



Selection

You've already worked with the GIMP's simplest selection tools: Rectangle, Ellipse, and Free (Lasso) Select.

So far, you've used selections primarily for drawing. But selections are more commonly used to choose one part of an image and ignore the rest.

This comes up in all kinds of applications. Perhaps you have a photo of a person against a complicated background, and you want to make the person stand out more—or you just want to paste a portrait onto a simpler background.

You may want to change part of an image—remember how the Bucket Fill tool could change the sky but not the rest of the photo, in Chapter 4?

Sometimes it's just a simple touch up. For instance, you might need to take black text on a white background and change it to green text on a yellow background. These are all selection issues.

If you've tried to use the Free Select tool to cut out parts of an existing image, you probably reached its limitations quickly. It takes a very steady hand, and if you make a mistake you have to start all over again.

Never fear! GIMP has quite a few tools for selecting shapes in existing images, in as much or as little detail as you need.

In this chapter, you'll learn about the following:

- Working with selections
- Select by Color and Fuzzy Select
- Bezier paths
- The Intelligent Scissors tool
- Modifying selections with selection modes
- The QuickMask
- Highlighting foreground objects
- Using channel masks to save a selection
- Layer masks
- Extracting foreground objects with SIOX

Working with Selections

You know how to copy a selection and paste it somewhere else, but what else can you do with a selection?

Marching Ants

When you have a selection in an image, be aware of the selection boundary. It's a black-and-white dotted line outlining whatever is currently selected. The segments along this line move, making the selection outline seem to shimmer. This changing outline is dubbed the *marching ants*, and you'll see the term used a lot.

The marching ants are helpful for telling you when you have a selection and where it is. But they can also get in the way, particularly when you're trying to blend in an object pasted from somewhere else, as you'll see. For this reason, it's very helpful to be able to hide the marching ants using *View* ► *ShowSelection*.

Squashing ants is used often enough that you may want to learn its keyboard shortcut, Ctrl+T (T stands for *toggle selection boundaries*). Another Ctrl+T will bring the ants back.

As useful as this is, though, it's also a major source of confusion. Once you've hidden the marching ants, you have no way of knowing whether anything is selected. If you try to conduct a GIMP operation that works only on the selection (which means *most* GIMP operations), you may be surprised when nothing happens.

Caution When you hide the selection boundary, try to remember to show it again as soon as possible. If you forget, you may regret.

The *Select* Menu

Take a quick look through the *Select* menu (Figure 5-1), which contains a number of operations affecting the current selection.

