

(15)

## A NOTE OF THE NOMENCLATURE OF THE WEST AFRICAN MANGROVE OYSTER

KOBINA YANKSON

Department of Zoology, University of Cape Coast, Cape Coast - Ghana

### Summary

The West African mangrove oyster has a considerable economic potential and is currently engaging research attention in this country. This paper discusses the confused nomenclature of the species. Reasons are given for the preference for the generic name *Crassostrea* to *Ostrea* and *Gryphaea*, and the specific name *tulipa* to *gasar*. It is concluded that the nomenclature of this oyster should be *Crassostrea tulipa* (Lamarck, 1819).



Fig. 1 Mangrove oysters on the stilts roots of the red mangroves. Notice the elongated shell outlines.  
Mag. x 1/3.

### Introduction

The West African mangrove oyster occurs along the West Coast of Africa between Senegal and Angola (Nicklès, 1950). Specimens are found predominantly attached to the stilts roots (Fig. 1) of the red mangrove (*Rhizophora* spp.) which fringe the coastal water bodies in this region. This oyster is one of two marine/brackishwater bivalves (the other being the bloody cockle, *Anadara senilis*) with considerable economic potential in West Africa. Afinowi (1975) considers the inadequate understanding of the ecology of the species as one of the factors militating against its full exploitation. In the Department of Zoology, University of Cape Coast, attention has now been focused on the ecology and culture of this oyster with the aim of gathering information that would enable its better exploitation.

The literature on the West African mangrove oyster reveals considerable confusion about its scientific name as shown by a sample in Table 1. It is apparent that there is no definite chronological trend upon which a selection could be made based on "modern usage". In

view of the economic and research importance which the species is now assuming, it is considered timely to resolve the nomenclatural confusion surrounding it. This paper therefore assesses the various names that have been applied to this oyster with the view to arriving at the most valid one.

### Genus

It is seen from Table 1 that three generic names have been used for this oyster namely, *Ostrea*, *Gryphaea* and *Crassostrea*. Morton (1967, p.141) used the generic name *Ostrea* for the oviparous group of oyster as follows: *O. virginica*, *O. angulata*, *O. cucullata*, and went on to describe them as "those species which we are now bidden to refer to as *Gryphaea*." Perhaps, this explains the switch from the usage of *Ostrea* to *Gryphaea* for the West African mangrove oyster in the early and mid-1960's (Table 1). In the same book (p. 195) however, Morton correctly used the name *Crassostrea* for the oviparous oyster as it is now generally accepted. It may be inferred therefore that the name *Gryphaea* could be synonymous to *Crassostrea* as indicated by Afinowi (1975) for the West African mangrove oyster, and not *Ostrea* as used by Edmunds (1978) for the same species. Furthermore, according to S. Morris of British Museum Natural History (pers, comm. 1988) the name *Gryphaea*

Table 1

*Scientific names applied to the West African mangrove oyster by various authors (in chronological order)*

Authors	Date	Scientific Name Used
Nicles, M.	1950	<i>Ostrea tulipa</i>
Buchanan, J.B.	1954	<i>Ostrea tulipa</i>
Bassindale, R.	1961	<i>Ostrea tulipa</i>
Blanc, A.	1962	<i>Gryphaea gasar</i>
Sandison, E.E.	1966	<i>Gryphaea gasar</i>
Sandison, E.E. & Hill, M.B.	1966	<i>Gryphaea gasar</i>
Lawson, G.W.	1966	<i>Ostrea tulipa</i>
Olaniyan, C.I.O.	1968	<i>Ostrea tulipa</i>
Yankson, S.C.K.	1974	<i>Ostrea tulipa?</i>
Afinowi, M.A.	1975	<i>Gryphaea (Crassostrea) gasar</i>
Chaytor, D.E.B. & Aleen, A.A.	1976	<i>Ostrea (Crassostrea) tulipa</i>
Cho Wellesley-Cole	1976	<i>Crassostrea tulipa</i>
Ndomahina, E.T.	1976	<i>Crassostrea tulipa</i>
Okera, W.	1976	<i>Crassostrea tulipa</i>
Edmunds, J.	1978	<i>Ostrea (Gryphaea) gasar</i>
Kamara, A.B., McNeil, K.B. & Quayle, D.B.	1979	<i>Crassostrea tulipa</i>
Obodai, E.	1979	<i>Ostrea tulipa</i>
Quayle, D.B.	1980	<i>Crassostrea gasar</i>
Ajana, A.M.	1980	<i>Crassostrea gasar</i>
Yankson, K.	1990	<i>Crassostrea tulipa</i>

may only be correctly ascribed to fossil oysters "since those species, except for *angulata* described by Lamarck are fossils and most likely have no close living relatives." Quayle (1988) also shares the same view, and *angulata* is now ascribed to the genus *Crassostrea*. A choice then has to be made between the genera *Ostrea* and *Crassostrea* for this mangrove oyster.

