Cardona, J., 2003.** Llista actualitzada dels molluscos continentals de Catalunya. *Spira*, 1 (3): 1-29.
- Westerlund, C.A., 1890.** *Fauna in der palaearktischen Region lebenden Binnen-Conchylien*. Supplement 1, 168 pp. Berlin, Friedländer.
- Westerlund, C.A., 1893.** *Spicelegium malacologicum*. Neue Binnen-Conchylien aus der Paläarktischen Region, IV. *Nachrichtsblatt der Deutschen Malakozoologischen Gesellschaft*, 25: 116-132.
- Westerlund, C.A., 1901.** Synopsis molluscorum in regione palaeartica viventium ex typo *Clausilia* Drap. *Mémoires de l'Académie Impériale des Sciences de St.-Pétersbourg*, VIII, Vol. XI (11 & final): 37 + 203 pp.
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***Papillifera papillaris*: a second colony is discovered in England**

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The discovery of a thriving colony of *Papillifera papillaris* (Müller, 1774) at Cliveden House near Maidenhead, England, in 2004 (Ridout-Sharpe, 2005, 2007) has led to a flurry of articles on the anthropogenic dispersal of this clausiliid snail from its homeland in peninsular Italy and some adjacent islands to many places around the Mediterranean from antiquity onwards (Gümüş, 2006; Gümüş and Mienis, 2009, 2010, 2010a [this newsletter]; Menez, 2007; Mienis and Gümüş, 2007, 2009; Örstan, 2006; Ridout-Sharpe, 2008). It has now been reported from (clockwise from Italy) Croatia, Montenegro, Albania, Greece, Turkey, Libya, Tunisia, Algeria, Morocco, Gibraltar, Spain (Catalonia, Balearics) and the south coast of France. The presence of *Papillifera papillaris* in England represents an outpost some 600 miles/966 km distant from this circum-Mediterranean distribution, with (as yet) no known localities between southern England and the south of France.

The Cliveden record was at first considered to be unique in the UK. Then Dance (2008) drew attention to a hand-coloured engraving which appears to represent *Papillifera papillaris*, with its distinctive crenulated suture, in 'A descriptive catalogue of the British Testacea' by W.G. Maton and T. Rackett, published in the *Transactions of the Linnean Society of London* in 1807. The accompanying text identifies this shell as *Turbo bidens* Linnaeus, by which name *Papillifera papillaris* was then known, mistakenly as it turns out (Kadolsky, 2009). The engraving shows a specimen from the collection of Richard Pulteney (1730-1801) which was then housed by the Linnean Society of London but which unfortunately is now lost. Pulteney described the shell as 'a Dorsetshire shell', although the authors of the 1807 catalogue considered that he was mistaken and that 'the species is not of British growth, since, notwithstanding a most diligent search, we have been unable to procure it'. Then in August 2010, the UK National Trust issued a press release announcing the presence of *Papillifera papillaris* on Brownsea Island, Dorset.

Brownsea Island in Poole Harbour, near Bournemouth, is approximately 1.4 miles/2.25 km long and 0.6 miles/0.97 km wide with a surface area of some 500 acres/202.35 ha. It is approachable only by boat, being about 0.3 miles/0.5 km from the nearest spit of mainland, and supports coniferous and deciduous woodland, heathland and saltmarsh habitats. Owned by the National Trust, and as one of the very few locations where red squirrels (*Sciurus vulgaris*) are still to be found in the wild in the UK, the island is managed as a nature reserve and the northern half is leased to the Dorset Wildlife Trust. The south-east corner of the island is occupied by 'Brownsea Castle' which has undergone several incarnations, first as a Tudor fortress built in 1545 and most recently as a large Victorian mansion built in the 1890s which is currently leased to a retail company as a staff hotel. The walled gardens of the 'Castle' support a large population of *Papillifera papillaris* which has spread to the outside face of the enclosing brick wall and to the brick facade of a house on the opposite side of the lane that runs alongside the wall from the quay. It appears to occur nowhere else on the island, despite quite an intensive search.

The timing of the National Trust press release is odd, since it turned out that the snail had first been noticed on Brownsea Island 17 years previously. Specimens were sent to Michael Kerney at the Natural History Museum in London in 1993. He identified them as *Papillifera papillaris* (and suggested that the colony might be a short-lived phenomenon) – but the finding was not published and so the first official record of this species in the UK remains that of the colony at Cliveden House, even though there is evidence to suggest that the Brownsea Island colony has been in existence for longer than the Cliveden one.

At Cliveden, the snails are still largely confined to the Borghese Balustrade and it is assumed that this colony was introduced when the balustrade was imported from Rome in 1896. But how and when did the snails get to Brownsea Island? Menez (2007) suggested that the colony in the Garrison Library gardens on Gibraltar may have been introduced on garden ornaments in the late 18th and/or 19th centuries. At this time, Italianate gardens were fashionable throughout Western Europe and great quantities of marble statuary and ornaments were imported during this period to satisfy the demand. The archives of Brownsea Castle tell us that at least three of its owners established Italianate gardens. The first was Sir Humphrey Sturt who inherited Brownsea Island in 1765 and set about rebuilding the castle on a grand scale. He is said to have spent over £50,000, a prince's ransom in those days, just on establishing the ornamental gardens. The Hon. George Cavendish-Bentinck owned the island between 1873 and 1891, when he is reported to have filled Brownsea Castle with a spectacular array of Italian Renaissance sculpture. Finally, Charles and Florence van Raalte bought the island in 1901 and soon afterwards laid out a formal Italianate garden in the grounds of Brownsea Castle (National Trust, 2006).

