

## THE MARINE FAUNA OF LUNDY

### GENERAL INTRODUCTION

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The Island of Lundy lies 18 km from the mainland in a position 51°11'N, 4°40'W at the mouth of the Bristol Channel. Lundy is 4.9 km long and 1.5 km at its widest with an area of 4.3 km<sup>2</sup> and a coastline of 13 km. There is a plateau at about 100-120 m with the highest point being 138 m. The plateau is surrounded by steep sidelands and precipitous cliffs which often continue across the shore and underwater as almost vertical surfaces to depths of 15 to 35 m. In bays and along much of the east coast, there are boulder-covered beaches which extend seawards to depth of up to 14 m. Off the south and west coasts there are extensive horizontal rock surfaces dissected by steep sided gullies and thrown up into underwater pinnacles. Many of these pinnacles rise above sea level offshore. Rock off the south and south-east coast is of slate whilst the rest of the rocky shore and seabed is of granite. The mobile substrates range from large stones in areas exposed to strong tidal streams through coarse gravel in wave and current exposed localities to sand and fine mud on the east coast. The only sandy beaches are in the Landing Bay. The west coast is exposed to prevailing winds and Atlantic swell whilst the east coast is comparatively very sheltered. Tidal streams of up to 2.6 m/s (5 knots) flow along the north and south coasts whilst on most of the west and east coasts streams do not exceed 0.52 m/s (1 knot). The mean spring tidal range is 7.2 m.

The variety of habitats and environmental conditions around Lundy, together with the position of the island in the south-west of the British Isles has led to the presence of a rich and varied marine life which includes many examples of Mediterranean-Atlantic elements of the fauna and some rare animals recorded from very few other sites in the British Isles. This richness, together with the small size of Lundy and its isolation from mainland pollution and from previous disturbance, makes the island an excellent location at which to study sublittoral ecology. The management of the shore and seabed around Lundy as a marine nature reserve by the island authorities (Hiscock *et al.* 1972) is intended, as far as possible, to maintain the area as a rich habitat for marine life whilst at the same time providing opportunities for study and recreation underwater.

Although Lundy was visited by several 19th century naturalists, no account of the littoral fauna and flora of the island was published until the work of Professor L. A. Harvey in the late 1940's and early 1950's (Anon 1958, Harvey 1950, 1951). Since then, the use of diving as a technique in marine ecology has been widely adopted and studies of the plant and animal communities underwater around Lundy have been carried out from 1969. A list of the marine algae has been published (Irvine *et al.* 1972) and notes on the animals living on sublittoral rocks have been included in Hiscock (1970), Hiscock (ed.) (1971) and Mendelsohn (ed.) (1973). In 1971 the Lundy Field Society provided marine species record cards as a means of retaining the observations of visiting scientists and of amateur divers (the latter records taken as supplementary observations on the distribution of common easily recognised species). Lists of some groups are already fairly complete and over the next few years experts in the various groups requiring further study will be encouraged to visit Lundy to make observations and collections of their own so that adequate information is available for the preparation of a marine fauna. These lists together with the work being carried out to describe the ecology of plant and animal communities around the island are intended not only as a contribution to our knowledge of marine ecology but also as a basis on which future studies can determine the changes

which occur in marine communities as a result of natural environmental variations unaffected by local pollution or exploitation.

The area encompassed by these studies includes littoral and sublittoral habitats which are a part of Lundy or are within the influence of the island mass. This includes all of the shore and seabed in an area 23 km east to west by 15.5 km north to south between Lat. 51°7' to 51°15' N and Long. 4°30' to 4°50' W (Fig. 1). At present, work is virtually restricted to the observation and collection of benthic species.

The system of classification of animal species used in each list will be indicated by the contributor. Synonyms used in standard identification works or of recent usage will be given together with vernacular names which are in common use and which are not considered to be misleading. Brief notes on the distribution, abundance, reproductive biology and other aspects of the ecology of each species around Lundy will be given where possible. However, in some cases, the exact location of rare species will not be published in the lists. Detailed information will be kept on the marine species record cards held by the Lundy Field Society.

At some future date, all of the lists will be combined with additions into a marine fauna of Lundy. The work being carried out to map sublittoral habitats, to measure environmental conditions and to describe the distribution of sublittoral communities will eventually be incorporated into a more thorough introduction to the complete marine fauna.

#### ABBREVIATIONS USED IN THE LISTS

Jan., Feb., March, April, May, June, July, Aug., Sept., Oct., Nov., Dec.: Months of the year.

1.8.74: The first day of the eighth month of 1974.

(ABC/DEF): Initials of the observer/initials of the person responsible for the identification (where different from the observer). (Initials keyed in each list).

CD: Chart Datum (the level of the lowest astronomical tide. The level to which soundings are referred and tidal predictions are made. On Lundy, CD is 4.2 m below local Ordnance datum).

HW: High Water

LW: Low Water

TL: Tide Level

M: Mean

E: Extreme

S: Springs

N: Neaps

N.N.W. etc.: Compass directions

GR: Grid Reference

Lat.: Latitude

Long.: Longitude

km: kilometres

m: metres

cm: centimetres

mm: millimetres

s: seconds

#### TERMS

The system of classification for zonation on rocky shores is that of Lewis (1964). Although sublittoral rocky areas have been shown to be clearly divided into biologically defined vertical zones, a satisfactory system of nomenclature has not yet been developed. Alternative terms are therefore given.