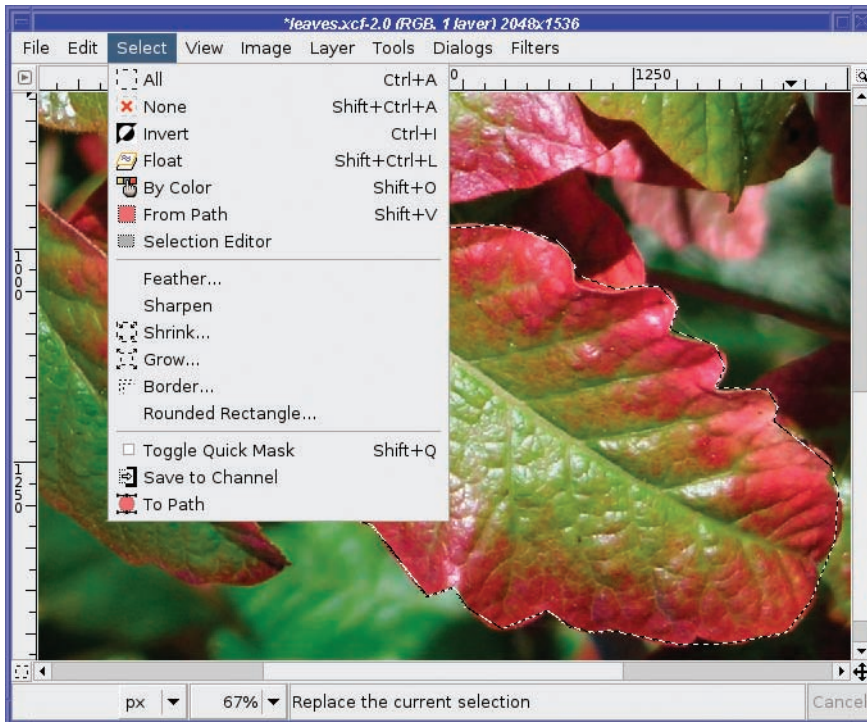


Figure 5-1. *The Select menu*

All and *None* select the whole image, or make sure nothing is selected. You'll use these operations a lot, and it may be worth learning the keyboard shortcuts for them (Ctrl+A and Ctrl+Shift+A, respectively).

Invert reverses the selection: whatever is selected becomes deselected, and vice versa. You'll see why this is useful later in this chapter.

Float cuts out the selected area (leaving white or transparent behind) and pastes it as a new floating layer. Dragging inside a selection will do the same thing while also moving the selection. *Float* seems very similar to cut then paste. So why use it? One reason: *Float* keeps the selected area in the same location in the image. *Paste* usually centers whatever you're pasting, losing any information about where the selection was.

By Color will be discussed later in this chapter.

From Path converts the current path to a selection.

Selection Editor brings up a dialog with a few options that mostly duplicate other functions.

Feather makes the edges of the selection fuzzy.

Sharpen does the reverse, making a fuzzy selection sharper. However, if your selection is fuzzy because you've feathered it, you're best off using *Undo* to get back exactly what you had before.

Shrink and *Grow* make the selection larger or smaller.

Border replaces a selection with a new one that follows the border of the old selection (Figure 5-2). You can fill this with a color or pattern using the Bucket Fill tool, to create an effect much like stroking the selection; or you may find other uses for it.

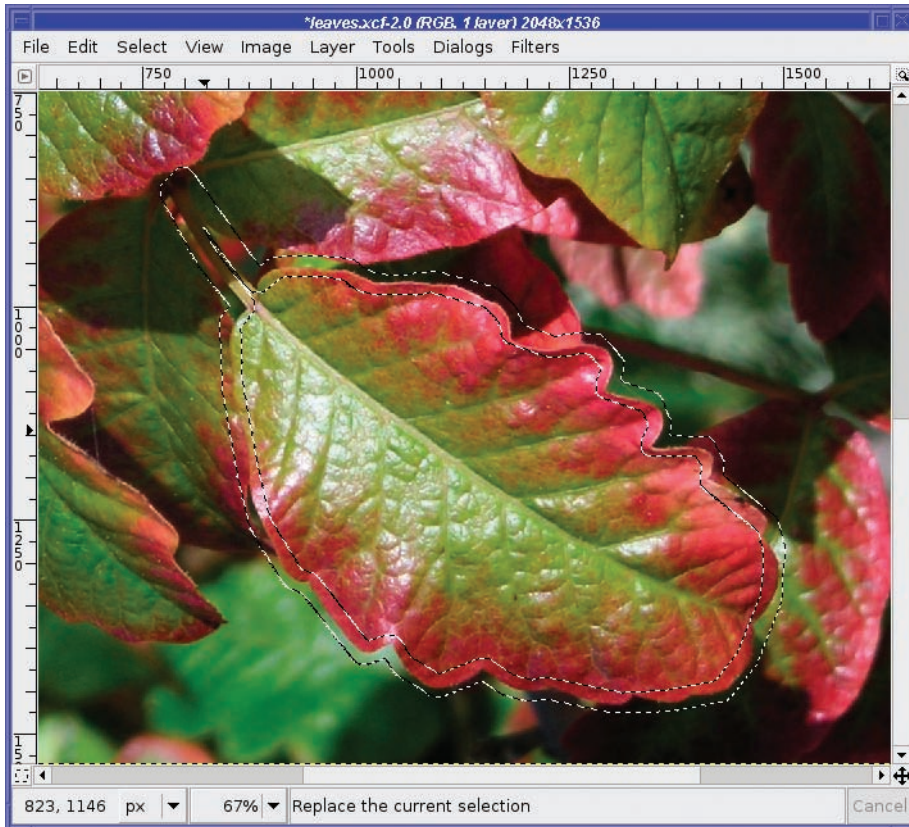


Figure 5-2. *Bordering a selection*

Rounded Rectangle rounds the edges of a rectangular selection. Making a rectangle with feathering is another way of rounding a rectangular selection; but *Rounded Rectangle* gives you nice rounded edges that are still sharp, while feathering will make the edges fuzzy. (You could sharpen the edges afterwards, but that's more work.) You'll learn about the QuickMask and Channels later in this chapter.

