Introduction to CW Skimmer
By Pete Smith, N4ZR

The purpose of this brief guide is to assist the ham operator who is curious about CW Skimmer, but uncertain whether it will be interesting enough to warrant buying a licensed copy.

I should make it clear here that I am simply an enthusiastic user of CW Skimmer. I have no business relationship with Alex, VE3NEA, though I have worked with him as a volunteer beta tester and frequent kibitzer since December, 2007.

Setting Up

Initially, I'm assuming you have downloaded and installed the software on your computer, which has either a standard soundcard or motherboard sound components. Run a standard stereo cable from either the headphone jack or a rear panel audio output to the "line in" jack of your soundcard.

Now start CW Skimmer. The first screen you'll see looks like this:
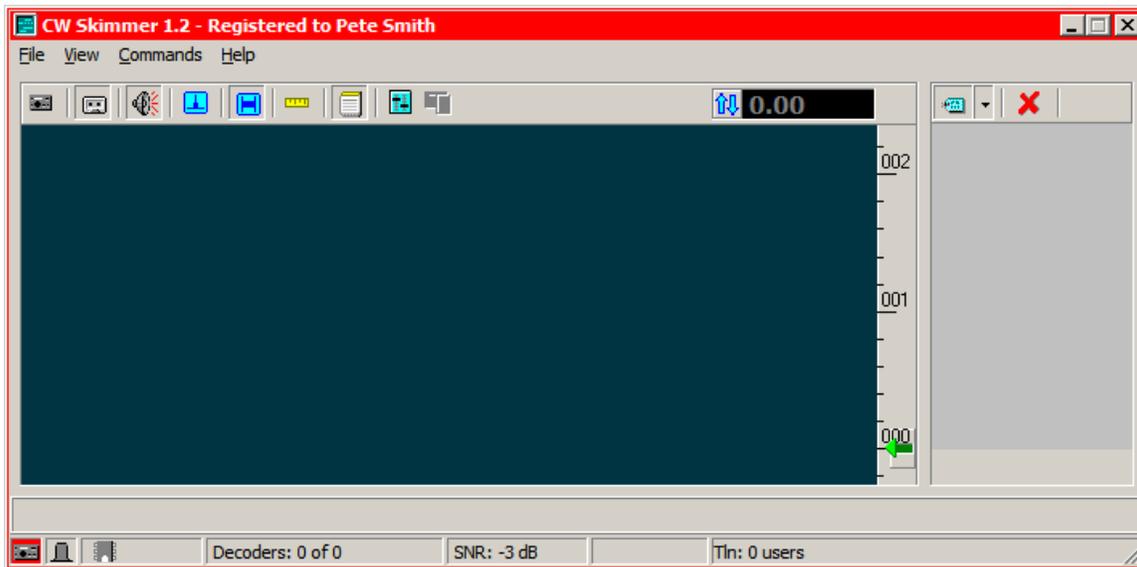
First, we need to set up the program. Click the blue/green button that looks like a pair of audio sliders, near the center of the screen. That will put you in the Settings menu, which looks like this:
