

Understanding Forest Health



1. What is Tree Health
2. What is Forest Health
3. What can you do about it
4. Health problems

Understanding Forest Health



Another **Course-in-a-Box**

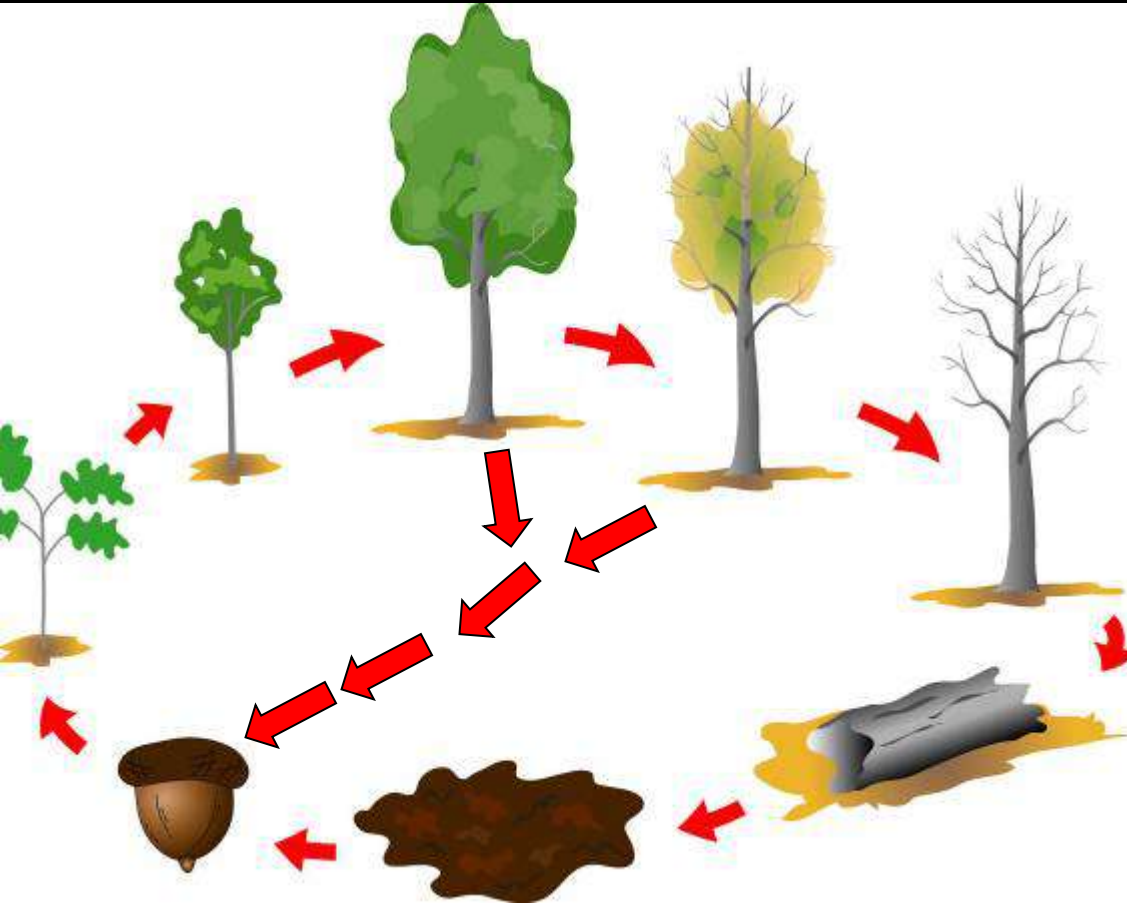


Tree Health



- Trees can live a long time
 - Maple – 300 years
 - Poplar – 20 to 80
 - White Pine – 250
 - Oak - 400

Tree Health



- Trees have a life cycle
 - Initiation
 - Growth
 - Maturity
 - Reproduction
 - Overmaturity
 - Decline
 - Death
 - Decomposition
- Trees seldom live to their potential
- All trees decompose!

Tree Health



- Main forest management considerations
 - Initiation
 - Growth
 - Maturity
 - Reproduction
- Secondary forest management considerations
 - Overmaturity
 - Decline
 - Death
 - Decomposition

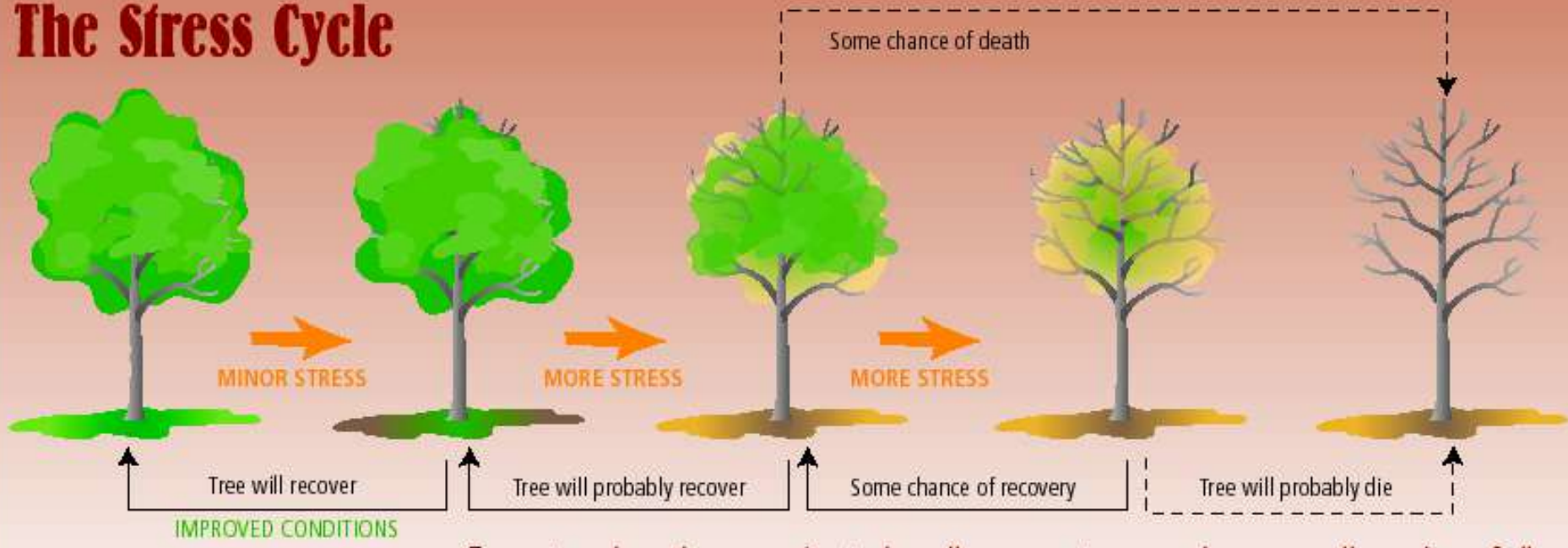
Tree Health



- Trees are affected by stress
 - Affects growth
 - Affects health
 - Affects value
- Two main types
 - Abiotic – weather & human
 - Biotic – insects & disease

Tree Health

The Stress Cycle



- Every tree can handle some stress
 - Stress is natural
 - Stress is compounding

Tree Health



- Stress is inevitable
 - Trees can live with stress
- Stress causes change
- Stress is a benefit to others (unstressed)
 - Other trees
 - Wildlife
 - Insects

Tree Health

If a tree is important to you and if it is stressed...



- You want to reduce the stress
 - Very difficult to do
 - Easier to prevent
 - Later in presentation
- If you can't reduce stress...
 - Find another tree

Tree Health



So what is tree health...