To Path converts a selection to a path. Then you can edit it using the Bezier Paths tool (explained later in this chapter), stroke it, or save it in a vector-graphics format.

Moving Selections

You may have already discovered, probably by accident, that dragging in a selection moves its contents, leaving a "hole" behind. If this ever happens unintentionally, GIMP has a fancy way

to cancel a mouse operation. Press the *right* mouse button while you're still dragging with the *left* button. Keep holding the right button down as you release the left. Whatever you were dragging should pop back to where it started. (You can release the right button now, too.)

Hitting Escape while dragging may also work in some versions of the GIMP.

Of course, if you forget these, undoing always works.

If you want to move the selection *boundary* without taking the contents along, use Alt-drag (as discussed in Chapter 3).

Tip If your computer uses Alt-drag for something else, Alt-Shift-drag will also move a selection boundary. Alt-drag may not work on Mac versions of GIMP. If it doesn't work for you, you can also move a selection boundary using the Move tool by setting its mode to *Transform Selection*.

Select by Color and Fuzzy Select

Select by Color is a very valuable tool in your selection arsenal. You can use it on images where you want to separate a foreground from a simple background.

For instance, the Hubble Space Telescope folks offer a poster showing several views of Saturn (Figure 5-3). I'd like to cut out the central image to make a Saturn that I can paste anywhere.

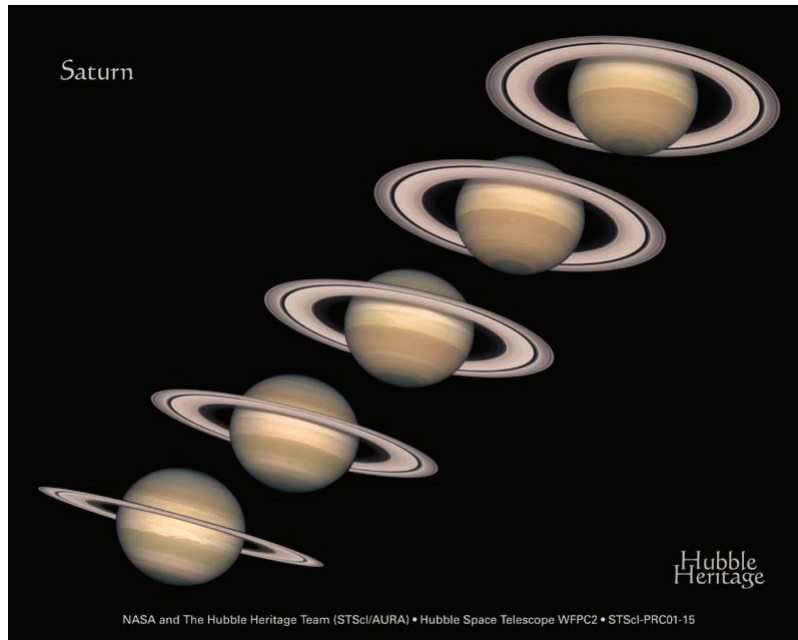


Figure 5-3. *Saturn, from the Hubble Space Telescope*

The first step is to single out just one of the Saturns. Since that doesn't involve any fine detail, I'll use the Lasso (Free Select) tool (Figure 5-4), and then use *Copy* and *Paste as New*.

