

THE MARINE FAUNA OF LUNDY BIVALVIA

BY JAMES G. WILSON

Environmental Sciences Unit, Trinity College, Dublin 2, Ireland

INTRODUCTION

The first bivalve records for Lundy were provided by Edward Forbes, who with Robert McAndrew took dredge samples off the East Coast of the Island in 1848. The dredging was carried out at distances ranging from half a mile (0.8 km) to two miles (3.2 km) offshore in depths of 7 to 25 fathoms (12.5—45.3m) on a bottom described as "sand and gravel" and yielded a total of 24 bivalve species (Forbes, 1851).

Harvey (1950, 1951) in his littoral investigations, listed a total of ten species of bivalve. The large number of sublittoral studies using diving since 1970 has extended the area of investigation into a greater number of habitats ranging in depth from the shore to around 35m and in character from coarse sand to fine mud to polyzoan turfs and rock crevices. This has considerably extended the list to over fifty species.

However, the small size, limited geographical area and geology of the island restrict the variety of habitats present particularly with regard to the littoral and sublittoral sediments. In consequence, the list is rather restricted when compared with those from much larger areas.

DISTRIBUTION AND ABUNDANCE

The densest collections of bivalves are found in the undergrowth of polyzoa, often with a pronounced layer of silt, which covers much of the rock surfaces on the East Coast of the island. Here, *Musculus* spp. and juvenile *Modiolus* spp. may be found at densities of over 2,000 per metre square, along with considerable numbers of more typically infaunal bivalves of the nearby sediments.

The nearshore sediments of Lundy (i.e. those within 2km of the island) may be divided broadly into two classes. The first class comprises the large particle size, well sorted sediments which are found off the North, South and West coasts, and the second class the generally less well sorted, smaller particle size sediments off the East Coast (Wilson and Harris, 1980). The former is largely barren, and it is the latter that supplies the bulk of the Lundy bivalve fauna.

The East Coast sediments themselves are not wholly uniform in character. The majority support a community equivalent to Thorson's (1957) *Syndosmya* (= *Abra*) *alba* community, although the predominant bivalve in the later records is *Abra nitida*. In the muddier sediments in Quarry Bay and Gannet's Bay the community type tends towards Thorson's (1957) *Amphuira* community in which *A. nitida* is a characteristic bivalve. Towards the Landing Bay, the community tends towards the shallow water *Venus* community (Thorson, 1957) as the sediment becomes coarser and better sorted. In the Landing Bay itself, the sediment comprises clean, well sorted, medium to fine sand, and the community type switches to the shallow/littoral *Tellina* community. This community, however, is restricted to sediments deeper than 3m below C.D. and no bivalves have been found in the beach and shallow sublittoral sediments around the Landing Bay.

Of interest is the shift in species composition from earlier surveys (Hoare and Wilson, 1976) to *A. nitida* as the dominant bivalve for the East Coast and secondly the finding of *Donax variegatus*, which reaches its Northern geographical limit around South Britain, in place of *Tellina fabula* just off the Landing Bay. The sediments themselves do not seem to have altered in character, and the cause of the shift is unknown.

Further offshore, the community type has been assigned to a *Modiolus* community (Warwick and Davies, 1977) and these results have been dealt with separately, along with those of Hartley (1979).

SPECIES LIST

The list is drawn from published lists in Forbes (1851) (EF), Harvey (1950, 1951) (LH) and Hoare and Wilson (1976) (H & W) in addition to material collected by the

following: Dr. R. J. Atkinson (RJA), Ms. D. Carlidge (DC), Mr. J. P. Hartley (JPH), Dr. S. Hawkins (SH), Dr. K. Hiscock (KH), Dr. R. Hoare (RH), Dr. Paul Tyler (PT) and Dr. J. G. Wilson (JW). Their assistance is gratefully acknowledged.

The identification and nomenclature follows that of Tebble (1966) and Glemarec (1968). The depth or range of depths of sample (where known) is given after the location.

Abundance is expressed in numbers per metre square where quantitative samples were taken; otherwise presence only is implied.

Phylum **MOLLUSCA**
Class **BIVALVIA**
Order **PROTOBRANCHIATA**
Superfamily **NUCULACEA**
Family **NUCULIDAE**

***Nucula hanleyi* (Winckworth)**

NUT SHELLS

Offshore, 12-45m (EF) (as *N. radiata*).

