

## How to Make a Bow

- 1** **Cut by**  
- Striking, elm, ash, maple, dogwood, hickory, hawthorn, holly, yew, juniper, olive, pear, mulberry, etc.  
(Heartwood species may require choosing a growth ring)
- 2** **Split into staves**  
Seal ends with glue
- 3** **Dry** - 1 year per inch thickness  
Or see post-drying video  
Thick? 7-10% moisture content
- 4** **Prepare staves, remove bark**  
Embosses mind  
If the bow dries, it's good drying time, but with increased moisture, many will
- 5** **Layout bow design & Rough Out**  
Use straight, twisted, or curved etc.
- 6** **Floor Tillering**  
Up to 1/3 draw length  
Use straight, twisted, or curved
- 7** **Longstring Tillering**  
Up to 3/4 draw length  
- Tiller bow with pulling (upward)  
- Adjustable tillering string (shortened, but still stick)
- 8** **Short-String Tillering**  
All the way to full draw  
- Bow is braced with initial bowstring
- 9** **Sheeting-la**  
Roughly 200 shots before finishing  
Make sure something is stable
- 10** **Finishing:**  
Sealing, finish, arrowhead  
- 220 grit sanding  
- Raw gum (nut-oil, waxes)  
- 320 grit  
- Raw gum  
- 400 grit  
- (320) finish  
- Handle wood (optional)  
- Sealant, paraffin, wax, oil, finish, powder, finish, etc.

youtube.com/JonSantam-Bows

## Wood Selection

(For traditional bows)

**Whiteoak Bowwoods**  
(For one traditional surface for the rest of the bow)

Hickory, maple, ash, elm, hazel, hophornbeam, hawthorn, etc.  
(See list for more)

**Heartwood** (Camber Bowwoods)  
(Undercut surface is not typically used for rest of bow)

- Yew, Olive, orange, mulberry, Laburnum, or the heartwood of any "whiteoak"

**Seal exposed endgrain with glue** (wood sealer, Atlatlable varnish...)

**6" trunk**  
Straight, knot free

**4-10" diameter**

Avoid spiral, knot in bark

Trees smaller than 4" might be small to split - best the section by or the shape

Larger than 10" - may be too much work to split/process

Choose strong, healthy trees without decay or big damage  
Storm-fallen wood can be a sign of hidden issues  
Most whitewoods are not rot-resistant and will quickly decay if left outside.

## Splitting & Drying

**Hearted**  $3-5"$

**Quarter**  $7-10"$

**Eight**  $8-10"$

**Pickaw**  $8-10"$

**Eight to Sixteen**  $8-10"$

(Rude advice: dry by per inch of thickness)

Better: dry until the stave stops losing weight (dry to equilibrium moisture content)

Moist: 6-12% mc

Quick Drying: rough out over small bow blank to speed up drying.  
(caution: stave may crack, warp)

Seasoning (vs drying): in addition to drying, wait until resin are solidified and the stave is dimensionally stable.  
- More advantageous for resins woods (yew, olive)

Seal endgrain ASAP to prevent checking  
- use dilute wood glue, or wood sealer like shellac  
- also seal back if bark is removed

## Design & Simensions

Dimensions will vary greatly. Only the tillering process can tell you the true dimensions.

**75" long, neck to neck**  
FRONT PROFILE

Width: Mostly parallel width taper

- 1 1/4" at the handle
- 1 3/8" midlimbs
- 1" 10" from tips
- 7/8" at the necks
- 1/2" at the tip

**SIDE PROFILE**  
Mostly straight resting side profile with just a bit of string follow  
Thickness is tapered from handle to tip

- 1" at the handle
- 1 3/8" midlimbs
- 1 1/2" 10" from the tips
- 5/8" at the necks
- 3/8" at the tips

