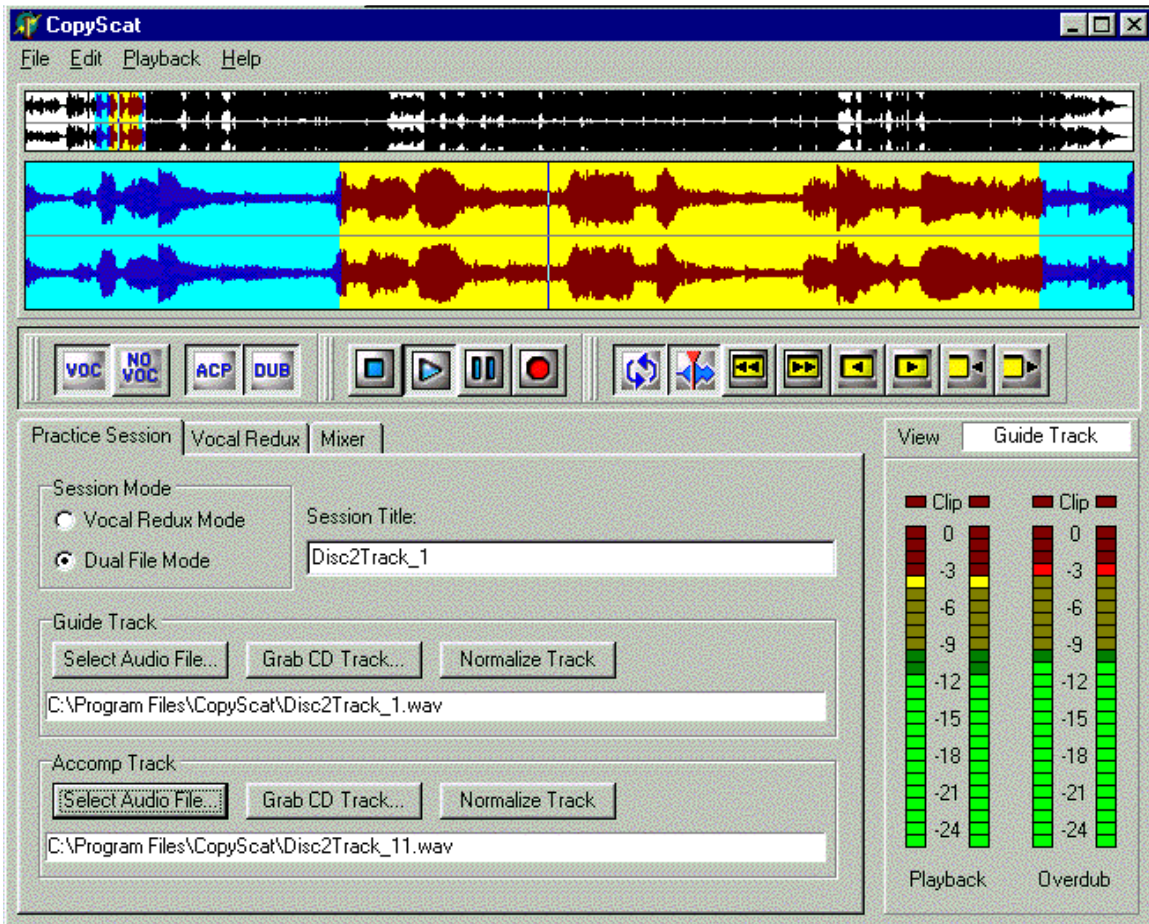




## CopyScat Overview



Use CopyScat to practice along with pre-recorded songs. CopyScat is most typically used for vocal practice, though you may also find CopyScat useful for instrumental practice.

Easily set loops to repeatedly drill on a verse, chorus, or phrase. Press the record button while looping, and sing (or play) along. When the loop has finished recording, CopyScat will loop and continue playback, so you can immediately hear your performance.

This practice method makes it easy to identify problems, and then refine your performance. Listen to your performance solo, or mixed with the “Guide Vocal” of the original track, or alternately listen with Vocal Redux on the Guide Track..

Record repeated vocal takes to polish your performance. Then Mix your performance to a new Wave file and send it to friends.

## Audio Formats Supported

CopyScat uses uncompressed stereo 16 bit Wave files. CopyScat can also grab tracks from Audio or Karaoke CDs, importing to hard drive in Wave format.