Table 2

*The main characteristics of the genera Ostrea and Crassostrea culled from Quayle (1980)*

Ostrea	Crassostrea
Left valve shallow	Left valve cupped
Circular in outline	Elongate
Adductor muscle scar central	Adductor muscle near shell edge
Adductor muscle scar colourless	Adductor muscle scar often colourless
No Promyal chamber	Promyal chamber present
Eggs large; incubated	Eggs small; not incubated.

The main characteristics of the genera *Ostrea* and *Crassostrea* as listed by Quayle (1980) are shown in Table 2. The conchological features exhibited by the West African mangrove oyster (Fig.2) conform with those ascribed to the genus *Crassostrea* namely, cupped left valve (attached to the substratum), elongate outline, adductor muscle scar near shell edge, and the scar being coloured in some specimens. According to Morris (1985) a small patch of chomata (small tubercles and corresponding pits on the inner margins of the right and left valves respectively) occurs in *Ostrea* but completely absent in *Crassostrea*. Figure 2 shows a lack of chomata in this mangrove oyster. On the other hand, a distinct promyal (exit chamber characteristic of the genus *Crassostrea* occurs in the

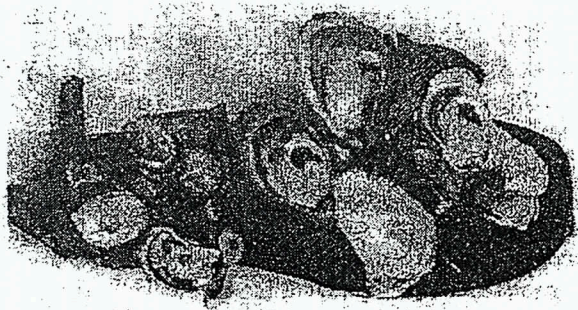


Fig 2. Mangrove oysters on the sole of an old shoe. The right valves and the meat of most of the specimens have been removed to show the 'cupped' left valves. Notice the adductor muscle scars which are 'coloured' in some specimens and also their acentric positions.

according to S. Morris, (pers. comm.), in 1890 Dautzenberg made the name available in the combination "*Ostrea gasar*". Before then, however, Lamarck (1819) had used the combination "*Ostrea tulipa*" for the West African mangrove oyster. Since Lamarck's *tulipa* (1819) pre-dates the resurrected *gasar* of Dautzenberg the former has priority over the latter and should be the accepted specific name for that oyster.

The nomenclature of the West African mangrove oyster should therefore be *Crassostrea tulipa* (Lamarck, 1819).

#### Acknowledgement

I am indebted to S. Morris of the British Museum (Natural History) for invaluable advice.

#### References

- ADANSON, M., (1757) *Histoire naturelle du Sénégal: Coquillage: Avec la relation abrégée d'un voyage fait en ce pays, pendant les années 1749/50/51/52.*
- AFINOWI, M.A. (1975) The biology of *Andara Sinilis* and *Gryphaea (Crassostrea) gasar* in West African Waters. In *FAO/CIFA Symposium on Aquaculture in Africa*; 386-406.
- AJANA, A.M. (1980) Fishery of the mangrove oyster, *Crassostrea gasar*, Adanson (1957), in the Lagos area, Nigeria. *Aquaculture*; 21: 129-137.
- BASSINDALE, R. (1961) On the Marine fauna of Ghana. *Proceedings of the Zoological Society of London*; 137: 481-510.
- BLANC, A. (1962) Etude de l'huître des paletuviers (*Gryphaea gasar* Adanson). Document, Service de l'Océanographie et des Pêches Maritimes, de Développement Rural, République du Sénégal, pp.76.
- BUCHANAN, J.B. (1954) Marine molluscus of the Gold Coast, West Africa. *Journal of the West African Science Association*; 1: 30-45.
- CAHN, A.R. (1950) Oyster culture in Japan. *Fishery leaflet. FishWildl. Serv. U.S.*; 383: 1-80.
- CHAYTOR, D.E.B. AND ALEEN, A.A. (1976) Marine molluscs of Sierra Leone. In *Bulletin of the Institute of Marine Biology and Oceanography*, Fourah Bay College, University of Sierra Leone; 22-23.
- CHO WELLESLEY-COLE (1976) Preliminary investigations on the fouling organisms affecting raft culture oyster populations in Sierra Leone. In *Bulletin of the Institute of Marine Biology and Oceanography*, Fourah Bay College, University of Sierra Leone; 26-28.
- EDMUNDS, J. (1978) *Sea Shells and other Molluscs found on West African Coast and Estuaries.*

local oyster. Furthermore, according to Yankson (1990) the latter group of oysters which include the genus *Ostrea*, brood their larvae before discharge. From the foregoing, the generic name *Crassostrea* appears to be more appropriate for the West African mangrove oyster.

