FROM THE MUSHROOM BASKET...

MYCENAS OF THE TREETOPS

ANDRUS VOITK AND GARY WARREN

Recent genetic work has shown that the genus *Panellus* is closely related to the mycenas, surely one of the prettiest group of mushrooms. Mycenas are saprobes (decompose dead organic matter), several species growing on rotten wood. In their preference for wood, their treetop cousins resemble them.

In addition to the very common *P. serotinus* and *P. stypticus*, described by Henry Mann in the last issue, you may come across three other *Panelli* in our province: *P. mitis*, *P. violaceofulvus* and *P. ringens*. Of these, *P. mitis* resembles *P. stypticus* in appearance (lateral stem with very sharp demarcation line between stem and gills), but is smaller and usually white; tan forms, like *P. stypticus*, do occur (Fig. 1). If unsure, the host tree will aid identification: *P. stypticus* grows on broad-leaved trees and *P. mitis* on conifers. The other two, *P. violaceofulvus* and *P. ringens*, have a rudimentary or no stem. In this case, the mushroom is connected to the tree at the top of the cap.

The stem gives a hint where one might find these mushrooms. Mycenas, with a central supporting stem, are on the ground or other horizontal substrate, from which the stem elevates the cap, to enable the wind to carry off falling spores. *Panelli* with lateral stems are most often found on vertical tree trunks, from which they project horizontally for the same reason. Those without stems, attached by the top of the cap, are usually found on the undersides of horizontally projecting branches, allowing spores to drop down with ease.

Fig. 1 (Top) *Panellus mitis*. Grows on conifers. The usual white form on the left and the light tan form on the right.
Fig. 2 (Bottom left) *Panellus fulvoviolaceus*. Grows on balsam fir. The amount of purple is variable, from quite dark purple to just a subtle purple overtone to the underlying brown. Fig. 3 *Panellus ringens*. Grows on hardwood branches, mostly birch in Newfoundland. Much like *P. fulvoviolaceus*, but purple usually less evident.

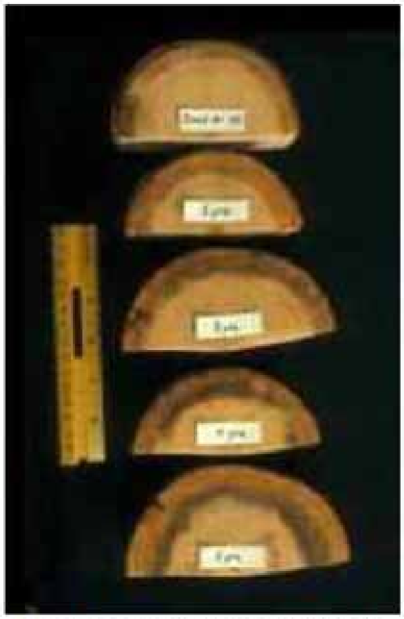

Fig. 4 Sapwood decay pattern in balsam fir, showing decay (brown stain) and scavenger (black stain) fungi.

Tree trunks are readily visible, so we should have no difficulty finding mushrooms growing on them. Therefore, if we do not see *P. mitis* too often, it is because the mushroom is uncommon. Branches, on the other hand, are high up beyond our vision, making it easy to miss small mushrooms in the loft, even if common.

In fact, *P. violaceofulvus* is a very common mushroom, even if we encounter it rarely. As the name suggests (violaceous = purple, fulvo = fox tan) the cap is tan with purplish overtones (Fig. 2). It grows on dead branches of standing balsam fir, and sometimes on recently fallen dead fir branches. *P. ringens* is a dead ringer for *P. violaceofulvus* (Fig. 3), but on hardwood branches. It is not nearly as common and the only time we have observed it is on dead birch branches on the ground after high winds. These two are our treetop mycenas.