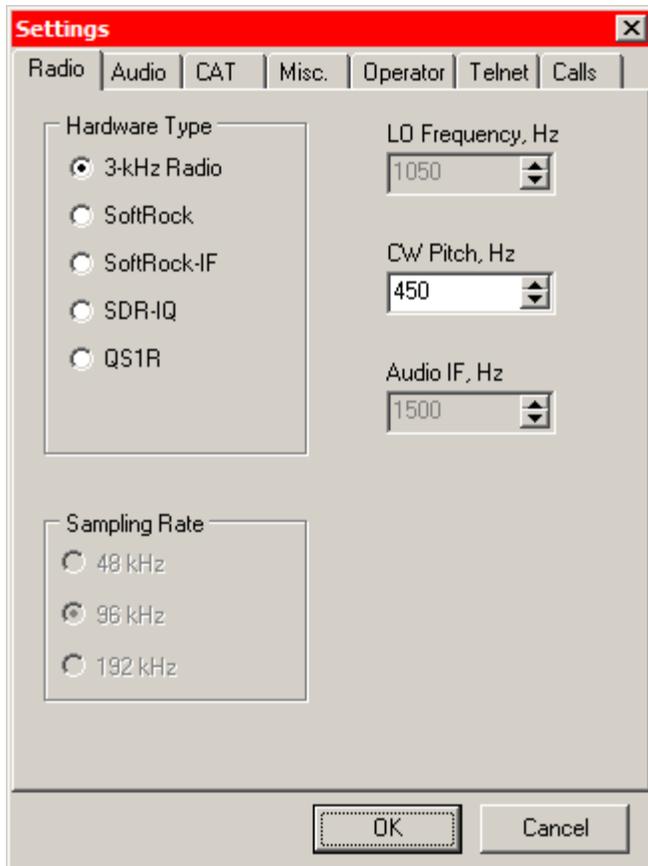
Start with the Radio tab. Select 3-KHz radio. Then set the CW pitch you like –
that will determine the pitch of CW you hear in the speaker (if you have the
speaker on) and the accuracy of the frequency readout, so set it to your
accustomed pitch. Now click on the Audio tab.
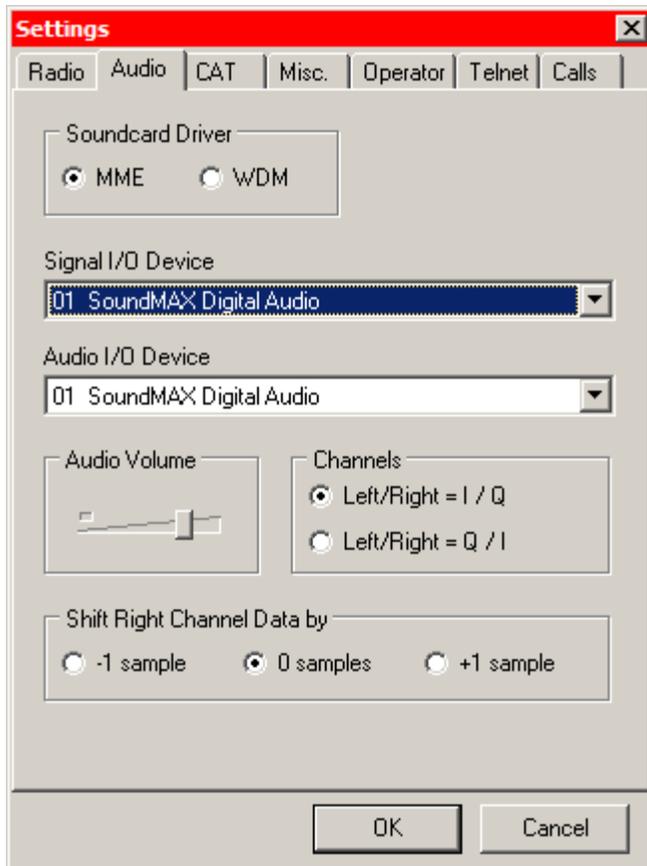
Either the MME or WDM soundcard driver will work with most soundcards. Just pick one for now. Now click the drop-down buttom to the right of the Signal I/O Device list-box. You'll see a list of all the sound devices your computer has, or at least those that are recognized by the operating system.
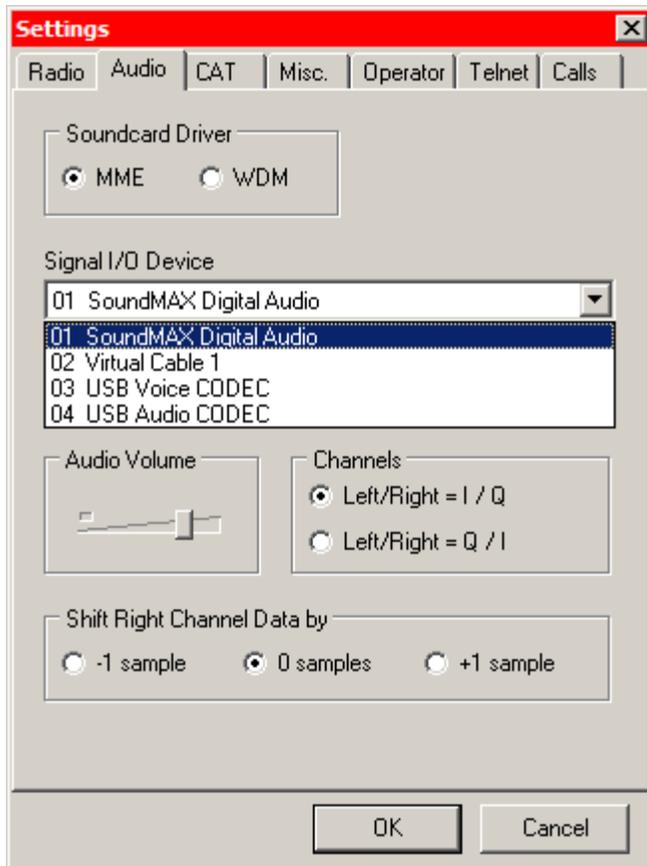
I have several options, but don't worry about that. Most likely you'll have something like my SoundMAX Digital Audio (which is a built-in soundcard). Choose that. Repeat the process for the Audio I/O device. Ignore all the stuff below.