- Subjective condition of the tree
- Encompasses many factors
- Subject to change

Tree Health

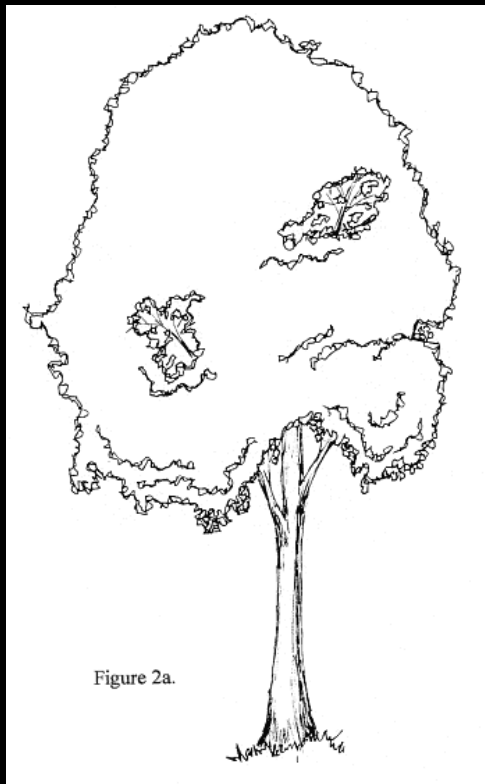


So what is a healthy tree...

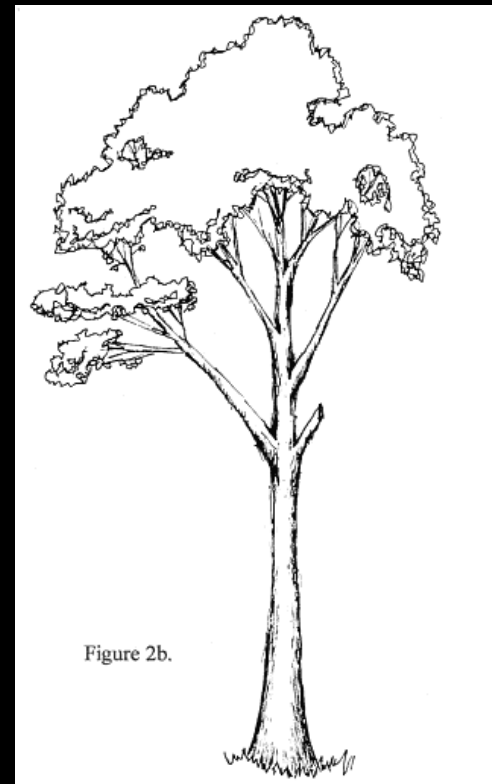
- Growing in diameter
- Not severely stressed or declining
- Has a chance to do what you want it to do
 - Probably should be left for future consideration

Tree Health

Recognizing the healthy tree...



2/3



1/3

Crown Size – at least 1/3 live healthy crown

Tree Health

Recognizing the healthy tree...



Acer saccharum
Mo Fayyaz

Healthy green leaves

Tree Health

Recognizing the healthy tree...

Full thick crown



Tree Health

Recognizing the healthy tree...



Fine Branches

Tree Health

Recognizing the healthy tree...



Bark vigour

Tree Health

Recognizing the healthy tree...



Tree Health

Recognizing the healthy tree...



Tree Health

Recognizing the healthy tree...



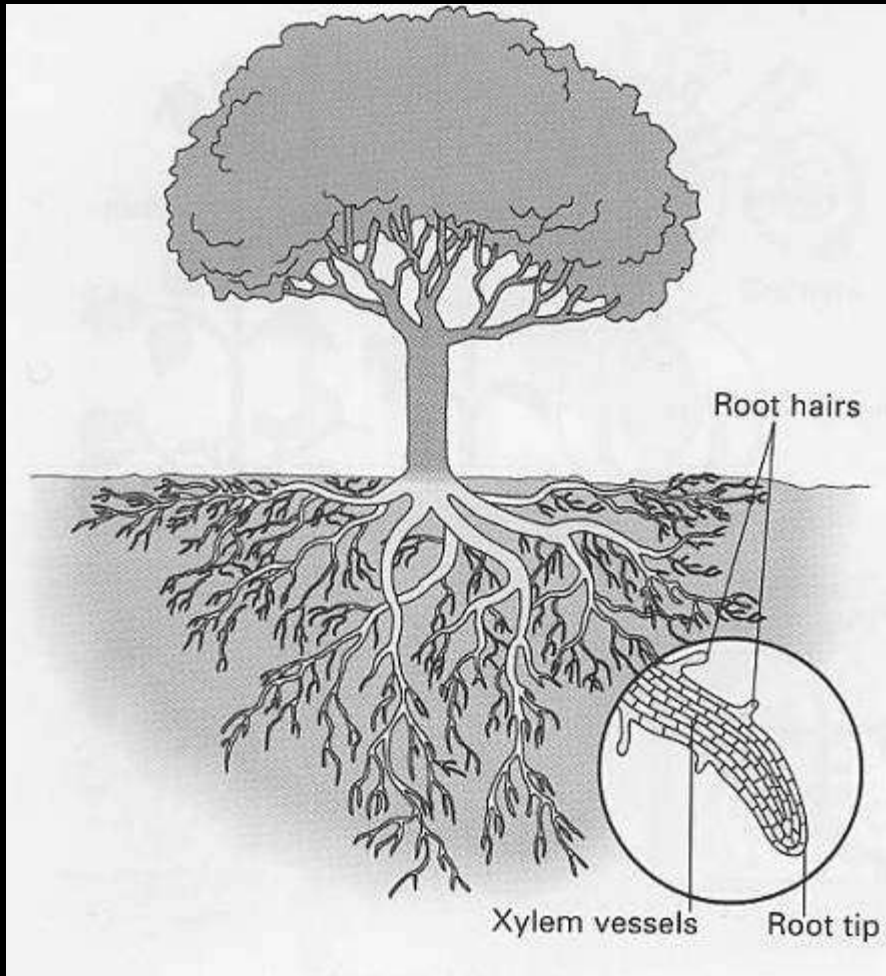
Tree Health

Recognizing the healthy tree...



Tree Health

Recognizing the healthy tree...



Undisturbed Roots

Forest Health

Healthy



Unhealthy



Isn't easy to determine

Forest Health



- Very subjective
- Needs to be linked to goals and objectives
- Changes all the time



Forest Health

1. Think of forest health as the 'general condition' of your forest ...
 - at this particular time
 - under these particular circumstances
2. Recognize that health can change
3. Manage to keep it in its best condition possible
- 4. It is the trend that is really important**

Forest Health

Forest Change

- Natural
- Succession



Forest Health

There is unnatural change too!