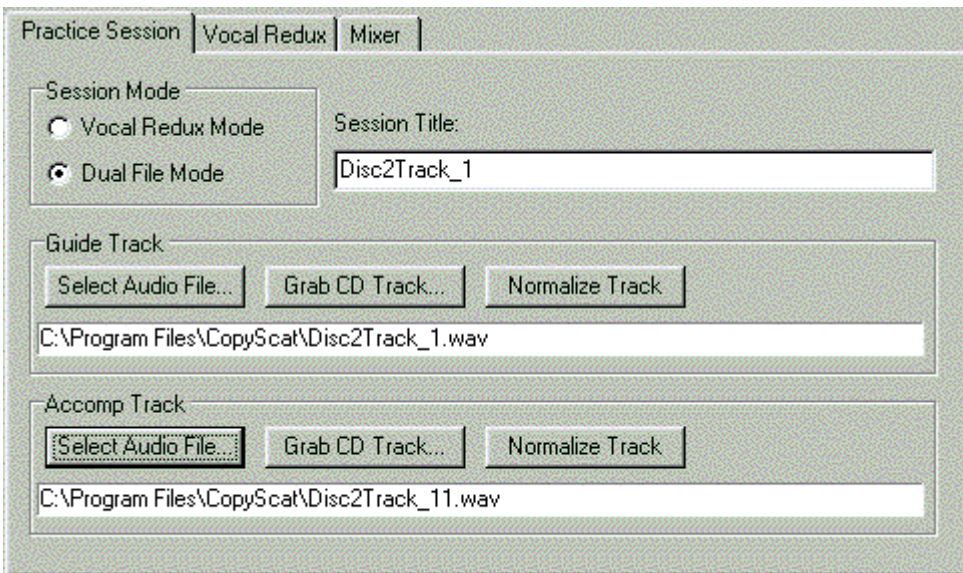
## The Practice Session

The first step using CopyScat is to set up a Practice Session.



A Practice Session collects all the CopyScat settings for a song. Practice Sessions are saved as \*.prs files.

Practice Sessions remember which audio files to use, Vocal Redux settings, Mixer settings, and other relevant information.



## Session Mode

Two Playback Modes are available:

**Vocal Redux Mode** - Vocals can be suppressed on many recordings, using the Vocal Redux feature. In Vocal Redux Mode, listen to a Guide Track in its original form, or with the vocals attenuated. Easily switch between **Vocal** (Guide Track) and **No Vocal** (Guide Track processed by Vocal Redux).

**Dual File Mode** -Dual File Mode can switch playback between two different Wave files, **Vocal** (Guide Track) and **No Vocal** (Accompaniment Track).

Vocal Redux works quite well on many pop recordings, but doesn't work on all recordings. Luckily, Karaoke CDs and tapes often offer dual versions of songs. Each song is supplied as a Guide Track with vocals, and an Accompaniment Track without vocals.

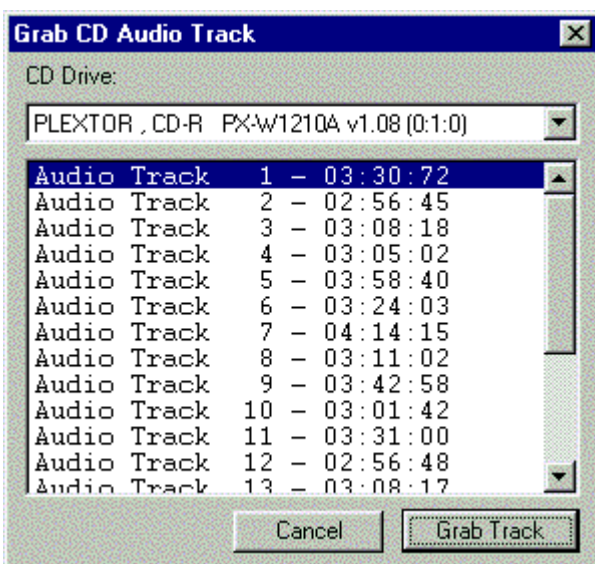
For Karaoke songs, select Dual File Mode. Pick the song's vocal version as the Guide Track, and pick the song's no-vocal version as the Accompaniment Track.

**Select Audio File** - If a song Wave file is already on the hard drive, click the Select Audio File button. In Vocal Redux Mode, it is not necessary to select an Accompaniment Track, but in Dual File Mode you must select both a Guide Track and an Accompaniment Track before CopyScat can play.

**NOTE** - CopyScat Wave files must be on your hard drive and cannot be write-protected. CopyScat cannot play tracks directly from CDROM or other non-re-writable media. Make sure your hard drive has sufficient empty space to hold tracks. A Vocal Redux Practice Session consumes about 20 megs per minute, and a Dual File Practice Session consumes about 30 megs per minute.

**Grab CD Track** - Import a song from Audio CD or Karaoke CD. Insert the CD in your CDROM player, and click the Grab CD Track button.