Not all of Brownsea Castle's owners led charmed lives and nearly all of the Italian statuary was auctioned off in 1857 and again in the 1920s to pay off debts. Today very little remains of the Italianate splendour of the past – except for *Papillifera papillaris*. This species may have limited powers of dispersal but it has apparently been on Brownsea Island for long enough to colonise the whole of the walled garden area. Richard Pulteney may have collected his 'Dorsetshire shell' from Sir Humphrey Sturt's garden in the 18th century. If this is true, then the Brownsea Island colony was established nearly 250 years ago, making it more than twice as old as the colony at Cliveden House.

These examples show that colonies of *Papillifera papillaris* can survive for very many years before they are officially recorded, and it seems likely that further colonies remain to be discovered in Britain – and elsewhere in Europe. Did the sale of garden ornaments from Brownsea Castle result in this species being transported to new localities? Dance (2008)

refers to possible records of its occurrence on the outskirts of Edinburgh at the beginning of the 19th century, where it almost certainly does not survive today. The National Trust has now launched a nation-wide survey of *Papillifera papillaris*, inviting the public to submit photographs of candidate snails for identification – but none had been confirmed at the time of writing.

Mienis and Gümüş (2009, 2010a) refer to a Sicilian subspecies with a ribbed shell, *Papillifera papillaris affinis*, which is mainly distributed in the Western Mediterranean, whereas the relatively smooth-shelled form tends to occur in the Eastern Mediterranean. The shells from Cliveden House and Brownsea Island appear relatively smooth and closely match specimens that the author collected near Rome in 1981, close to the original site of the Borghese Balustrade that was later imported to Cliveden.

References

- Dance, S.P., 2008.** Early British records of *Papillifera papillaris* (Müller, 1774). *Mollusc World*, No. 16: 20-21.
- Gümüş, B.A., 2006.** Additional data on the distribution of *Papillifera papillaris* (O.F. Müller, 1774) (Gastropoda: Pulmonata: Stylommatophora: Clausiliidae) in Istanbul, Turkey. *Archaeo+Malacology Group Newsletter*, No. 10: 4-6.
- Gümüş, B.A. and Mienis, H.K., 2009.** The *Papillifera bidens*-complex along the coast of the eastern Adriatic Sea. *Archaeo+Malacology Group Newsletter*, No. 16: 3-7.
- Gümüş, B.A. and Mienis, H.K., 2010.** Supplementary information concerning the presence of *Papillifera papillaris* along the coast of the eastern Adriatic Sea. *Archaeo+Malacology Group Newsletter*, No. 17: 5-7.
- Gümüş, B.A. and Mienis, H.K., 2010a.** Records of *Papillifera papillaris affinis* in continental Spain and their connection with walls and ruins from the Roman period. *Archaeo+Malacology Group Newsletter*, No. 18: 1-3.
- Kadolsky, D., 2009.** *Turbo bidens* Linnaeus 1758 (Gastropoda: Clausiliidae) misidentified for 250 years. *Journal of Conchology*, 40 (1): 19-30.
- Menez, A., 2007.** *Papillifera papillaris* (Müller, 1774) in Gibraltar. *Mollusc World*, No. 13: 6-7, 9.
- Mienis, H.K. and Gümüş, B.A., 2007.** More notes on the extra-territorial distribution of *Papillifera papillaris*, a species often associated with archaeological sites. *Archaeo+Malacology Group Newsletter*, No. 11: 4-7.
- Mienis, H.K. and Gümüş, B.A., 2009.** Records of the *Papillifera bidens*-complex from ancient sites in North Africa (Mollusca, Gastropoda, Clausiliidae). *Archaeo+Malacology Group Newsletter*, No. 15: 3-6.
- National Trust, 2006.** *An illustrated souvenir: Brownsea Island, Dorset.* (Revd edn.) Swindon, National Trust. 32 pp.
- Örstan, A., 2006.** The clausiliid snail *Papillifera papillaris* in Istanbul, Turkey. *Archaeo+Malacology Group Newsletter*, No. 9: 6-7.
- Ridout-Sharpe, J., 2005.** *Papillifera papillaris* (Gastropoda: Clausiliidae): a new record for Britain. *Archaeo+Malacology Group Newsletter*, No. 7: 6-7.
- Ridout-Sharpe, J., 2007.** *Papillifera papillaris* (Müller, 1774) in Britain: a giant leap for a small snail. *Mollusc World*, No. 14: 12-14.
- Ridout-Sharpe, J., 2008.** *Papillifera* at Carthage. *Archaeo+Malacology Group Newsletter*, No. 14: 7.

Snails from the ‘Cloaca Maxima’ of Caesarea, Israel

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The original Cloaca Maxima was one of the drainage ditches first constructed in Rome during the reign of Tarquinius Superbus sometime in the 6th century BC. Originally this and other canals served as drains for the forum and neighbouring valleys. Rome was situated in a rather swampy area and suffered from flooding after heavy rain. These channels carried the excess water to the river Tiber. Only at a much later stage did these drainage ditches come to serve as enormous sewers, carrying away the growing quantity of waste products of the constantly increasing number of inhabitants of Rome.

The name ‘Cloaca Maxima’ has also been given to a channel traversing Caesarea in Israel. Prof. Robert J. Bull of Drew University, New Jersey, USA, who carried out excavations in Caesarea between 1971 and 1995, used that name in an unpublished excavation report to the Israel Antiquity Authority.

Yeshu Drey, a well-known restorer of ancient technology living at nearby Binyamina, questioned the purpose of this canal as a sewage channel and wondered whether it was built like its more famous namesake in Rome primarily as a drainage channel. Ancient maps, and even the map provided by the Survey of Palestine published in 1941-42, show several wells situated immediately east of ancient Caesarea while a large area between Caesarea and Binyamina is indicated as marsh land, i.e. the region situated immediately east of Caesarea was much wetter in the past than today. It is also possible that excess water brought to Caesarea by means of the famous aqueducts was diverted with the help of this channel.

