

**NOTES ON *LITTORINA SAXATILIS* AND ALLIED SHELLS EXAMINED AT
THE BRITISH MUSEUM OF NATURAL HISTORY, LONDON**

ABSTRACT

This short note records some notes made by the author on the shells of *Littorina saxatilis* (Olivi) and certain allied forms while examining these from collections in the British Museum of Natural History, London.

IN CONNECTION with the variations noticed in the shell features in the species, an opportunity was availed to examine the collections of *Littorina saxatilis* and allied forms stored in the British Museum of Natural History, London, thanks to the kindness of Dr. W. J.

Rees who was at that time the Keeper of the Molluscan Gallery there. While the author's conclusions have since been published (Seshappa, 1976), brief notes made at that time are given here as they may be of some interest and use in any further studies on the species



PLATE I. A. Male *Taeniura melanospila* (1330 mm across disc) and B. Tail region of the same ray.

and its variants. The main works on *L. saxatilis* subsequent to my above work are those of James (1968) and Fischer-Piette *et al.* (1960, 1961 a, b; 1963, 1964, 1966 a,b).

The register numbers of the samples and the names of the collectors are given here as found with the original preserved samples at the time of the examination.

1. 'No. 1939-7-25./Lord Moyne. *Littorina saxatilis* Olivi. Liverpool Bay, Novascotia'. The inside label states: 'collected above High Water neaps; 1-10-1937. *L. saxatilis* or *neritoides*?'

Comments: This is definitely *L. saxatilis* (Olivi) and not *neritoides* as queried above in the label. Thin-shelled forms, mostly small and below 1 cm in length, a few bigger; resemble Port Erin forms; some shells tend to be stronger also as in the Port Erin forms. The proportion of spire length to the length of the mouth of the shell is variable and the spire appears to be longer with increasing thickness of the shell. Some of the shells are plain brown and others have some white stripes resembling in this also the Port Erin (and New biggin) High Water Level forms. The ridging is fine or smooth to rather well-developed, but never so prominent as in the *jugosa* — type of shells. Colour transitions are noticed in some from whorl to whorl as in some of the Cullercoats specimens. These can perhaps be closely allied to the form *rudissima* of Cullercoats.

2. 'No. 1939-1-11. 59-78. J. S. Colman's collection; *Littorina saxatilis* (Olivi), Woods Hole, Massachusetts'.

Comments: Thin-shelled, but reaching a bigger size than the Cullercoats *rudissima* form; the bigger shells also tend to be stronger, but never as strong or thick as the *rudis* of Cullercoats. Shape and sculpture are variable from perfectly round to quite elongate forms; the larger shells resemble the bigger thin-shelled snails of Port St. Mary; whorls are tumid;

sudden changes in the nature of colouring and sculpture are also present; tessellation when present, is seen often in the penultimate whorl; some of the shells are patulate; the smaller shells strongly resemble the Cullercoats *rudissima* forms and have large opercula. *This form must be very closely related to the Cullercoats rudissima.*

3. 'No. 1936-9-10. 34-46. Dr. Hans Schlesch Collection. *L. obtusata castanea* Dautz. & Fischer. N. W. Ireland. June 1936.'

Comments: Thick-shelled and unmistakably *obtusata*; but the spire is a bit produced when compared to the Cullercoats specimens of *L. obtusata* (= *littoralis*).

4. '1936-9-10-8296. *Littorina saxatilis groenlandica* Dautz., N.W., Ireland. June 1936.'

Comments: Thin-shelled and longish; more or less like the Port Erin forms, but bigger reaching upto 15 mm in length. Most of the shell including the body whorl is white to yellowish white; the apex and often the sub-penultimate whorls are brown or black; the shell is smooth to well-ridged, but the ridges are closely arranged when present; sudden changes in sculpturing are also seen in some shells. This can be related to the Port Erin form.

5. '1939-7-25. 267-286. Lord Moyne. *L. saxatilis* from West Greenland.'

Comments: This is obviously the *groenlandica*; thin shells with shape varying from round to elongate and the mouth becoming smaller with the greater elongation of the shell; operculum is large; mouth is round; sculpture is also variable with smooth to well-developed ridges of the *jugosa*-type; the larger sizes have a rather thick shell, but not so thick as the Cullercoats *rudis* form; colour is variable from brown to yellowish white in different shades. Ill-marked tessellation also present, but mostly among the smaller shells. This

seems to be definitely related to the Cullercoats and Port Erin forms.

6. '77-8-60. Arctic Expedition, 1875. H. C. Hart Collection. Habitat: Uponivik; *L. groenlandica*.'