**NOTE** - The CD Grab function uses AKRIP32.DLL (C) Andy Key. Please refer to the included file "akrip-dll-20010913.zip" for more information on this fine library.



On many Karaoke CDs, each song is supplied in two forms- one track with guide vocals, and a second track without vocals.

For instance, if a Karaoke CD contains ten songs, the Guide Tracks may be numbered 1 thru 10, and the Accompaniment Tracks may be numbered 11 thru 20. Given such a situation, to configure the Practice Session for Song 3 on the CD, Grab Track 3 to the Guide Track, and Grab Track 13 to the Accompaniment Track.

If your PC has multiple CDROM, DVDROM, and CD Burners, use the CD Drive pop-up menu to select which one to use.

Then select the desired Track, and click the Grab Track button.

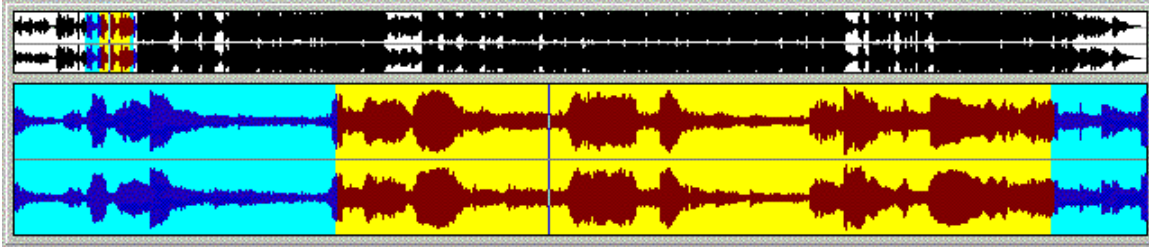
**Normalize Track** - Maximize the audio level of a Track Wave file.

**Session Title** - When you select a Guide Track, the default Session Title is set to the Guide Track filename, but you can rename the title. The Session Title is not required to be the same as the Practice Session \*.prs filename.

## Audio Overview

The Audio Overview represents the song audio data. The Overview also shows playback and loop locations.

You can view either the Guide Track, Accompaniment Track (Dual File Mode only), or your OverDub Track (but only one of the tracks is visible at a time).



For ease of navigation, there are two simultaneous Views into the selected Track:

**Full View** - The upper region is the Full View. The Full View always shows the entire length of the song, for easy navigation around the song.

**Zoom View** - The lower region is the Zoom View. The Zoom View magnifies the loop region selected in the Full View.

This dual-view window makes it easy to set loop points. Quickly select the approximate loop region using the Full View. The Loop is then magnified in the Zoom View, making it easy to refine the loop points by clicking in the Zoom View.

The Loop Region appears Red-on-Yellow. If there is a sub-selection in the Zoom View, the border edges of the Loop Region are drawn Blue-on-Aqua. Un-selected regions in the Full View appear Black-on-White.

When a file first opens, the entire Wave is selected, so both Views display the entire file in Red-on-Yellow.

## Setting Playback Location

Single Click a location on either View panel to set the Playback Location. The Playback Location must be within the Loop Region. You can click to change Playback Location during Stop, Pause, or Play modes, but you cannot change Playback Location during Record. If you try to change Playback Location during Record, CopyScat will automatically Stop Recording.

## Setting Loops

Loops can be adjusted either in Stop or Playback, but Loops cannot be adjusted while Recording. If you try to adjust the loop during Record, CopyScat will automatically Stop Recording.

### Loops can be set several ways:

**Left Click and Drag** - Left-Click the desired Loop location. Hold down the mouse button, and drag to the desired Loop End.

**Shift Click or Right Click** - Shift-Click or Right-Click to extend or shorten the loop to the cursor location. Shift-Click or Right-Click to the right of the Loop center to change the Loop End. Shift-Click or Right-Click to the left of the Loop center to change the Loop Start.

You can also **Shift-Click-Drag** or **Right-Click-Drag** to extend the Loop with a drag operation.

**Set Loop Start to Playback Position** - Press the **S** key (uppercase or lowercase) while Stopped or Playing, to set the Loop Start to the current Playback Position.

**Set Loop End to Playback Position** - Press the **E** key (uppercase or lowercase) while Stopped or Playing, to set the Loop End to the current Playback Position.

The **S** and **E** keys make it easy to set the Loop while listening to playback. When the song reaches the desired Loop Start location, tap the **S** key. Let the song continue until it reaches the desired Loop End location, and tap the **E** key.

## Loop Toolbar and Menu Items

The Loop Toolbar offers additional Loop control options. These tools have equivalent Menu items in the Playback Menu, and also have equivalent keyboard shortcuts.



