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Predation Forms In Rapana Venosa: Drilling And Valves Opening

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It is known that gastropods of the family Muricidae may use two forms of predation: drilling and opening the valves of a bivalved prey by the foot. Edge drilling is a form of predation in which a predatory snail excavates a hole at a point along the margin of the closed valves of a bivalved animal. The time required to complete an edge-drilling attack is several times less than when prey are attacked through the shell wall (Dietl, Herbert, 2005). The edge-drilling behaviour is more risky and may be selectively advantageous in environments where enemies are abundant, especially competitors that might attempt to steal prey (Dietl et al., 2004). According to literature data, Rapana venosa uses drilling when being a juvenile (first months after settling down from plankton), and opening the valves – when an adult (Chukhchin, 1984). According to our data, adult rapa whelks also use drilling. During experimental keeping of several rapa whelks in cages for 2 months, among empty valves of eaten mussels was found a number of valves with drilled edges (about 10% of total number of valves). Drilling, as well as soft tissues tearing, is realized by anterior 12-15 tooth rows of radula. In case of drilling these section of radula must be significantly scuffed. The examination of radulae of specimens collected in several sites of the Black Sea coast with two types of grounds (sand or/and rocks) and prey (clams or/and mussels) revealed differences in scuffing of anterior rows of teeth. In rapa whelks collected from sandy grounds with clams (Anapa, Tuzla, Donuzlav), scuffed teeth were present in the majority of specimens without respect to age and size. Rapa whelks collected from hard ground with large mussels (under the pier in Blue Bay) lack scuffed teeth. Rapa whelks from combined biotopes – rocks with mussels and sandy bottom with clams between them (Orlyonok, Tarkhankut cape, Blue Bay except the pier) – possess equal percent of specimens with scuffed and normal teeth. In specimens collected from Sochi (hard ground with extremely small mussels and very small rapa whelks feeding on them) scuffed anterior rows of teeth were found in the majority of examined specimens. Obtained data allow assuming that adult rapa whelks also use drilling in predation. Probably drilling is an additional mechanism in case the animal is not able to open the valves by foot. For example, rapa whelks from Sochi with scuffed radulae had very small sizes (all age groups with shell height at about 25 mm). It is also notable that rapa whelks use an edge drilling (and not wall drilling) as the consequence of a high competition for prey in the conditions of overpopulation.