In order to check his ideas, Yeshu Drey collected a sediment sample from the excavated channel on 25 May 2003 and asked me whether an interpretation of the molluscs present in that material could shed some more light on the function of the canal. A study of the material revealed the presence of 15 species of land and freshwater molluscs. They are enumerated in Table 1.

Table 1: Snails recovered from the ‘Cloaca Maxima’ in Caesarea

Species	Number
Freshwater snails	
<i>Theodoxus karasuna</i> (Mousson, 1874)	>100
<i>Globuliana gaillardoti</i> (Germain, 1911)*	1
<i>Heleobia phaeniciaca</i> (Pallary, 1939)	>30
<i>Melanoides tuberculata</i> (Müller, 1774)	25
<i>Melanopsis buccinoidea</i> (Olivier, 1801)	>100
<i>Melanopsis lampra</i> Bourguignat, 1884	>100
<i>Valvata saulcyi</i> Bourguignat, 1853	2
Terrestrial snails	
<i>Elia moesta moesta</i> (Rossmässler, 1839)	1
<i>Ceciloides acicula</i> (Müller, 1774)	1
<i>Oxychilus cyprius</i> (Pfeiffer, 1847)	1
<i>Caracollina lenticula</i> (Michaud, 1831)	1
<i>Cochlicella acuta</i> (Müller, 1774)	1
<i>Microxeromagna lowei</i> (Potiez & Michaud, 1838)	1
<i>Xeropicta vestalis joppensis</i> (Schmidt, 1855)	4
<i>Levantina spiriplana caesareana</i> (Mousson, 1854)	1

*Until recently this species was placed in the genus *Islamia*, but recently Kadolsky (2008) and Boeters and Falkner (2009) have shown that *Globulina* Paladilhe, 1866 is an older name for *Islamia* Radoman, 1973.

The terrestrial snails can tell us little about the type of water which was flowing in the Caesarean ‘Cloaca Maxima’. However, the freshwater snails explain everything. All seven of the species encountered in the sediment require clean, well-aerated, running water with a high level of oxygen. They were certainly not living in a canal used for the disposal of sewage. Eleven specimens of *Theodoxus karasuna* were found with the operculum still in the aperture while over 20 additional loose opercula were among the material. According to the molluscs found at the site, I tend to support the idea of Yeshu Dray that the channel crossing Caesarea

was most probably a kind of drainage canal and not a sewer. To call that channel a 'Cloaca Maxima' was therefore also in my opinion an unfortunate choice.

Acknowledgement

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References

- Boeters, H.D. and Falkner, G., 2009.** Unbekannte westeuropäische Prosobranchia, 15. Neue und alte Quell- und Grundwasserschnecken aus Frankreich (Gastropoda: Moitessieriidae et Hydrobiidae). *Heldia*, 5 (6): 149-162, pls. 20-22.
- Kadolsky, D., 2008.** Mollusks from the late Oligocene of Oberleichtersbach (Rhön Mountains, Germany). Part 2: Gastropoda: Neritimorpha and Caenogastropoda. *Courier Forschungs-Institut Senckenberg*, 260: 103-137.

Land and freshwater molluscs recovered during the excavation of Area A at Yavneh-Yam, Israel

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The ruins of Yavneh-Yam ('Yavneh-on-Sea') are situated some 15 km south of Tel Aviv-Yafo on a promontory consisting of kurkar (a local sandstone) overlooking the shore of the Eastern Mediterranean. Dothan (1952) carried out a first archaeological survey of the site, which was followed by that of Kaplan during the years 1967-1969 (Kaplan, 1993) and several other archaeologists during only brief periods. However, the main excavation was carried out during five seasons between 1992 and 1999 by Prof. Moshe Fischer of the Tel Aviv University (Fischer, 2002, 2005).

In this report the land and freshwater molluscs recovered during the excavation of Area A by Prof. Fischer are reviewed. Area A is situated on the promontory and the excavation showed that this particular site was occupied during the Late Bronze B until the Mamluk period. Interestingly no remains were found from the Roman period. The numbers of the baskets are omitted from the following list because none of the loci contained remains belonging to more than one historical period.

Gastropoda

Family Ampullariidae

Pila ovata (Olivier, 1894)

Locus 788: one fragment of the columella area.

Family Melanopsidae

Melanopsis buccinoidea (Olivier, 1801)

Locus 761: one shell.

Family Hygromiidae

Monacha obstructa (Pfeiffer, 1842)

Locus 778: one damaged shell.

Monacha syriaca (Ehrenberg, 1831)

Locus 754: one shell; Locus 786: one complete and two disintegrated shells; Locus 789: one damaged shell; Locus 804: one fossil shell; Locus 805: one shell.

Xerocrassa davidiana (Bourguignat, 1863)

Locus 789: one shell.

Xeropicta vestalis joppensis (Schmidt, 1855)

Locus 707: one shell; Locus 716: one top fragment; Locus 754: one shell; Locus 756: two shells; Locus 764: five shells and two fragments of the body whorl; Locus 777: two juvenile shells and one damaged shell; Locus 778: eight shells; Locus 785: two shells; Locus 778: eight shells; Locus 789: one shell; Locus 795: four shells; Locus 806: one disintegrated shell; Locus 811: one shell.

