

THE MARINE FAUNA OF LUNDY

ECHINODERMATA

P. A. TYLER

Department of Oceanography, University College, Swansea, S. Wales, U.K.

INTRODUCTION

The five classes of echinoderms are a conspicuous element of the fauna in truly marine areas. The British echinoderm fauna has been treated in detail by Mortensen (1927). In shelf sea areas they are usually found below LWN tide level with occasional species moving up into the littoral zone. Examples of the dominant extant groups are found in all types of substrates, the ophiuroids and the heart urchins being particularly important in the determination of soft substrate benthic communities (Thorson, 1947).

SOURCES OF MATERIAL

The collections made by divers during marine surveys of Lundy have produced a considerable record particularly of the conspicuous epifaunal asteroids, regular echinoids and holothurians. Observations of the less conspicuous infaunal ophiuroids and irregular echinoids have been obtained by divers and by benthic surveys using R.V. 'Ocean Crest'.

THE LUNDY FAUNA — GENERAL CONSIDERATIONS

To date, 24 species of echinoderm have been recorded around Lundy. Of these species only 8 were recorded by Harvey (1950, 1951) at Lundy. The most notable exceptions to the fauna are *Acrocnida brachiata* and *Spatangus purpureus*, both of which have been found further up the Bristol Channel and may be supposed to be found round Lundy where a suitable substrate exists for these infaunal species. A number of species appear to be common all round the island. These include *Asterias rubens*, *Marthasterias glacialis*, *Luidia ciliaris*, *Echinus esculentus* and *Holothuria forskali*. The very rare sea cucumber *Leptosynapta decaria* has been reported as occurring round Lundy (Hoare & Wilson, 1976). As no specimen is available for confirmation, this record is open to doubt.

THE LIST

The introduction of this series (Hiscock, 1974) includes a list of abbreviations and terms, and a map of the location sites.

This list includes records made by K. Hiscock (KH), B. Picton (BEP), R. Hoare (RH), J. Wilson (JW), Diving Investigation, 1971 (DI), J. D. George (JDG) and P. Tyler (PT).

The classification uses that followed by Mortensen (1927) with a modification of the Family Cucumaridae following Rowe (1969).

Phylum ECHINODERMATA

Class Crinoidea

Family ANTEDONIDAE

Antedon bifida (Pennant. 1777)

FEATHER STAR

N. of Rat and Mouse Island, 4.5 m, 9.6.73 (KH); On Paddle Steamer, Lee Rocks, 25 m, 22.7.76 (BEP). Individuals.

Class **Asteroidea**
Order **PHANEROZONIA**
Family **ASTROPECTINIDAE**
Astropecten irregularis (Pennant, 1777)

Knoll Pins, 15 m on sand 24.7.71 (RH); Knoll Pins South, 14 m, on gravel bank, 10.8.74 (KH); Quarry Bay, July 1975 (RH/JW); 1 km E. Brazen Ward, 20 m, on fine sand, 21.7.78 (JW).

Family **LUIDIIDAE**
Luidia ciliaris (Philippi, 1837)

SEVEN-ARMED STARFISH

Present in small numbers predominantly in the circalittoral all around Lundy. Not recorded from the south part of the east coast.

A common British species feeding on a variety of other echinoderms. Common amongst *Ophiothrix* and *Ophiocomina* populations.

Order **SPINULOSA**
Family **ASTERINIDAE**
Asterina gibbosa (Pennant 1777)

CUSHION STAR

Hell's Gates, LWN, 25.7.71 (DI); Black Rock, 14 m, 7.8.71 6 m, July 1977; Needle Rock, 9 m, 3.8.74; Seal Rock, 10 m, 2.8.74; St. Phillips Stone, 7 m, July 1977 (All KH). This species has not been differentiated from the recently described *Asterina phylactica* (Emson and Crump, 1978).

