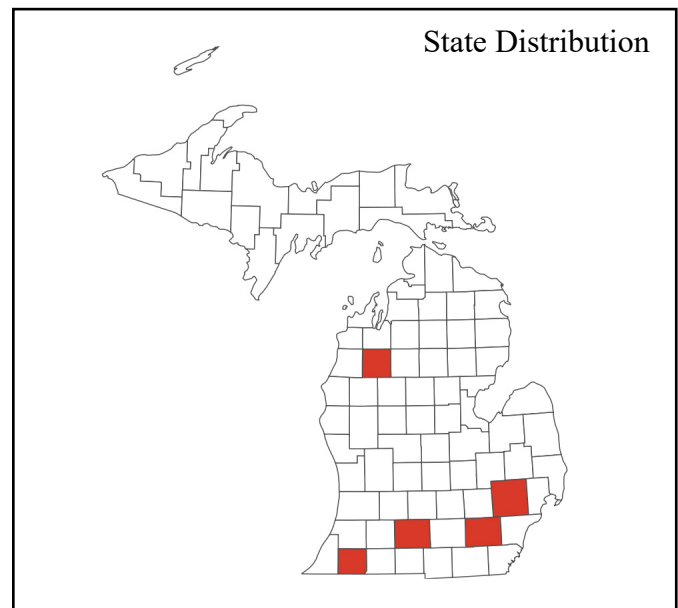
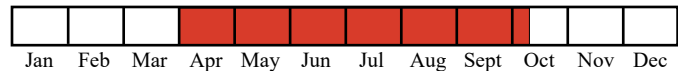


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Best Survey Period



**Status:** State Endangered

**Global and State Rank:** G2 (Globally Imperiled) / SNR (No status rank in Michigan)

**Family:** Succineidae (amber snails)

**Synonyms:** *Catinella protracta* Franzen

**Other Common Names:** A land snail

**Total Range:** This land snail is endemic to Michigan, where there is no status rank for the species (SNR). Globally, this snail is considered imperiled (G2; NatureServe 2026).

**State Distribution:** Occurrences of this ambersnail historically appeared in five counties of the lower peninsula. Four of these counties are in the southern portion of the state, including western (Cass), central (Calhoun), and eastern (Washtenaw and Oakland) counties. These snails were also found in Wexford County, south of the Leelanau peninsula. Despite this potentially broad distribution, this snail hasn't been observed in the state since 1975 (MNFI 2026).

**Recognition:** These land snails are small, reaching only 15 mm in length (0.6 in). Shells of this ambersnail are slender, fragile, and elongate with three to three and a quarter inflated, tight whorls. These whorls increase in size, with the top whorl (apex) knob-like in shape and a tumid final whorl. Compared to other species of *Mediappendix* (*Catinella*), this land snail has a longer spire and is narrower. Their translucent yellow shells have a large oval aperture (opening) that is about 60% of the height of the shell. The shell has an overall shiny appearance with fine striations (Franzen 1983).

In live specimens, the body is light brown to gray to largely unpigmented with a pale grey mantle with black and white spots. On both sides of the body, a pedal groove separates the foot from the lateral body wall. Additional shallow, vertical grooves incise the pedal and suprapedal grooves. The genital aperture is crescent shaped and located on the right side of the snail's body. The snail's eye peduncles and tentacles are thick (Franzen 1983).

**Best Survey Time:** This species is active from the first week of April to the first week of October. Surveys are likely to be more successful during cooler



weather and higher relative humidity, typically in the spring and fall after rain or while the soil is moist. While land snails are primarily nocturnal, they can be active during the day following a rain event (Burch and Pearce 1991). Surveys can be done visually (searching for moving individuals in leaf litter or under woody debris), however, visual detection tends to be difficult for these species. Instead, leaf litter sampling (collecting soil and leaf litter, drying the materials, and sifting for shells) is recommended (Nekola 2003).

**Habitat:** Ambersnails are found in a variety of natural communities, including carbonate cliffs, alvars, and grasslands, with members of *Mediappendix* favoring duff and turf soils (Nekola 2003). They can typically be located beneath leaf litter, logs, and stones located on the forest floor or lakeshores (Burch and Yung 1988). This snail has been recorded in wet areas, including floodplains and along ponds, marshes, and swamps (Hubricht 1985).