#### Species

Two specific names *gasar* and *tulipa* have been used for this oyster (Table 1). Adanson (1757) first published the name *gasar* but since the naming of animals follows the system of Linnaeus (1758) *gasar* became an unavailable name. Ac-

*C. tulipa* exhibit  
broadcast fertilisation  
Genetic studies

- Ghana Universities Press, Accra; 146pp.
- KAMARA, A.B., MCNEIL, K.B. AND QUAYLE, D.B. (1979) Tropical mangrove oyster culture: Problems and prospects. In T.V.R. Pillay & W.A. Dill (Eds.) *Advances in Aquaculture*. FAO Technical Conference on Aquaculture, Kyoto, Japan, 344-348.
- LAMARCK, J.B.P.A. (1819) *Histoire Naturelle des Animaux sans Vertebres*. Tome 6 (1e partie). Chez L'Auteur: Paris.
- LAWSON, G.W. (1966) The littoral ecology of West Africa. *Oceanography and Marine Biology, Annual Review*; 4: 405-448.
- LINNAEUS, C. (1758) *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus differentiis, synonymis locis*. Tumes I. edition 10 Stockholm.
- MORRIS, S. (1985) Preliminary guide to the oyster of Hong Kong *Asian Marine Biology*; 2: 119-138.
- MORRIS, J.E. (1967) *Molluscs*. 4<sup>th</sup> (revised) Edition, London. Hutchinson & Co. Ltd.; 244pp.
- NDOMAHINA, E.T. (1976) Preliminary studies on the reproductive cycle of the mangrove oyster, *Crassostrea tulipa*. In *Bulletin of the Institute of Marine Biology and Oceanography*, Fourah Bay College, University of Sierra Leone; 31-34.
- NICKLÈS, M. (1950) *Manuels Ouest-Africain, Mollusques Testacéa Marins de la Côte occidentale d'Afrique*, 2<sup>nd</sup> Edition, Paris; 269p.
- OBODAI, E.A. (1979) *The growth of oyster (Ostrea tulipa) spat in Elmina lagoon*. B.Sc. (Hons) dissertation, University of Cape Coast; 27pp.
- OKERA, W. (1976) The cockle fishery of Sierra Leone. In *Bulletin of the Institute of Marine Biology and Oceanography*. Fourah Bay College, University of Sierra Leone, 24-25.
- OLANIYAN, C.I.O. (1968) *An Introduction to West African animal ecology*. Heinemann Education Bks. Ltd. London; 167pp.
- QUAYLE, D.B. (1980) *Tropical oyster: Culture and methods*. Ottawa, Ont. IDRC.; 80pp.
- QUAYLE, D.B. (1988) Pacific oyster culture in British Columbia. *Canadian Bulletin of Fishery and Aquatic Science*; 218: 241pp.
- SANDISON, E.E. (1966) The effect of salinity fluctuations on the life cycle of *Gryphaea gasar* in Lagos Harbour, Nigeria, *Journal of Animal Ecology*; 35: 379-389.
- SANDISON, E.E. and HILL, M.B. (1966) The distribution of *Balarus pallidus strutsburi* (Darwin), *Gryphaea gasar* (Adanson) Dautzenberg, *Marcierella Enigamatica* (Fauvell) and *Hydroides uncinata* (Phippi) in relation to salinity in Lagos Harbour and adjacent creeks. *Journal of animal ecology*; 35: 235-250.
- WALE, P.R. (1979) *Culture of bivalve molluscs*. 2nd Edition. London, Whitefriars Press Ltd.; 189pp.
- YANKSON, S.C.K. (1974) *Preliminary study of some aspects of the Biology of the mangrove oyster (Ostrea tulipa?) in the Elmina lagoon*. B.Sc. (Hons) dissertation, University of Cape Coast; 30pp.
- YANKSON, K. (1990) Preliminary studies on the rearing of the West African mangrove oyster, *Crassostrea tulipa* in the Laboratory. *Discovery and Innovation*; 2(4): 45-51.