**Loop Enable Button** ( ' L ' Key ) - Toggle Loop Playback using the Loop Enable Button, Menu Item, or Shortcut key. With Loop enabled, CopyScat repeatedly plays the Loop Region until you Stop or Pause. With Loop disabled, CopyScat will Stop when it hits the end of the Loop Region.

**Loop Beat Finding Button** ( ' B ' Key ) - Loop Beat Finding tries to find the most likely downbeat in the vicinity of the selected location. This can help keep loops on beat boundaries.

Beat Finding will auto-adjust toward the loudest audio peak within 250 Milliseconds of a selected Loop location.

If you click on a quiet location close to a loud peak -- Rather than setting the Loop at the quiet location, Loop Beat Finding will jump to the close loud peak.

This usually assists loop finding. But if you need to set an exact loop location that Beat Finding does not allow, disable this feature and then CopyScat will set the loop location anywhere you want.

**Move Entire Loop Back** ( ' < ' Key ) - Move the entire Loop back by the length of the Loop. For instance, given an eight bar Loop, this command will move the Loop back eight bars.

**Move Entire Loop Forward** ( ' > ' Key ) - Move the entire Loop forward by the length of the Loop. For instance, given an eight bar Loop, this command will move the Loop ahead eight bars.

**Nudge Entire Loop Back** ( ' colon ' Key ) - Nudge the entire loop back by 250 Milliseconds (one-fourth of a second).

**Nudge Entire Loop Forward** ( ' quote ' Key ) - Nudge the entire loop forward by 250 Milliseconds.

**Nudge Loop End Back** ( ' [ ' Key ) - Nudge the Loop End back but do not change the Loop Start.

**Nudge Loop End Forward** ( ' ] ' Key ) - Nudge the Loop End forward but do not change the Loop Start.

## Transport Toolbar and Menu Items

The Transport Toolbar controls Playback and Recording. These tools have equivalent Menu items in the Playback Menu, and also have equivalent keyboard shortcuts.



**Play** ( ' **Space** ' Key ) - Play from the current Playback location.

**Pause** ( ' **Space** ' Key ) - Suspend Playback.

Toggle between Play and Pause by tapping the space bar. If Playing, tap the space bar to Pause. If Paused, tap the space bar to resume Playback.

**Record** ( ' **R** ' Key ) - Record an OverDub. CopyScat always Records from Loop Start to Loop End, unless you click the Stop Button to bail out before reaching the Loop End.

If Loop is enabled, when CopyScat ends Recording it enters Playback mode, to provide instant feedback on your OverDub.

**Stop** ( ' **Esc** ' or ' **Backspace** ' Keys ) - Stop and set the Playback location to the Loop Start.

## Track Audition Toolbar

The Track Audition Toolbar controls which Tracks are audible.



In Vocal Redux Mode, CopyScat uses two Tracks, and offers three ways to monitor the Tracks.

Guide Track (vocals).  
Guide Track with Vocal Redux (no vocals).  
Your Overdub Track.

In Dual Files Mode, CopyScat uses three Tracks, and offers three ways to monitor the Tracks.

Guide Track (vocals).  
Accompaniment Track (no vocals).  
Your Overdub Track.

**VOC Button** ( ' **V** ' Key ) - Listen to the Guide Track with vocals.

**NO VOC Button** ( ' **V** ' Key ) - In Vocal Redux Mode, listen to the Guide Track processed with Vocal Redux. In Dual Files Mode, listen to the Accompaniment Track.

Repeatedly toggle between VOC and NO VOC by tapping the **V** key.

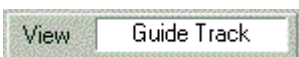
**ACP Button** ( ' **A** ' Key ) - ACP is an abbreviation for **Accompaniment**. When the ACP button is checked, CopyScat plays whatever backing track has been selected by the VOC and NO VOC buttons. When the ACP button is un-checked, CopyScat only plays the OverDub Track.

**DUB** ( ' **D** ' Key ) - DUB is an abbreviation for **OverDub**. When the DUB button is checked, CopyScat plays the OverDub Track. When the DUB button is un-checked, CopyScat only plays whatever backing track has been selected by the VOC and NO VOC buttons.