***Nucula nucleus* (Linnaeus)**

Brazen Ward, 0-12m, 5-10/m² (KH); offshore, 12-45m (EF).

***Nucula turgida* (Leckenby and Marshall)**

In softer sediments off the East Coast. Three-Quarter Wall Bay, 12m, 100/m² (H & W) 13.8m, 11/m² (JW); 100m SE of Gannet's Rock, 30m, 11/m² (JW); 1km off Quarry Bay, 24m, 11/m² (JW); ½km off Landing Bay, 12.5m, 33/m² (JW); offshore, 12-45m (EF) (as *N. nitida*).

Superfamily **ARCACEA**
Family **ARCIDAE**

***Arca tetragona* (Poli)**

ARK SHELL

Brazen Ward, 12m, 5/m² (KH); Dead Cow Point, 10-18m, 5-10/m² (KH); offshore, 12-45m (EF).

***Arca lactea* (Linnaeus)**

Offshore, 12-45m (EF).

Family **GLYCYMERIDAE**

***Glycymeris glycymeris* (Linnaeus)**

DOG COCKLE

Offshore East Coast (PT); offshore, 12-45m, (EF) (as *Pectunculus glycymeris* and *P. pilosus* (common)).

Order DYSODONTA
Superfamily MYTILACEA
Family MYTILIDAE

Mytilus edulis (Linnaeus)

COMMON MUSSEL

Small specimens to be found on most shores and occasionally sublittorally. Shore (LH); Landing Beach in crevices etc. (JW); "Robert", 14.8m, 5/m² (DC); Brazen Ward, 0m, 6m², 20/m² (KH); Dead Cow Point, 0-2m, 745 — 15/m² (KH).

Mytilus galloprovincialis (Lamarck)

MEDITERRANEAN MUSSEL

Jenny's Cove in rock pools on shore (SH).

Modiolus modiolus (Linnaeus)

HORSE MUSSEL

Rat Island, Ladies Beach and other shores (LH).

Modiolus barbatus (Linnaeus)

BEARDED HORSE MUSSEL

Shore (LH).

Modiolus adriaticus (Lamarck)

Offshore, 12-45m (EF) (as *Modiola tulipa*).

Modiolus phaseolinus (Phillippi)

BEAN HORSE MUSSEL

Shore (LH); "Robert", 14.8m, 90-980/m² (DC); Brazen Ward, 0-16m, 20-1120/m² (KH); Dead Cow Point, 0-18m, 115-1485/m² (KH). Probably this species recorded as dominating large areas of seabed 1km West of Needle Rock (KH).

Musculus discors (Linnaeus)

GREEN CRENELLA

Brazen Ward, undergrowth, 0-16m, 260-1860/m² (KH); Dead Cow Point, undergrowth, 0-18m, 20-1045/m² (KH).

Musculus marmoratus (Forbes)

MARBLED CRENELLA

Ladies Beach and other shores (LH); 100m SE Gull Rock, 15.4m, 11/m² (JW); Three Quarter Wall Bay, 13.8m, 33/m² (JW); "Robert", 14.8m (DC); Knoll Pins, undergrowth, 20m (RJA); ½ km NE Rat Island, undergrowth, 15m (DC); 1km W of Needle Rock, 40m (KH); offshore, 12-45m, (EF) (as *Crenella marmorata*).

Musculus costulatus (Risso)

“Robert”, 14.8m (DC).

Order PSEUDOLAMELLIBRANCHIATA
Superfamily ANOMIACEA
Family ANOMIIDAE

Common and abundant attached to solid substrates or undergrowth. All depths. Brazen Ward, 0-16m, 5-300/m² (KH); “Robert”, 14.8m, 45-315/m² (DC); Dead Cow Point, 0-18m, 30-654/m² (KH).

Anomia epihippium (Linnaeus)

COMMON SADDLE OYSTER

Shore (LH); undersurface of rocks and crevices on shore (JW); Knoll Pins in undergrowth, 20m (RJA); “Robert”, on iron scrap, 14.8m (JW); ½km NE Rat Island, in undergrowth, 15m (DC).

Heteranomia squamula (Linnaeus)

Shore (LH); “Robert”, in undergrowth, 14.8m (DC); 1km W of Needle Rock, 40m (KH).