Family **SOLASTERIDAE**
Solaster (Crossaster) papposus (L. 1786)

COMMON SUNSTAR

Offshore of Halfway Wall Bay, 20 m, 20.4.77 (PT). Single specimen.

Family **ECHINASTERIDAE**
Henricia oculata (Pennant 1777),

Gannet's Rock, 15 m, 1.8.71 (DL), 13 m, 8.8.74 (KH); Knoll Pins 2.8.71 (DI); Quarry Bay, 13.5 m, 14.8.72, Brazen Ward, 14 m, 11.7.75, July 1976 (KH). Small numbers rarely observed. Circalittoral. This species has not been distinguished from *Henricia sanguinolenta*.

Order **FORCIPULATA**
Family **ASTERIIDAE**
Asterias rubens L. 1758

COMMON STARFISH

Present all around the island occurring as individuals or in aggregations.

Marthasterias glacialis (L. 1765)

SPINY STARFISH

Present all around the island on rock generally in small numbers. Especially common on exposed coasts and present on clean gravel and on other sediments only where stones or shells are present.

Class **Ophiuroidea**
Order **OPHIURAE**
Family **OPHIOCOMIDAE**
Ophiocomina nigra (Abildgaard, 1789)

Present in patches along the south coast usually in depths greater than 18 m up to several hundred individuals/m² in places. Rattles Anchorage 27 m 2.8.70, 19 m, 20.7.78 (KH); S.E. Rat Island 24.7.76 (KH); Lee Rocks 30 m, (KH); S.E. Point 25 m, 15.7.77 (KH). Offshore from Halfway Wall 20 m, 20.4.77 (PT); on sand at Seals Hole (KH).

Family OPHIOTRICHIDAE
Ophiotrix fragilis (Abildgaard, 1789)

Common off the East side of island, especially Gannets Rock, Brazen Ward and Rat Island. Appears to prefer a solid substrate, either on rocky shores or coarse shell/stone debris. S.E. of Rat Island, individuals present under stones at 23 m and dense beds below 27 m. Juveniles widely distributed in undergrowth and on stones all around the island.

Family AMPHIURIDAE
(*Amphipholis squamata* Delle Chiaje 1828)

Common all round Lundy especially in the lower littoral and sublittoral. Rarely found below 12 m. Maximum recorded densities 90/m² off Dead Cow Point at 8 m and 75/m² off Brazen Ward at 0m.

Amphiura filiformis (O. F. Muller, 1788)

Found on east side offshore of island on muddy sand at Brazen Ward, 15 m, 14.7.76 (BEP) and in Lundy Roads in muddy sand and shell, 20.4.77 (PT). Also found commonly 1 km offshore from the Quarries 24 m, 26.7.78, 28.7.78 (JW).

Family OPHIACTIDAE
Ophiactis balli (Thompson 1840)

Knoll Pins, 15 m, 11.7.76 (BEP), July 1975 (KH/PT); N. Rat Island, May 1975 (KH/PT); Lee Rocks; Due E. of Ugly, 20 m, 23.7.76 (KH). In shelly gravel on east side of Lundy (PT).

Family OPHIOLEPIDAE
Ophiura albida Forbes, 1841

Knoll Pins, 10 m, 11.7.76; Brazen Ward, 15 m, 4.7.76 (DEP); July 1976 (KH/PT); Lee Rocks (KH); Dead Cow Point, 16 m.; Half Tide Rock, 20 m; Due E. of the Ugly, 20 m (KH). This species was generally found on muddy sand and gravel and on silty areas between rocks. Maximum recorded density 120/m² at 18 m off Dead Cow Point (KH/PT).

Ophiura texturata Lamarck, 1816

Landing Bay, 15 m, 16.7.76, single specimen, on muddy sand (BEP). 1 km east of Quarry Beach, 19 m, 18.7.78 occasional (KH/PT).

Class Echinoidea
Order DIADEMATOIDEA

Family ECHINIDAE
Psammechinus miliaris (Gmelin, 1778)

Knoll Pins, 34 m, 3.8.71 (JDG), 21.5 m, July 1975 (KH); Brazen Ward, +0.8 m, 23.6.75; Rat Island, 10.5 m, 12.7.75 (KH).

