

# TOP-BAR BEEKEEPING IN ALASKA



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## What is beekeeping?

Beekeeping is the ability to manage a colony of honeybees so as to attain the maximum adult foraging population to coincide with the beginning of the major nectar flow in your area. Worldwide beekeepers must answer the following three questions to be successful –

1. What are the major honey plants of the local area and when do they bloom?
2. What management steps need to be taken to maximize the adult bee population to coincide with the beginning of the nectar flow?
3. What to do with the bees and equipment during periods of dearth (non-nectar flow – winter)?

Beekeeping essentials are –

- Some protective gear (especially for the face) to minimize stings.
- A few tools; (*Below*) hive tool, bee brush and smoker with fuel (burlap, dried corn cobs, moose nuggets all make excellent smoker fuel).



*Simple veils (must be easy to see through) or a complete bee suit range from \$10-\$100.*

- Some sort of container in which to house the bees (hive),

*Right – components of a modern Langstroth hive.  
Below - a simple top bar hive.*



- **A desire to learn and interact with nature.**
- **Of course, some honeybees.**

*Below - bees arrive in April in 3-4 pound packages (10-13,500 bees with a queen).*



*Above- The fascinating world of bees! It offers an opportunity to learn about nature with a sweet reward at the end of the season.*

### **What are top-bar hives?**

Top-bar hives may be considered an intermediary step between **fixed-comb** hives (where the colony firmly fixes the comb to the top and frequently the sides of the container) and **moveable-frame** hives (in which bees build comb upon human-provided foundation set in a frame). Top-bars could also be called **moveable-comb hives** as the combs may be manipulated in a similar fashion to moveable-frame hives but lack the frame and foundation.

The Greeks were employing top-bars in the 1600's well before the discovery of the bee space ( $\frac{3}{8}$ "") in the 1850's by Rev. Lorenzo Langstroth that made **moveable-frame** beekeeping possible. They became the development hive of choice in East Africa after Ontario Agricultural College and Canadian aid organizations introduced them in the 1960's. Today they are experiencing a new surge in interest due to their economy and ease of sourcing information on the Internet.



*Above - Moveable-frame beekeeping allows easy colony inspection but requires precision cut frames and foundation.*

*Below- Top-bar combs are built naturally by the bees and must be handled with care as the wax is not reinforced by foundation.*



## Why top-bars?

Top-bar beekeeping offers an economical way to keep bees and produce honey especially in rural locations where the prohibitive cost of shipping can make beekeeping with conventional hives an expensive proposition. Top-bar hives can be made of scrap material such as pallets, plywood scraps, Blazo boxes, and even discarded fuel drums (*provided they are thoroughly cleaned!*).

Conventional beekeeping with Langstroth hives (modern bee boxes named after Rev. Lorenzo Langstroth who discovered the bee space) requires a hot knife to uncap the ripe honey, a centrifuge apparatus to extract the honey and a pest-proof storage area to store equipment away from mice and voles.

## Pros & Cons; \$ comparison estimates (no Alaska shipping included!)

### Conventional Langstroth hive

Cost of complete hive set up\* = **\$380**  
(\* includes bee suit, gloves, smoker)  
Additional hive set ups = **\$210**  
Extracting set-up = **\$350**  
Bees (per colony) = **\$135**  
Sugar, pollen sub., etc. = **\$40**  
**Total start up costs 2 colonies ≈ \$1250**

Each type of colony will require some personal gear such as a bee suit, smoker and hive tool.

Well assembled conventional equipment will last for many years with proper storage.

Frames may be stored (protected) and used in subsequent years – about 5-10% should be replaced yearly.

Extracting equipment is a must.

### Top-bar Hive

Cost of complete hive set up = **<\$50**  
Bee suit, gloves, smoker etc = **\$90-\$135**  
Additional hive set ups = **<\$50**  
Extracting set up – not needed  
Bees per colony = **\$135**  
Sugar, pollen substitute, etc. = **\$40**  
**Total startup costs 2 colonies ≈ \$522**

Annual operating costs (bees, meds, sugar and pollen substitute) are about the same for both styles.

Well built top-bar hives will last equally long.

A few top-bars (4-5) with drawn brood comb may be kept for spring hiving ***if*** they are carefully stored.

Honey is sold as comb or chopped, drained then bottled.