Forest Health

Unnatural change



Cut Trees



Impact site



Affect Climate



Recreate

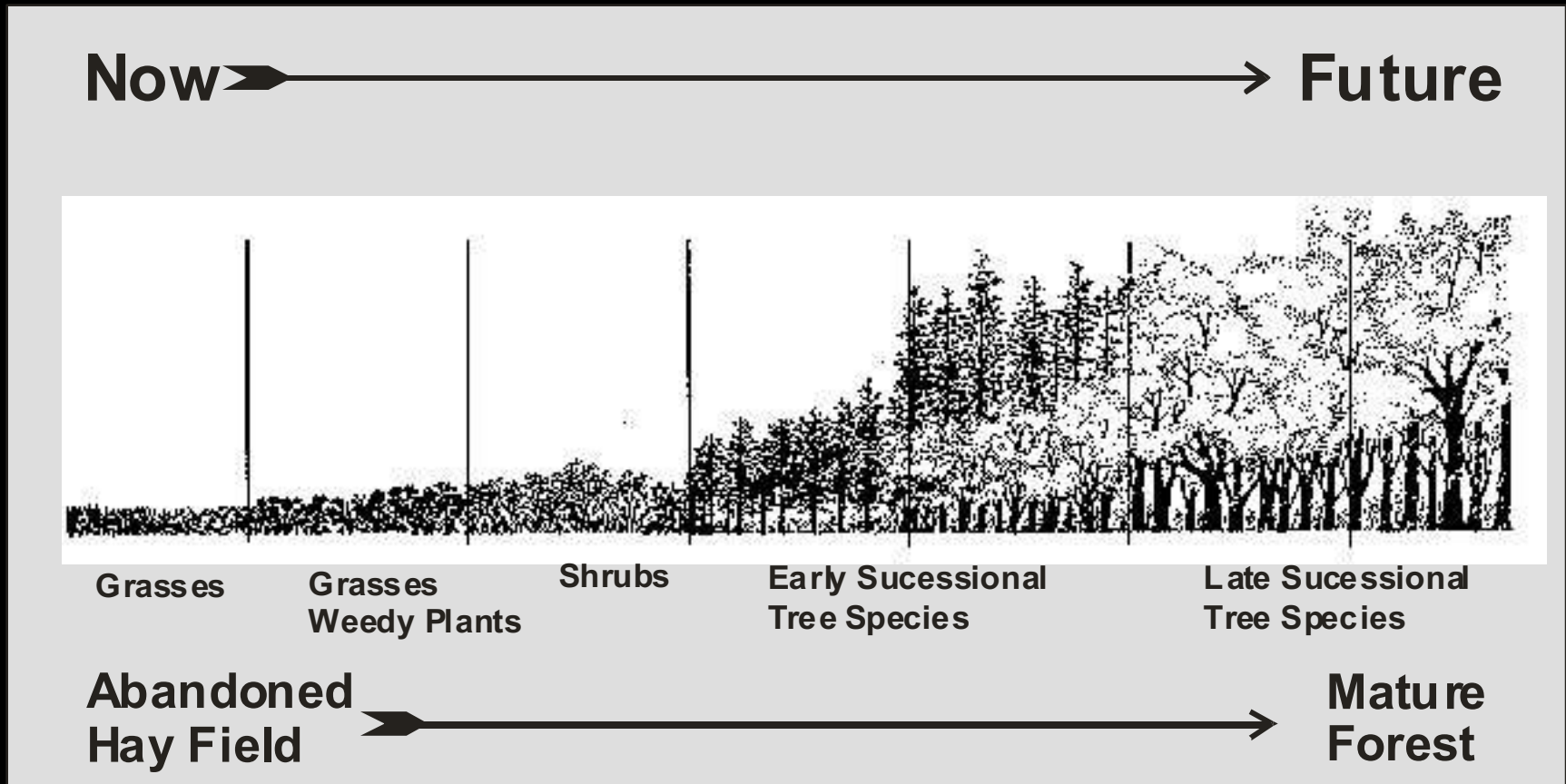


**Introduce
new species**



**Push out
old ones**

Forest Health

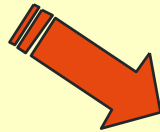


This doesn't apply to most woodlots

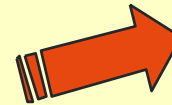
Forest Health

The Managed Woodlot

**Your
Forest**



Management
Activity



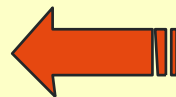
Management
Activity



Management
Activity



**Your
Goal**



Management
Activity

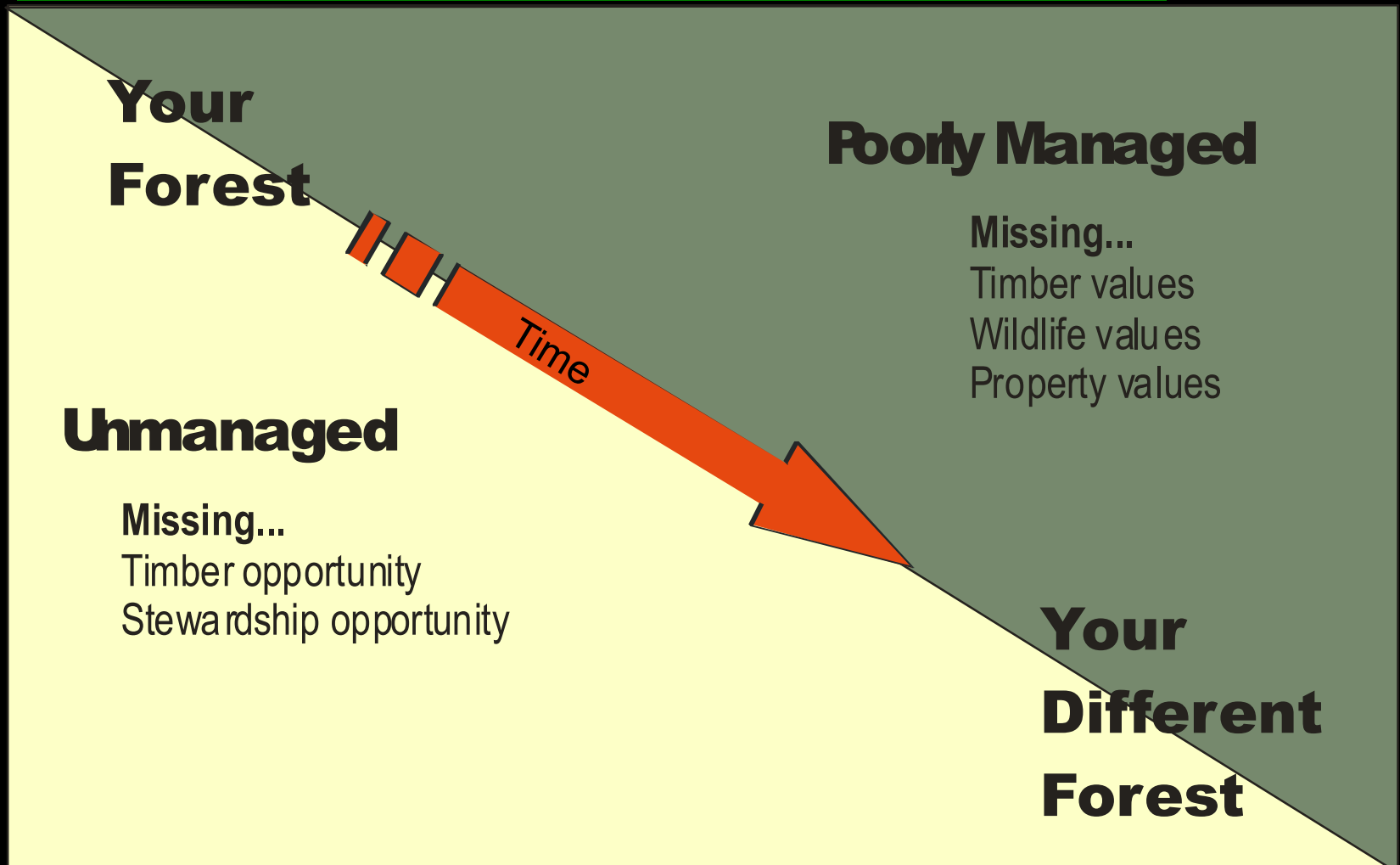
Forest Health

The Managed Woodlot



Forest Health

The Unmanaged/Poorly Woodlot



Forest Health



Factors

- Species associations
- Site
- Management Actions
- Forest Health Events