If you have a computer-controlled radio, click the CAT tab:
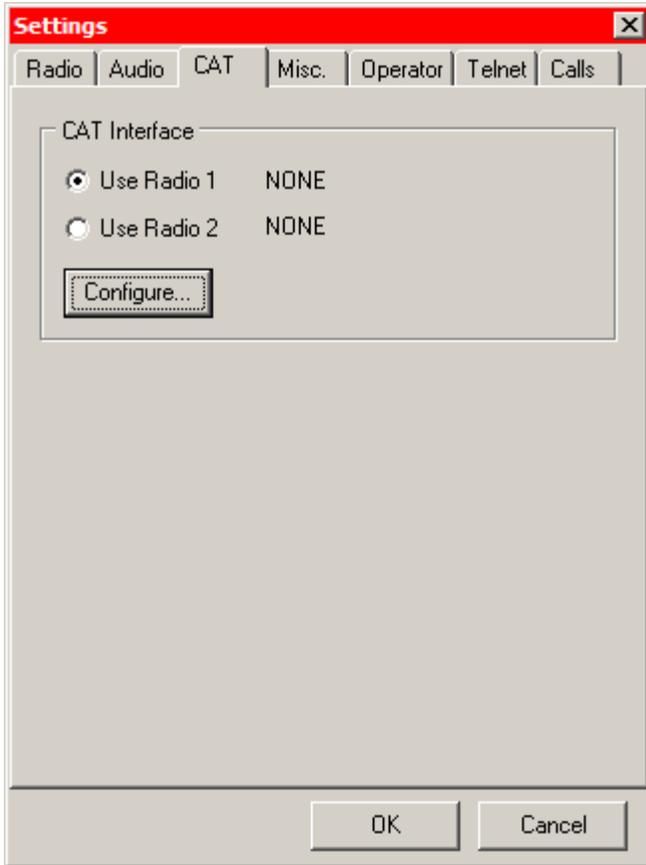
Select Radio 1, and click the Configure button
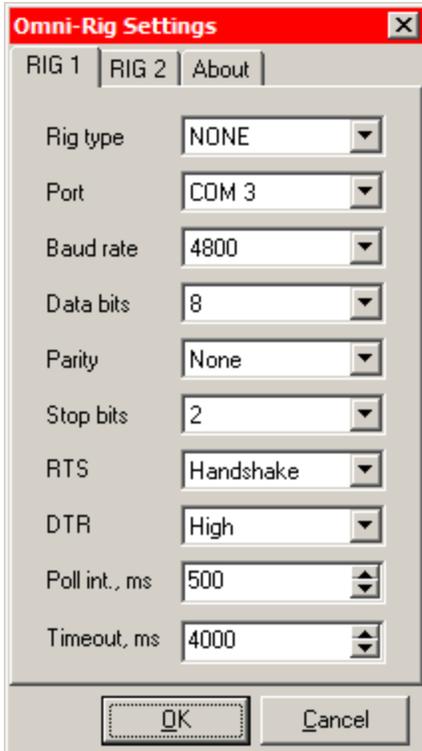
Fill in the form to fit your radio and computer setup, and then Click OK. That will take you back to the CAT tab.

For now, you don't need to fill in anything on the other tabs, so just Click OK and you're back at the main CW Skimmer screen.
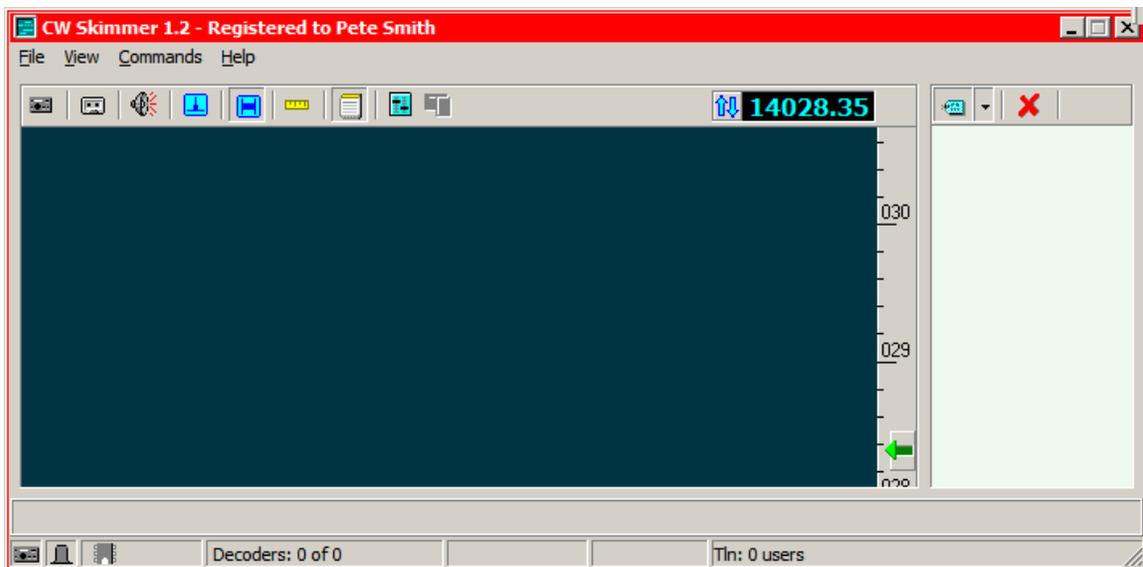
If you've connected a radio, your frequency will now show in the frequency window. If you left-click the Up/Down Arrow button to the left of the frequency display, your frequency will go up one screen height, or approximately 3 KHz; right-click, and it goes down 3 KHz.