## Design elements of a top-bar hive

Top-bar hives are easier to construct using available material than the conventional Langstroth hives. A survey of local lumber stores in Fairbanks revealed that the price for the raw material to build a single deep box was about \$11.60 for #2 grade lumber, while the mail-order price for the same quality pre-cut lumber (precision-milled boxes with finger joints, rabbets and handholds) was \$12.00. Consider your time and woodworking skills – are they more valuable than the shipping cost of a 10 pound box?

Top bar hives (and any beehive for that matter) have only one critical dimension – the spacing of the top-bars. Depending on the species of bees they build comb with a natural spacing of 28 mm ( $\approx 1\frac{1}{8}$ "") for the Asian Hive Bee, 32 mm ( $\approx 1\frac{1}{4}$ "") for the African bee, and 35 mm ( $\approx 1\frac{3}{8}$ "") for our European Hive Bee.

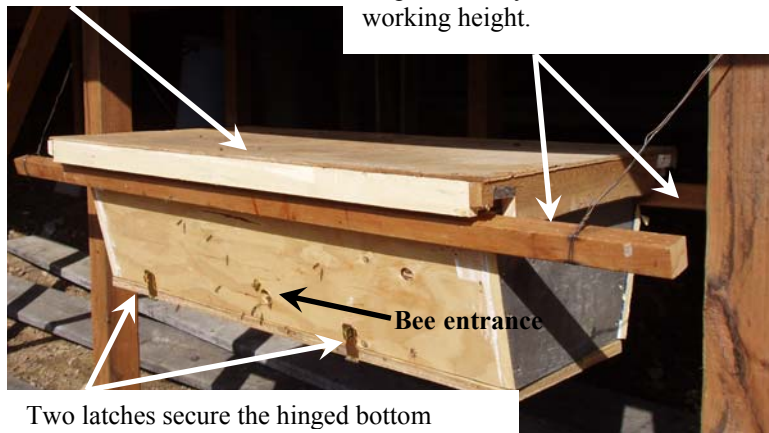
It is advantageous to make the top bars the same length as conventional frames ( $19\frac{1}{4}$  inches) so you can transfer top-bars to a standard box for easy transport or storage. If you are using a discarded plastic drum or Blazo box as your hive chances are the frames won't match a conventional hive - but make them interchangeable, certainly within your operation or even within a village so they can be exchanged.

In India I learned the advantage of a hinged bottom – a pair of hardware store cabinet hinges and a couple of latches allows the whole bottom to swing free exposing the bottom of the combs and makes colony inspection a snap.

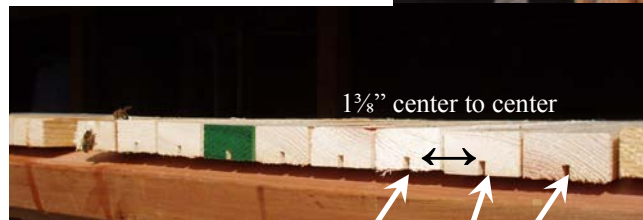
Handles protruding out from either end serve as carriers, a place to hang combs while working the hive, and a means of suspending the hive off the ground at a comfortable working height and well away from pests.

Starter strips or comb guides can be as simple as a bead of beeswax down the center of the top bar, a saw kerf with a  $\frac{3}{4}$ " strip of conventional foundation (wax or

$\frac{3}{8}$ " or  $\frac{1}{2}$ " plywood cover with  $\frac{3}{4}$ " foam insulation underneath.



Handles extend past the ends providing a spot to place combs during colony inspection, lifting ease for transport, and a way to suspend colony at a comfortable working height.



Saw kerfs about  $\frac{1}{4}$ " deep in the center of the top bar will accept starter strips or comb guides at the proper spacing 35 mm ( $1\frac{3}{8}$ "") so the bees build parallel combs.



The bottom of the hive hinges down allowing a rapid assessment of what's happening inside with minimal disturbance to the bees.

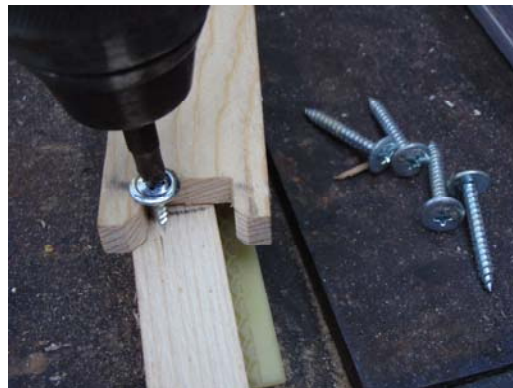
plastic) inserted, or even a few popsicle sticks – any sharp edge to encourage the bees to build comb in parallel lines.