## View Track

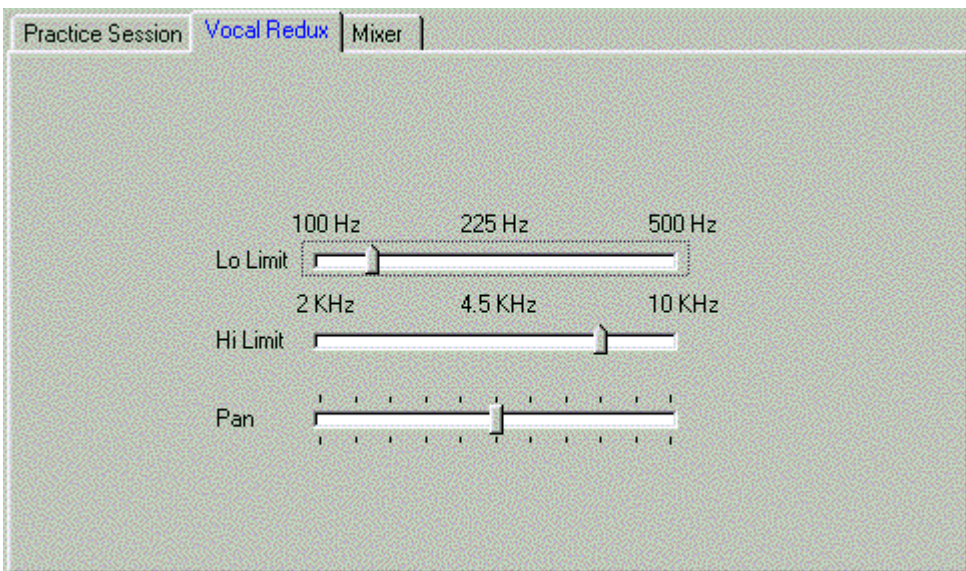


Click the View Track control to select which Track to see in the Waveform Overview. The Edit Menu also offers View items.



## Vocal Redux

In Vocal Redux mode, when the **NO VOC** button is checked, the Guide Track is processed by Vocal Redux, which can reduce the level of vocals on many pop recordings.



### Redux Operating Principle

Vocal Redux exploits a common mixing technique used on many pop records-

Recording engineers often center-pan the lead vocal, but they often side-pan backing parts.

With a center-panned lead vocal, the lead vocal is identical on the left and right channels, but most backing instruments are louder on one side or the other.

On such recordings, we can subtract one channel from the other. Subtraction will remove most of the "common mode" lead vocal, while leaving backing instruments relatively unaffected.

### Redux Challenges

Even if a lead vocal is center-panned, vocal reverb is typically recorded in stereo. If a recording has very loud stereo reverb, Vocal Redux may reduce the level of the dry vocal, but drastically amplify the vocal reverb.

Vocal Redux works best on Wave Files extracted from well-made commercial Audio or Karaoke CD's, because commercial CDs usually have good fidelity and low distortion.

Vocal Redux is not often as effective on low-fidelity songs imported from MP3, cassette tape, or vinyl, but it never hurts to experiment.



## Tweak Vocal Redux Via the Pan Slider

Fine-tune the Pan slider to see if the voice cancellation can be optimized.

The center Pan position will often be “as good as its gonna get” on commercial CD recordings.

However, some CD recordings may contain accidentally mis-matched Left-Right balance. This is most likely on CD-reissues of Oldies. In such cases, you may get improved vocal cancellation by twiddling the Pan slider to find a “sweet spot.”

Songs imported from Vinyl or Cassette Tape, are much more likely to need Pan control adjustment. Vinyl and Cassette Tape recordings often have mis-matched levels between the left and right channels.

## Low- and High- Frequency Adjustments

Recording engineers often center-pan Bass, Kick Drum, and Snare Drum.

If we simple-mindedly subtract the Right channel from the Left channel, we are likely to zap other center-panned instruments along with the vocals, particularly Bass, Kick, and Snare.

Adjust the Lo Limit and Hi Limit sliders to retain as much Low and High frequency information as possible.

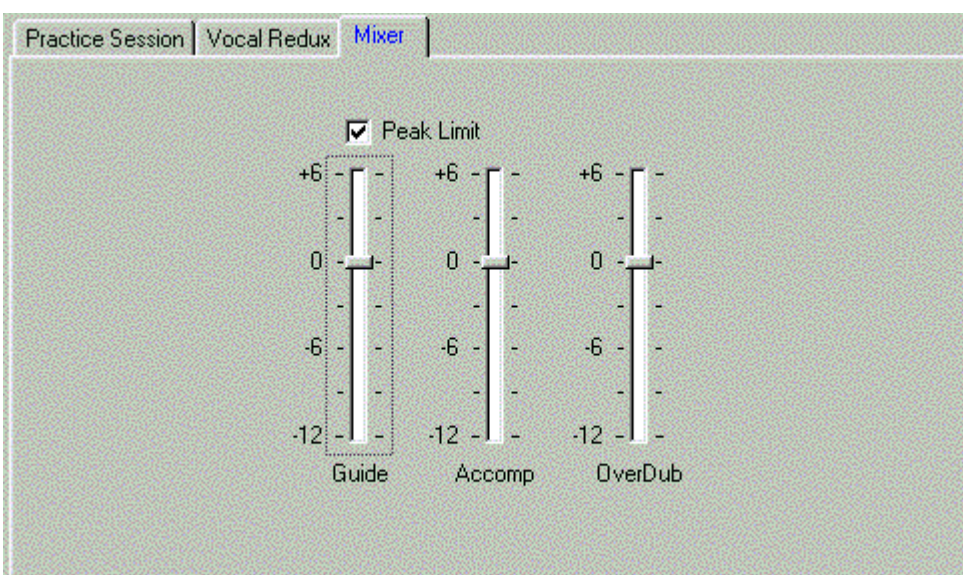
**Lo Limit** - Adjust Lo Limit as far to the right as possible without leaking Lead Vocal low undertones.