Superfamily PECTINACEA
Family PECTINIDAE

Pecten maximus (Linnaeus)

GREAT SCALLOP or CLAM

Three Quarter Wall Bay, 12m (H & W); Gannet’s Rock, 15m (H & W); Rattles Anchorage, 15m (JW); Lee Rocks, 33m (JW).

Chlamys varia (Linnaeus)

VARIEGATED SCALLOP

Common in undergrowth. “Robert”, 14.8m, 5-75/m² (DC); Brazen Ward, 0-16m, 5-65/m² (KH); Dead Cow Point, 6-18m, 10-75/m² (KH); Landing Bay, 4m, (KH).

Chlamys distorta (da Costa)

HUNCHBACK SCALLOP

Offshore, 12-45m (EF) (as *Pecten sinuosus*).

Chlamys opercularis (Linnaeus)

QUEEN SCALLOP

Lee Rocks, 33m (JW); offshore, 12-45m (EF) (as *Pecten opercularis*).

Chlamys tigrina (Müller)

TIGER SCALLOP

Offshore, 12-45m (EF) (as *Pecten tigrinus*).

Order EULAMELLIBRANCHIATA
Superfamily LUCINICEA
Family LUCINIDAE

Lucinoma borealis (Linnaeus)

NORTHERN LUCINA

100m SE Gannet's Rock, 30m, 11/m² (JW); 1km off Quarry Bay, 24m, 11/m² (JW).

Family DIPLODONTIDAE

Diplodonta rotundata (Montagu)

ROUND DOUBLE TOOTH

Offshore, 12-45m, abundant (EF).

Superfamily ERYCINACEA

Family KELLIIDAE

Kellia suborbicularis (Montagu)

Shore (LH): Dead Cow Point, 0m, 410/m² (KH).

Family ERYCINIDAE

Lasaea rubra (Montagu)

Ladies Beach and other shore (LH); Landing Beach in crevices (JW).

Family LEPTONIDAE

Lepton nitidum (Turton)

300m off Landing Beach, 12.5m, 11/m² (JW).

Family MONTACUTIDAE

Montacuta ferringuosa (Montagu)

Landing Bay, 5m (H & W); Landing Bay, 7.1m, 11-22/m² (JW).

Superfamily CYPRINACEA

Family ARCTICIDAE

Arctica islandica (Linnaeus)

Landing Bay, 11m, 11/m² (JW), 9.5m; 1km off Quarry Bay, 24m, 22/m² (JW).

Superfamily CARDIACEA

Family CARDIIDAE

Acanthocardia echinata (Linnaeus)

1km off Quarry Bay, 24m, 11/m² (JW); Brazen Ward, 16m, 5/m² (KH).

Parvicardium ovale (Sowerby)

Common on both mixed sediment and undergrowth. Three Quarter Wall Bay, 13.8m, 11/m² (JW); 300m off Landing Beach, 12.5m, 11/m² (JW); "Robert", 14.8m, 150-375/m² (DC); Brazen Ward, 0-16m, 10-45/m² (KH); Dead Cow Point, 2-18m, 10-235/m² (KH); Knoll Pins, undergrowth, 20m (RJA); 1km W of Needle Rock, 40m, (KH); offshore, 12-45m (EF) (as *Cardium fasciatum*).

Laevicardium crassum (Gmelin)

Offshore, 12-45m (EF) (as *Cardium norvegicum*).

Superfamily VENERACEA

Family VENERIDAE

Dosinia exoleta (Linnaeus)

RAYED ARTEMIS

In the coarser sediments off the East Coast. Landing Bay, 5m (H & W) 7.1m 132-143/m² (JW); Three Quarter Wall Bay, 12m, 100/m² (H & W); Gannet's Rock, 15m, 100/m² (H & W); 300m SE Gull Rock, 26m, 11/m² (JW); 1km off Quarries, 20m, 11/m² (JW) 24m, 11/m² (JW); SE Gannet's Rock, 30m, 11/m² (JW).

Dosinia lupinus (Linnaeus)

SMOOTH ARTEMIS

300m SE Gull Rock, 26m, 11-22/m² (JW); Landing Bay, 11m, 33/m² (JW); 300m off Landing Beach, 12.5m, 11/m² (JW).

