



Department of Planning and Natural Resources
Division of Fish and Wildlife
U.S.V.I. Animal Fact Sheet #16
Whelk
(also called the West Indian Topshell)
Cittarium pica



Description

Whelks are large snails that occur in shallow rocky habitats throughout the USVI. Their large size (to ~ 4 inches wide) and tasty flesh make them a popular and traditional meal. In fact, whelks were an important part of the island diet since before Columbus – the Taino Indians ate whelk quite frequently judging by their shell middens. These days, whelks are still eaten regularly and a modest recreational and commercial fishery makes whelks the second most important marine snail, behind the queen conch (*Strombus gigas*), in the USVI.

Whelk shells are hard and heavy – about $\frac{1}{3}$ of a whelk's weight is in its shell - making the shell quite durable. These sturdy shells resist destruction by waves and, as a result, are commonly found by beachcombers along our shorelines. In addition to delighting shell collectors, the attractive shell pattern with alternating white and black bands has inspired the use of whelk shells in Caribbean jewelry.

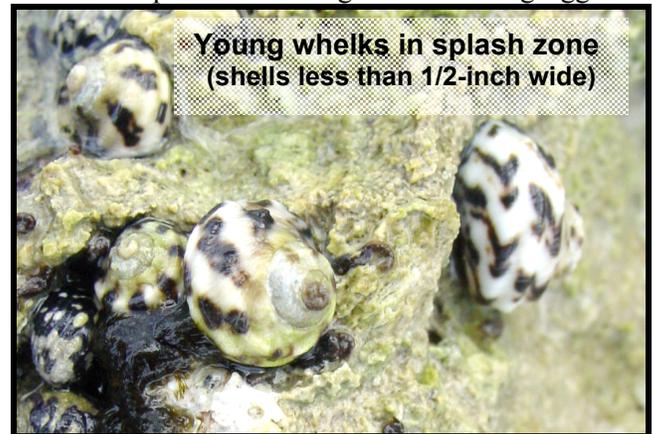
Although a whelk shell is easy to observe, the living animal found inside is harder to see – most of it is safely tucked deep inside the shell. Usually, only two parts are exposed. The first is a muscular foot, which allows the whelk to firmly grip onto rocks, resist crashing waves, and crawl around [when whelk are eaten, it is the foot that forms most of the meal]. The other exposed part is the head, which includes two stalked eyes and a snout (called a proboscis). At the end of the proboscis is a small, hard, tooth-like structure called a radula. A whelk uses its radula to scrape algae from rocks. When threatened, a whelk can withdraw completely into its

shell, closing the opening with a trapdoor-like operculum.

Identification

Adult whelks are usually easy to identify. They are one of only a few shallow-water snails that reach such a large size. Shell color is a useful clue - heavy black or purple stripes on a white background color. Sometimes it is hard to see the shell pattern because of algal growth: blue-green algae give whelk shells a greenish tint and encrusting red algae may completely cover shells of older whelks.

Young whelks (< $\frac{1}{2}$ -inch wide) are common in the splash zone of rocky areas and are distinguished by having mostly white shells with regular black spots. Three ridges spiral around, following the path of shell growth. As young whelks grow, these ridges get smaller, turn to bumps, and are eventually lost completely. Color changes with growth too. The white color gets obscured as the black spots become larger and more zigzagged.



Common Names

Most locals in the USVI call them whelks. In other parts of the Caribbean, they are also called West Indian topshells or magpie shells. In Spanish, whelks are called 'Caracoles', 'Burgao', or 'Quigua' (Venezuela).

Classification

Whelks are marine invertebrates that belong to the phylum Mollusca. Like all snails, whelks are classified in the subphylum Gastropoda. They belong to the family Trochidae, a diverse group that includes many species harvested for food. Whelks are placed in the genus *Cittarium* and the species *pica*.