Family Helicidae

Helix engaddensis Bourguignat, 1852

Locus 353: three shells; Locus 721: one shell; Locus 725: nine shells and one fragment of the body whorl; Locus 727: one heavily damaged shell; Locus 737: one damaged shell and four fragments of another shell; Locus 746: seven shells; Locus 748: one damaged shell and six fragments of another shell; Locus 752: two shells and one body whorl; Locus 757: one shell; Locus 761: two heavily damaged shells; Locus 764: one small part of the columella; Locus 766: one body whorl; Locus 767: two shells and one damaged shell; Locus 769: one fragment of the body whorl; Locus 773: two shells and one shell missing the top; Locus 775: five shells; Locus 776: one fragment of the body whorl; Locus 777: one damaged shell; Locus 778: one fragment of the body whorl and one top fragment; Locus 787: one damaged shell; Locus 788: 12 complete shells and one damaged shell and four fragments of the body whorl; Locus 789: six shells and one fragment; Locus 794: two shells; Locus 795: 25 shells of which three have been damaged by rodents and five have a small hole opposite the aperture and three fragments; Locus 797: two shells; Locus 800: three heavily damaged shells and two fragments of other shells; Locus 801: one shell; Locus 804: one shell; Locus 806: one shell; Locus 810: one shell.

Levantina spiriplana caesareana (Mousson, 1854)

Locus 355: two shells.

Theba pisana (Müller, 1774)

Locus 707: one shell; Locus 725: one shell; Locus 742: one shell.

Bivalvia

Family Unionidae

Unio mancus eucirrus Bourguignat, 1857

Locus 761: one tiny fragment of the ventral margin; Locus 766: one disintegrated fragment of the ventral margin; Locus 776: one fragment of lateral teeth; Locus 778: one fragment of the ventral margin; Locus 788: one fragment of the ventral margin; Locus 805: one fragment of the ventral margin.

Discussion

Seven different species of land snails and three species of freshwater molluscs were recovered in Area A during the excavations carried out by Prof. Fischer at Yavneh-Yam between 1992 and 1999. These inland molluscs originated from at least four different areas. Five species of land snails have to be considered of local origin: *Monacha syriaca*, *Xerocrassa davidiana* (on local kurkar outcrops only), *Xeropicta vestalis joppensis*, *Helix engaddensis* and *Theba pisana*. Three species arrived at the site most probably from the nearby streambed of Wadi

Rubin (now Nahal Soreq): the land snail *Monacha obstructa* (an inhabitant of heavy soils), the freshwater gastropod *Melanopsis buccinoidea* and the freshwater mussel *Unio mancus eucirrus*. The land snail *Levantina spiriplana caesareana* is known only from rocky outcrops in the hills north of today's Tel Aviv-Jerusalem highway, while the freshwater snail *Pila ovata* had its origin in the river Nile, Egypt. However, most likely the latter had been found on the beach near Yavneh-Yam since similar shells are still known to arrive in the same way on the Mediterranean beaches of Israel today.

The 177 shells or fragments of shells were not evenly scattered over the entire period of occupation. Most of the shells (146, 82.5%) were found at loci from the Persian period:

Archaeological Period	Iron Age	Persian	Hellenistic	Byzantine	Arabic
Centuries	8-7 BC	5-4 BC	3-2 BC	5-7 AD	8-14 AD
Species					
<i>Pila ovata</i>	-	1	-	-	-
<i>Melanopsis buccinoidea</i>	-	1	-	-	-
<i>Monacha obstructa</i>	-	1	-	-	-
<i>Monacha syriaca</i>	-	6	-	-	1
<i>Xerocrassa davidiana</i>	-	1	-	-	-
<i>Xeropicta vestalis joppensis</i>	3	35	-	-	2
<i>Helix engaddensis</i>	4	96	-	3	13
<i>Levantina spiriplana caesareana</i>	-	-	1	-	-
<i>Theba pisana</i>	-	-	-	-	3
<i>Unio mancus eucirrus</i>	-	5	1	-	-
Total	7	146	2	3	19

The majority of the inland molluscs recovered at Yavneh-Yam consisted of specimens or fragments of *Helix engaddensis* (116, 65.5%). Since this *Helix* is an edible species and because another edible species was also present among the material (*Levantina spiriplana caesareana*), we may not rule out the possibility that these large land snails were consumed by the inhabitants of Yavneh-Yam. The valves of *Unio mancus eucirrus*, which show a nice interior of mother-of-pearl, might also have been exploited in one way or another.

Conclusion

Most of the land and freshwater molluscs recovered during the excavation of Yavneh-Yam turned out to be of local origin and 82.5% date to the Persian period. There is some indication that at least the largest local land snail, *Helix engaddensis*, might have been exploited as food. Among the marine molluscs, which will be dealt with elsewhere, there is evidence that at least *Patella caerulea* Linnaeus, 1758 was also exploited as food.

Acknowledgement

I would like to thank Prof. Moshe Fischer (Tel Aviv University) for entrusting me with the discussed material.

References

- Dothan, M., 1952.** An archaeological survey of the lower Rubin River. *Israel Exploration Journal*, 2: 104-117.
- Fischer, M., 2002.** [Yavneh-Yam 1992-1999 – Interim Report.] *Qadmoniyot*, 123: 2-11. [In Hebrew.]
- Fischer, M., 2005.** [New archeological studies of Yavneh-Yam and neighbourhood.] pp. 173-208. In: Fischer, M. (ed.), [Yavneh, Yavneh-Yam and their neighbourhood: studies in the archaeology and history of the Judean coastal plain.] Tel Aviv University. [In Hebrew.]
- Kaplan, J., 1993.** Yavneh-Yam. *The new encyclopedia of archaeological excavations in the Holy Land*, 4: 1504-1506.

Shells recovered during an excavation in Bat Galim, Haifa, Israel

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In June-July 1998, Dror Barshad of the Israel Antiquities Authority carried out a salvage excavation in Bat Galim, Haifa, Israel (IAA Permit A-2869). The site turned out to consist of the remains of buildings and installations dating to the Byzantine and Early Islamic periods, which dates were confirmed by a follow-up excavation carried out by Kareem Sa'id in October-November 2006 (Sa'id, 2008). Among the archaeozoological remains were a number of shells, which are briefly dealt with in this report.

