

NATURAL MATERIALS & IMPROVISED GEAR GUIDE

Build with what the landscape gives you.



WOOD

BARK

FIBER

TEST

KNOWLEDGE • SKILL • DISCIPLINE • SURVIVAL

Independent educational field guide • verify current laws, local conditions, and expert guidance

MATERIAL CHOICE IS ENGINEERING

Legality, identification, properties and testing come before the project.

USE WHAT IS LEGAL

Dead and down does not automatically mean available.

Natural materials can replace containers, handles, fasteners and simple camp hardware, but collection rules vary widely. Protect living plants, cultural resources, wildlife habitat and high-use sites.

1 SELECTION PRINCIPLES

- Verify land ownership, protected-species rules, harvesting limits and fire restrictions before collecting.
- Use dead and down material where permitted; avoid cutting live trees or stripping bark from living trunks.
- Identify the material before food contact, burning, skin contact or structural use.
- Match strength, flexibility, abrasion resistance, water behavior and decay rate to the task.
- Test a small sample before investing calories or depending on the finished item.

2 DESIGN PRIORITIES

- Prefer reversible projects that can be dismantled and scattered or packed out.
- Use simple replaceable parts: pegs, toggles, wedges, lashings and sleeves.
- Keep sharp edges and abrasive fibers away from cordage, skin and waterproof fabric.
- Do not use unknown wood, bark, resin, stone or shell in food-contact or medical applications.
- Reinspect natural materials after wetting, drying, freezing, heat and load cycles.

FIELD RULE

The landscape is not free inventory. Take only what is legal, necessary and replaceable; leave the site looking and functioning like a natural place.

MATERIAL SELECTION MATRIX

Choose by property and risk, not by appearance.

TEST THE SAMPLE

Know how it bends, splits, swells and fails.

The same species can behave differently when green, dry, decayed, frozen or waterlogged. Reject unknown, contaminated, protected or structurally degraded material.

MATERIAL	USEFUL PROPERTIES	COMMON USES	TEST / CAUTION
Dead, sound wood	Compression strength, carveability, predictable grain.	Pegs, toggles, wedges, handles, racks, spoons.	Reject punky wood, checks at load points and hidden rot.
Naturally shed bark or bark harvested where lawful	Sheet form, water shedding, moderate stiffness.	Containers, shingles, pads, sleeves, scoops.	Never girdle live trees; identify species and food-contact safety.
Roots, withes and flexible shoots where collection is lawful	Bending and binding with low hardware demand.	Basket frames, lashings, hoops, ties.	Test wet and dry; living harvest can damage plants and may be prohibited.
Plant fibers and inner bark from approved sources	Twist, braid and netting potential.	Cordage, ties, wicks, soft lashings.	Some fibers irritate skin or weaken sharply when wet.
Resin / pitch from legal sources	Adhesion, sealing and water resistance.	Noncritical sealing, tack and repair compounds.	Flammable, heat-sensitive, variable and often unsuitable for food contact.
Stone, shell or naturally shed antler where lawful	Hard edge, abrasion and compression resistance.	Scrapers, burnishers, weights, wedges.	Cultural artifacts and remains are protected; sharp fracture can injure.
Snow and ice	Moldable, insulating in depth, temporary mass.	Wind blocks, cooling, temporary forms.	Ventilation, collapse, meltwater and cold-injury hazards.

MATERIAL TEST BEFORE COMMITMENT

- 1

IDENTIFY
Know the species or material. Reject toxic, rotten or protected resources.
- 2

BEND
Test flexibility and recovery. Listen for cracking.
- 3

LOAD
Apply a controlled load far below the final demand.
- 4

WET
Check swelling, slip, delamination and loss of strength.
- 5

AGE
Reinspect after heat, cold, abrasion and repeated cycles.

FASTENERS & STRUCTURAL PARTS

Simple geometry converts imperfect materials into reliable camp hardware.

BUILD REPLACEABLE COMPONENTS

Pegs, toggles, wedges and lash points are easy to inspect.

Avoid depending on one carved joint or one brittle branch. Spread load, round contact surfaces and design parts that can be replaced without rebuilding the entire system.

1



PEG

Taper the working end, leave a strong shoulder, and strike only sound end grain. Use for ground anchors where soil and rules permit.

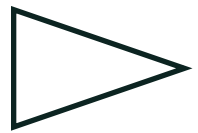
2



TOGGLE

A smooth crosspiece spreads load in a loop or behind a fabric reinforcement. Round edges to protect cord and cloth.

3



WEDGE

Converts driving force into clamping or splitting. Use gradual taper and avoid brittle material near hands.

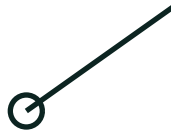
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SPLINT

Bridges a broken handle, pole or container wall. Extend well beyond damage and lash over sound material.

5



HANDLE

Follow straight grain, smooth transitions and secure mechanical retention. Test with light controlled loads first.

6



LASH POINT

Use a notch, saddle or broad contact surface that prevents slip without cutting fibers.

LOAD TEST

Test every new component with a light controlled load, then a moderate load away from the body. Stop at cracking, permanent bending, slipping, fiber damage or an unexpected sound.