Forest Health



Lowland Hdwds



Upland Oaks



Tolerant Hdwds



Cedar

7 main forest
'types' in
S. Ontario



Early
Successional



Pines



Hemlock

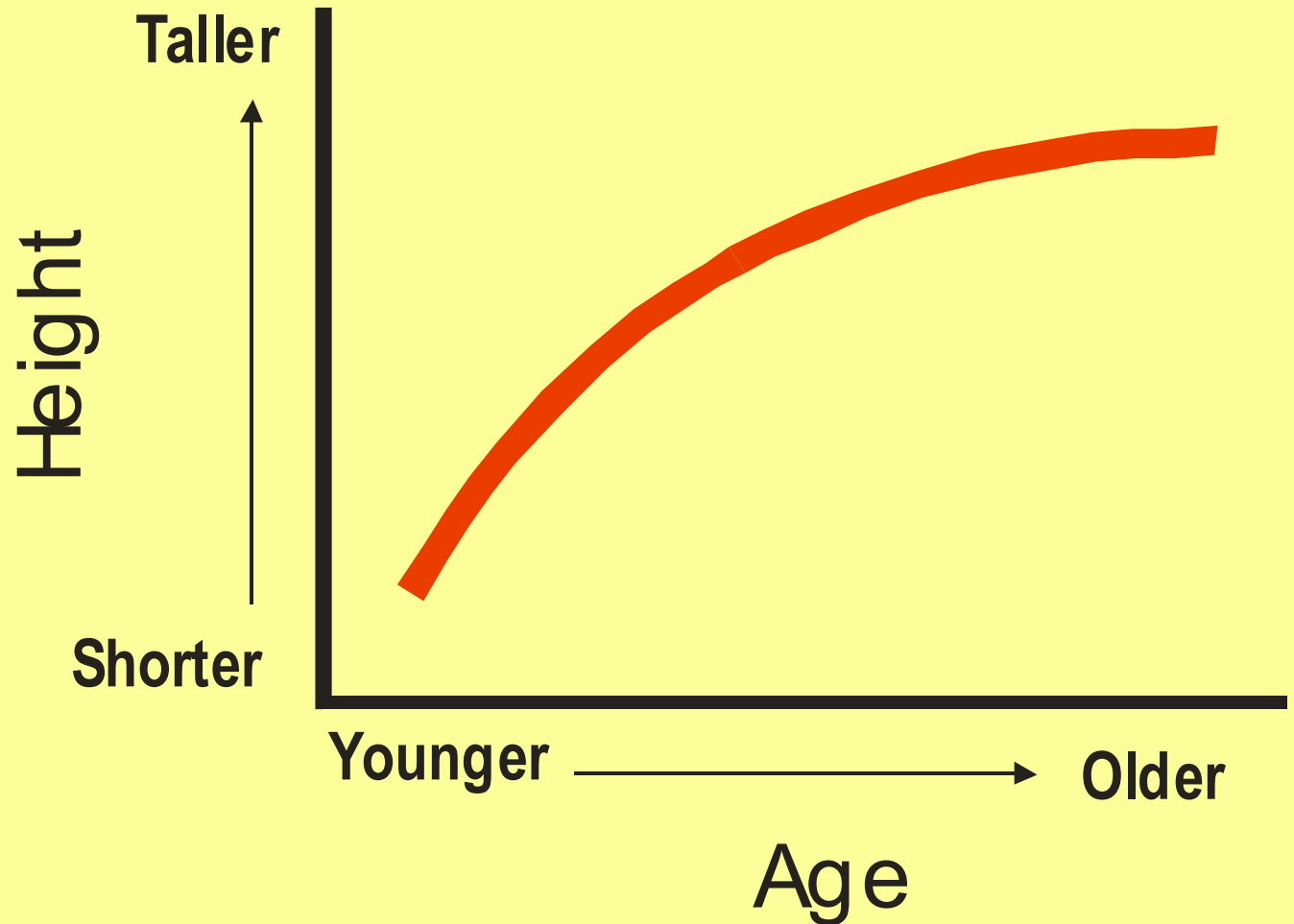
Forest Health

<i>Working Group</i>	Common Tree Species	Typical soil and site type	Typical locations and landforms	Ecological adaptations	Most Appropriate Management Systems
Upland Mid-tolerant Species	Red Oak White Oak White Pine White Ash Sugar Maple	dry to fresh moisture conditions, shallow to very shallow soils with good drainage, sandy sites	Canadian shield dry rock ridges, top of drumlins	adapted to fire and dry soil conditions	Shelterwood

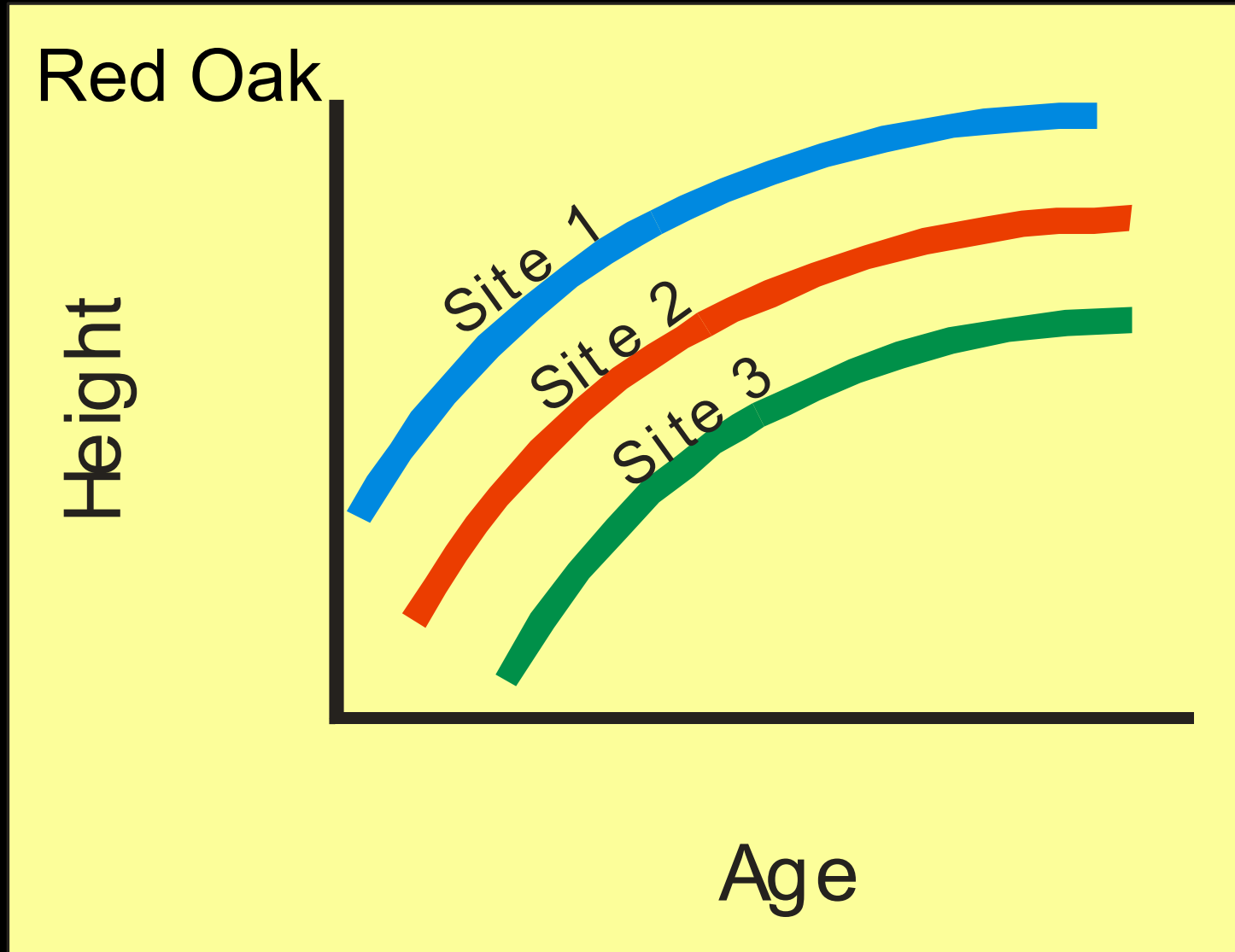
- Species have defined requirements
- Need to manage accordingly