Material and Methods

The material originated from three different fields (A, B and C) and was most probably handpicked by eye, according to the size of the archaeomalacological items. The shells were identified in the Mollusc Collection of the Hebrew University of Jerusalem (HUJ). Fragments were compared with complete specimens of recent origin in order to check the provisional identifications.

Results

The identified molluscs are enumerated in systematic order. Each entry consists of the field number (A, B or C), followed by the locus number consisting of three digits and the basket number formed by four digits.

Gastropoda

Family Cassidae

Phalium granulatum undulatum (Gmelin, 1791)

A-114-1224: one lip of the aperture and part of the adhering body whorl; A-123-1865: one large, heavily damaged shell.

Family Ranellidae

Charonia variegata (Lamarck, 1816)

B-379-5472: one shell consisting of three whorls and lacking both the apex and the body whorl, and one fragment consisting of a single whorl belonging to a second shell.

Family Tonnidae

Tonna galea (Linnaeus, 1758)

A-134-1568: one lower part of the columella of a large specimen.

Family Muricidae

Bolinus brandaris (Linnaeus, 1758)

A-113-1118: one shell missing the siphonal canal and one fragment of the columella; B-379-5472: one shell missing the siphonal canal, with a large hole behind the lip of the aperture.

Hexaplex trunculus (Linnaeus, 1758)

A-109-1126: seven tiny fragments; A-100-1020: one shell missing the top and with a hole behind the lip of the aperture; A-101-1088: one extremely abraded fragment of the columella; A-110-1093: one shell; A-112-1087: one tiny fragment; A-118-1144: two tiny fragments; A-118-1189: one very small shell and one tiny fragment; A-121-1268: 17 tiny fragments; B-350-5204: one fragment of the body whorl; B-379-5472: one heavily damaged body whorl;

B-387-5592: one heavily abraded part of the body whorl; C-517-10055: one very large, worn shell.

Stramonita haemastoma (Linnaeus, 1767)

A-120-1350: one large shell; A-123-1536: one tiny fragment of body whorl; B-379-5472: one shell with a very large hole in the body whorl.

Family Columbelloidea

Columbella rustica (Linnaeus, 1758)

B-323-5413: two shells both filled with mortar.

Family Nassariidae

Nassarius (Hinnia) nitidus (Jeffreys, 1867)

B-323-5413: one shell with a hole behind the lip but filled with mortar.

Family Conidae

Conus mediterraneus Hwass, 1792

B-323-5413: four shells of which three have a hole in the umbo and all are filled with mortar.

Family Bullidae

Bulla striata Bruguière, 1789

B-360-5373: one shell filled with mortar.

Family Helicidae

Helix (Pelasga) engaddensis Bourguignat, 1852

A-137-1676: two shells; A-138-1689: one shell with a large hole in the body whorl.

Bivalvia

Family Glycymerididae

Glycymeris insubrica (Brocchi, 1814)

A-101-1088: one slightly damaged valve; A-110-1093: two valves, both damaged along the margin; A-112-1087: one umbonal fragment; A-118-1189: one complete and one damaged valve of which one is filled with mortar; A-120-1326: one valve damaged along the ventral margin; A-120-1353: three valves of which one has a man-made hole in the umbo; A-121-1268: one valve damaged along the ventral margin; A-122-1580: two valves, both damaged along the ventral margin; A-123-1536: two valves, both with mortar; A-123-1558: nine valves of which three have a hole in the umbo, three umbonal fragments and one fragment of a ventral margin; A-123-1661: 12 complete and six broken valves; A-130-1291: five valves and five umbonal fragments, some filled with mortar; A-138-1689: three valves; B-360-5373: four damaged valves, all with a hole in the umbo; B-379-5472: 11 valves, three with a man-made hole in the umbo; B-402-5614: one valve damaged along the ventral margin.

Family Mytilidae

Mytilus galloprovincialis Lamarck, 1819

A-120-1326: three umbonal fragments of very large valves; A-120-1328: one umbonal fragment of a very large valve; A-134-1568: one umbonal fragment of a very large valve.

Family Pectinidae

Flexopecten glaber (Linnaeus, 1758)

B-surface-5569: one slightly damaged valve; B-402-5614: one valve.

Family Mutelidae

Chambardia rubens arcuata (Cailliaud, 1823)
B-373-5389: one tiny fragment of the ventral margin.

Family Cardiidae

Acanthocardia tuberculata (Linnaeus, 1758)

A-110-1093: one umbonal fragment with a man-made hole near the umbo; A-123-1661: one umbonal fragment; B-surface-5569: one valve.

Remarks

The shell material consists of 16 different taxa, of which 14 had their origin in the Mediterranean Sea: *Phalium granulatum undulatum*, *Charonia variegata*, *Tonna galea*, *Bolinus brandaris*, *Hexaplex trunculus*, *Stramonita haemastoma*, *Columbella rustica*, *Nassarius nitidus*, *Conus mediterraneus*, *Bulla striata*, *Glycymeris insubrica*, *Mytilus galloprovincialis*, *Flexopecten glaber* and *Acanthocardia tuberculata*. One is a local land snail: *Helix engaddensis*; and the remaining one is a freshwater mussel from the river Nile in Egypt: *Chambardia rubens arcuata*.

Although *Chambardia* seems to be the only clear foreign element among all the shells recovered during the excavation of Bat Galim, we must not rule out the possibility that the specimens identified as *Mytilus galloprovincialis* also reached the site from elsewhere. The five umbonal fragments were all of very large valves, much larger than any that have been collected along the coast of Israel. Similar valves were also recovered during the excavation of Nessana (Mienis, 2004) and likewise they date from the same Byzantine-Early Islamic period. If the *Mytilus galloprovincialis* mussels were indeed of foreign origin then they were most probably imported as food items, i.e. alive or in a pickled form.