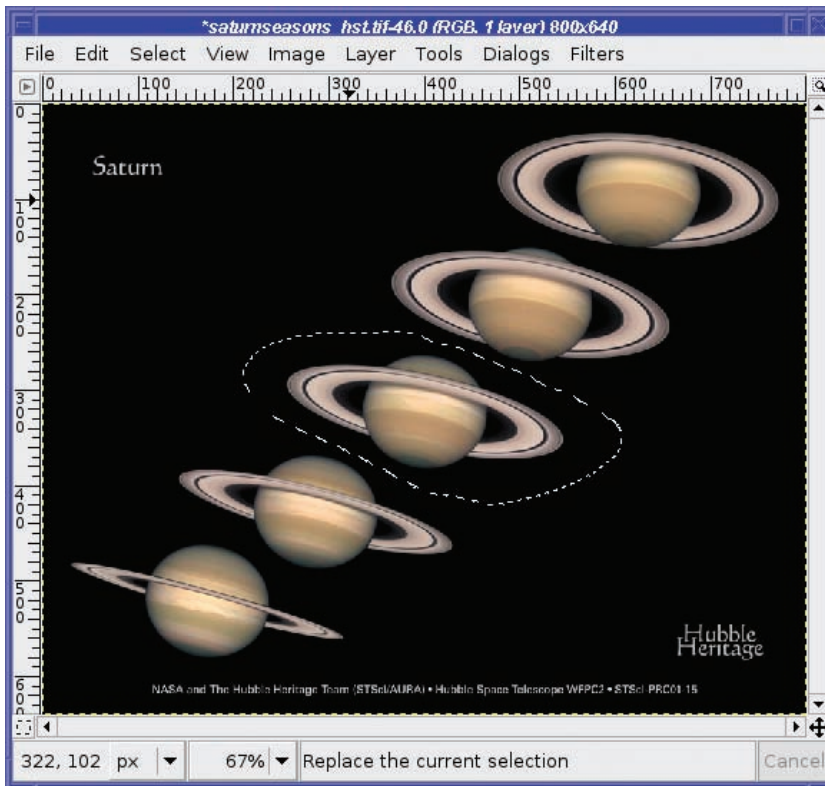


Figure 5-4. Separate the middle Saturn from the rest with the Lasso tool.

Now it's time to use Select by Color. There's a button for it in the Toolbox (Figure 5-5), or you can use the *Select > By Color* menu.

Click in the image, on the color you want to select. In this case, I'll select the black sky: I'm trying to select everything that *isn't* Saturn. Why? Because that's easier than selecting Saturn. The sky is all one color; Saturn isn't.

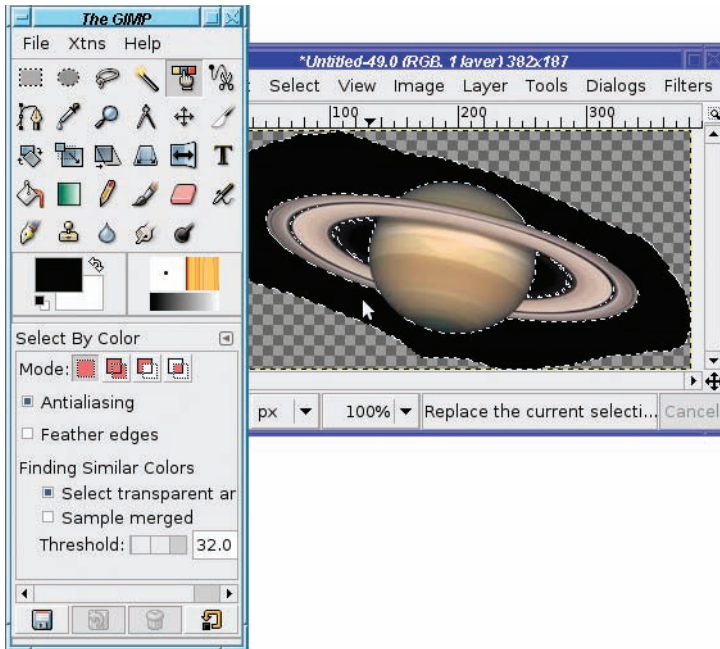


Figure 5-5. *Select by Color*

Notice the tool options.