**DRAWN SHAPE**  
Full-compass (bending handle)  
Elliptical tiller shape

## Tillering

**FLOOR TILLERING**  
To about 1/3 draw length

**LONGSTRING TILLERING**  
to a bit 2/3 draw length

**SHORT-STRING TILLERING**  
to full draw

**Basic Practices**

- Alternate between scraping/paring stiff areas and checking the hand
- Only remove wood from stiff areas and leave bending areas alone
- Don't pull/pull the bow harder than the target drawweight  
Only pull as hard as you need to see any issues
- At first, the stave will be very stiff. Every time you remove wood from the stiff areas the bow will pull a little further
- Lower the "target draw weight" if you encounter issues, such as excessive set (elastic deformation) or hinges

**Tips**

- Shorten the tillering string as much as possible for reliable draw weight readings.
- If the bow feels stronger than the target drawweight, stop pulling so hard, and keep removing wood from the stiff areas.

**Troubleshooting**

- Hinge
- Whip Tiller
- Too much middle hand, stiff bow
- Stiff bow, too much inner limb bend
- None tiller shapes are exaggerated
- Remove wood here
- Avoid this area

## How to Post a Tiller Check

Different bows need different tiller shapes.  
We need 3 key pictures to communicate tiller

**Front Profile**  
Shows width distribution

**Side Profile**  
Shows thickness taper

**Drawn Shape**  
Only show tiller with context from side and front profiles.

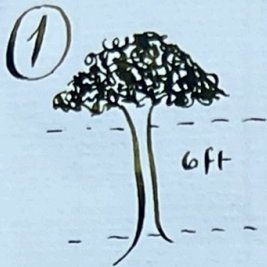
**Key Stats**

- Length of bow
- Target draw weight, draw length
- Current draw length
- None shorten longstring as much as possible

**Optional Extras**

- Braced picture
- Picture of any problem spots
- Video drawing the bow
- Full bow by hand near full draw





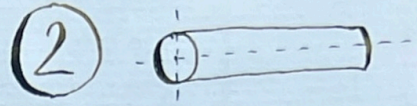
### 1 Cut log

- hickory, elm, ash, maple, hazel, dogwood, hornbeam, hop hornbeam, yew, juniper, \*Osage, \*locust, \*mulberry, etc
- (\*heartwood species may require chasing a growth ring)

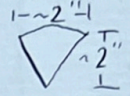
# How to Make a Bow



dry ~ 1 year per inch thickness  
Or see quick-drying video.  
Ideal: 7-14% moisture content



Split into staves  
Seal ends with glue.



Prepare stave, remove bark, trim excess wood.

Do this before drying to speed drying time, but with increased cracking, warping risk.



### 5 Lay out bow design

### & Rough Out

Use drawknife, hatchet, or cleaver etc.



F draw weight

- Remove wood from stiff areas
- Leave bending areas alone.



Scale (optional)

pulley

### Longstring Tillering

- Up to ~2/3 draw length
- Tiller tree with pulley (optional)
- Adjustable tillering string (shortened, but still slack)

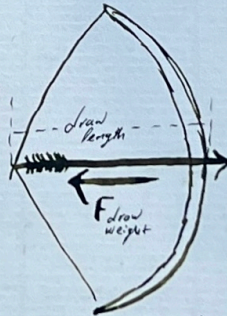


### Short-String Tillering

- All the way to full draw
- Bow is braced with actual bow string



### Shooting-In



Roughly 200 shots before finishing  
Make sure everything is stable.



### Finishing:

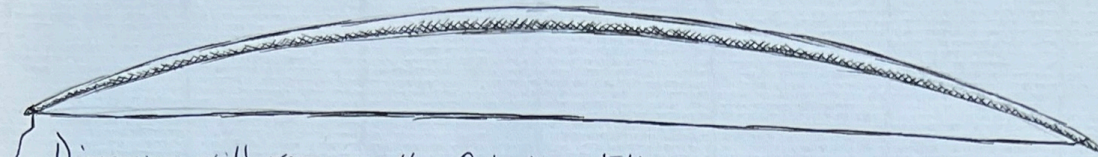
Sanding, finish, artwork

- 220 grit sanding
- Raise grain (wet cloth, or alcohol)
- 320 grit
- Raise grain
- 400 grit
- (Stain) & finish
- Handle wrap (optional)