**Littoral.** The zone extending from the top of the *Littorina/Verrucaria* belt on the shore to the upper extent of the *Laminaria/Alaria* population.

**Littoral fringe.** That part of the littoral zone which lies above the barnacle and/or furoid populations.

**Eulittoral.** That part of the littoral zone which includes the barnacle and furoid populations (= midlittoral).

**Sublittoral.** The zone extending from the upper limit of the *Laminaria/Alaria* population to the deepest level at which plants can grow. The lower limit of this zone around Lundy is undetermined. However, Irvine *et al.* (1972) recorded several algae species from 37 m, the deepest point sampled.

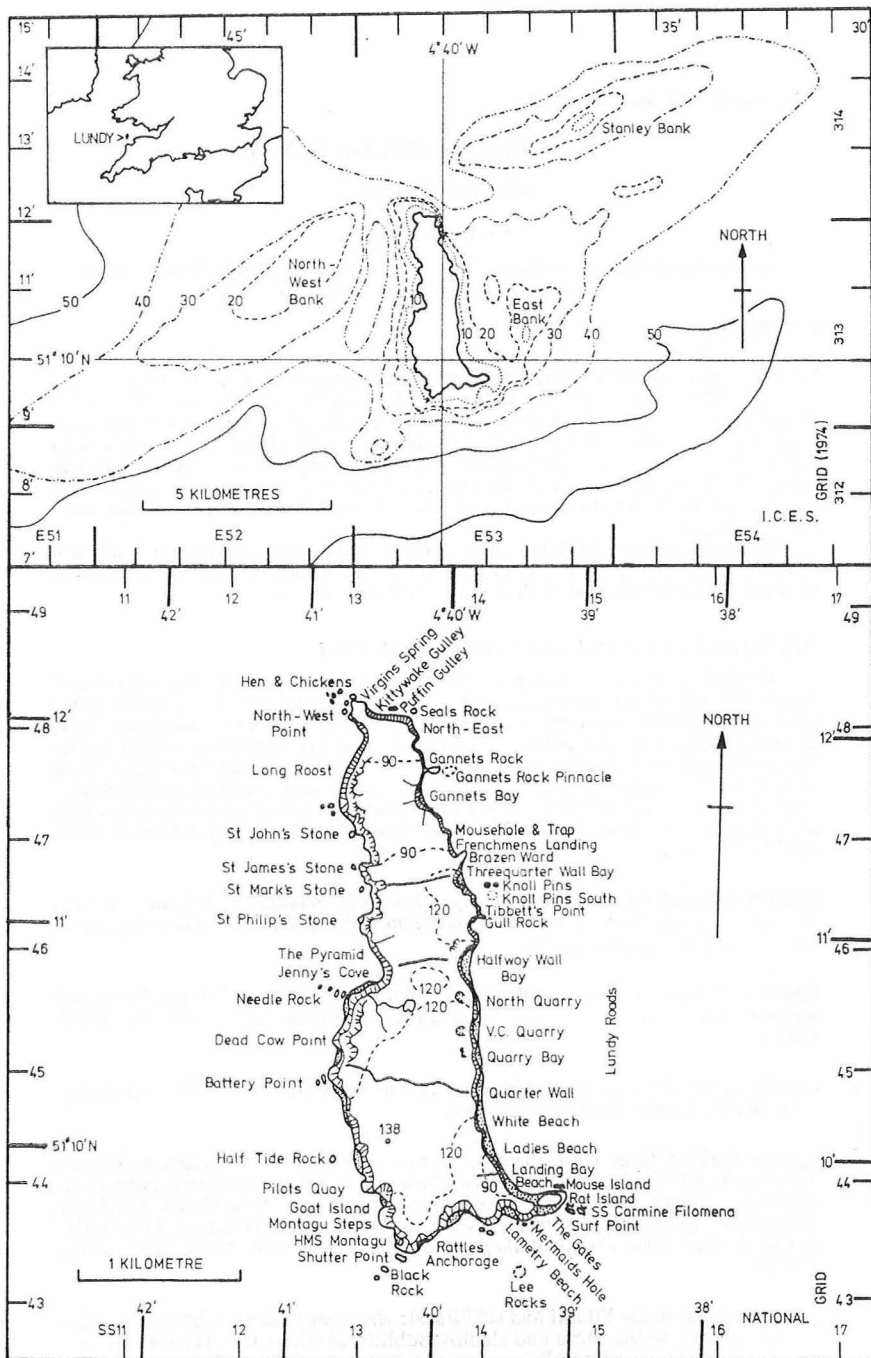
**Infralittoral/Upper Sublittoral/Laminaria zone.** That part of the sublittoral zone dominated by the *Laminaria* forest (which extends to about 11 m below CD on Lundy).

**Infralittoral fringe/Sublittoral fringe.** That part of the infralittoral zone which lies above the main *Laminaria hyperborea* population. In practice, it is the shallow water zone dominated by *L. digitata* where undergrowth forming algae are sparse.

**Cirralittoral/Lower Sublittoral/Sub-Laminaria zone.** That part of the sublittoral zone below the *Laminaria* forest.

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**Fig. 1.** Lundy: its position, the area covered by the lists and the names used in the lists. Depth contours are drawn from Admiralty Charts 1164 and A6582 and refer to depth in metres below C.D. Height contours are from the Ordnance Survey and refer to metres above Ordnance Datum. The names of land features are from the C. G. Taylor map of Lundy. Some names have been added for prominent sublittoral features.