Comments: Thin-shelled, similar to the above. but the ridges are less prominent and the brown colour is also less marked; the shells are more like the Port Erin High Water Level forms.

7. '1936-9-10. 67-75. *L. obtusata auricularia*. Schlesch. N. W. Ireland. June 1936'.

Comments: Unmistakably an *obtusata* (= *littoralis*) though the spire is slightly produced.

8. '1936-9-10. 3-10. *L. obtusata* var. *ex. col. reticulata* Dautz. & Fischer. N. W. Ireland'.

Comments: The shell-lip is thinner than usual for *obtusata*; but it still rather resembles shells of juvenile *obtusata* from Cullercoats in appearance though the shell is larger reach in upto 14mm in length.

Note: The above samples (nos. 1 to 8) are all preserved wet, but the following (nos. 9 to 45) are preserved dry.

9. 'No. 44-9-20-146-152. *L. sitchana* Philippi. California. Lady Douglas Collection.'

Comments: Only seven dry shells in the sample; length of shell 7.5 mm to 16.5 mm; ridges well-developed; shell with rounded to elongate shape; very nearly related to the Cullercoats *rudissima*.

10. '42-1-22-591. 42-1-22-590.' (other details missing).

Comments: Short forms; apparently same as above.

11. '1927-4-21-113-112. Schlesch collection. *Littorina* from Greenland.'

Comments: *L. groenlandica* (?). The shells are very much like the *L. saxatilis* of Cullercoats and Port Erin, though more like the latter; size 8-11 mm; colour and shape varying widely as in Cullercoats forms; short shells few only.

12. '43-6-30-110-112. *L. groenlandica* typica - Greenland.'

Comments: Only three shells in the sample; two ridged like the *rudissima* of Cullercoats and one more conical with five whorls looking like a 'tenebrosa' form.

13. '75-12-31-453. *L. palliata* Say, Newfoundland. On rocks at the Narrows, L. Phelps, 1858.'

Comments: Shells are very much like those of *rudissima* Bean except that the ridges are not well-developed.

14. 'Disco Harbour. H.M.S. Alert, 1875. *saxatilis* Olivi.'

Comments: Thin shells with rounded to moderately elongated shape; they can be related to the Cullercoats form of *rudissima*.

15. '90-9-15-161-170. *L. rudis* Gould — U.S. F.C. Newport R. I. Shore' (outer label: '*saxatilis* Olivi, Newport R.I.').

Comments: These shells are more like the *rudissima* forms than the *rudis* forms of Cullercoats; however, it seems rather difficult to place these shells in either group; they rather resemble the plymouth High Water Level forms of *rudis*.

16. '43-6-30-95-98. *L. arctica* var.: Moller, Greenland' (Outer label: '*palliata* Say').

Comments: These are thin-shelled forms resembling the *rudissima* of Cullercoats, but with smoother shell surface.

17. Unregistered single specimen from 'm.c. drawer No. 7, B, 16/40-16 *saxatilis tenebrosa* Mont. Britain'.

Comments: Thin shells; elongate; about half the length of the shell is tessellated, whitish on brownish.

18. Unregistered. 'm.c. drawer No. 7, B, 16/40-16. *nigrolineata* Gray'.

Comments: Thick-shelled forms with ribbon-like ridges and brown colour in the narrow grooves; the raised ribbons are yellowish white; grooves are several, but eight are prominent. Subsidiary minute grooves are also present on the ridges themselves.

19. '43-6-30-116-118. *L. groenlandica* var. *reticulata* Menke; Greenland.'

Comments: Thin-shelled reticulated forms with elongated shell; undoubtedly like the elongated *rudissima* shells of Cullercoats; tessellated shells, brown plus white.

20. '43-6-30-119-121. *L. groenlandica* var. *rubra* Menke, Greenland.'

Comments: Thin-shelled; elongate and ridged shells that are undoubtedly related to the High Water Level *rudissima* of Cullercoats; shell has five whorls and reaches a length of upto 16½ mm.

21. Unregistered. 'drawer No. 7, B, 16/40-16. *fabalis* Bean, Scarborough'.

Comments: These shells seem to belong to juveniles of *Littorina obtusata* (= *littoralis*); shell smooth, brown and thin.

22. Unregistered. 'drawer No. 4, A, 3/41, 3, *palliata* Bay, Arctic, Moller collection'.

Comments: *obtusata*? Shell is thin and smooth with a wide rounded mouth; it can be only very distantly if at all, related to any of the Cullercoats forms.