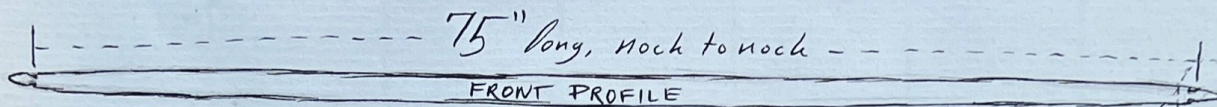
(Shellac, linseed oil, tung oil, gunstock finish etc)



# Design & Dimensions



Dimensions will vary greatly. Only the tillering process can tell you the true dimensions.



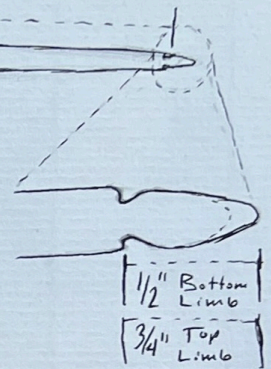
75" long, nock to nock

FRONT PROFILE

## Width

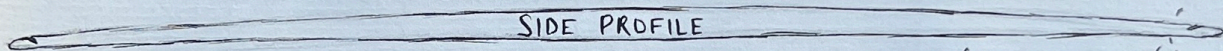
- 1/4" at the handle
- 1 3/8" midlimbs
- 1" 10" from tips
- 7/16" at the nocks
- 1/4" at the top

Mostly parallel width taper



1/2" Bottom Limb

3/4" Top Limb



SIDE PROFILE

## Thickness

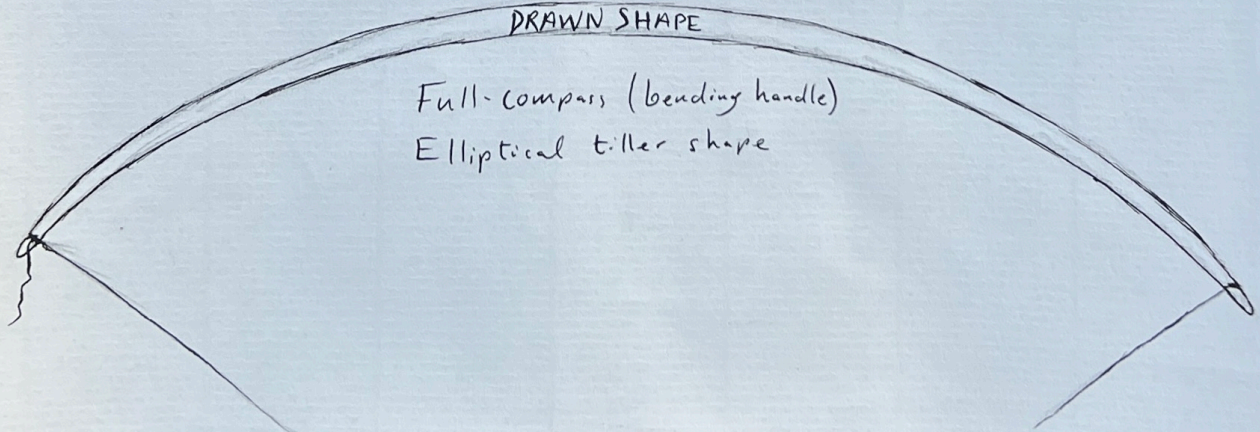
- 1" at the handle
- 13/16" midlimbs
- 1 7/32" 10" from the tips
- 15/32" at the nocks
- 3/8" at the tips

Mostly straight resting side profile with just a bit of string follow.