I should mention here that computer control is very important, not only to effective use of Skimmer, but also for logging and other DX-related programs. If you don't already have a radio capable of computer control, put it near the top of your priorities – you won't regret it.

So let's start skimming – Click the Radio button on the left end of the row of buttons. You'll see the waterfall start to stream across the screen from right to left.
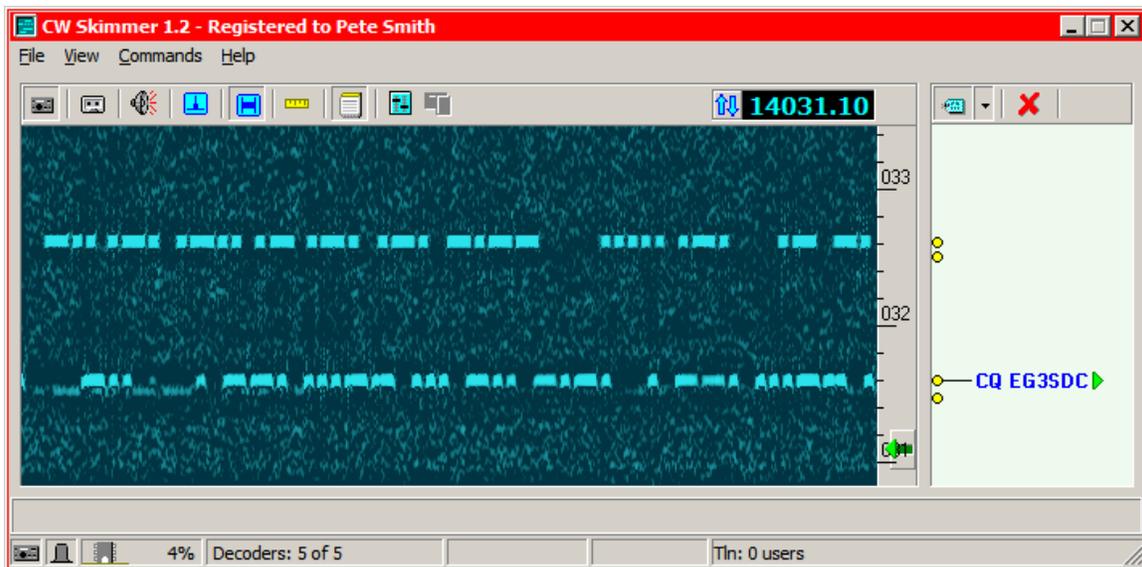
TROUBLE-SHOOTING: If you don't see your radio's frequency, even though it is connected, double-check your CAT settings. If you don't see the waterfall, check your soundcard mixer settings. Make sure that the RECORD line in is selected, and that the wave output is not muted

Turn off any narrow CW filter you might have on, tune your radio until you hear some signals, and you will start to see Morse code in the waterfall. Now click on either the yellow dot on the bandmap, or on the callsign if Skimmer has already copied one.
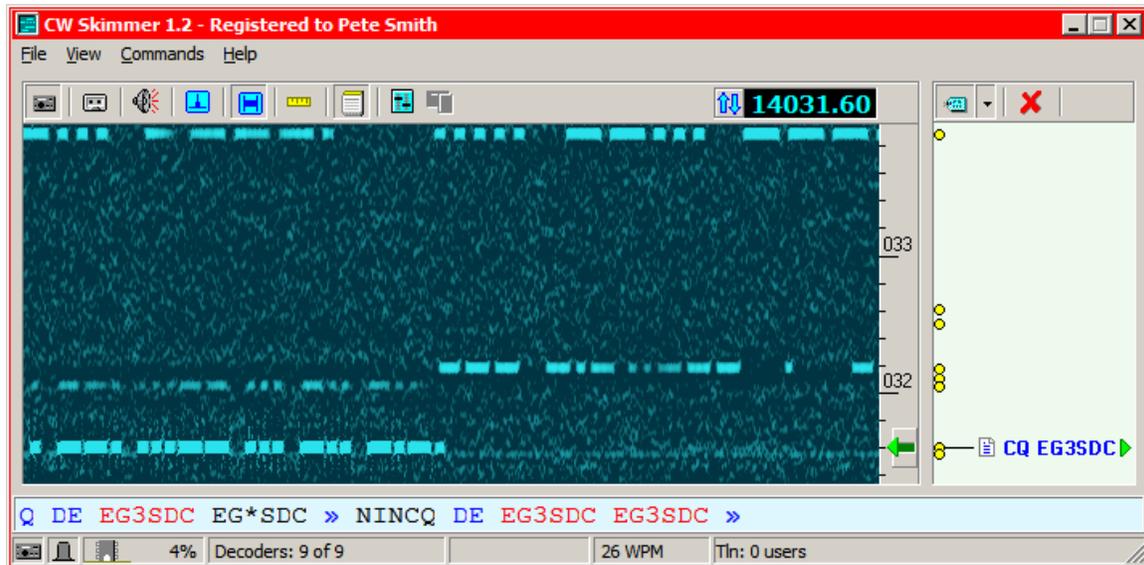
In this example, you'll notice that the little green arrow shifted to the frequency of EG3SDC, and that the waterfall now reflects the frequency above the arrow. Also, the decoded CW begins to appear in the main decoder line below the waterfall. The little "page" symbol confirms that is the signal that is being decoded.

