

## Iowa Hardwood Bark Beetle and Ambrosia Beetle BMP Guide for Logging Operations, Slash, Log Decks, and Wood Movement

Iowa-focused field guidance for foresters, loggers, timber buyers, contractors, and landowners working in oak-hickory and mixed hardwood stands.

**Purpose.** Reduce the chance that harvesting, slash, log storage, or wood movement will create fresh breeding material or stress cues that draw bark beetles and ambrosia beetles into Iowa hardwood stands, especially oak-hickory forests under drought, root stress, flooding, construction injury, storm damage, or active decline.

### Hardwood framing for Iowa

**This guide is written for Iowa hardwood systems, not western or southern pine bark beetle situations.** The main concern is reducing fresh, stressed, or wounded hardwood material that can attract opportunistic bark beetles and ambrosia beetles and then increase local beetle pressure near residual trees.

- Primary stand context: white oak, red oak, bur oak, hickory, walnut, maple, elm, basswood, cottonwood, aspen, and other Iowa hardwoods.
- Primary operation context: harvest timing, slash treatment, log deck placement, firewood movement, and avoiding injury to residual trees.
- Primary management idea: keep hardwood trees vigorous, reduce fresh untreated material during warm-season beetle activity, and move or process logs quickly.



Oak-associated bark beetle example: *Pseudopityophthorus pruinosus*.  
Credit: J.R. Baker and S.B. Bambara, North Carolina State University,  
[Bugwood.org](http://Bugwood.org), image 5158004.



Exotic ambrosia beetle example in hardwood systems: *Xylosandrus germanus*. Credit: Rachel Osborn, Michigan State University,  
[Bugwood.org](http://Bugwood.org), image 5573168.

### 1. Beetles of concern in Iowa hardwoods

Two broad groups matter for Iowa hardwood operations, and they damage trees in different ways. Knowing the difference helps explain why timing and sanitation, rather than spraying, are the core BMPs.

#### True bark beetles

True bark beetles feed in the inner bark (phloem) and excavate branching galleries between the bark and the wood. In Iowa hardwoods the most relevant are the oak bark beetles (*Pseudopityophthorus* spp.), small beetles that breed abundantly beneath the bark of stressed, dying, and recently killed oaks. They are mainly a sanitation concern: large numbers can build in untreated cull logs, tops, and storm-damaged stems, and the same insects are recognized secondary vectors of the oak wilt fungus.

## Ambrosia beetles

Ambrosia beetles bore directly into the sapwood and farm a symbiotic fungus inside their galleries; the beetle larvae feed on the fungus, not the wood itself. The galleries and fungal staining are what reduce log value and, in heavy attacks, can girdle and kill smaller stems. Two exotic species are widespread in eastern hardwood systems and are the ones most likely to turn up in Iowa: the black stem borer (*Xylosandrus germanus*) and the fruit-tree pinhole borer (*Xyleborinus saxesenii*). Both are strongly attracted to ethanol given off by stressed, flooded, or freshly cut wood, which is why fermenting slash and damp shaded decks draw them.

The signature symptom of an ambrosia beetle attack is the toothpick-like strands of compacted boring dust (frass) protruding from tiny round entrance holes, along with fine sawdust at the base of the tree. Because the beetles spend almost their entire life inside the wood, insecticides are unreliable; removing or rapidly drying the attractive material is far more effective.

## 2. Why these BMPs matter in Iowa hardwoods

Many bark and ambrosia beetles are drawn to hardwood trees, logs, and slash that are stressed, wounded, recently cut, drying, or fermenting. Ethanol and other stress volatiles are important cues for several ambrosia beetles.

Fresh slash, cull logs, storm-damaged stems, and shaded log decks can become both attractants and brood material. If material sits during warm weather, beetles can build locally and spill over into nearby stressed standing trees.

Most hardwood bark and ambrosia beetles should be treated as stress responders and sanitation concerns rather than as a single “pine beetle style” outbreak problem. The most effective BMPs are timing, rapid processing, sanitation, and residual-tree protection.

- Use the dormant season as the default low-risk operating window whenever practical.
- Treat fresh hardwood slash and cut material quickly during the growing season.
- Protect residual trees from bark wounds, root injury, rutting, and prolonged compaction.
- Keep firewood and untreated hardwood material local unless it has been processed or treated under an approved plan.