Gafrarium minimum (Montagu)

In coarser sediments and undergrowth. Lametry Bay, 8.4m, 11/m² (JW); Three Quarter Wall Bay, 13.8m, 22/m² (JW); 300m off Landing Beach, 12.5m, 22/m²; Brazen Ward, 8-14m, 5-20/m² (KH); Dead Cow Point, 18m, 5/m² (KH); Knoll Pins, undergrowth, 20m, (RJA); offshore, 12-45m (EF) (as *Circe minima*).

Venus casina (Linnaeus)

Lee Rocks, 33m (JW); Lametry Bay, 8.4m, 11/m² (JW); 300m off Landing Beach, 12.5m, 11/m² (JW); Landing Bay, 7.1m, 11/m² (JW).

Venus ovata (Pennant)

Common in the deeper mixed muddy gravels. Seals Hole, 15m, 100/m² (H & W); Quarry Bay, 16m, 25/m² (H & W); Gull Rock, 14m, 100/m² (H & W); Three Quarter Wall Bay, 12m, 200/m² (H & W) 13.8m, 11/m² (JW); Knoll Pins, 16m, 100/m² (H & W); Gannet's Rock, 15m, 200/m² (H & W); Lee Rocks, 33m (JW); 1km off Brazen Head, 21m, 11/m² (JW); 1km off Quarry Bay, 20m, 11/m² (JW), 24m, 33-55/m² (JW); 300m off Landing Beach, 12.5m, 33/m² (JW); offshore, 12-45m, particularly abundant (EF).

Venus fasciata (da Costa)

BANDED VENUS

E Coast, coarse sand and gravel, 20m (JPH); Rattles Anchorage, 15m (JW); 1km off Quarry Bay, 24m, 22/m² (JW); offshore 12-45m (EF).

Venus striatula (da Costa)

STRIPED VENUS

Landing Bay, 5m (H & W); 1km off Quarry Bay, 20m, 33/m² (JW), 24m, 11/m² (JW); 100m SE Gannet's Rock, 30m, 22/m² (JW).

Superfamily MACTRACEA

Family MACTRIDAE

Spisula elliptica (Brown)

ELLIPTICAL TROUGH SHELL

Offshore East Coast (PT); offshore, 12-45m, particularly abundant (EF) (as *Maetra elliptica*).

Spisula ovalis (Sowerby)

Offshore East Coast, 20m (JPH).

Spisula subtruncata (da Costa)

CUT TROUGH SHELL

Three Quarter Wall Bay, 13.8m, 11/m² (JW).

Family LUTRARIDAE

Lutraria lutraria (Linnaeus)

Landing Bay, 11m (JW); Quarry Bay, 12m (JW).

Superfamily TELLINACEA

Family DONACIDAE

Donax variegatus (Gmelin)

Mainly in the shallower, cleaner sediments inshore. Landing Bay, 11m, 11/m² (JW), 3.9m, 11/m² (JW), 7.1m, 11-44/m² (JW); 300m SE Gull Rock, 26m, 66-77/m² (JW); 100m SE Gull Rock, 15.4m, 11/m² (JW); 300m off Landing Beach, 12.5m, 11/m² (JW).

Family TELLINIDAE

Tellina tenuis (da Costa)

THIN TELLIN

Landing Bay, 5m (H & W).

Tellina fabula (Gmelin)

Landing Bay, 5m (H & W).

Tellina donacina (Linnaeus)

Landing Bay, 7.1m, 11/m² (JW); offshore, 12-45m (EF).

Tellina pygmaea (Loven)

Offshore East Coast, 20m (JPH).

Family SCROBICULARIIDAE

Abra alba (Wood)

One of the commonest bivalves found almost anywhere with silt. Miller's Cake, 14m, 67/m² (H & W); Quarter Wall Bay, 15m, 1900/m² (H & W); Half Way Wall Bay, 16m, 140/m² (H & W); Three Quarter Wall Bay, 12m, 500/m² (H & W); Gannet's Rock, 15m (H & W); Landing Bay, 11m, 66/m² (JW); 1km off Quarry Bay, 20m, 33/m² (JW); "Robert", 14.8m, 5-155/m² (DC); Brazen Ward, 0-16m, 5-115/m² (KH); Dead Cow Point, 10-18m, 5/m² (KH); offshore, 12-45m (EF) (as *Syndosmya alba*).