**Hi Limit** - Adjust Hi Limit as far to the left as possible without leaking Lead Vocal high overtones.

You may choose compromises on the Hi Limit and Lo Limit settings. For instance, if Redux clobbers the cymbals on a particular song, you might decide to let some of the Vocal leak thru, to get louder cymbals.

## Mixer

Use the Mixer to balance levels between the Vocal, No Vocal, and OverDub Tracks.



**Peak Limit** - Enable the Peak Limiter to avoid distortion if the Tracks are mixed too hot.

**NOTE** - The Peak Limiter can cure nasty output distortion, but it cannot cure nasty input distortion that is recorded on the OverDub Track. Please take care to record your OverDub at a modest level. Set the Record level low enough to avoid triggering the Clip indicators on the OverDub Level Meter.

## File Menu

**New Practice Session** - Create a New Practice Session and set the default values for Vocal Redux and the Mixer.

**Open Practice Session** - Open a Practice Session you previously created, including Vocal Redux and Mixer settings.

**Save Practice Session** - Save the current Practice Session, along with the Vocal Redux and Mixer settings.

**Save Practice Session As** - Save the current Practice Session to a new File name.

**Save Vocal Redux Wave File** - Make a new Wave File of the Guide Track with vocals removed.

First make sure the session is in Vocal Redux Mode. Next, play the Practice Session and make sure the Vocal Redux and Mixer settings sound good. Then invoke Save Vocal Redux Wave File. CopyScat will save a new Wave file that sounds like the Vocal Redux NO VOC play mode.

You can use the Vocal Redux Wave file in other audio or Karaoke programs, or burn Vocal Redux files to CDR for use in live performance.

You can also use the Vocal Redux Wave file in CopyScat as the Dual File Mode Accompaniment Track, though this usually offers no particular advantage over Vocal Redux Mode.

**Mix To Disk** - Make a new Wave file, mixing your vocal performance with the backing track.

First play the Practice Session, verifying all the settings sound good. Then invoke the Mix To Disk function to save what you hear to a new Wave File.

Burn the mix to CDR, email the mix to a friend, or whatever you want to do with the finished product.

## Edit Menu

**Select All** - Expand the Loop Region to cover the entire Song.

**Trim Selection (All Tracks)** - If you import a song with silence or unwanted audio at the beginning and/or end of the Wave file, you can Trim the unwanted audio. Select the good region you to keep, and then Trim. This will remove the sections of the Wave file before and after the selected Loop Region.

**Delete Selection (All Tracks)** - This is a complementary command to Trim Selection. Delete Selection will remove the Selected Region from the Wave files, and close up the deleted gap.

**Silence Selection (View Track Only)** - Replace the Selected Region with silence.

To remove noise or static from a region at the beginning or end of the Guide Track or Accompaniment Track, first View the target track. Then select the noisy region, and apply Silence Selection.

To silence a bad take on the OverDub Track, View the OverDub Track, select the bad section, and apply Silence Selection. Or more simply, just re-record over the bad take.

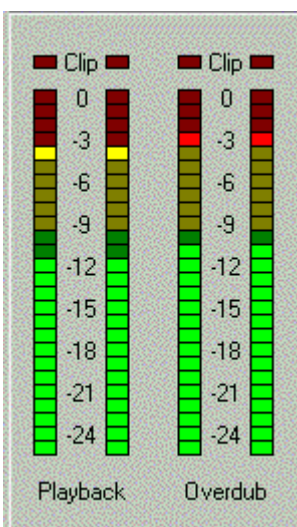
**Normalize Selection (View Track Only)** - Optimize the audio level of the selected region of the View Track. This is useful to increase the level of a “weak” section of the OverDub Track.

**NOTE** - All three Wave files used in a Practice Session must be the same length. The Trim Selection and Delete Selection functions will trim all three Tracks to the same length.

**NOTE** - You can UNDO Edit Operations. But if you Exit CopyScat without using UNDO, changes to the Wave files are permanent. If you wish to keep a copy of the original Wave file in addition to an edited copy, make a duplicate of the file before applying an Edit.