## 3. Iowa hardwood operating window

These are conservative operational windows for Iowa hardwood forests. They are management windows, not a claim that every beetle species flies on the same dates or that risk is zero outside the window.

| Window  | Operational risk | Hardwood-focused recommendation                                                                                                                                                                                                          |
|---------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nov-Mar | Lowest           | Preferred period for routine harvest, decking, slash handling, and wood movement when soil conditions allow. Frozen or dry ground also reduces rutting and root injury.                                                                  |
| Apr-Jul | Highest          | Avoid routine fresh cutting when practical. If work proceeds, shorten every exposure time for slash and logs. Use extra caution with oaks because fresh wounds and wood movement can overlap with oak wilt and beetle activity concerns. |
| Aug-Sep | Moderate         | Continue prompt slash treatment and log haul-out. Do not let shaded hardwood decks or cull piles linger into fall.                                                                                                                       |
| Oct     | Transition       | Risk is generally declining, but warm falls can extend beetle activity. Treat high-risk material rather than assuming it is safe because the calendar changed.                                                                           |

## 4. Harvest timing BMP

Preferred practice: schedule planned thinning, salvage, and routine harvest work between November and March whenever practical. Dormant-season work reduces the overlap between fresh hardwood host material, fresh oak wounds, and peak warm-season beetle activity.

### Operational rule

- Avoid planned warm-season harvests in oak-hickory stands that are already under drought, flooding, oak decline, storm damage, or root stress.
- If warm-season harvest is unavoidable, plan the cleanup before cutting starts: slash treatment, deck location, haul schedule, and who verifies completion.
- Treat fresh tops, cull logs, and large slash before less urgent cosmetic cleanup.
- For oak-dominated stands, coordinate with current oak wilt pruning and harvest guidance and avoid creating unnecessary fresh oak wounds during high-risk periods.



*Xyleborinus saxesenii* is a common exotic ambrosia beetle detected in many eastern hardwood systems. Credit: Bugwood.org, image 5329041.



Hardwood gallery example on American elm. Credit: Steven Katovich, Bugwood.org, image 5556432.

## 5. Slash management BMP

Fresh hardwood slash is one of the easiest ways to amplify local beetle pressure after harvest. Larger pieces hold moisture longer, stay attractive longer, and can support brood development. Risk is highest when slash is fresh, shaded, concentrated, and left through spring or summer.

### Operational rule

- Preferred options: chip, grind, burn where permitted, remove, or lop and scatter so material dries quickly and is not concentrated around leave trees.
- Prioritize large-diameter oak, hickory, walnut, and maple slash, cull logs, and storm-broken material over small twigs.
- Avoid piling fresh slash in shaded draws, tight stand interiors, north-facing edges, or directly beside valuable residual hardwoods.
- Do not leave deep fresh chip mats against the butt flare or root collar of leave trees; keep chips thin and pulled away from high-value stems.

## 6. Log handling, decking, and transport BMP

Freshly cut hardwood logs can continue to emit attractant cues and remain suitable for colonization when stored in shaded, cool, humid conditions. Decking in open sun, improving airflow, and moving wood quickly shorten the time that material is attractive and usable.

### Operational rule

- Deck logs on dry, open, sunny sites outside the stand interior whenever feasible.
- Keep decks organized by harvest date so old material is not forgotten behind newer loads.
- Move oak, hickory, walnut, maple, and other hardwood logs quickly during April through September.
- Do not move suspect infested firewood or untreated hardwood material long distances without processing, heat treatment, debarking, chipping, or another approved plan.



Cut hardwood material can become beetle habitat when left untreated. Credit: Bugwood.org, image 2109038.



Avoidable bark wounds can create stress points on residual hardwoods. Credit: Bugwood.org, image 5541533.

## 7. Residual tree protection BMP

The best beetle BMP is often the same as the best silviculture BMP: keep leave trees healthy. Bark wounds, exposed roots, rutting, and severe compaction can turn a residual hardwood into the next stressed host. Trees already coping with drought, flooding, defoliation, disease, root damage, or crown loss are less able to defend themselves.

