

# Pest Problems and Fiber Storage

*An excerpt from  
"The Spinner's Companion"  
By Bobbie Irwin*

## MILDEW

- Warmth and humidity promote mildew (fungus).
- Mildew primarily affects cellulose fibers, especially cotton; some fibers are only susceptible when damp.
- Mildew is rarely a problem with protein fibers unless they're stored damp.

## BACTERIA

- Bacteria primarily affect cotton and can affect protein fiber subjected to prolonged dampness.
- Silk is relatively bacteria resistant, but can rot if subjected to prolonged dampness.

## INSECTS

### *Incidental Damage*

- Clothes moth larvae will eat through cellulose and synthetic fibers in order to get to the protein fiber they want to consume.
- Insects may feed on the finishes of some fabrics or yarn, especially sizing (starch).

### *Direct Damage*

- Crickets, silverfish, firebrats, roaches, and termites may chew fabrics or fibers but not as a primary food source; some are attracted to starch.
- Silverfish and firebrats look similar, but firebrats are speckled and have longer appendages. Both prefer dark places; silverfish prefer warmth and dampness, firebrats seek heat. Immature silverfish and firebrats resemble the adults, only smaller.



Silverfish



- Clothes moths (family Tineidae) are small (1/2 inch) and tan. Adult moths do not eat fiber; only larvae eat fiber. Females are relatively sedentary; most of the moths you see flying around are males. Clothes moths are not attracted to light.
- A female moth lays 100-200 eggs at a time; eggs laid directly on fiber, yarn, or fabric are tiny pearly ovals that hatch within one to three weeks.



Clothes moth larvae

- Clothes moth larvae seek the protein keratin found in animal fibers (wool, hair) as well as leather, skin, horn and feathers. They may stay in the larval state for six weeks to almost three years (warm, humid weather promotes their development).
- The larvae are very small, off-white, naked caterpillars with dark heads, that eat holes in animal fibers, yarn, and fabric. They will eat the protein fiber in a blend.
- Carpet beetles (genus Anthrenus and others) are small (less than 1/2 inch), hard-shelled beetles, mottled or black. Females lay

Carpet Beetle



eggs in dark, dusty places, including carpets and crevices of upholstered furniture. Adults do not normally damage fiber or fabric.



- Carpet beetle larvae are broad, small (1/4 inch), bristly, and stay in the larval state up to several years. They eat protein fiber, including silk.
- Moths and carpet beetles prefer darkness, dirt, and cramped conditions.

## DETECTING INSECT INFESTATIONS

Even if insects are not present, you can tell if they've been into your fiber or yarn.

- If you see adult insects, inspect your fiber/yarn/fabric for damage.
- Insects chew holes in fabric and cut through yarn or fiber.
- Small, scattered holes are typical of moth damage.
- Carpet beetles leave large holes.
- Clothes moths leave behind a mass of cobweb-like threads or silky tubes, mixed with fecal debris. Carpet beetles do not leave debris.
- Be alert for egg clusters.
- Inspect fiber, yarn and fabric frequently. Untwist yarn skeins periodically.
- If you find damaged fiber or active infestation, destroy all pests and eggs, and sort the rest of the fiber. Unaffected areas may still be used, but it's a good idea to freeze or wash the good fiber even if it has been washed before.

## REMEDIES

### *Chemical Controls*

- Moth balls and crystals containing paradichlorobenzene (PDB) or naphthalene evaporate to form fumes that kill larval and adult insects and may also repel them. They are effective only in closed areas where the vapors can't dissipate, and they are toxic to humans. PDB is probably carcinogenic.
- Chemicals such as Eulan\*, Edolan\*, and Mitin\*, designed for industrial use, make fibers permanently unpalatable to insect larvae. They are not safe for home application.
- Dry cleaning solvents kill insects but are too toxic for home use.
- Most home and garden insecticides

that kill insects are not recommended for use on fiber or fabric.

- Boric acid (2-4 percent) combined with imidazole (1 percent) provides moth protection that persists through dry cleaning but not washing.



Clothes Moth

**NATURAL CONTROLS**

**Physical Methods**

- Submersing fiber, yarn, or fabric completely underwater for at least twelve hours will kill larvae and eggs.
- Freezing fiber, yarn, or fabric for several days and 0F/-17.7C, kills larvae, eggs, and adults.
- Heat above 106F/41C for four hours kills moth eggs, larvae, pupae, and adults. Excessive heat may damage fiber (e.g., prolonged exposure of fiber to sunlight while it's sealed in a plastic bag is not recommended).
- Fiber-damaging insects dislike light and may leave the fiber source if exposed to strong sunlight and air for a few hours. Prolonged exposure to sunlight damages fibers.
- Flypaper and other sticky traps are effective. Soak cotton balls in fish oil and attach them to the flypaper to help attract insects.
- Layer fiber between sheets of printed newspaper or brown (kraft) paper. Newspaper ink may have some repellent effect (although the new soy-based inks are said to be less effective), and brown paper is a physical barrier that larvae won't eat. Acids from the paper will eventually damage fiber, however.

**Biological Control**

- The bacterium *Bacillus thuringiensis* (BT) attacks moth larvae of all types and may be effective against clothes moths.



Cricket

**HERBAL CONTROLS**

**Insecticides**

- 'Natural' does not always mean 'safe'- some plants and plant extracts, such as concentrated nicotine, kill insects but are also very toxic to humans and are unsafe for home use.
- Effective herbal insecticides which are relatively safe include Rotenone and Pyrethrin.
- Insecticidal soaps are safe, but their effectiveness on clothes moth or carpet beetle larvae have not been reported.