You can adhere the comb guides to the top bars with natural beeswax or brad nails – if you're careful with the width of your saw kerf you may get the comb guides to fit ***snugly*** in the saw kerfs.

Another option is to have 1" wide top-bars with  $\frac{3}{8}$ " spacers – this allows sufficient space for the bees to crawl up into honey supers and store honey beginning in early July – however frequently the bees build brace comb between the top-bars. I use a one-inch wide top-bar and a pan head screw set with  $\frac{3}{8}$ " exposed for proper spacing.



*Use only pure beeswax to fix comb guides in saw kerf (never paraffin).*



***Above left*** – a snug fit in the saw kerf is essential to avoid having the comb guides drop out. ***Above right*** – If you want to be able to place another box atop the hive then you must space top-bars  $\frac{3}{8}$ " apart; easily done using pan head screws and a piece of  $\frac{3}{8}$ " material as a spacer. ***Below right*** – Here in a honey super the frames are properly spaced - note the screws are on alternate sides of the top bar and the top-bar can be turned either direction.



***Left*** - the bees draw out the comb using the comb guide- the result can be cut up and packaged after capping over by the bees.



## Building a top-bar hive

If you possess some simple woodworking skills you can build a top-bar hive; power tools are great but not a necessity, scrap wood can be used, but remember a well constructed hive will last for many years.



*Above left- a 55 gallon drum split lengthwise using a saws-all (don't use a torch!!). In retrospect I'd have - the top-bars sit on top of the barrel rim doing away with a support lip which I screwed into the sides and, a few inches of foam on the outside of the barrel to provide some insulation both from cool spring and summer heat. On the right, using a frame gripper, I lift a comb from the hive- note the curve corresponding to the shape of the barrel.*

I've even kept bees in a top-bar hive made from a 55-gallon fuel drum split in half lengthwise (**WELL** cleaned out of course); although in hindsight some spray foam on the outside would have ameliorated the temperature swings. I've also thought about building the "Alaskan Natural Hive" made of birch bark (gathered in early spring), double walled (with sphagnum moss filling the 2-3" void), and sewn together with spruce root; in short the same construction principles as a birch bark canoe – a project I've yet to get to!

Here are a few tips to consider in constructing a top bar hive:

1. The width of the top bars ( $1\frac{3}{8}$ " or 35 mm) or their spacing is the most important factor- this allows for the normal natural spacing of combs for our Western honey bee.
2. A comb guide is another important aspect; a double saw kerf spaced about  $\frac{1}{8}$ " apart and about  $\frac{1}{4}$ " deep (forming a small ridge), a bead of wax dribbled down the **center** of the top bar, a series of popsicle sticks fixed in a single saw kerf, or a strip of foundation  $\frac{1}{2}$ " to  $\frac{3}{4}$ " wide down the center- anything to provide the bees with a guide for constructing straight combs.
3. A hinged bottom – (see photos page 5) this makes for a very easy and rapid inspection. A few puffs of smoke and the bees will crawl up way from the bottoms of the comb exposing any queen cells- you can see in an instant how many combs the bees have drawn and if swarm preparations are under way; then, if you need to you can close up the bottom and manage the bees from the top.
4. Adaptable to regular Langstroth equipment – if your top bars are  $19\frac{1}{4}$ " long they will fit inside a standard Langstroth box (makes it easy to carry combs into the house). Likewise if the depth of your hive body is less than 9" (measured vertically) a fully drawn comb will sit inside a Langstroth deep super. Not only

will this allow for easy transport but it will allow for a transition to Langstroth equipment or the use of standard boxes for honey supers.

5. A feeder that can be moved inside the hive, is easily filled with minimal disturbance to the bees, and allows very easy access to the sugar syrup (within an inch or two). A zip-lock bag placed on the floor of the hive is too far for the bees to travel for food in cool spring weather. The feeder should fit snug inside the hive acting as an insulated follower board (see below).