But wait – do you notice that there is more in the decoder line than just what you heard after you clicked on that station? That's because while you're listening elsewhere, CW Skimmer is decoding and storing all of the CW it copies in its passband. If there were ten signals in that 3-KHz space, as there might be if a rare DX station called CQ "up", then Skimmer will copy them all. We'll come back to this in a minute, because it is one key to how Skimmer can help you work DX more easily and efficiently than ever before.

Let's try something else. If you click the little "speaker" icon (third from the left in that row) then your sound card will pass on the audio to your computer speakers. You'll notice right away that you can't hear everything you can see on the screen – that's because Skimmer includes a narrow audio DSP filter, denoted by the little dark green "window" just to the right of the green arrow. Put your cursor anywhere in the main Skimmer window, and move the scroll wheel on your mouse to widen or narrow the filter, from 20 Hz all the way up to 700 Hz. Alternatively, put your cursor in the dark-green "window" and drag upward to open the filter up, or downward to close it down. Either way, you'll quickly learn to cut the bandwidth just enough to do the job, and it always is centered on the signal you have selected.

Are we done yet? No, we're just beginning. If you click on the third button from the right on that row – the one that looks like a little notebook – the program opens another window, like this.
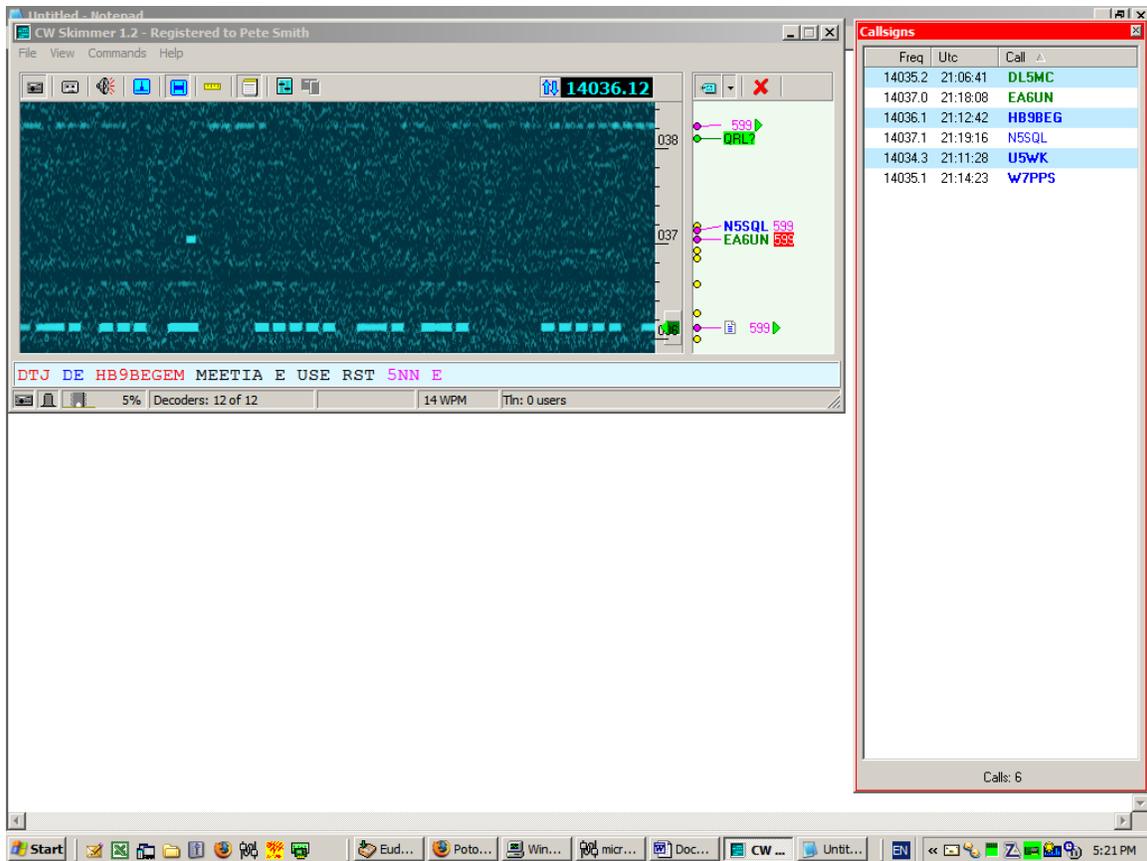
What's going on? Well, those other stations in the passband of your radio, the ones that Skimmer was copying while you were doing other things, are all displayed in the Callsign List, as well as in the bandmap to the right of the waterfall.