## Audio Level Meters

Use Audio Level Meters to monitor Playback and Record levels.



The Playback meter displays the amplitude of CopyScat’s Mixer Output. If the Playback meter seems too quiet or too loud, adjust levels using the CopyScat Mixer.

The OverDub meter displays the amplitude of your singing (your PC’s Audio Input level).

The OverDub meter is "live" any time a valid Wave file is open. Watch the OverDub meter to help adjust your microphone recording level.

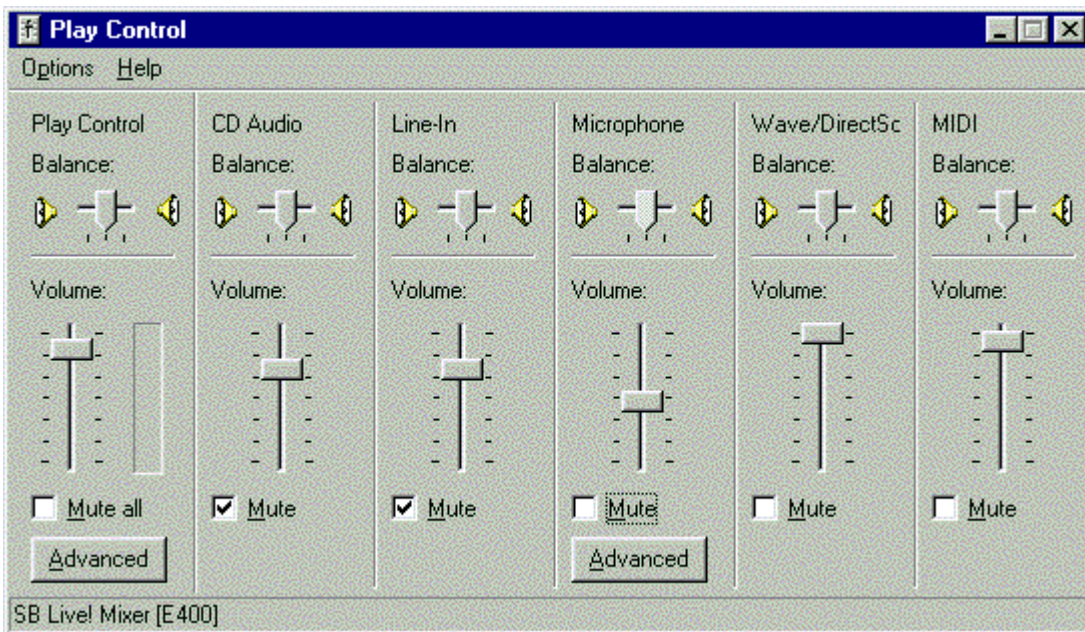
## Setting Signal Levels

Depending on your computer, version of Windows, and brand of Sound Card, you may have one of several Multi Media Audio software mixers for controlling the audio levels.

Below are illustrations of a common Windows Mixer, invoked by clicking the little “Speaker” icon in the System Tray at the bottom-right of your screen.

### Playback Levels

This panel actually contains two mixers, but you only see one mixer at a time.



The mixer you usually see is the playback mixer. Use this panel to adjust the levels that are heard at your computer's audio output.

If you have a Microphone directly connected to your computer, there are three controls of interest for CopyScat.

**Play Control** - This is the Master Volume adjustment. If the computer sounds too loud or too quiet, adjust the Play Control to taste.

**Wave Output** - The Wave Output slider controls the level of the Wave files played by CopyScat.

**Microphone** - The Microphone slider in the Playback mixer does not control the recording level. This microphone playback slider controls how loud you hear the microphone as you sing along with the Wave files.

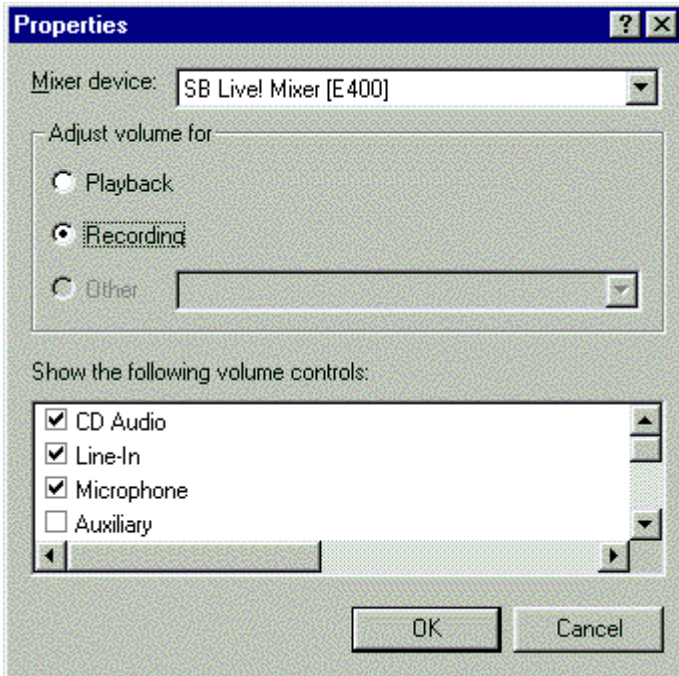
Juggle the Play Control, Wave Output, and Microphone level until you hear a comfortable level, and your singing sounds balanced with CopyScat's Wave playback.