*Above- a feeder holding about 3 quarts of sugar syrup for spring feeding; the inside is lined with melted beeswax to make it waterproof. It fits snugly conforming to the trapezoidal shape of the hive acting as a follower board. Below a screen in the feeder makes it easy for bees to crawl in and out.*



6. An insulated follower board (above) - this is simple a movable piece of rigid foam insulation that is used in the spring to control the size of the brood area. As the bees increase their population and draw out comb the follower board can be moved to expand the brood nest. It may take a bit more time, material, and construction skill but a double walled hive (wood/rigid foam sandwich) will do much better in our spring cool conditions- especially if you have a small package of bees (2-3 pounds) early in the year.



## Managing top-bar hives

With standard Langstroth equipment frames can be rotated in any direction- not so with top-bar combs- they are fragile; if they break off it's a chore to tie them back to the top bar snugly with some cotton string. Frequently the bees will adhere the top inch or two of the combs to the sides of the box- a long flat knife should be used to cut the adhesion points before trying to remove the



combs. After a few times of your cutting it away the bees will give

*Use a thin bladed knife to cut points attached to the side walls. Note the inverted top bar resting on the hive top- two parallel saw kerfs aid the bees in producing straight comb.*



up and it should hang free. Sometimes they will adhere the comb to the bottom of the hive- here's another advantage of the hinged bottom- open the bottom just a bit and using your long, thin-bladed knife cut any adhesion points. If you do break a comb tie it back to the top bar with cotton twine- the bees will eventually chew it off and stick the comb to the top-bar. Remember rotate the comb held at eye level in a clockwise or counter clockwise position. If you have handles protruding several inches from the hive body they make an excellent place to put a few combs while you are inspecting the colony.

### Harvesting top-bar colonies

If you're gadget/mechanically inclined you might try building an extractor from a steel drum and some bicycle parts – I haven't built one. Looking at the photo on the right I'd make some provision for the combs to be held more securely in the horizontal position. The extractor works on the same principle as a radial extractor- honey is expelled from both sides at the same time.



Comb honey is in high demand and easily produced by top-bar hives. Honey still in the comb guarantees purity and the stamp of a “natural product” (not that any Alaskan honey shouldn't be!). At the end of the season or when the honey is capped over simply remove the comb and, with a knife dipped in hot water, cut sections to fit what ever container you'd like to use. Placing the honey on a screen for a few hours before packaging will lessen the amount of honey dripping from the cut cells. You can use zip-lock baggies or plastic clam shell boxes as seen in delis. *Right – my daughter cuts square sections with a hot knife and places them on a screen to drain.*



### Storing equipment

In the fall it is worthwhile to find and kill the queen – that way within three weeks all brood will have hatched out; you'll find some frames which are dark from several generations of brood rearing that still have some pollen and honey store- save those and treat them with care. You can use them



the following spring upon having a new package. If you've build several boxes all of the same dimensions or are planning on

*Here's a comb woth keeping for spring- well drawn out in a straight line, some stores of honey and pollen, darker comb not all that suitable for comb honey, and ready for a new queen to commence laying. Note how th extended handles of the hive body provide a convieient palce to put combs while inspecting.*

expanding the number of colonies you maintain then the drawn comb can be distributed between several colonies to give the bees a jump on spring. Keep the colony suspended in a protected place (this will keep shrews, mice and voles out of there), as soon as you've rid the colony of bees place a small mesh screen over the entrance so wasp or other robbers cannot enter. DO NOT DISTURB during the winter- combs are extremely fragile when cold!

In the fall when all the brood has hatched you can kill off your bees by using a large container of soapy water (2-3 feet in diameter with 5-10 gallons of soapy water -1/2 cup dishwashing soap to 5 gallons water) and brushing the bees from the frames into the soapy water. The combs are fragile so be gentle- this may be a good time for a full bee suit- they'll be vexed!

DO NOT ALLOW THE BEES TO DIE IN THE HIVE!! In the spring you'll find thousands of bee butts sticking in the cells- they've crawled in the cells as they starve to death.

Because a top-bar hive is more of a "horizontal" arrangement of combs than a natural "vertical" arrangement such as may be found in a hollow tree they are not conducive to overwintering in a severe climate. If you'd like to experiment with top-bars and overwintering a Warré hive (vertical orientation) would be more suitable. There are several sources of information about Warré hives on the Internet. There are several web sites devoted to top-bar hives – just remember there is never a universally true answer for all conditions in beekeeping; do some experimentation yourself. The best bee is the one that survives your management!

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