Thickness is tapered from handle to tip



DRAWN SHAPE



Full-compass (bending handle)

Elliptical tiller shape



# Wood Selection

(for whitewood longbows)

## "Whitewood" Bow Woods

(Can use underbark surface for the back of the bow)

Hickory, maple, ash, elm,  
hazel, hophornbeam, hornbeam, etc...

(See links for more)

## Heartwood or Combo Bow Woods

(Underbark surface is not typically used for back of bow)

- Yew, Osage orange, mulberry,  
laburnum, or the heartwood of  
any "whitewood".

Seal exposed endgrain with  
glue / wood sealer ASAP after cutting

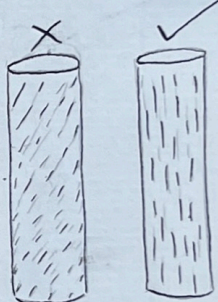
• Trunks are easier to use, but there may be bows in the branches too.

• Look out for 3-4' + sections for billet staves to join at the handle, or make take-downs!

6' + trunk

Straight, knot free

4-10" diameter



Avoid spiral,  
twist in bark

• Trees smaller than 4" maybe too small to split - treat the entire log as the stave.

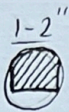
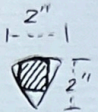
• Larger than 10" - maybe too much work to split/process.

- Choose strong, healthy trees without decay or bug damage.
- Storm-fallen wood can be a sign of hidden issues.
- Most whitewoods are not rot-resistant and will quickly decay if left outside.

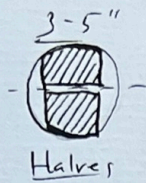


# Splitting & Drying

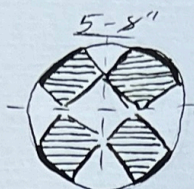
## Ideal Stave



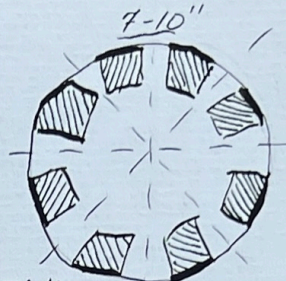
• Use whole log as stave.  
• Avoid pits in bending limb.



Halves



Quarters



Eighths

Crude advice: dry 1yr per inch  
of thickness

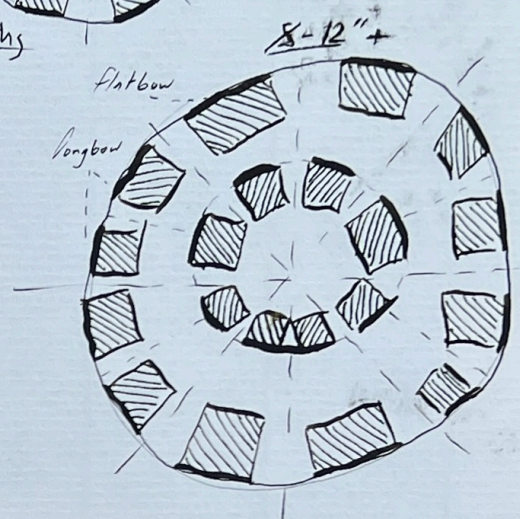
Better: dry until the stave  
stops losing weight  
(dry to equilibrium moisture content)

Ideal: 6-12% m.c.

Quench Drying: rough out over sized  
bow blank to speed up drying.  
(caution: stave may crack, warp.)

Seasoning (vs drying): in addition to drying, wait until  
resins are solidified and the stave is dimensionally stable.  
• More advantageous for resinous woods (yew, osage)

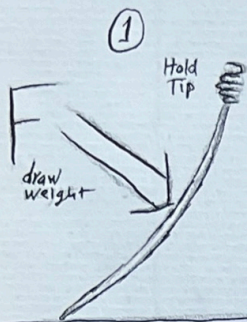
Seal endgrain ASAP to prevent checking  
- use dilute wood glue, or wood sealer like shellac.  
• also seal back if bark is removed.