### Operational rule

- Mark and communicate high-value leave trees before felling and skidding begin.
- Plan skid trails, landings, and felling direction before cutting starts; avoid turning machines at the base of valuable oaks and other leave trees.
- Stay out of wet soils when rutting or compaction will damage roots. Use frozen or dry soil windows whenever possible.
- Use slash as a protective roadbed where appropriate, but do not create large fresh slash piles that remain shaded and wet.
- After the job, inspect residual trees near skid trails and log decks for fresh bark wounds, root damage, boring dust, or rapid decline.

## 8. Sanitation and declining-tree BMP

Declining or freshly killed hardwoods with boring dust, toothpick-like frass, small round entrance holes, galleries under bark, storm breakage, or severe mechanical injury can act as local beetle reservoirs. Prompt sanitation lowers local brood production and removes obvious attractants.

### Operational rule

- Separate suspect material from sound loads so it is not forgotten in the woods or left at the edge of a landing.
- Do not leave freshly killed tops, cull logs, or storm-damaged hardwood stems untreated beside high-value residual trees.
- Where practical, peel bark or examine cut surfaces to confirm galleries before deciding how aggressively to process material.
- If several oaks are rapidly wilting or browning, treat it as a possible oak wilt concern and contact Iowa DNR Forest Health or another qualified forest health specialist before moving suspect oak material widely.

**Oak wilt and the spring wound window.** Beetle sanitation and oak wilt prevention reinforce each other, because both come down to fresh oak wounds and warm-season insect activity. Oak wilt is caused by the fungus *Bretziella fagacearum* (formerly *Ceratocystis fagacearum*). It spreads overland when sap-feeding (nitidulid) beetles carry spores from fungal mats on infected trees to fresh wounds on healthy oaks; oak bark beetles (*Pseudopityophthorus* spp.) are recognized secondary vectors. In the Midwest, the high-risk period for wounding oaks is roughly April 15 through July 1, when these insects are most active and fresh wounds are most attractive.

- Avoid pruning, cutting, or otherwise wounding healthy oaks during the high-risk spring and early-summer window whenever practical; schedule oak work for the dormant season.
- If oaks must be wounded during the high-risk window (for example, storm damage or unavoidable harvest), apply a wound dressing promptly to make the wound less attractive to vectors.
- Do not move firewood or unprocessed logs from oak wilt-killed trees; these stems can carry fungal mats and bark beetles. Where infected material must be held, burn, chip, debark, or seal it under intact plastic before the following spring.

Note that most local oak wilt spread happens underground through connected root systems, so a confirmed infection usually calls for a forest health diagnosis and a site-specific control plan, not just material handling.

## 9. Processing and containment options

When immediate removal is not possible, switch from simple storage to a processing or containment strategy. The goal is to remove beetle habitat, speed drying, or prevent adult escape.

| Option                                               | Best use in hardwood operations                                                               | Watch-outs                                                              |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Chipping / grinding                                  | Fresh slash, tops, and smaller cull material when equipment is available.                     | Avoid deep fresh chip mats against residual tree bases.                 |
| Debarking                                            | Logs or bolts where bark beetle brood habitat is concentrated under bark.                     | Partial debarking is less reliable than complete bark removal.          |
| Bucking, splitting, loose stacking, and sun exposure | Firewood-sized material and small logs that need to dry quickly.                              | Shaded, tight stacks stay humid and attractive longer.                  |
| Heat treatment                                       | Firewood or regulated movement situations. A recognized phytosanitary schedule is heating the | Use recognized treatment standards or an approved regulatory/compliance |

| Option                                  | Best use in hardwood operations                            | Watch-outs                                                   |
|-----------------------------------------|------------------------------------------------------------|--------------------------------------------------------------|
|                                         | wood core to 160°F (71°C) for 75 minutes.                  | plan.                                                        |
| Sealed plastic or fine-mesh containment | Short-term containment when removal cannot happen quickly. | Only works if the cover stays intact, sealed, and monitored. |

## 10. Monitoring and documentation BMP

Field checking should be simple and repeatable. Look for fresh boring dust, toothpick-like frass, small round entrance holes, galleries under bark, sap or staining around entry points, and new attacks clustered around decks, slash, and stressed trees.