Let's look at the Callsign List window.
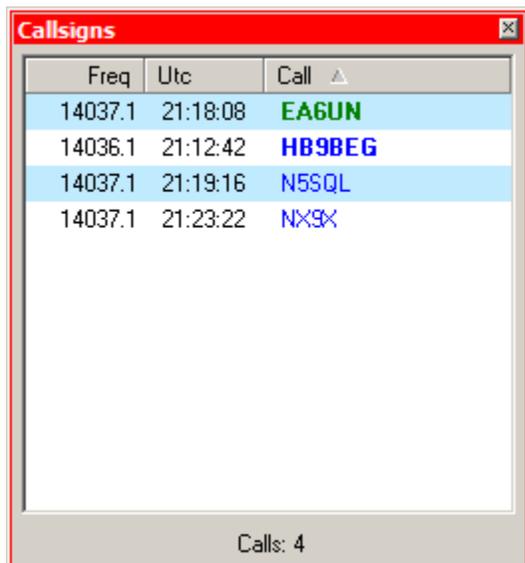
You'll notice that Skimmer has copied 4 stations. As a default, the Callsign List is arranged alphabetically by callsign, but you can sort it by frequency or time of arrival by clicking on the respective column header.

This list is dynamic – that is, stations are constantly being added, as they are decoded, and deleted, if 10 minutes passes without them being heard again. If a station changes frequency, the list will automatically reflect the change. If a callsign is bolded, that means that the program has detected that the station is calling CQ or otherwise looking for calls. It is also clickable – double-click on any station and the waterfall, the main decoder, and the DSP audio filter all move to that station's frequency.

The color-coding of the callsigns is related to callsign validation, a subject we will cover later. Briefly, for now, you can tell the program to apply a variety of criteria to callsigns it copies, and only accept those that meet the criteria. For example, on the callsign list above, EA6UN is green because the call was found on a master.dta file, while the other calls are blue because they meet criteria as to their structure, based on analysis of 11 years of packet spot data.

Now let's look back at the main screen again.
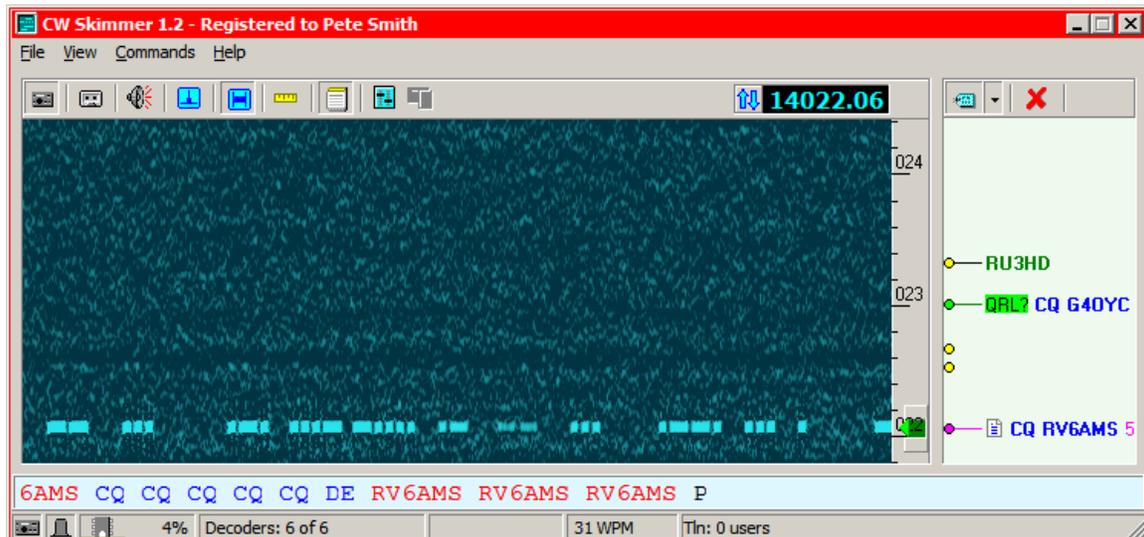
If you look at the bandmap just to the right of the waterfall, you'll notice that this time Skimmer has detected two stations calling CQ. It also recognizes certain other indicators, such as a station that sends "QRL?" The program flags these with a green marker, as shown above, to help you get to notice them quickly. You can just click on any callsign on the bandmap, or on one of those markers, and the program will move your radio to that frequency, ready to call if you choose to.