Cockroach

**Repellents**

Some strong-smelling herbs may mask the sulfur scent that attracts moths and beetles to fiber food sources. Essential oils are highly concentrated and should be handled with care; many will kill insects as well as repel them. Soaps scented with herbs may make effective sachets. Dried plant material from the following and other sources, alone or combined, may deter pests, especially in confined areas where the vapors are concentrated:

- |                    |                           |
|--------------------|---------------------------|
| Balsam Fir         | Painted Daisy (Pyrethrum) |
| Bay                | Pennyroyal                |
| Camphor            | Basil                     |
| Cedar              | Southernwood              |
| Cinnamon           | Sweet Marjoram            |
| Cloves             | Sweet Woodruff            |
| Geranium (Scented) | Tansy                     |
| Lavender           | Tarragon                  |
| Wormwood           |                           |



Termites

- Raw plant material including wood (such as cedar) releases acids that can hasten the deterioration of fiber and fabric; avoid direct contact and prolonged exposure.
- Not all strong-smelling plants repel insects; clothes moths are attracted to some of them. the following are not considered effective:

- |                |                  |
|----------------|------------------|
| Allspice       | Hellebore        |
| Angelica Root  | Horseradish      |
| Black Pepper   | Eucalyptus       |
| Cayenne Pepper | Red Cedar Leaves |
| Ginger         |                  |



Top: rosemary; left: lavender; above: marjoram.

- Citronella and camphor are effective repellents derived from plant sources. Camphor is poisonous, but less so than chemical mothballs.

**PREVENTION**

- Carefully examine all new fiber for evidence of insect infestation; destroy affected fiber. Keds (sheep ticks) that are obviously dead will not harm your fiber, but since some ticks spread disease, don't handle them with your bare hands.
- Skirt fleeces well and discard dirty, matted areas that won't wash clean.
- Clean fleeces and textiles thoroughly before storing them.
- Spin fresh fiber whenever possible and avoid keeping fiber over long time periods.
- Avoid compressing fiber.
- Inspect fiber periodically and allow it

to air in the sunshine.

- Vacuum crevices, carpets, and upholstery regularly.
- Check the underside of rugs and the back side of wall textiles.

**Storage**

- Clean fiber, yarn, and textiles thoroughly before storage.
- Fiber, yarn, and textiles must be completely dry before storage. Wool may feel dry even though it holds some moisture, so don't store it for several days after you wash it. In a humid climate it will absorb some moisture from the atmosphere but that is probably safe.
- Ideal storage temperature is 65-68F, relative humidity 45-50 percent.
- Avoid direct contact with unfinished wood.
- Place insect repellents in cloth bags, out of direct contact with fiber, yarn, or textiles.
- Avoid contact with polyvinyl chloride

plastic (PVC); use inert plastics labeled "acid-free" or "archival." Safe containers include those made of polyethylene, polyester, and polypropylene.

- Paper or cardboard in long-term contact with fiber, yarn, or textiles must be acid-free.
- Avoid compressing fiber; allow it to breathe.
- Store protein fibers in indirect, low light to discourage insects.
- Store cellulose fibers in dark places to protect from sunlight.
- Use sealed bags and containers to create a barrier to insects and make repellents more effective. Plastic storage boxes are good, especially in regions with low humidity.
- Clean fiber, yarn, and textiles that are hung in airy, open spaces rarely attract insects.
- Air fiber, yarn, and fabrics and check for pests every few months.



*This article is an excerpt from The Spinners Companion, by Bobbie Irwin, a quick reference guide designed for both beginners and experienced spinners. For more information on Bobbie's work, you can contact her at irwin@rmi.net*

**About the Author**

*Bobbie Irwin, Montrose, Colorado, has been weaving for 30 years and enjoys playing "what if?" games on her looms, pushing the limits of traditional techniques using unorthodox materials and methods. She has taught for conferences and guilds in the United States and Canada since 1985. A Contributing Editor and editorial assistant for Interweave Press, she has written dozens of articles for textile and craft journals in three countries. Bobbie is the author of Twined Rag Rugs and The Spinner's Companion.*



Susceptibility of Fibers to Damage					
Fiber	Susceptibility to		Worst Insect Pests	Storage Conditions	
	Mildew/Bacteria	Insects		Avoid	Best
Alpaca	low	high	clothes moths, carpet beetles	moisture, dirt, darkness	dry, light*
Angora	low	high	clothes moths, carpet beetles	moisture, dirt, darkness	dry, light*
Camel	low	high	clothes moths, carpet beetles	moisture, dirt, darkness	dry, light*
Cashmere	low	high	clothes moths, carpet beetles	moisture, dirt, darkness	dry, light*
Cotton	high	low	crickets, silverfish, roaches	heat, moisture, dirt	dark, dry
Flax	low, if dry	low	moisture	dry	
Hemp	low to moderate	low	dry		
Llama	low	high	clothes moths, carpet beetles	moisture, dirt, darkness	dry, light*
Mohair	low	high	clothes moths, carpet beetles	moisture, dirt, darkness	dry, light*
Nylon	none	low	crickets, roaches	sunlight	dark
Ramie	very low	low	dark, dry		
Rayon	high	moderate	silverfish, firebrats	moisture	dark, dry
Silk	low/moderate	moderate	carpet beetles	sunlight, oxygen	dark, sealed
Wool	low, if dry	high	clothes moths, carpet beetles	moisture, dirt, darkness	dry, light*

\*avid strong light; provide air circulation