Forest Health

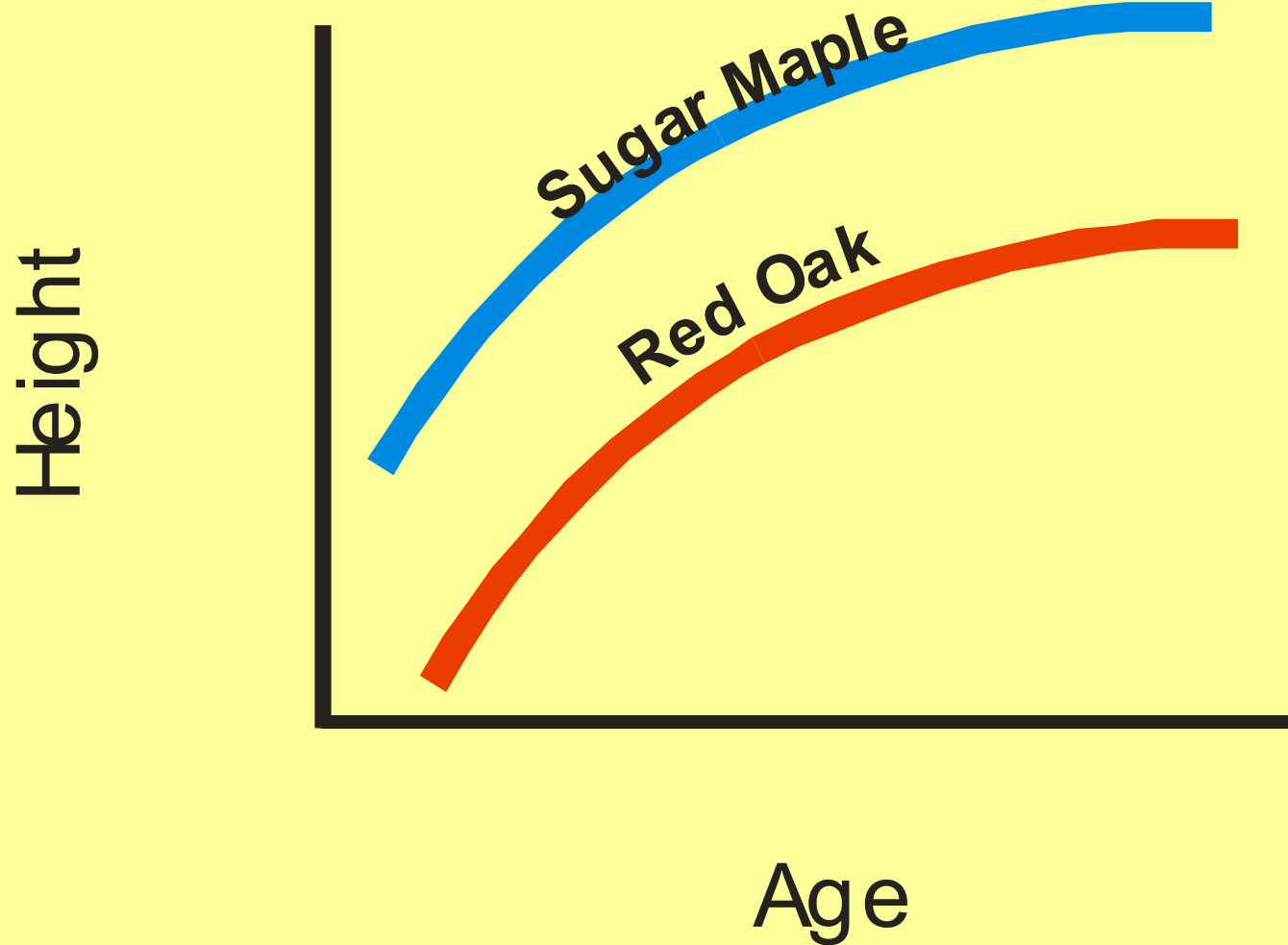
Site



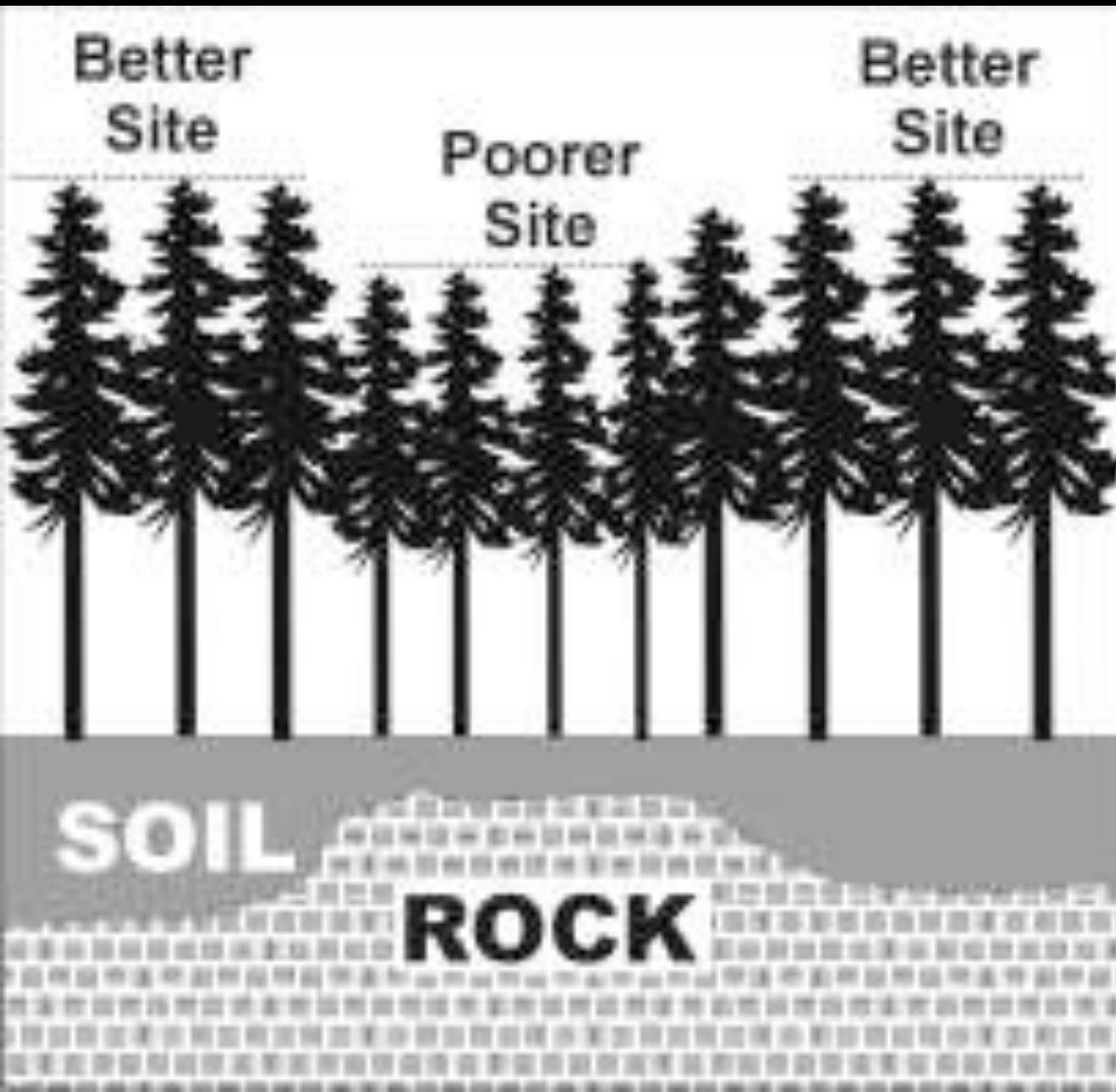
Forest Health



Forest Health



Forest Health



The better the site
The healthier the forest

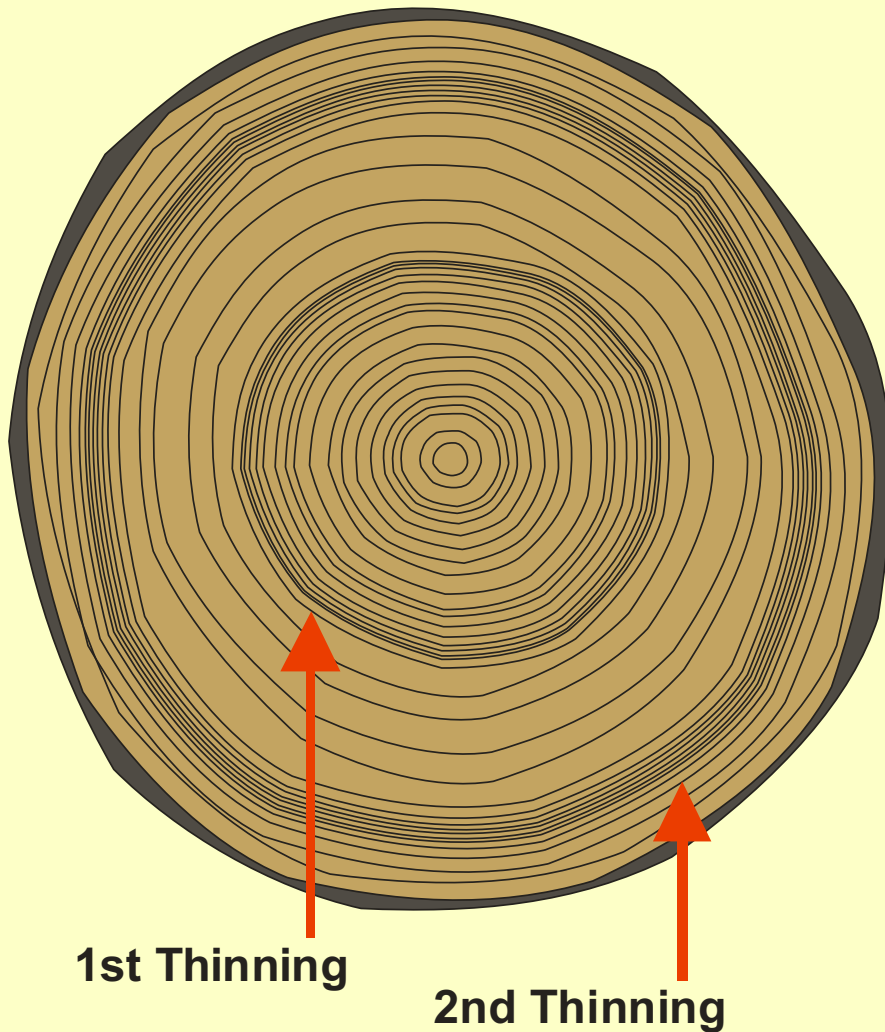
Forest Health

Good Forest Management leads to:

- **Getting what you want from it (a benefit)**
- **A healthy, productive and diverse forest**