### Recording Levels

After adjusting the Playback settings, it is time to adjust the recording level-

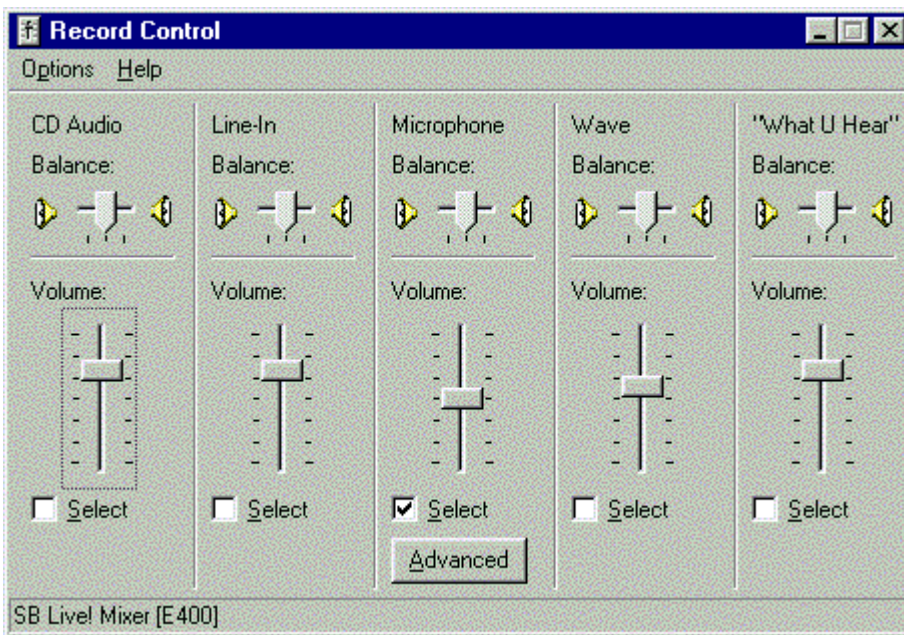
Click the Menu Options/Properties to show the Properties dialog -





Click the **Recording** radio button and then click OK.

This shows the “hidden” recording mixer



If you are recording with a direct-connect PC Microphone, verify that Microphone is selected for input. Verify that all other inputs are disabled.

For use with CopyScat, you only want to record Microphone. It is undesirable to enable any other inputs such as Wave Out or Midi.

If your Microphone is connected to the Line-In or some other computer input, enable whatever channel is receiving Mic input.

On many sound cards, there is an Advanced button for setting special features on the Microphone channel. This can be useful if your microphone record level is too loud or too quiet.

### **Adjusting Record Level**

With the Record Mixer running, go to CopyScat. Select a Wave file or a Practice Session. You must select a valid Guide Track before audio input will turn on and you can monitor your OverDub level with the OverDub Level Meter.

Sing a few lines while watching CopyScat's OverDub Level Meter.

If your singing is too quiet on the meters, go to the Record Control window and raise the Microphone slider.

If your singing lights the Clip indicators, go to the Record Control window and lower the Microphone slider.

Keep singing and adjusting until you have a nice hot signal that never clips.

Now you are ready to wail !

## **Tips**

**Practice Using Headset Mic/Headphones** - Many inexpensive Headset Mic/Stereo Headphones can be found at computer and office supply stores. You may find that a Headset Mic/HeadPhone is ideal for practice with CopyScat.

Headset Mic/HeadPhones are very easy to connect. Simply plug two wires into the computer and start wailing. Headset Mic/HeadPhones are resistant to microphone feedback, and it is easy to hear the backing tracks in the headphones.

**De-fragment Your Hard Drive** - If the hard drive is fragmented, the hard drive works very hard scanning hither and yon to play audio data. CopyScat performance can suffer. A fragmented hard drive is more likely to give audio dropouts and stutters on playback. It is beneficial to occasionally de-fragment the hard drive.