23. Unregistered. 'drawer No. 4, A, 1/41, 1. 'saxatilis Johnston'.

Comments: This is *L. saxatilis* Johnston allright of my classification also. Shell is thin and tessellated and very much like the thin-

shelled Low Tide Level forms of *saxatilis* Johnston found at Cullercoats.

24. 'No. 43-6-30-99-102, *L. arctica*, Greenland.'

Comments: Seems to be mixed up sample; all shells thin, two smooth patulate and two ridged shells.

25. '1935-7-8-1-20. Schliesch. *Groenlandica* from Labrador'.

Comments: Shells are similar to those under 26 below, but are smoother with finer ridges.

26. '1935-7-8-1-40. Dr. Hans Schliesch. *Groenlandica* Moller.'

Comments: Shells resemble a High Water Level collection of *L. saxatilis rudissima* though the shells have in general a more produced spire.

27. '1926-8-24-92-97. Sir S. F. Harmer. *L. sax.* Ol. *nigrolineata* Gray var. *compressa*. St. Serven.'

Comments: Similar to the *rudis* forms of Cullercoats. Shell very thick with ribbon-like ridges and narrow grooves with or without brown colour in the grooves; elongate as well as rounded.

28. '1926-8-24-125-27. S. F. Harmer. *L. sax.* Ol. *jugosa* Montagu. Point de la Varde, near Parame.'

Comments: Thick-shelled and similar to the thick-shelled *rudis* forms occurring at Plymouth.

29. '1926-8-24-121-24. S. F. Harmer. *L. sax.* Ol. *groenlandica* Moller. Iceland.'

Comments: Thin-shelled forms, but shells are rather strong and large (resembling the stronger, but somewhat thin-shelled forms of Port Erin; 14½ mm.

30. '1926-8-24-145-151. S. F. Harmer. *L. sax.* Ol. *tenebrosa* Mont. St. Malo'.

Comments: Shells thin and wide-mouthed; ridges not well-developed; shell rounded to longish with 4-5 whorls; related to the thin-shelled High Water Level forms of *rudissima* of Cullercoats and Port Erin.

31. '1926-8-24-131-32. S. F. Harmer. La Trinite Sur. Mer. *L. sax.* *Ol. rudis* Maton var. *rudissima* Bean.'

Comments: Thick-shelled and more like *L. littorea* than *L. saxatilis rudis* or *rudissima*; there is absolutely no resemblance to the *rudissima* shells of Cullercoats.

32. '1926-8-24-137-139. S. F. Harmer. *L. sax.* *Ol. groenlandica* Moller var. *zonaria*. Iceland.'

Comments: Occasionally or rarely shells of this shape and variations in size (limited to 5-6 mm) occur at Cullercoats at and around High Water Neap Tide Levels *i.e.* at the upper limit of distribution of *L. saxatilis* Johnston.

33. '1926-8-24-142-144. S. F. Harmer. *L. sax.* *Ol. tenebrosa* Montagu, St. Servan'.

Comments: Shell colour, tessellation, etc. are exactly like the Port Erin forms at High Tide Level; there are five whorls in the shell; but the spire is not as long as usually described for *tenebrosa*.

34. '1926-8-24-152-156. S. F. Harmer. *L. sax.* *Ol. jugosa* Montagu, St. Servan'.

Comments: Identity not clear in comparison with the Cullercoats and other forms of *rudis* with thick shell and ridges here are better developed, the shell being thicker and stronger; the mouth is not broad; *this is not the rudissima of Cullercoats.*

35. '1926-8-24-185-186. S. F. Harmer. *L. palliata* Say var.?'

Comments: This is not comparable to any of the forms at Cullercoats; the shell is very elongate like a large '*tenebrosa*'; length

of the shell 17½ mm and width of shell-mouth 10 mm.

36. '1926-8-24-140-41. S. F. Harmer. *L. sax.* *Ol. rudis* Maton *rudissima*. Le Val Andre, Lavassari.'

Comments: The shells resemble the Plymouth shells in shape and sculpture; colour bands present; *not rudissima of Cullercoats.*

37. '1926-8-24-83-86. S. F. Harmer. *L. sax.* *Ol. rudissima* Bean. Finistere.'

Comments: The sample seems to be mixed up; there are both *rudis* type thick shells and *rudissima* type thinner shells; Some look like the '*nigrolineata*' forms, but without the brown lines.

38. '1926-8-24-87-91. S. F. Harmer. *L. sax.* *Ol. rudis* Maton *rudissima* Bean. Finistere.'