Without doubt all the other Mediterranean shells were picked up from the beach, since all of them are more or less abraded. Most likely they were exploited for building purposes because some of the shells (*Columbella rustica*, *Nassarius nitidus*, *Conus mediterraneus*, *Bulla striata* and *Glycymeris insubrica*) are still filled with mortar.

Acknowledgements

I would like to thank the excavator Dror Barshad and my colleague Liora Kolska Horwitz for entrusting me with the discussed material.

References

- Mienis, H.K., 2004. The molluscs of Nessana. In: Urman, D. (ed.), Nessana, excavations and studies, I. Beer-Sheva, *Studies by the Department of Bible and Ancient Near East*, 17: 165-196.
- Sa'id, K., 2008. Haifa Bat Galim Final Report. *Hadashot Arkhaeologiyot (Excavations and Surveys in Israel)*, 120.

Ancient metal 'weights' in the form of bivalve shells

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Last year two articles were published in which eight metal 'weights' in the form of bivalves were described (Dar, 2009; Dar and Nagar-Hillman, 2009). These bivalve-like 'weights' had been found during excavations of Dor (3), Shallale (3) and Gamla (2) in Israel. The metal used for these 'weights' was in all cases lead. Molten lead had been poured into single valves

of Heart cockles, *Acanthocardia tuberculata*. After the lead had hardened again, the shell was removed from the lead cast. Although Heart cockles are mentioned nowhere by name in the two articles, I reached that identification with the help of an excellent photograph of one of the 'weights' on a poster dealing with the excavation of Shallale, which was hanging in the lecture room belonging to the complex of buildings owned by the Israel Nature Reserves and National Parks Protection Authority on the ancient tell where both Shallale and the City of Carmel were once situated.

They are not the only shell-like metal 'weights' that I have come across during the 40 years that I have lived in Israel. Some 15 years ago a student of metal weights showed me several copper or brass 'weights' of a completely different form from the lead 'weights'. They were oblong and not flat at one side. At first I had no idea, but suddenly I knew it: they were perfect internal moulds of the freshwater mussel *Unio terminalis*. Some of these 'weights' fitted almost exactly in matching pairs of valves from the Sea of Galilee. Unfortunately I don't remember the name of the owner of these 'weights', nor do I remember where they were excavated. However, I do remember that it was a site from either near the Jordan River or the Sea of Galilee where that mussel is still living.

This is more or less the only information that I am able to supply about 'weights' in the form of bivalves, except for the fact that the two 'weights' from Gamla were dated to the 5th century BC. All the other 'weights' are probably of Hellenistic or Roman origin, but no exact dates are available.

Throughout this short note I have called the metal objects 'weights', because I am not sure that they have ever really been used as weights. The differences in their weight are too large: from 17-125 g among the Heart cockle 'weights', while the size of the freshwater mussel 'weights' likewise varied considerably. So they could not have been used as standard weights for specific commodities. Neither the 'weights' made from lead, nor those from copper or brass showed a hole in order to fix them to fishing nets to allow them to sink quicker. I wonder whether it is possible that these 'weights' were a kind of ingot used for marketing the metal in a more attractive form or perhaps they were used as currency? I hope that a reader may be able to throw some more light on these interesting shell 'weights'.

References

- Dar, S., 2009.** Metal weights. In: Dar, S. (ed.), Shallale: ancient city of the Carmel. *BAR International Series*, 1897: 419.
- Dar, S. and Nagar-Hillman, O., 2009.** Two types of weights from Tel Dor and Horvat Shallale on the Carmel. *Eretz Israel*, 29: 118-124. (In Hebrew.)

Abstracts

Debruyne, S., 2010. Tools and souvenirs: the shells from Kilise Tepe (1994-1998). *Anatolian Studies*, 60: 149-160.

ABSTRACT: The shell finds from Kilise Tepe in the Göksu valley in central southern Turkey, the site of a rescue excavation in 1994-1998, are analysed from environmental and archaeological perspectives. The site was occupied from the Early Bronze Age to the Byzantine period. The material studied comprised 3455 shells and shell fragments (MNI=2788) which included terrestrial, freshwater and marine (Mediterranean) species. Most specimens (3338, 96.6%) were determined to at least family level and 2868 (83.0%) to species; only 117 (3.4%) remained unidentified. Land snails (n=810, 24.3%) were dominated by Ferussaciidae (n=409), followed by Helicidae (n=229), Hygromiidae (n=165), Zonitidae

(n=5) and Buliminidae (n=2). The largest component was freshwater molluscs (n=2323, 69.6%) of which 2105 (90.6%) were *Melanopsis praemorsa*; 218 specimens were highly fragmented Unionidae (including at least 16 *Unio mancus*). The marine molluscs were poorly represented numerically (n=205, 6.1%) but comprised 15 species of gastropods (n=89) dominated by Patellidae (n=28) and Nassariidae (n=27), and six species of bivalves (n=116) dominated by Cardiidae (n=78). The land snails indicate an open, lowland environment with a relatively dry Mediterranean-type climate. The freshwater snails are believed to be accidental introductions, whereas some of the unionids appear to have been used as tools (scrapers) in the Late Iron Age. The marine shells are interpreted as beach finds, brought to the site as 'souvenirs'; 33 of them had been worn as ornaments.

Ktalav, I. and Borowski, O., 2010. Molluscs from Iron Age Tel Halif. *Tel Aviv*, 37: 31-39.