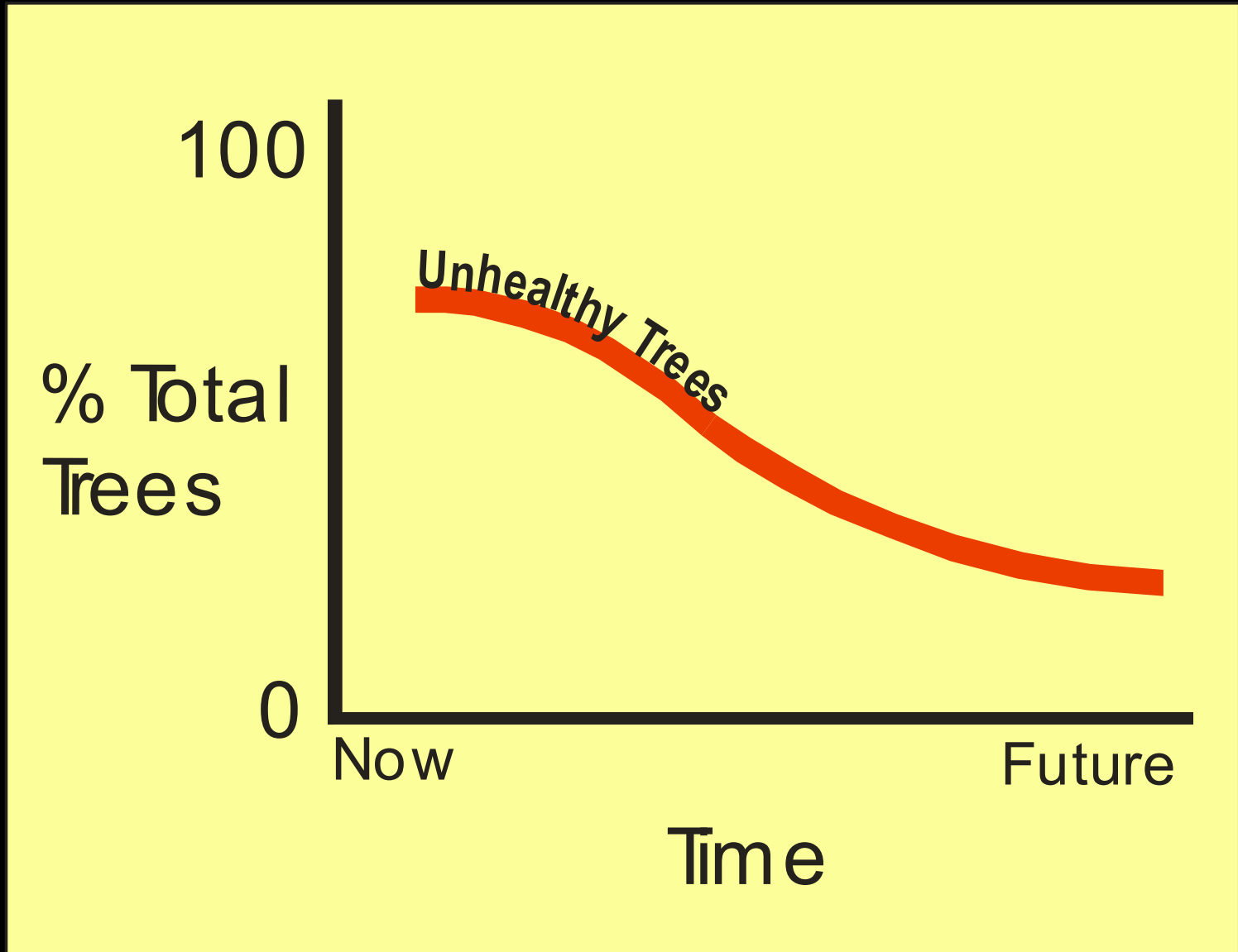
Forest Health



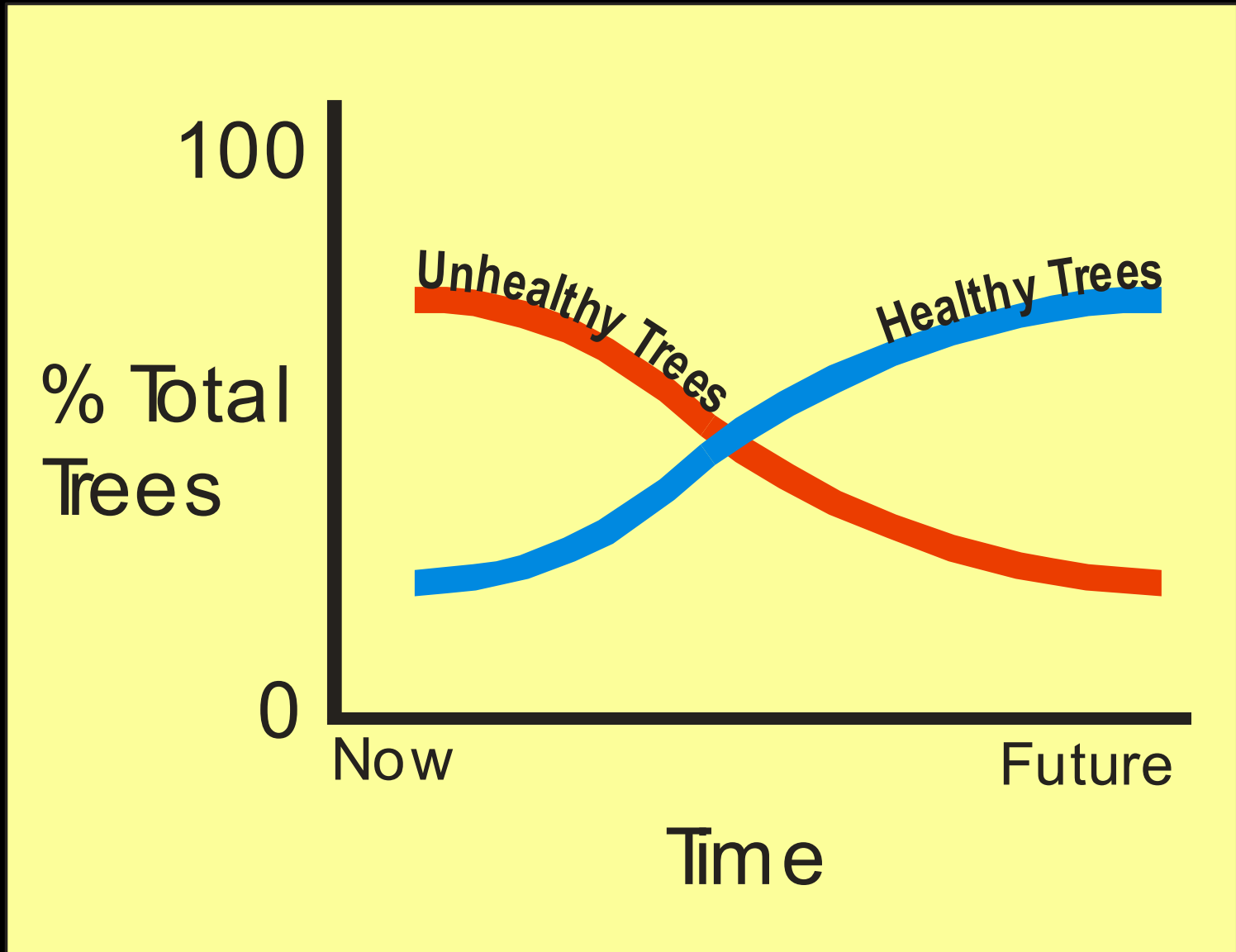
Management Actions

- Thin to improve growth
- Thin to improve FH

Forest Health



Forest Health



Forest Health

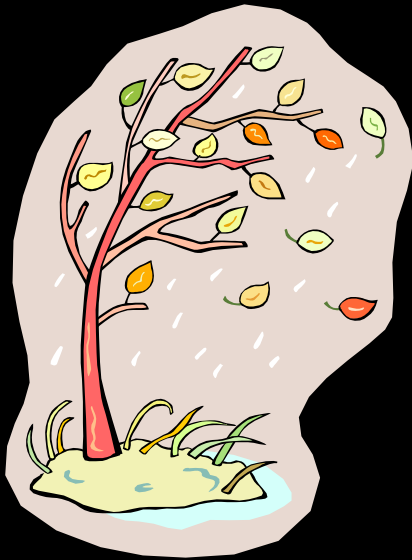


Forest Health Events

- Weather
 - Wind
 - Ice/snow
 - Drought
- Insect outbreaks
- Invasive species
- Bad management

Forest Health

Weather Events



- 1998 ice storm
- 2001/02 drought
- 2006 windstorm

- Can't plan for them
- Can't avoid them
- Can be devastating
- Can impact forest for decades
- Can adapt to them

Forest Health

Insect Outbreaks



- Insects are always there
- Can be small or large scale
- Are a natural part of the forest ecosystem
- Can adapt to them

Forest Health