- Record cut dates, deck dates, haul dates, and processing dates during April through September.
- Photograph slash treatment, deck locations, residual tree injuries, and completed processing when contracts require proof.
- Map or flag clusters of recent attacks so the next operation does not repeat the same conditions.
- If unusual attack levels appear, contact Iowa DNR Forest Health or another qualified forest health specialist before additional cutting or wood movement.

## 11. Quick field sheet

| Do this                                                                                                 | Avoid this                                                                                          |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Plan routine harvests for Nov-Mar when practical.                                                       | Do not treat Iowa hardwood operations as if they are pine-only bark beetle situations.              |
| Treat fresh hardwood slash promptly, especially larger oak, hickory, walnut, and maple material.        | Do not leave fresh slash piles untreated in shaded woods through spring or summer.                  |
| Deck logs in open sun with airflow if removal is delayed.                                               | Do not use long-term damp decks in the stand interior.                                              |
| Protect leave trees from bark and root injury.                                                          | Do not assume stressed residual trees will defend themselves.                                       |
| Keep firewood local: buy it where you burn it, and do not move suspect material casually between sites. | Do not move suspect oak or other infested hardwood material widely without processing or treatment. |
| Document dates, photos, and processing method.                                                          | Do not rely on plastic containment unless the seal will stay intact and be checked.                 |

## 12. Hardwood site-information checklist

Use this list when evaluating a site or following up on unusual beetle activity, oak decline, or possible disease overlap.

- Tree species affected and whether symptoms are concentrated in oaks, hickories, walnut, maples, elms, or mixed hardwoods.
- Number of trees affected, approximate diameter class, and whether trees are clustered, scattered, downslope, along an edge, or near a log deck or slash pile.
- Recent site changes: harvest, thinning, construction, grading, trenching, utility work, root disturbance, road work, herbicide exposure, flooding, drought, storm damage, fire, or soil compaction.
- Tree symptoms: crown thinning, rapid wilting, brown leaves held in crown, dieback pattern, basal wounds, root collar injury, fungal conks, boring dust, toothpick frass, sap/staining, and galleries under bark.
- Photos needed: whole tree, crown, trunk base, root flare, close-up symptoms, galleries under bark if present, nearby slash/log decks, and surrounding site conditions.

## When to get help

Contact Iowa DNR Forest Health, your local Iowa DNR district forester, Iowa State University Extension, IDALS State Entomologist staff, or a qualified arborist when several hardwoods are declining on the same site, when oak wilt is possible, when unusual beetle activity is clustered around recent cutting, or when a tree with decay or root disease could strike a target.

## References and resources

Iowa Department of Natural Resources. Forest and Tree Health resources. Available at: [Iowa DNR Forest and Tree Health \(iowadnr.gov\)](http://iowadnr.gov)

Bugwood Images / InsectImages / IPMImages / Invasive.org. Image database and image usage guidance. Available at: [Bugwood image usage guidance \(invasive.org\)](http://bugwoodimageusageguidance.invasive.org)

Chen, Y., et al. 2021. Differential flight responses of two ambrosia beetles to ethanol treatments. Agricultural and Forest Entomology.

Kentucky Extension. Non-Native Ambrosia Beetles: Damage and Management.

USDA Forest Products Laboratory. Heat Treatment of Firewood - Meeting the Phytosanitary Requirements for Emerald Ash Borer and Other Insects.

[DontMoveFirewood.org](#) and National Park Service. Firewood movement prevention guidance.

USDA APHIS PPQ / IDtools. Bark Beetle Genera of the U.S. and Southeast Asian Ambrosia Beetle ID resources.

## Photo credits inserted in this guide

Oak bark beetle, *Pseudopityophthorus pruinus*: J.R. Baker and S.B. Bambara, North Carolina State University, Bugwood.org, image 5158004.

Black stem borer, *Xylosandrus germanus*: Rachel Osborn, Michigan State University, Bugwood.org, image 5573168.

Fruit-tree pinhole borer, *Xyleborinus saxesenii*: Bugwood.org, image 5329041.

Native elm bark beetle galleries on American elm: Steven Katovich, Bugwood.org, image 5556432.

Cut stump / galleries and decay: Bugwood.org, image 2109038.

Hardwood stem wound: Bugwood.org, image 5541533.