ABSTRACT: The molluscan assemblage recovered from the Iron Age II level at Tel Halif, north-east of Beersheba, Israel, reflects the position of the site close to an ancient trade route leading from the coastal plain to the hill country. The site was excavated during 2007 and 2008 and shells were collected by eye and by coarse (0.5 x 0.5 cm) sieving. Land snails comprised about 90% of the assemblage, and the fauna was similar to that extant in the area today: *Monacha syriaca*, *Levantina spiriplana hierosolyma*, *Xeropicta vestalis joppensis*, *Caracollina lenticula*, *Xerocrassa seetzenii*, *Eopolita protensa jebusitica*, *Helix engaddensis* and *Sphincterochila fimbriata*. Sixty-nine marine shells and one freshwater bivalve were retrieved from 35 loci and identified to species level. Fifty-five shells represented four species from the Mediterranean Sea: *Erosaria spurca* (n=1), *Neverita josephinia* (n=1), *Glycymeris insubrica* (n=51) and *Cerastoderma glaucum* (n=2). Fourteen shells and four species originated in the Red Sea/Indo-Pacific: *Clanculus pharaonis* (n=1), *Monetaria annulus* (n=6), *Monetaria moneta* (n=6) and *Erosaria turdus* (n=1). The broken bivalve, *Pseudunio homsensis*, was sourced to Syria or Lebanon. Most of the marine shells were holed and/or polished, indicating their use as ornaments and amulets, either as pendants or sewn onto fabric, since many were found in association with a textile-producing workshop. Shell symbolism is discussed.

Kurzawska, A., Bar-Yosef Mayer, D. and Mienis, H.K., 2010. Scaphopod shells in the Natufian culture. p. 166. *ICAZ 2010: Abstracts of the oral and poster presentations. 11th International Conference of Archaeozoology, Paris, 23-28 August 2010.*

ABSTRACT: Scaphopod shells are considered to be one of the hallmarks of the Natufian culture and previous studies have determined three different sources, namely the Mediterranean, the Red Sea and Pliocene formations. A detailed analysis was undertaken of scaphopod shells from Late Pleistocene/Early Holocene sites in Israel: Urkan e-Rub Ila (Kebaran), Hayonim Cave, Eynan, Hilazon Tachtit Cave and Raqefet Cave (Natufian), Gilgal (Final Natufian and PPNA), and Ramat Harif (Harifian). Eleven species were identified from three families (Fustiariidae, Dentaliidae, Laevidentaliidae). Most shells originated in the Mediterranean and were identified as *Antalis vulgaris* and 'Antalis dentalis group'; these are assumed to have been the most easily accessible scaphopods in the Epipalaeolithic. Red Sea shells mostly belong to the '*Dentalium reevei* complex'. The research suggests that specific species were selected for use as beads and that they were used separately in burials, as at Hayonim and Hilazon Tachtit Caves and Eynan.

Mienis, H.K., 2010. Shells. pp. 305-307. In: Geva, H. (ed.), *Jewish Quarter excavations in the Old City of Jerusalem conducted by Nahman Avigad, 1969-1982. Volume IV: the Burnt House of Area B and other studies. Final report.* Jerusalem, Israel Exploration Society and Institute of Archaeology, Hebrew University of Jerusalem.

ABSTRACT: Ten damaged and/or burnt shells were recovered during the excavation of the 'Burnt House' in the Old City of Jerusalem, which is believed to have been the mansion of the

Qatros priestly family before its destruction by the Romans in AD 70. Eight of the ten shells belonged to bivalves with a highly lustrous pearl-like interior: *Pinctada margaritifera* (n=4) from the Red Sea, and *Chambardia rubens arcuata* (n=4) from the river Nile. Both species were intensively exploited in the past for mother-of-pearl inlay and jewellery manufacture. The two other shells found, an operculum of *Bolma rugosa* and a single valve of *Glycymeris insubrica*, support the suggestion that shell-based craft activity took place in the mansion.

Mienis, H.K., 2010. Some archaeomalacological highlights. *Haasiana*, No. 5: 69-70.

ABSTRACT: Some recent archaeomalacological studies undertaken by the author alone or with colleagues are briefly described in this newsletter of the National Natural History Collections of the Hebrew University of Jerusalem. They include: a study of stable isotopes from shells of Viviparidae at Gesher Benot Ya'aqov (Spiro *et al.*, 2009, abstracted in *AMG Newsletter*, No. 16: 15); Middle Palaeolithic shell beads from Morocco (Vanhaeren *et al.*, 2006, abstracted in *AMG Newsletter*, No. 10: 9-10); shells and crabs from Tel Aphek-Antipatris (Mienis, 2009, abstracted in *AMG Newsletter*, No. 15: 13); and *Papillifera bidens* [= *P. papillaris*] in North Africa (Mienis and Gümüş, 2009, *AMG Newsletter*, No. 15: 3-6).

Mienis, H.K., 2010. A cassid lip. pp. 146-147, pl. 174: 6. In: Kletter, R., Ziffer, I. and Zwickel, W. (eds), *Yavneh I: the excavation of the 'Temple Hill' repository pit and the cult stands*. Fribourg, Academic Press, and Göttingen, Vandenhoeck and Ruprecht. (Orbis Biblicus et Orientalis 30, Series Archaeologica.)

ABSTRACT: The salvage excavation of the so-called 'Temple Hill' at Yavneh, Israel, in 2002 yielded a single molluscan item. This was a piece of shell that had been roughly cut from the aperture of an estimated 8-cm high *Semicassis* [= *Phalium*] *granulatum undulatum*. This item falls into the category of 'cassid lips', which are often found at archaeological sites in the Mediterranean area, dating from the Upper Palaeolithic to the first century AD. The finding of this cassid lip together with the remains of other items buried in a cultic repository pit of the 9th century BC emphasises its religious associations. [This report was also published in the *Archaeo+Malacology Group Newsletter*, No. 13 (June 2008): 9-10.]

Mienis, H.K., 2010. Interim report concerning the shells from the new excavations of Beisamoun. pp. 40-42, annexe 9 [=tables]. In: Bocquentin, F. (ed.), *Beisamoun: implantation d'une culture agro-pastorale dans la haute vallée du Jourdain aux 8ème et 7ème millénaires. Rapport et note de synthèse 2010, plan quadriennal 2009-2012 du MAEE*. France, Ministère des Affaires Étrangères et Européennes, and Israel, Israel Antiquities Authority.

