

Plants need chlorophyll

Plants share in common certain characteristics, one of which is the ability to manufacture their own food in the form of glucose via the process of photosynthesis. This is possible because of the presence of the pigment chlorophyll which gives plants their green color. Even plants that are not green, such as some of the marine algae, contain chlorophyll. It is simply masked by the presence of other pigments.

An exception to this general situation is a common woodland plant called Indian pipe (*Monotropa uniflora*), a member of the Pyrolaceae, the wintergreen family. Growing in shady areas and often in small groups, this plant is white or pink and lacks chlorophyll. Its flower is single and bell-shaped, growing on a stalk 5-10 inches high. If these plants don't photosynthesize how do they obtain their nutrition? They are characterized by biologists as saprophytic, meaning they extract nutrients from decaying organic material in the forest floor, often in association with soil fungi.

The largest group of non-chlorophyllous plants are, of course, the fungi. This group includes several economically important plants such as *Penicillium* from which we extract the antibiotic penicillin, and edible mushrooms, morels, and yeasts, important in the baking and brewing industries. Mildews, molds, rusts, and smuts are also common fungi. Some biologists place the fungi in their own kingdom, separate from the plants. They believe that the lack of chlorophyll warrants such a distinction. Other scientists find that unnecessary and cite other similarities with plants, such as the production of spores for reproduction.

There are also some microscopic organisms that photosynthesize, but are not classified as plants. The cyanophytes were long considered to be blue-green algae because of their photosynthetic ability, but are now grouped with the bacteria due to a similar cell structure. A common group of fresh-water organisms belong to the phylum Euglenophyta. Some of these contain chlorophyll and make their own food, whereas a few species in this group must obtain their nutrition by other means.

In spite of the exceptions, most plants require chlorophyll to survive. I once grew a plant in a lab, and observed the plant to be an albino, lacking any green color. Though I don't recall what species it was, it didn't last very long. Shortly after putting out the first leaves, the plant died. I can only assume that this occurred as a result of a gene mutation, similar in that respect to albinism in animals. It was a very rare event in our experiments, occurring only once.

Writer cites reasons for dredging denial

August 18, 1985

To: Department of the Army
New England Division Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Subject: Application by PRINCE COVE REALTY TRUST for
a Department of the Army Permit.

Reference: (1) Regulatory Branch, NEODOD-R-25-81-9444
dated August 5, 1985

(2) General Area Plan: Sheet 1 of 4, Braman Engineering Co. Civil Engineers and Surveyors, 258 Main Street, Buzzards Bay, Mass.

Gentlemen:

I wish to comment on the subject application in the following categories: 1. Navigation, 2. Fishing, 3. Fowling, 4. Shellfishing, 5. Dredging and Construction, 6. Shoreline Erosion and Silting, 7. Taking of Public Property for Private Use.

Navigation: The Mills River is narrow. It has strong tidal flow, both ebb and flood. Prevailing southwest winds blow across a broad stretch of Cotuit and North Bays and are funneled into the subject area by the contour of the surrounding land. These winds thus reach velocities above the average for the general area. When the tide ebbs against these winds the sea state is markedly disturbed.

Boat traffic in and out of North Bay is concentrated here. Vessels under sail exiting Mills River must tack back and forth into these strong winds and steep seas. Any obstruction which narrows the area shortens tacks and increases the difficulty of this passage. It also increases the frequency of crossing the courses of other vessels in this passage, endangering both. The General Area Plan (Ref. 2.) clearly shows that the proposed construction would narrow the navigable

area by twenty-five percent for a distance along shore of 150 feet. If a boat (or boats) are docked on the channel (eastern) side, reduction would be 35%. This is an unacceptable imposition on the public's right to navigate and constitutes a clear hazard to navigation.

Fishing: In Massachusetts, beach front owners own to the mean low water mark (in most other states, to the mean high water mark) subject to the rights of the public to pass "for the purpose of fishing, fowling and navigation." This law dates back to the mid-1600s. When the various states united it became, by the confederation, law as recognized by Federal Authority for this area. Therefore, unless there is a clear public interest (and I emphasize "public") in the exception of these rights, they prevail. The referenced construction is unacceptable since it would clearly interfere with the right of the public to fish in the area of construction and dredging.

Fowling: The above discussion applies equally to the public right to set decoys for migratory water fowl and hunt here. As a native of the area I know this as an excellent spot to hunt migratory wild fowl.

Shellfishing: The subject area of Mills River and North Bay where dredging is proposed is particularly prolific, not only for the production of shellfish, but for their nurture and development because of the fresh water discharged into this estuary. The proposed dredging and construction would destroy this public resource over a large area and continuously prevent public access.

Dredging and Construction: The extensive nature of the proposed work (Ref. 1 and 2) in a highly restricted area presents a further hazard to navigation due to the presence of dredges, lighters, tugs and other vessels associated with this work and associated with the periodic maintenance dredging which is noted in Ref. (1).

Shoreline Erosion: It is an established fact that wave height under any specified wind condition is a direct function of water depth. Dredging the proposed area will inevitably increase wave height and thus the erosional effects as these higher waves break on the east side of the Mills River/North Bay shoreline. This is an area which is already particularly vulnerable to this problem as can be seen by the shoreline/bank contours. The resulting erosion will accelerate the silting of the Mills River/North Bay channel and thus require more frequent dredging of the channel at public inconvenience and expense.

Taking of Public Property for Private Use: The proposal for which the subject permit is requested is not a request for taking of private lands for the public welfare. On the contrary, it is exactly the opposite. It is a proposal to take areas which have been public domain for hundreds of years to satisfy private interests. This is totally unacceptable.

To emphasize this point I will offer the following hypothetical example: My home fronts on a public street. This street is the standard forty feet in width. It has pavement twenty feet wide with ten feet on each side for utilities and pedestrian use. If I should ask the municipal authorities for a permit to take an area of this street ten feet wide by one hundred and fifty feet long in order to widen my lawn, provide for more parking and to construct a fence on the street side, it would be dismissed out of hand as ludicrous.

The obvious similarity between the above example and the subject request for a permit by Prince Cove Realty/Trust is self evident.

Therefore, I respectfully request that the Department of the Army deny the subject permit.

Very Truly yours,
Willis H. Leonard