***Abra nitida* (Müller)**

As *A. alba*, almost ubiquitous, particularly dense in the muddy gravels. Gull Rock, 14m, 100/m² (H & W); Lee Rocks, 33m (JW); 300m SE Gull Rock, 26m, 22/m² (JW); 1km off Quarry Bay, 20m, 3267/m² (JW), 24m, 144-567/m² (JW); 100m SE Gannet's Rock, 300m, 2344/m² (JW); beside "Robert", 20.8m, 143-242/m² (JW); Rattles Anchorage, 14.5m, 11/m² (JW); Landing Bay, 3.9m, 11/m² (JW), 7.1m, 33/m², (JW); 100m SE Gull Rock, 15.4m, 33-132/m² (JW); Gannet's Bay, 14.9m, 154-297/m² (JW); Three Quarter Wall Bay, 13.8, 110/m² (JW); 300m off Landing Beach, 12.5m, 99-275/m², (JW); Knoll Pins, undergrowth, 20m (RJA).

***Abra prismatica* (Montagu)**

Landing Bay, 7.1m, 11/m² (JW).

Family GARIIDAE

***Gari fervensis* (Gmelin)**

FAROE SUNSET SHELL

Landing Bay, 5m (H & W), 7.1m, 11/m² (JW); 300m SE Gull Rock, 26m, 11/m² (JW).

***Gari tellinella* (Lamarck)**

Offshore, 12-45m (EF) (as *Psammobia tellinella*).

Superfamily SOLENACEA

Family SOLENIDAE

***Ensis ensis* (Linnaeus)**

RAZOR SHELLS

300m SE Gull Rock, 26m, 11-22/m² (JW).

***Cultellus pellucidus* (Penant)**

Occasional specimens found in most sediments. Quarry Bay, 16m, 25/m² (H & W); Half Way Wall Bay, 16m, 20/m², (H & W); 300m SE Gull Rock, 26m, 22/m² (JW); 1km off Quarry Bay, 20m, 22/m² (JW); 100m SE Gannet's Rock, 30m, 22/m² (JW); Landing Bay, 3.9m, 11-33/m² (JW).

Superfamily MYACEA

Family CORBULIDAE

***Corbula gibba* (Oliv)**

COMMON BASKET SHELL

Common in the muddier mixed sediments. Half Way Wall Bay, 16m, 100/m² (H & W); 1km off Quarry Bay, 20m, 11/m², 24m, 11/m² (JW); 100m SE Gannet's Rock, 30m, 55/m² (JW); Three Quarter Wall Bay, 13.8m, 22/m² (JW); Brazen Ward, 10m, 5/m² (KH).

Superfamily HIATELLACEA

Family HIATELLIDAE

***Hiatella arctica* (Linnaeus)**

In crevices, ascidian tests and other nooks and crannies. Common and abundant. Ladies Beach and other shore (LH); "Robert", 14.8m, 315-1225/m² (KH), (JW), (DC); Brazen Ward, 0-16m, 95-2145/m² (KH); Dead Cow Point, 0-18m, 85-1815/m² (KH); offshore, 12-45m (EF). Records possibly included other species of *Hiatella*.

Superfamily PANDORACEA

Family LYONSIIDAE

Lyonsia norwegica (Gmelin)

Offshore, 12-45m (EF).

Family

PANDORIDAE

Pandora pinna (Montagu)

Offshore, 12-45m (EF) (as *P. obtusa*).

OTHER RECORDS

Warwick and Davies (1977) reported few bivalves from the pair of stations nearest Lundy. *Chlamys varia*, found at both stations to the North and East, and *Venus casina* from the Eastern station only, are both reasonably common in the areas nearer the island. Hartley (1979) sampled further offshore, including stations around 100 km to the West of Lundy. From the three stations closest to Lundy he reported depths of 85-89m with a bottom of silty mud (furthest) to fine sand (nearest) whose most common species were *N. turgida*, reasonably common nearer the island, *A. prismatica*, of which there is only one record near Lundy, and *Thyasira flexuosa*, of which there are no records from Lundy. The other species found (none more than one per grab) were:

<i>Myrtea spinifera</i>	(Montagu)*
<i>Lucinoma borealis</i>	(Linnaeus)
<i>Acanthocardia echinata</i>	(Linnaeus)
<i>Parvicardium scabrum</i>	(Philippi)*
<i>Dosinia lupinus</i>	(Linnaeus)
<i>Venus striatula</i>	(da Costa)
<i>Cultellus pellucidus</i>	(Pennant)
<i>Pandora pinna</i>	(Montagu)

* denotes not reported from Lundy.

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