CONTAINERS & CAMP IMPLEMENTS

Build only what saves work, protects resources or solves a repeated problem.

ADAPT BEFORE CONDITIONS FORCE IT

Utility before ornament

A natural-material project should reduce future calories, protect food or water, improve organization, or replace a failed tool. Otherwise it is expensive decoration.

1 BARK AND FOLDED CONTAINERS

- Use only lawfully gathered, positively identified material.
- Fold so water or contents press seams closed rather than open.
- Use smooth pegs or stitches; avoid punctures near the load line.
- Do not assume unknown bark is food-safe or heat-safe.

2 WOVEN BASKETS AND FRAMES

- Build a sound rim and base before filling the walls.
- Alternate flexible elements evenly to prevent a weak side.
- Dry slowly and retighten after shrinkage.
- Use liners for small, wet or food-contact contents when appropriate.

3 SPOONS, PADDLES AND SCOOPS

- Follow straight grain and leave thickness at the neck.
- Round all hand and mouth contact surfaces.
- Avoid toxic or highly aromatic unknown species.
- Dry and inspect for cracks before repeated food use.

4 RACKS, FUNNELS AND ORGANIZERS

- Use tripods, crossbars and broad supports rather than deeply cutting live trees.
- Keep drying racks away from fire and animal access.
- Use clean nonabsorbent liners for treated-water funnels.
- Dismantle temporary structures before leaving where required.

FOOD-CONTACT CAUTION

Identification matters. Unknown wood, bark, resin, fungi, pigments and plant fibers may be toxic, allergenic, irritating or contaminated. Use known safe materials and current regional guidance.

FAILURE MODES & SITE RESTORATION

Natural materials change after the first wet, dry, freeze and load.

DIAGNOSE THE SYSTEM

Design for inspection and removal

Avoid burying hardware, cutting living trees or leaving dangerous points. Dismantle temporary work, scatter natural material where appropriate and pack out synthetic additions.

FAILURE SIGNAL	LIKELY CAUSE	BEST CORRECTION
Peg splits when driven	Cross grain, brittle material, abrupt taper or impact on weak end.	Select straight-grained wood, make a gradual taper and reduce impact.
Lashing slips after rain	Material swelled, stretched or surface became slick.	Add mechanical stop, retension after wetting and use a more suitable cordage.
Container leaks at seams	Fold direction, puncture or shrinkage opened the seam.	Refold so load closes the seam; add liner or retire from liquid use.
Handle loosens during use	Poor grain, inadequate shoulder or wet-dry movement.	Stop use, rebuild retention and test under controlled load.
Pitch or resin softens near heat	Material is temperature-sensitive.	Remove from heat and use mechanical fastening or a compatible alternative.
Project consumes more time than it saves	Overbuilding, wrong material or low-value task.	Stop. Salvage reusable parts and return to a simpler system.

RESTORATION WORKFLOW

Remove cord, wire, tape and synthetic material. Dismantle structures unless specifically permitted. Disperse dead-and-down material naturally, replace moved rocks where appropriate, erase concentrated trampling and leave cultural or natural objects where found.

FIELD CARD, RED FLAGS & SOURCES

A legal, low-impact standard for improvised camp gear.

CARRY THE STANDARD

Use what is legal; build what lasts

Identify, test and choose materials by property. Protect living systems and dismantle what should not remain.

FIELD CHECKLIST

- ☐ Verify land ownership, harvest rules, protected species and site restrictions.
- ☐ Prefer dead and down material where permitted; do not strip bark from living trees.
- ☐ Leave artifacts, bones, antlers and culturally significant objects where rules require.
- ☐ Identify material before food, skin, fire or medical contact.
- ☐ Test bend, load, wet behavior and age before depending on the item.
- ☐ Round contact surfaces and protect cordage, skin and fabric from sharp edges.
- ☐ Use replaceable pegs, toggles, wedges, lashings and splints.
- ☐ Avoid pitch or resin near heat and in unknown food-contact uses.
- ☐ Reinspect after wetting, drying, freezing and repeated load.
- ☐ Remove synthetic additions and restore the site before leaving.

STOP / REASSESS

- The material is unknown, protected, contaminated or culturally significant.
- Harvest would damage a living tree, root system or wildlife habitat.
- The item will support a person or other life-safety load.
- Cracking, slip, permanent bend or delamination appears during testing.
- Food contact depends on an unidentified material.
- The project is consuming more energy than the problem justifies.

AUTHORITATIVE STARTING POINTS

NPS Leave No Trace Principles

www.nps.gov/articles/leave-no-trace-seven-principles.htm

Leave natural objects, avoid damage and minimize structures.

Leave No Trace: Leave What You Find

lnt.org/why/7-principles/leave-what-you-find/

Protect living trees, natural objects and cultural resources.

NPS Trip Planning Guide

www.nps.gov/subjects/healthandsafety/trip-planning-guide.htm

Research regulations and land-specific requirements before travel.

VERIFY BEFORE FIELD USE

Rules, access, weather, emergency procedures and land-use practices change. Confirm local requirements, current forecasts, device registration, medical guidance and land-manager instructions before deployment.