Comments: Very thick-shelled forms with round mouth; in most features these are like the *rudis* shells found frequently at mid-tide level at Cullercoats; Shell length upto 19 mm.

39. '1926-8-24-63-82. S. F. Harmer. *L. sax.* *Ol. tenebrosa* Mont. Denmark. Limfjorden'.

Comments: The shells resemble the *rudis* shells of Cullercoats; Dr. Jorgen Knudson of Copenhagen had also sent me similar shells from Denmark.

40. '1926-8-24-128-130. S. F. Harmer. *L. sax.* *Ol. rudis* Maton var. *rudissima* Bean. Qibernon.'

Comments: Shells resemble to some extent the thick-shelled High Water Level forms '*rudis*' (= *saxatilis rudis*) found at Plymouth regarding shape, thickness and sculpturing. But the identity is not quite clear; these are not *rudissima* Bean of Cullercoats and other places seen by the author. They do not tally with Alder's description also.

41. '1926-8-24-187-192. *L. neritoides* L. St. Servan'.

Comments: There seems to be a mix up in the sample; the shells resemble to some extent those of samples 37 and 40 above and are not *neritoides*.

42. '1926-8-24-157-158. S. F. Harmer. *L. sax.* Ol. *rudis* Maton *rudissima* Bean.'

Comments: Thick elongated shells with close ridges. These are different from the '*rudissima* Bean' of Alder found by me at Cullercoats and other places.

43. '1926-8-24-98-169. S. F. Harmer. *L. sax.* Ol. *rudis* Maton *rudissima* Bean'.

Comments: These shells are like the Plymouth High Water Level forms with a reddish colour and thick shell; *rudis*-like. Not *rudissima* of Cullercoats.

44. '1926-8-24-112-115. S. F. Harmer. *L. sax.* Ol. *groenlandica* Moll.'

Comments: These are shells of medium thickness like the Port Erin forms of *rudis*; shell mouth is wide as in *rudissima*.

45. Type specimens of *nigrolineata* Gray from Gray's collection.

Comments: These are thick *rudis*-like shells, about 8-15.5 mm in length; ridges of variable width and are ribbon-like, these being narrow in some cases, but never with sharp edges; the furrows are either all faint brown, deep brown or alternating, the shallower furrows showing the fainter colouring; when faint the colour has a yellowish tinge mixed with brownish; columella is produced and the mouth is neither rounded nor wide. The number of ridges and grooves on the shell appear highly variable. The grooves on the body whorl are 10-14; they are 8-9 in the middle these

being deep and prominent. The striations of colouring are continued for a short distance on the inner side of the lips also as seen frequently in *L. littorea* L.

Some shells of *L. saxatilis rudis* at Cullercoats do look like these shells though they are really different; some of Dautzenburg and Fischer's *rudissima* Bean could also be easily these (judging from the illustrations of the authors) provided the shell could be imagined as worn out somewhat and the colour in the grooves lost.

Gray's own description of *L. nigrolineata* is given as follows in *Zool. Voyage Beechey*, 1839, p. 140:

'Shell wide, sub-orbicular, pale-whitish, with numerous close-set, impressed, narrow, brown, spiral lines; the spire very short; whorls convex; suture impressed. Mouth ovate; outer lip black and white spotted, inner lip white, dilated in front; throat pale brown. Axis 7; diam. $5\frac{1}{2}$ lines.

The spire varies from being very low to nearly the length of the mouth.'

In the present author's work on *S. saxatilis* (Seshappa, 1976) *nigrolineata* has been treated as a synonym of *L. saxatilis* Olivi *rudis* (Maton).

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REFERENCES

- FISCHER-PIETTE, E. AND J. M. GAILLARD 1960. *J. du Conchyl.*, **100** : 10-37.
- _____, _____ AND _____ 1964. *Ibid.*, **5** : 125-171.
- _____, _____ AND _____ 1961. *Bull. de la Soc. Zool. de France*, **86** (1) : 163-172.
- _____, _____ AND MILE C. JOUIN 1961. *Ibid.*, **86** (2 & 3) : 320-328.
- _____, _____ AND MILE D. DELMAS 1966 (1967). *Bull. du Mus. Nat. D'Hist. Naturelle*, **6** : 874-897.
- _____, _____ AND B. L. JAMES 1963. *Cahiers de Biologie Marine*, **4** : 1-22.
- JAMES, B. L. 1968. *Cahiers de Biologie Marin* **9**.
- SEHSAPPA, G. 1976. *Indian J. Mar. Sci.*, **5** : 222-229.