Even for the very simplest DX situation, where several stations are calling the DX on, or almost on, his frequency, Skimmer can help you get through. You can see exactly where the other stations are calling and find yourself a place just above or below them – often, that is the difference between being heard and not.

Here's another neat feature.
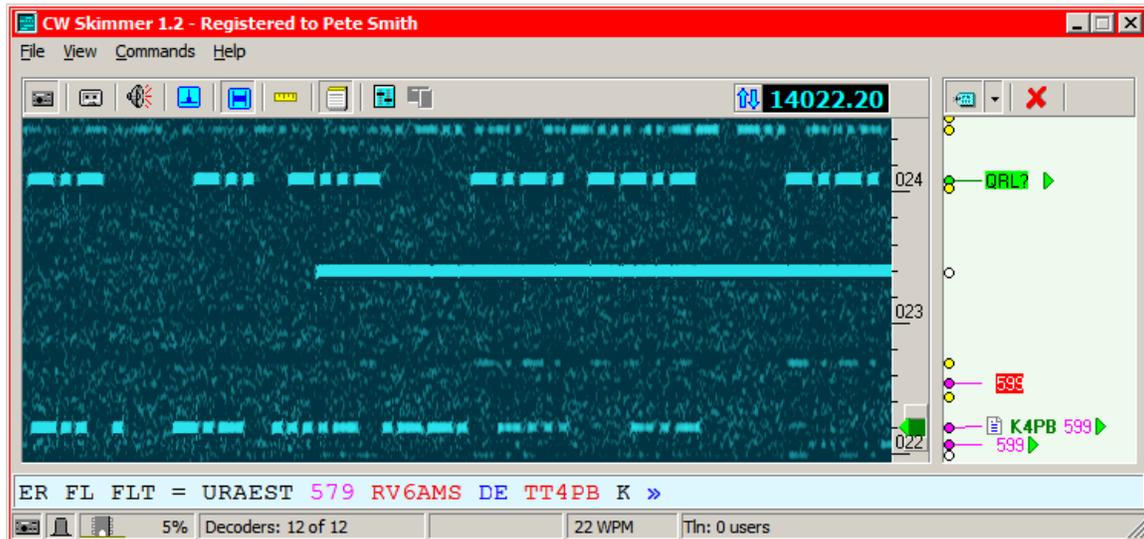
The program listens for signal reports. Why? Because the best way to find the person in a spread-out pileup that the DX station has just answered is to catch him saying "TU 579" or the equivalent. So the program takes note of each station that it hears sending a signal report. The latest one is flagged with a red marker, as in the example above, even if the program hasn't copied a callsign yet. Other stations that sent signal reports less recently are also shown, because taken together, all of these indications can help you to figure out the DX station's pattern – whether the station is tuning gradually up or down frequency, or jumping between two listening frequencies, or whatever. Once you know where you need to move to, you can get there in a mouse-click, and be ready the next time the DX says "QRZ?"

All this may seem sort of like "gilding the lily" in a typical DXing situation with only a few stations calling. But where it really comes into its own is when you are trying to work one of the big, much-in-demand DXpeditions that is listening over a 25-KHz bandwidth.

Let's take an example. Last December, OH2AM activated St. Barts for the first time after it became a separate DX entity. This what the pileup on 40 meters looked like.

Trying to figure out where to call in this sort of pileup can be very frustrating. If you have to wait for a packet spot to tell you where some successful caller was, by the time it comes in chances are the DX is already listening somewhere else.

Now obviously, the technique I'm going to describe works best with some sort of wider-bandwidth arrangement, but you can do it in 3-KHz radio mode as well. Just use your up and down arrows to tune across the pileup until you see one of those "599" markers, like this.

That tells you where the DX was just listening, and, chances are, still is. Alternatively, you can wait for a couple of QSOs and see if there's a pattern. Either way, you can quickly figure out how to crack the pileup. Very neat.

There are far more features that I've skipped over in this brief introduction. You can and should spend the time reading the Help file on each screen, but in the

meantime, if you want to go on reading this introduction, I've pulled together a couple of the most important ones below.