Invasive Species



- Can have long term impact on FH
- Insects, disease, plants
- New invaders present a serious threat
- Bark beetles & borers are the worst

Forest Health

Bad Management



- Just as bad as all the others
- Mostly results in lost economic potential
- Does affect other forest values – wildlife, SAR...

What you can do...

- Management planning
- Management actions
- Adapting to problems



+

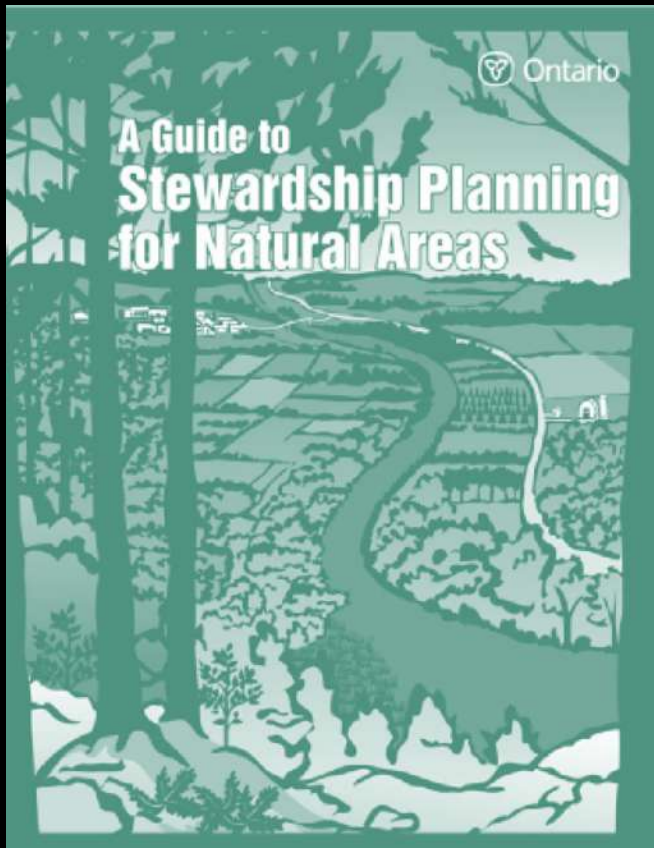


Can
=
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**Healthy
Forest**

What you can do...

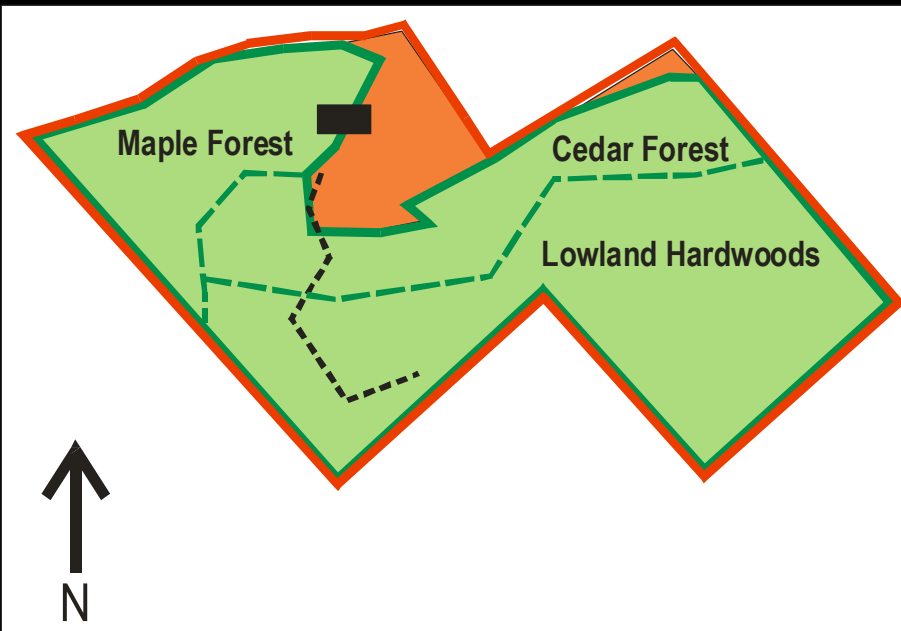
Management Planning



- Need a management plan
- Inventory of forest condition
- Get involved
 - Seminars/workshops
 - Books
- Diary

What you can do...

