



ATYPICAL PROSTATE STRUCTURE IN *LYMNAEA (LYMNAEA) VULNERATA* KÜSTER, 1862 (GASTROPODA: PULMONATA: BASOMMATOPHORA)

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ABSTRACT: Two well developed folds are a characteristic feature of the prostate structure in *Lymnaea (Lymnaea) vulnerata* Küst. A rare case of three folds in the terminal part of this gland is described and illustrated.

KEY WORDS: Lymnaeidae, *Lymnaea vulnerata*, prostate, reproductive organs

INTRODUCTION

During my research on the large lymnaeid collection that was received on loan from the Natural History Museum in Göteborg (Sweden), I found several specimens of *Lymnaea (Lymnaea) vulnerata* Küster, 1862. It is the most abundant lymnaeid species in Sweden (JACKIEWICZ & PROSCHWITZ 1991).

The structure of reproductive organs in this lymnaeid, and especially the internal structure of the

prostate, is a valuable diagnostic feature which makes it possible to distinguish *L. vulnerata* unambiguously from other members of the family (JACKIEWICZ 1988). There are two large very characteristic folds of the same size inside the terminal prostate part of this species (Fig. 1). In the studied collection, there was one specimen with atypical prostate structure.

MATERIAL AND METHODS

Materials for this study come from different localities in Sweden. They were collected in different years by several malacologists. The specimen with three prostate folds was found among specimens collected on 27th

September 1980 by H. W. WALDÉN in Västergötland, Flistad N of Holma & Lake Östen. The lymnaeids were preserved in 75% ethyl alcohol. The figures were drawn using camera lucida mounted on stereomicroscope.

RESULTS AND DISCUSSION

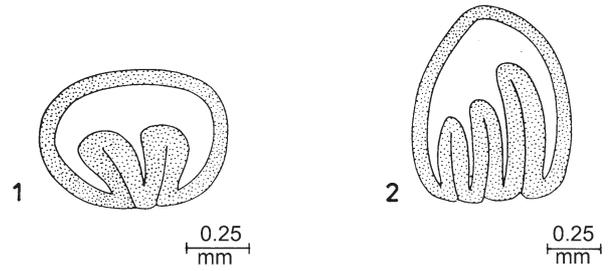
In the studied collection of the Natural History Museum in Göteborg, among many typical specimens, there was one with three folds instead of two developed inside the prostate (Fig. 2).

The analysis of the number and size of folds located in the terminal prostate part of the 11 lymnaeid species

known from Europe resulted in a reconstruction of the developmental trends of this gland in the lymnaeid phylogeny (JACKIEWICZ 1992). It led from the very simple to increasingly complicated forms. Such an opinion was also confirmed by the results of studies of ROSZKOWSKI (1927) and HUBENDICK (1951).

The prostate without any fold was probably the ancestral form. From this starting point, the following forms could develop: 1. with a single small fold, 2. with a large fold, 3. with two folds, 4. with several thick folds, and 5. with numerous small folds (Fig. 3). The complication of the prostate structure could consist in the development of its folds, which could lead to the increase in its internal surface. The number of folds was correlated with the size of the species. The developmental trends could also go in another direction. It may be assumed that the prostate with one well developed fold was the most primitive state. This fold was either reduced completely or became very small-sized in small species. Two folds of the same size developed in larger species. In the largest species, either several thick or many small folds were developed (Fig. 3). Moreover, some folds were formed in the proximal part of the gland.

The case of the specimen of *L. vulnerata* with three folds in the terminal prostate part may indicate that during the lymnaeid phylogeny this gland could be subject to alternate developmental process: either in



Figs 1, 2. Prostate cross-section of *Lymnaea (Lymnaea) vulnerata*: 1 – with two folds; 2 – with three folds

the direction of the reduction or of the increase in number of its folds (Fig. 3).

Alternatively, it may be assumed that the prostate with three folds instead of two in *Lymnaea vulnerata* is only an anomaly. However, I have never observed such an anomaly before among numerous specimens of the lymnaeids with one large prostate fold (Fig. 3) or of *L. vulnerata* with two prostate folds (Figs 1, 3).

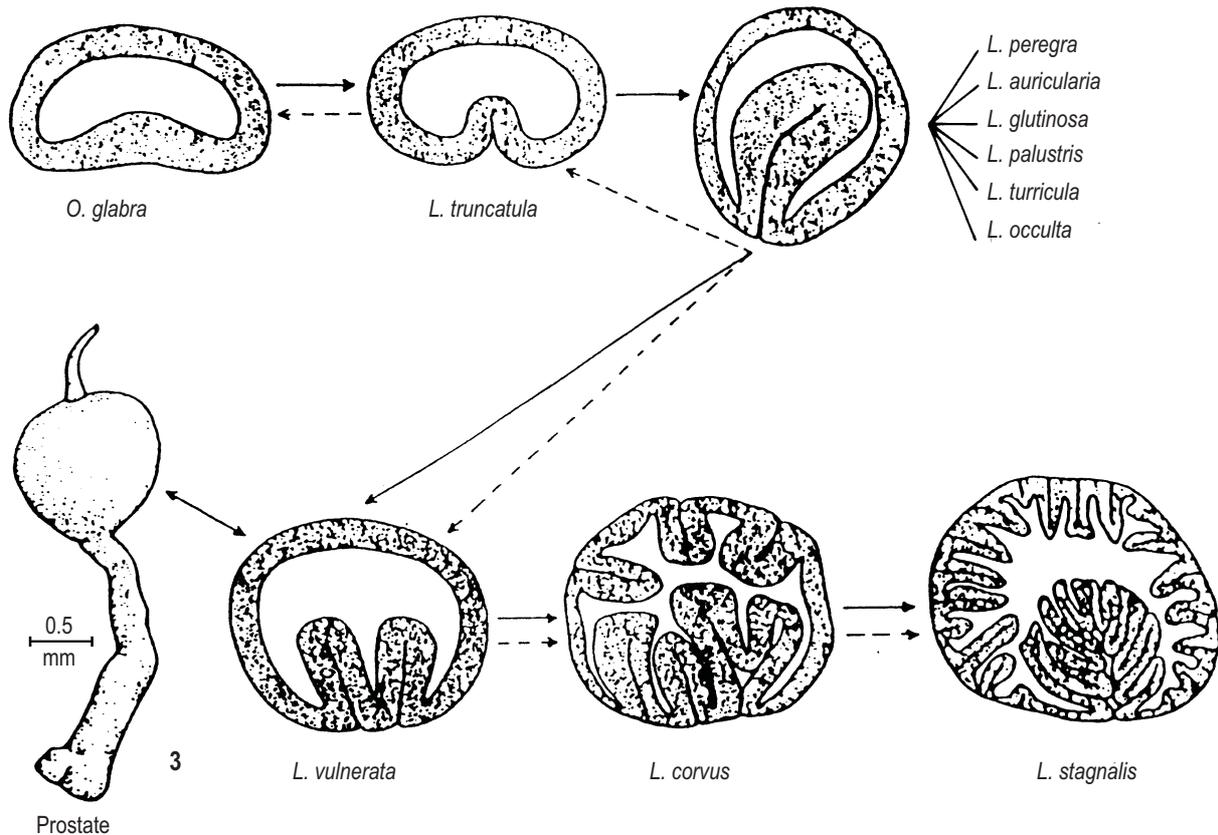


Fig. 3. Morphological series of the internal prostate structure in lymnaeids (after JACKIEWICZ 1992)



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