<u>Some Additional Topics</u>

One thing many people worry about is copying accuracy. If you click on the Settings button again, and then on the Calls tab, you'll see this:
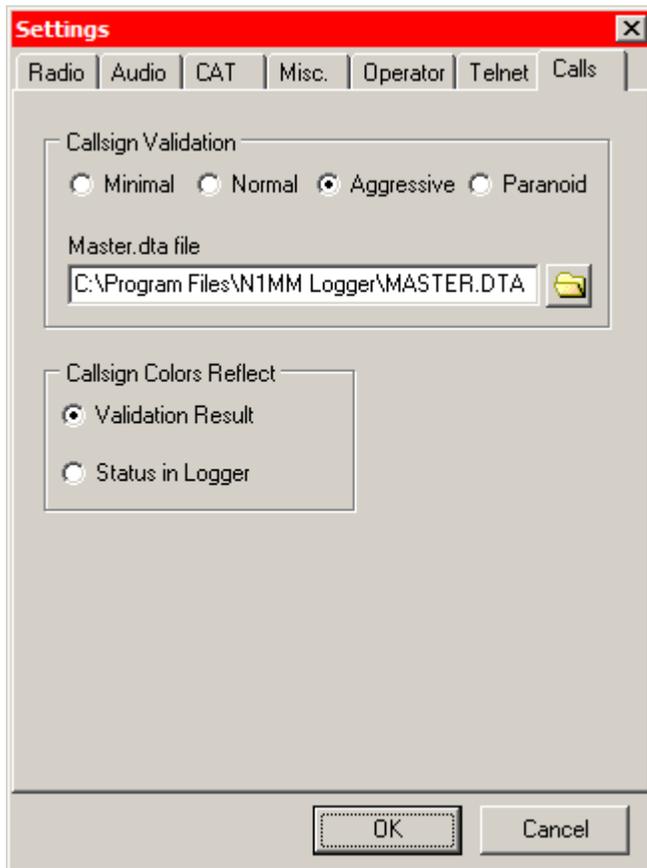
Without going into a lot of excruciating detail, the higher the Callsign Validation level you select, the more "skeptical" Skimmer is. If you choose "Paranoid" only callsigns that are contained in the master.dta file are accepted – this file, also known as a Super Check Partial file, can be obtained from http://www.k5zd.com/scp/index.html , and is updated very often. Most contest and general logging programs use the same file, and you can set Skimmer to use the same master.dta file that your logging program uses, as in the example above.

The other key feature we haven't discussed yet is integration with your logging program. Skimmer makes that easy by acting just like your own personal DX Cluster node. Here's how it works – go to Settings again, and click on the Telnet tab.
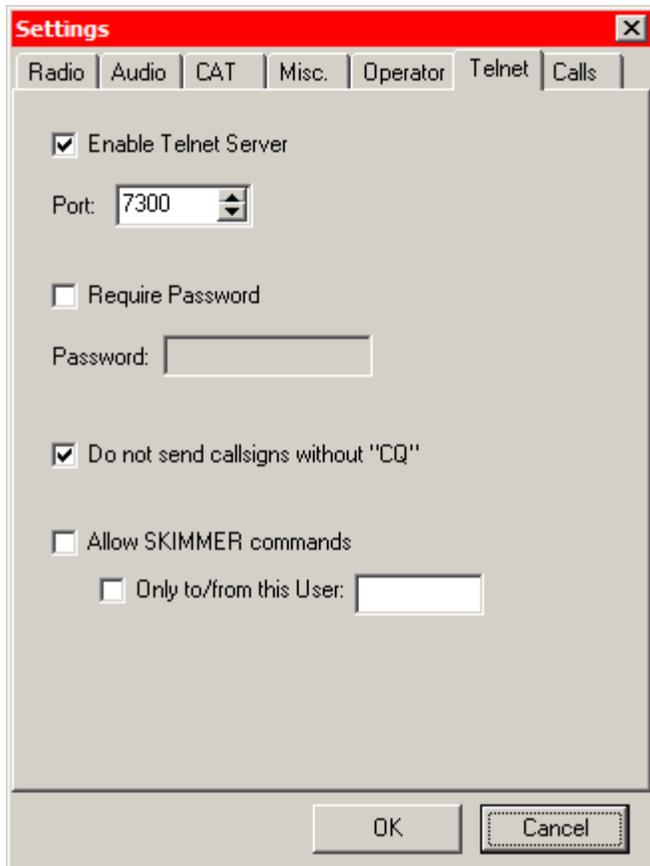
Now check the "Enable Telnet Server" box. Unless you have a good reason to do so, leave the Port at 7300. You'll probably also want to check the box for "Do not send callsigns without 'CQ'", because otherwise Skimmer will be spotting a lot of stations that are calling other stations, and they won't be there if you try to respond to the spot. Now OK out, and go into your logging program. You'll need to figure out how to add a telnet address for the Skimmer to your list of DX cluster nodes. For example, DX4WIN wants the format "Skimmer>Skimmer, localhost:7300", while N1MM Logger needs "Skimmer 127.0.0.1:7300" (127.0.0.1 is a local loopback IP address, the equivalent of "localhost" in the DX4WIN example).

Once you have set up your logging program to connect to Skimmer, you do that just like logging onto any DX Cluster, and as soon as you have done so, Skimmer begins sending you spots, which will show up on your bandmap in the logging program.

All this just scratches the surface of CW Skimmer's capabilities, but I hope that it has been sufficient to persuade you that this is a capability you really need to have. In the next installment of this series, I'll introduce you to the various wide-band receiving options that you can use to really make full use of Skimmer's amazing capabilities. Stay tuned!