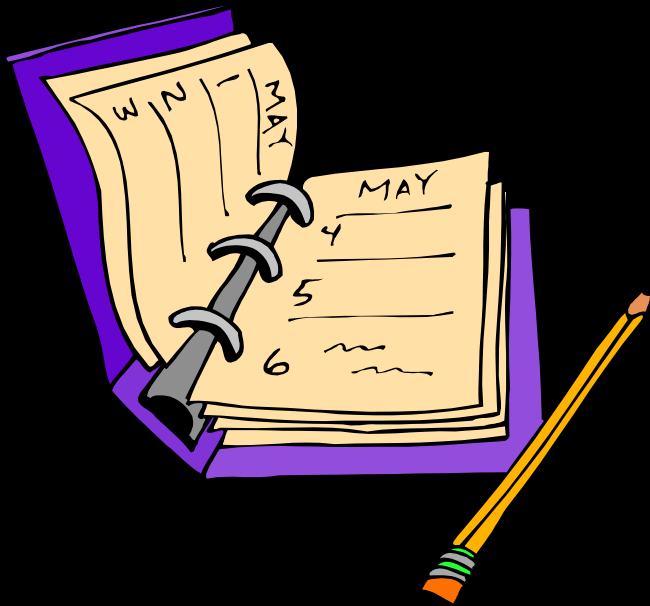
Management Planning



- Keep stands simple
 - They are just a guide
- Use forest cover types
 1. Upland Oaks
 2. Tolerant Hardwoods
 3. Lowland Hardwoods
 4. Cedar
 5. Hemlock
 6. Pines
 7. Early Successional
 8. Plantation

What you can do...

Management Diary



- Keep track of what you have done
- What you observe

What you can do...

Management Actions



Attention Landowners!

**Sit back,
do nothing,
and earn up to
\$1000 an acre.**

If you're thinking of clear-cutting
or thinning your mature forest, we're
the people you should contact.

**No lot too small or too large.
Money up front.**

**Call (613) 678-5317
or (613) 677-6003**

What you can do...

Management Actions



- Hire a consultant
- Account for all forest values

What you can do...

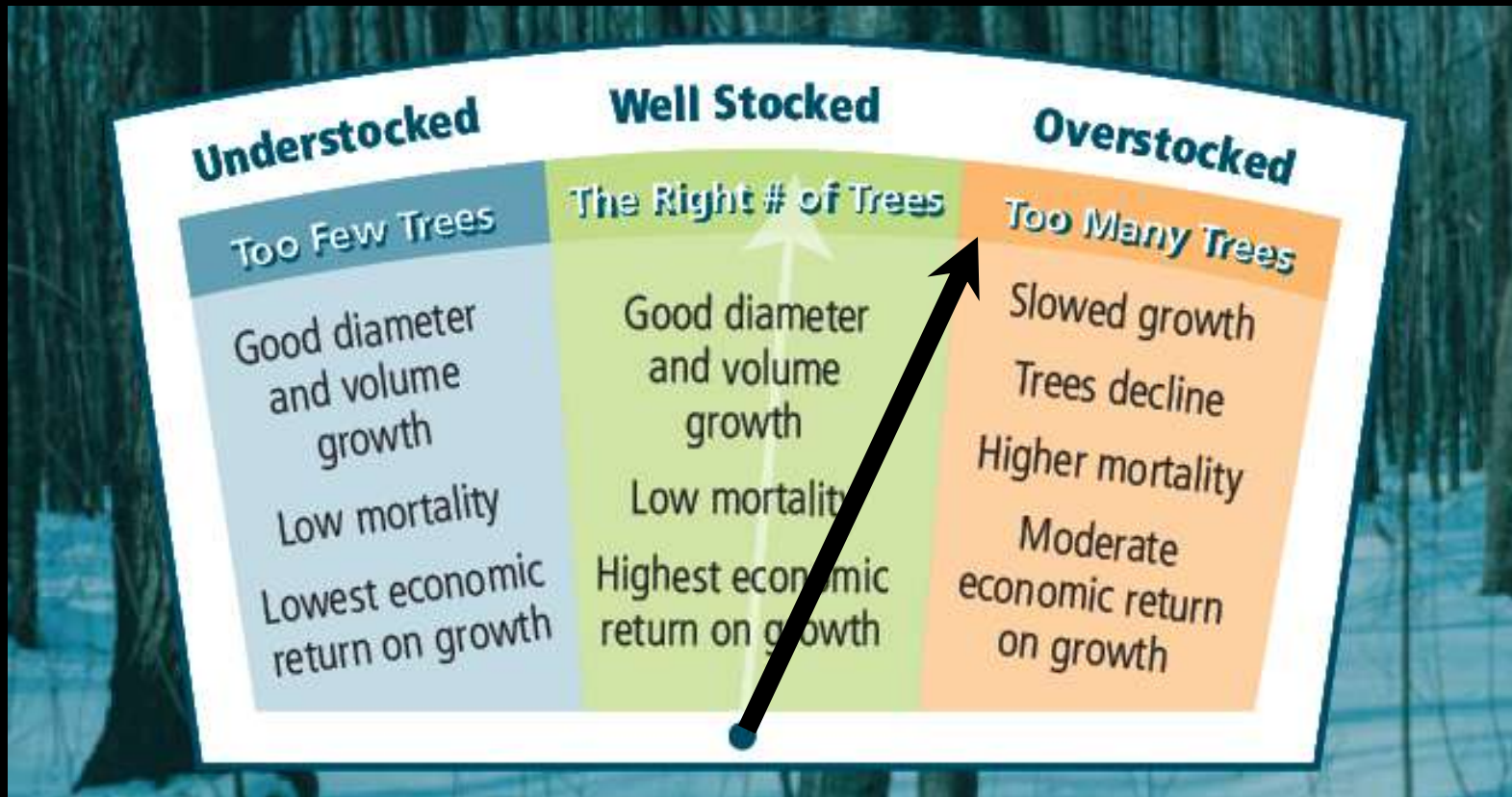
Management Actions



- Plan harvests well
 - Good logger
 - Have a contract
- Harvest at the right time
 - In the right season
 - When harvesting is needed

What you can do...

Management Actions



What you can do...

Management Actions



- Develop a marking prescription
- Use a certified tree marker

Forest Health Problems

Adapting to problems



- Need to adapt to problems
- Be flexible
- Plan management activities well
- Hire good people

Forest Health Problems

Drought



2001



Leaf scorch

- Problems show up years after
- Major stressor
- Water is most limiting resource
- Delay planned management activities

Forest Health Problems

Major wind / ice storm



- Can be devastating to your plan objectives
- Consider safety
- Consider salvage
- Healthier well-stocked forests generally more resilient

Forest Health Problems

Insects (native)



- Defoliators
 - Cyclic
 - More localized
 - Usually temporary
 - Are control options
- Borers / Bark Beetles
 - Prefer stressed trees
 - Can bite

Forest Health Problems

Insects (foreign)



- Defoliators
 - Gypsy Moth C.
- Borers / Bark Beetles
 - Asian Longhorned Beetle
 - Emerald Ash Borer
 - Pine Shoot Beetle
 - Sirex Wood Wasp
 - ????

Forest Health Problems

Insects (foreign)



Forest Health Problems

Insects (foreign)



Forest Health Problems

Plants (foreign)



Forest Health Problems

Plants (foreign)



Garlic mustard - small flowering plant (L), rosette leaves (R)

Forest Health Problems

Plants (foreign)



Forest Health Problems

Logging Damage