Eighths to Sixteenths  
Utilize inner belly splits  
(chase growth ring)

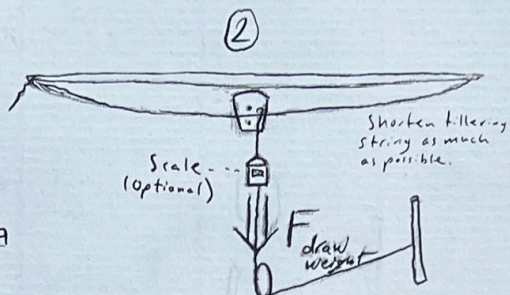


# Tillering



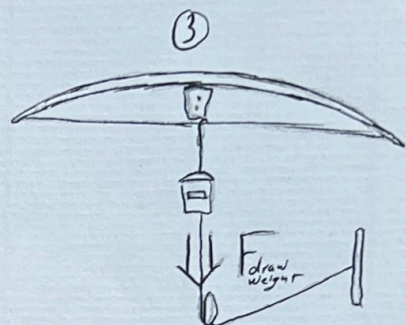
## FLOOR TILLERING

To about  $1/3$  draw length



## LONG STRING TILLERING

to about  $2/3$  draw length



## SHORT-STRING TILLERING

to full draw

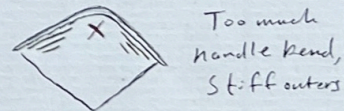
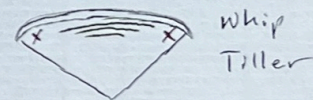
## Basic Practices

- Alternate between scraping/carving stiff areas and checking the bend.
- Only remove wood from stiff areas and leave bending areas alone.
- Don't push/pull the bow harder than the target draw weight. Only pull as hard as you need to see any issues.
- At first, the stave will be very stiff. Every time you remove wood from the stiff areas the bow will pull a little further.
- Lower the target draw weight if you encounter issues, such as excessive set (inelastic deformation,) or hinges.

## Tips

- Shorten the tillering string as much as possible for reliable draw weight readings.
- If the bow feels stronger than the target draw weight, stop pulling so hard, and keep removing wood from the stiff areas.

## Troubleshooting



\* Note: tiller shapes are exaggerated.

≡ Remove wood here

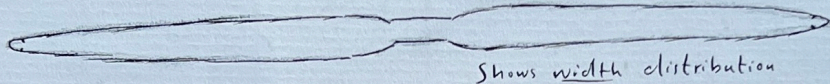
X Avoid this area



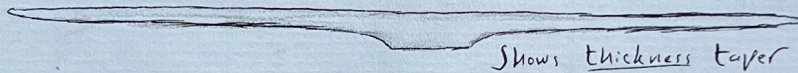
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We need 3 key pictures to communicate tiller.

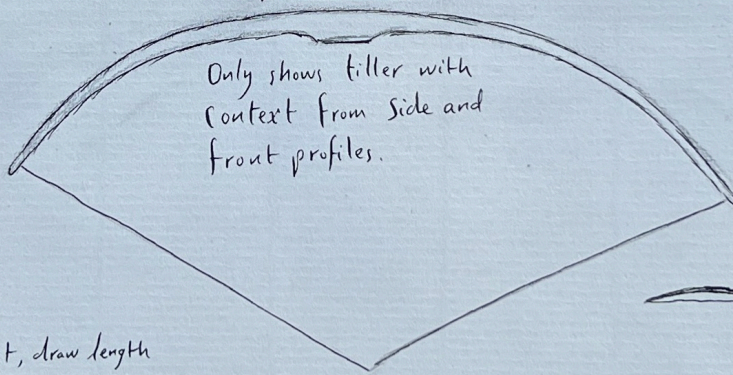
## Front Profile



## Side Profile



## Drawn Shape



## Key Stats

- Length of bow
- Target draw weight, draw length
- Current draw length

\* Note: shorten longstring as much as possible



## Optional Extras

- Braced picture
- Pics of any problem spots
- Video drawing the bow
- Full bow by hand near full draw