Although common further south, bitternut hickory is rare in Maine, occurring only in the extreme southwestern corner of the state at the southern tip of York County. Bitternut hickory will grow on a variety of sites, but makes its best growth on moist bottomland soils.

The bark of young trees is silvery-gray and smooth; older trees have gray bark with tight, shallow, interlacing furrows. The bark remains tightly attached on old trees and does not become shaggy. The leaves are 8–10 inches long, alternate, pinnately compound with 7–9 leaflets. The terminal leaflet is similar in size to the adjacent ones.

The flowers occur in spring; male flowers are in catkins and female flowers are in a terminal spike. The fruit is a nut; it is nearly round and only slightly flattened. It is covered by a thin green husk with 4 small wings descending from a sharp point to the middle. As the name bitternut implies, the meat is very bitter and not eaten by humans, although some wildlife utilize it as food. The twigs are somewhat stout (although much less so than other hickories) and have distinctive sulfur-yellow buds.

The wood is hard; further south, it used for making tool handles, furniture, paneling and pallets, as well as for fuel. It is a choice wood for smoking meats. In Maine, due to its rarity, the wood is not used commercially.