Distribution

Whelks are found throughout the Caribbean, ranging from the Bahamas to the central coast of South America. Occasionally, whelks are found in south Florida. In Bermuda, whelks were driven to extinction by over harvesting during the early 19th century (an effort to reintroduce whelks to Bermuda has been successful). In almost all places that whelks occur, people harvest them.

Life History & Habitat

Whelks live in rocky areas along the seashore in a habitat known as the intertidal zone. The intertidal zone is the shoreline that extends from highest high tide down to the lowest low-water line. Whelk habitat is like a narrow band running along the shoreline, and it does not extend very deep – most whelks are found immediately at the water's edge. Large adult whelks may occur slightly deeper, but generally not below about three feet deep. Like surfers, whelks seem to prefer areas with some wave action too. In such wave-washed rocky areas, whelks occupy a slightly greater depth range.

Food preference is the main reason whelks are restricted to the intertidal zone. Whelks like to eat filamentous algae – thin strands of seaweed - that grow abundantly on intertidal rocks, especially where surf prevents fish from feeding on the shallow beds of algae.

Whelks grow slowly. If there is plenty of good food, their shell width increases by about 1/16th-inch (1.5 mm) per month. It may take a whelk five years to reach the large size of reproductive adults and scientists still don't know how long whelk can live.



Whelks reproduce mostly in the late summer around the new moon. Females release small green eggs (~1/100th-inch wide) that are fertilized by the sperm released simultaneously by males. The fertilized eggs drift away in the ocean currents, developing rapidly into a larval stage called a veliger. Free-swimming veligers feed on microscopic algae called phytoplankton. After 3 to 5 days, ocean currents bring the larvae to suitable rocky shores where they settle and remain for the rest of their lives.

Ecology & Behavior

Whelks are generally sedentary, meaning they don't go far in their lifetimes. The longest trip recorded for a whelk was about 160 yards over 6 months – not a big

trip! Most of their movements occur at night, when whelks actively crawl about in search of something to eat. By day, they tend to remain in holes or crevices. This stay-at-home attitude – plus slow growth and a short larval stage - makes local populations of whelks vulnerable to overfishing.

Surprisingly, whelks are sensitive to sounds, and when startled they will release their grip on the rocks, dropping down into the water. In calm conditions, a predator (or fisherman) can still grab the whelk, but if there are waves, the whelk may get swept away or wedged deep into a crevice.

Without doubt, people are the number one predators on whelks, but whelks have many natural predators too. Three shallow water snails prey upon whelk: the wide-mouthed rock shell (*Pupura patula*), the deltoid rock drill (*Thais deltoidea*), and the rustic rock drill (*Thais rustica*). Some fish also eat whelk. The porcupine fish (*Diodon hystrix*) eats whelks like popcorn, as will larger puddingwife wrasses (*Halichoeres radiatus*). Octopuses regularly prey upon whelks. If that weren't enough, a bird called the oystercatcher (*Haematopus palliatus*) plucks whelks off of intertidal rocks.

Some organisms depend upon whelks. Dwarf suck-on limpets (*Acmea luecopluera*) can be found living on the undersurface of the whelk shells. After a whelk's death, their empty shells provide homes for hermit crabs. In fact, following whelk extinctions in Bermuda, purple-clawed hermit crabs (*Coenobita clypeatus*) began to die off. Lack of whelk shells apparently created a housing shortage for these hermit crabs.

Conservation

Territorial regulations protect whelks in the USVI. There is a closed season for whelk fishing that goes from April 1st to September 30th of each year - this closure protects whelk during their reproductive phase. There is a minimum harvest size of 2⁷/₁₆-inch shell width (62 mm). Fishers are encouraged to use a measuring loop [available from DFW] - if the whelk can pass through the loop, it's too small to keep. Whelk must be landed whole and in their shell. Otherwise, there is no harvest limit and no special license is required.

References for this article are available upon request from DFW. For more information on this or other animals in the USVI please visit our web site at:

www.vifishandwildlife.com

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