ABSTRACT: New excavations at the PPNB site of Besamoun in the Hula Valley, Israel, yielded thousands of shells and shell fragments. This interim report considers only the qualitative aspects of this assemblage: the species present, their zoogeographical origin, and their possible exploitation. Thirty-four different taxa were identified, comprising 17 freshwater, 13 terrestrial and four marine species. The land and freshwater shells are all local species and their presence is explained as the result of natural sedimentation processes. Most of the samples contained *Melanopsis costata*, *Unio terminalis* and *Theodoxus jordani*; other species were present in low numbers only. Three species are now extinct in Israel: *Melanopsis corrugata*, *Heleobia longiscata* and an unidentified *Calaxis* sp. *Melanoides tuberculata*, now common in the area, was absent. Four marine species from the Mediterranean Sea were represented by small fragments only: *Clanculus corallinus*, *Columbella rustica* (1 modified to form a bead), *Acanthocardia tuberculata* and *Cerastoderma glaucum* (artificially holed).

Reese, D.S., 2010. Shells from Sarepta (Lebanon) and East Mediterranean purple-dye production. *Mediterranean Archaeology and Archaeometry*, 10 (1): 113-141.

ABSTRACT: The site of Sarepta is located on the coast of Lebanon between Tyre and Sidon. Excavations in 1969-1974 yielded 501 (=MNI) marine shells ranging in date from Late

Bronze I to Roman/Byzantine which included three large accumulations of crushed *Hexaplex trunculus* of LBII (MNI=35), LBIII to Iron I (MNI=68) and LBIII or Iron I (MNI=150) date. Overall, this species represents 59.3% of the shell assemblage and the three accumulations account for 85.2% of all the *Hexaplex trunculus* found. Other marine species included *Stramonita haemastoma* (28), *Bolinus brandaris* (1), *Charonia variegata* (29, none modified to form trumpets), *Arcularia gibbosulus* (28, none modified to form beads), *Hinia costulata* (5), *Glycymeris insubrica* (15, including 8 holed at the umbo), *Conus mediterraneus* (10, including 2 possible pendants), *Phalium saburon* (3, including 1 'cassid lip'), *Euthria cornea* (14), *Tonna galea* (6), *Luria lurida* (5, none modified), *Patella caerulea* (4), Vermetidae (3), *Gibbula varia* (2), *Columbella rustica* (1), *Fasciolaria lignaria* (1, possibly a pendant), *Acanthocardia tuberculata* (1, holed at the umbo), *Maetra corallina* (1) and *Spondylus gaederopus* (1). Four small gastropod species (MNI=41) are thought to be chance introductions (*Alvania montagui*, *Cantharus d'orbigny*, *Mitra* sp. and *Rissoa* sp.). Three freshwater bivalve fragments and two *Helix* sp. were also recovered. The evidence for purple dye production at Sarepta is discussed and compared with evidence from other eastern Mediterranean sites.

Palaeobiodiversity mapping

Matthew Law has initiated a mapping system to record palaeobiodiversity in south-west Britain (<http://www.wikiarc.org/pbmaps>).

The South West Britain Palaeobiodiversity Maps are designed to demonstrate the benefits of a map-based scheme for facilitating searches for the distribution of different biota in the past as revealed by archaeological investigations. Some of the data have been drawn from published sources, but emphasis has been given to previously unpublished results, either from the 'grey literature' library (<http://ads.ahds.ac.uk/catalogue/library/greylit/index.cfm>) of the Archaeology Data Service or directly from specialists.

The maps are based on Google Maps and allow searches to be made by taxon, locality, period or author. This is a volunteer project and by its nature a growing resource. Data submissions from specialists are welcomed: all data are fully attributed with references prominently displayed as a key part of each record. Please contact Matthew for more information at: matt@wikiarc.org

Conferences

Survival of the fittest? North Atlantic biota in the light of the Quaternary record

This session, which is of potential interest to archaeomalacologists, will take place at the INQUA 2011 conference to be held at Bern, Switzerland, from 20-27 July 2011. Further details can be found at <http://www.inqua2011.ch/>

The concept of survival of North Atlantic island biota in refugia through at least part of the Quaternary appears to conflict with the palaeoecological record. This session will examine the origins and changes of North Atlantic fauna and flora as a result of climate change and human impact. From Scandinavia to Greenland and Canada, indigenous groups and incoming settlers have changed the landscape to different degrees and the anthropogenic impact can be seen in the palaeoecological record. Introductions of new biota and exploitation of natural resources have left their marks on the landscape. Studies of the palaeoenvironmental record in terms of

habitat evolution, and relating palaeoecological data to new lines of research in a multi-disciplinary framework will provide a basis for understanding long-term environmental changes.

Ancient maritime communities along the European Atlantic coast

This is the theme of the HOMER 2011 conference to be held at Vannes in Brittany, France, from 27 September to 1 October 2011. For further information, see the conference website at <http://homer2011.univ-rennes1.fr/index.php>

This conference aims to bring together the many researchers interested in questions of coastal archaeology, maritime communities, and the interactions between people and the marine environment within the Channel, North Sea and Atlantic areas of Europe. Sessions will consider the cultural identities of coasts and islands, the characters and evolution of maritime landscapes, and the production and transformation of marine resources.

6th Congress of the European Malacological Societies, Vitoria-Gasteiz, Spain, 18-22 July 2011

This congress is open for all contributions in the field of malacology. There will be several symposia, including: endangered species and hotspots of biodiversity; biogeography and phylogeography of the Mediterranean region; systematics and taxonomy of Western Palearctic Mollusca; biology, reproduction and culture of molluscs; ecology; invasive alien species; and miscellaneous. Further information is available from the congress website at <http://www.euromalacol2011.eu>