**Biology:** Little is known about the specific life history of ambersnails and land snails in general. Typically considered generalist herbivores, fungivores, and detritivores, some land snails are also predators. Regardless, they are considered essential for nutrient cycling in terrestrial ecosystems (Ovando et al. 2019). Snails are often prey for birds, small mammals, amphibians, reptiles, other snails or slugs, and insects, linking food chain levels (Kay 1995, Burch and Pearce 1991). Snails are an especially important food source for birds, providing a source of calcium that is important for egg laying (Coppolino 2010). To maintain their shells, snails are found in regions rich in calcium, such as limestone, or in areas with soil derived from limestone or that is high in calcium carbonate. Snails can also obtain calcium from local vegetation (Burch and Pearce 1991) or from absorbing or drinking water high in dissolved calcium (Heller and Magartiz 1983, Martin 2000).

Land snails can actively disperse slowly over short distances when conditions are favorable (i.e., cool temperatures and high relative humidity). Suffi-

cient moisture is required to produce mucous trails during movement, which is predominantly composed of water (Burch and Pearce 1991). Movement is typically restricted to seeking food, primarily via olfaction, or for reproducing. It is suspected that long distance dispersal is more passive, via hitchhiking on mammals, birds, or insects, by wind, rafting on objects, or through human activity (Baker 1958, Vagvolgyi 1975). Moisture is also necessary for snail eggs, which are susceptible to desiccation (Burch and Pearce 1991, Martin 2000). Most land snail species can seal their shell openings with an epiphragm, a mucous film that minimizes water loss, during dry periods to prevent excess water loss (Burch and Pearce 1991).

Life history studies on Hawaiian succineid snails suggest that maturity can be reached when snails are approximately three months old (Rundell and Cowie 2003). Commonly considered sedentary, land snails are thought to be hermaphroditic (Martin 2000), although they can have many different reproductive strategies (Leonard 1991). Male and female gametes can be produced in the same gonad or in separate ovaries and testes (Hodgson 2009). Many snails exhibit reciprocal mating, where both partners exchange sperm during copulation (Martin 2000). Land snails can lay eggs (oviparous), have eggs develop in the mother and juveniles are born live (ovoviviparous), or retain eggs in the mother until they are more advanced and then laid (egg retention; Tompa 1979). Some succineid snails likely live for one to two years in the wild, though they can breed year-round upon maturation and lay many eggs within each brood. However, some snails may only breed when ideal conditions are realized, limiting population sizes (Rundell and Cowie 2003).

**Conservation/Management:** Land snails are thought to be intolerant of disturbance, making them vulnerable to extirpation. Habitat loss, fragmentation, and degradation are thought to be the largest threat to these organisms (Kay 1995). Land snails tend to avoid areas that are dry or lack vegetation, even seemingly small, unpaved paths. Thus,



even low traffic hiking trails can impact movement and conservation of land snails (Jordan and Black 2012). Other recreational activities, including rock climbing, can have deleterious effects on snail communities and populations associated with cliff habitats (McMillan et al. 2003).

Land snail abundances may be most limited by refuge availability, as opposed to food resources or predation. Snails use refuges from extreme hot or cold temperatures or predators (Burch and Pearce 1991). Common refuges include soil humus, leaf litter, woody debris (such as rotting logs), crevices in bark, rocks, and soils, and under rocks, logs, or boards (Burch 1962). Prescribed fire can destroy refuges used by land snails and should be done infrequently leaving some areas unburned (Jordan and Black 2012, Nekola 1998).

In addition, snails can bioaccumulate chemical pollutants and heavy metals (Berger and Dallinger 1993), and high exposure can change feeding patterns, prevent reproduction, and reduce hatching success (Notten et al. 2005, El-Gendy et al. 2021). While more research is needed, herbicide and insecticide applications should be limited where vulnerable land snails are present. Additionally, when applied, populations should be carefully monitored, particularly as most studies have been done in the lab as opposed to in nature (Kay 1995, El-Gendy et al. 2021).

**Research Needs:** As these snails have not been observed for multiple decades, dedicated surveys using multiple methods (visual, leaf litter collection) are needed to understand ambersnail distribution and habitat use. Additionally, little is known about general land snail populations, necessitating genetic studies that could elucidate the diversity of this group (Nekola 2003). Land snails are broadly understudied, and more specific information is needed to better describe their life history for more effective conservation and management.

**Related Abstracts:** floodplain forest, prairie fen, mesic prairie, mesic sand prairie, southern wet

meadow, wet prairie, wet-mesic prairie, wet-mesic sand prairie, *Mediappenix exilis*, *M. gelida*

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