Like other mycenas, they require moisture to fruit. This is much easier on a rotten stump than on a high dead branch, where the least air current dries them up. Therefore, you need special conditions to find them. The best is during thaws or at snowmelt time: either after some soft wet snow has covered branches that then melts in the sun, or during persistently drizzling and overcast days, when everything is wet. They are uncommon because we do not look for mushrooms at snowmelt. However, if you set out specifically to find them and select the right habitat, substrate, season and moisture condition, you will find them every time!

Although fruiting in the treetops, the fungus exists throughout dead trees. *P. violaceofulvus* decomposes the sapwood (the outer layers of the tree trunk, through which sap flows) of balsam fir, recently killed after defoliation by spruce budworm or hemlock looper – another clue to where to find it. *Panelli* decompose lignin (produce white rot), reducing its complex chemical structure to simple sugars, in order to use the sugars for energy. However, they are too efficient and produce so much sugar that the accumulated sugar suppresses synthesis of lignin degrading enzymes, bringing the whole process to a halt. The sugar concentration outside the mycelial cells of *P. violaceofulvus* is lowered by scavenger fungi, which mop up excess sugars for their own needs, thus allowing *P. violaceofulvus* to continue its degradation of cellulose.

One of its common scavenger partners is the Coelomycete *Kirschteiniella thujina*. Coelomycetes are microscopic conidial (asexual) ascomycetes that we generally do not notice. We may note splits in tree bark, where they build up and discharge their spores. Many scavenger fungi have dark pigmented cell walls which cause a blue/black discoloration to the wood they have colonized. The sapwood decay pattern in balsam fir with a dark stained leading edge, as observed in Figure 4, is a good indicator of *P. violaceofulvus* as the decay fungus and *K. thujina* as the scavenger.

Many wood rotters leave patterns, demarking their activity. One result is spalted wood, a decorative feature used to good effect by woodworkers (Fig. 5). The dark lines of spalted wood are caused by specialized interlocking hyphal cells (pseudoscerotial plates) created by one or both wood colonizing fungi, forming a barrier zone to stop the progress of competing fungi into its/their wood substrate territory.

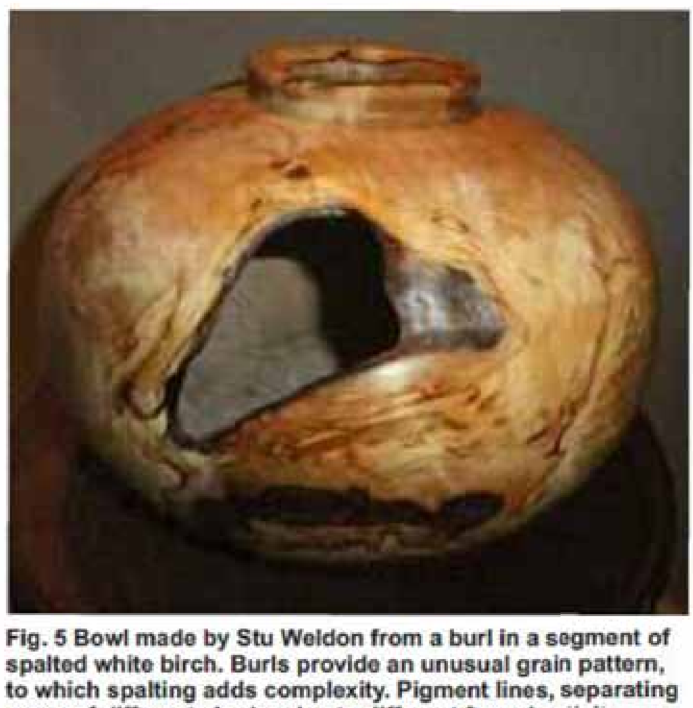

Fig. 5 Bowl made by Stu Weldon from a burl in a segment of spalted white birch. Burls provide an unusual grain pattern, to which spalting adds complexity. Pigment lines, separating areas of different shades due to different fungal activity, are readily evident. Wood rot softens the wood, often requiring the addition of strengthening compounds to allow it to be worked without falling apart. Oils and stains are absorbed differently by these sections, adding further complexity to the final pattern. *Photo Stu Weldon*