Echinus esculentus L. 1758

COMMON SEA URCHIN

Large individuals present all around Lundy. A few small individuals observed in deep water and caves. Densities commonly of about 1/10 m². Present to 0 m on parts of the sheltered east coast but generally absent in depths shallower than 8 m on the exposed west coast. See also Rodhouse & Tyler (1978).

Order CLYPEASTROIDEA

Family FIBULARIIDAE
Echinocyamus pusillus (O. F. Muller, 1776)

Knoll Pins, 21.5 m, 10.7.75 (KH/PT). Common on soft sediments to east of Island (PT).

Order SPATANGOIDEA
Family SPATANGIDAE
Echinocardium cordatum (Pennant, 1777)

SEA POTATO

Landing Bay, in sand, 6 m, 3.8.71; Rattles Anchorage in gravel, 20 m, 5.8.71; Quarry Bay, in mud, 16 m, 6.8.71 (KH); Landing Bay in sand; Gannets Rock (RH/JW).

Class **Holothuroidea**
Order **ASPIDOCHIROTA**
Family **HOLOTHURIIDAE**
Holothuria forskali Delle Chiaje, 1824

COTTON SPINNER

Widely distributed in small numbers on rocks all around Lundy. Frequent at some localities. Not observed shallower than 6 m.

Order **DENTROCHIROTA**
Family **CUCUMARIIDAE**
Pseudocucumis mixta Ostergren, 1824

1 km off Quarry Beach, 19 m, fine muddy shelly sand, rare, 18.7.79 (KH)

Pawsonia saxicola (Brady & Robertson 1871)

Recorded as *Cucumaria* sp. and almost certainly all this species. Specimen identified from S. Surf Point, 6 m, 20.7.76 (KH). Present all around Lundy in very small numbers. Most records are from slate areas. Recorded as common at one location S. Surf Point (KH).

Paracucumaria hyndmani (Thompson, 1840)

Lee rocks, 14 m, 20.7.76, one very small specimen (BP).

Order **APODA**
Family **SYNAPTIDAE**
Leptosynapta inhaerens (O. F. Muller 1776)

Quarries, on muddy sand, 12-8 m, 1.8.74, rare (JW).

REFERENCES

- Emson, R. H. & Crump, R. G. (in press). Description of a new species of *Asterina* (Asteroidea), with an account of its ecology. *J. mar. biol. Ass. U.K.*, **59**.
- Harvey, L. A. (1950). The granite shores of Lundy. *Rep. Lundy Field Soc.*, **4**, 34-44.
- Harvey, L. A. (1951). The slate shores of Lundy. *Rep. Lundy Field Soc.*, **5**, 25-33.
- Hiscock, K. (1974). The marine fauna of Lundy. General Introduction. *Rep. Lundy Field Soc.*, **25**, 16-19.
- Hoare, R. & Wilson, J. (1976). The macrofauna of soft substrates off the coast of Lundy. *Rep. Lundy Field Soc.*, **27**, 53-58.
- Mortensen, T. (1927). *Handbook of the Echinoderms of the British Isles*. Oxford University Press, 471 pp.
- Rodhouse, P. G. & Tyler, I. D. (1978). Distribution and production indices of the sea urchin *Echinus esculentus* L. in the shallow sublittoral around Lundy. In: *Progress in Underwater Science, Rep. Underwater Ass.*, **3** (NS) (Ed. by J. C. Gamble & R. A. Yorke). London: Pentech Press, pp. 147-163.
- Rowe, F. W. E. (1969). A note on the British species of Cucumarians, involving the erection of two new nominal genera. *J. mar. biol. Ass., U.K.*, **49**, 683-687.
- Thorson, G. (1957). Bottom Communities. *Geol. Soc. Amer. Memoir* **67** (1), 461-534.