The *Finding Similar Colors* options work the same way as they did for Bucket Fill in Chapter 4. With *Threshold* at 0, only colors exactly the same as the one you click will be selected. With a higher threshold, GIMP will include colors that are similar but slightly different.

If you don't like the threshold when you first click, change it a little and click again. (If you undo first, the operation won't clutter up your undo stack, but it's not mandatory.) When you're trying to select an area that isn't all exactly the same color, like a sky, *where* you click in the image can make a big difference in what gets selected. Try clicking in different places with the same threshold, to see how that changes the selection.

In addition, *Select by Color* offers the usual selection tool options you used in Chapter 4, *Antialiasing* and *Feather edges*.

Now that everything that *isn't* the planet is selected, you can make a transparent Saturn image by clearing with *Edit* ► *Clear* (Del in GIMP 2.4, or Control+K in earlier versions). This erases the black sky you just selected, leaving transparency instead (assuming the image has an alpha channel). Alternately, you can select Saturn and nothing else. Remember that *Select* ► *Invert* menu item, which selects everything that isn't selected, and vice versa? If you use it now, you can copy just Saturn. Either way, you end up with a Saturn that you can paste into other images.

Besides selecting solid-color backgrounds, *Select by Color* is particularly useful for extracting text or other single-colored elements out of logos, screenshots, or other computer-generated images.

Select Contiguous Regions

Select Contiguous Regions, also known as Fuzzy Select or the Magic Wand tool (from its Toolbox icon) is very similar to Select by Color, and its tool options are basically the same. The main difference is that it only selects areas that touch each other (Figure 5-6).

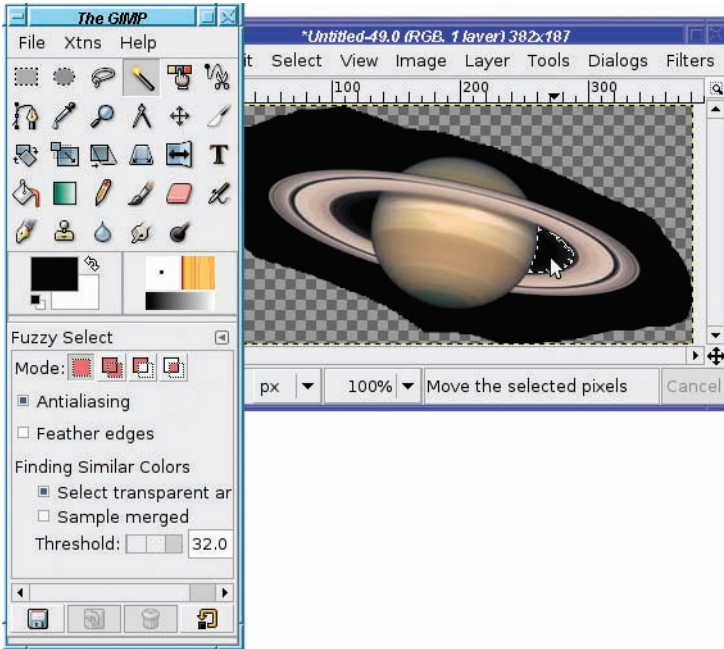


Figure 5-6. Select Contiguous Regions

There are two other very important differences between Fuzzy Select and Select by Color. First, in Fuzzy Select, if you get the threshold wrong and want to try again, you have to cancel the previous selection (with Undo or *Select ► None*) to try again. It's all too easy to forget. If you don't undo, you'll end up moving the contents of the first selection you made.

The other difference is that with Fuzzy Select you can fine-tune the selection by dragging with the mouse. The marching ants appear as soon as you click the mouse down in the image. If too much or too little is selected, dragging down and right will increase the amount selected, while dragging up and left will decrease the amount.

Like Select by Color, Fuzzy Select is quite useful for text, especially when you need to select a single letter.

Bezier Paths

The Bezier Paths tool lets you define *control points* (also called *anchor points* or *nodes*) outlining your object. Then it “connects the dots” to create a path. You can even bend the lines between the dots to create a smooth curve.

Note *Bezier* curves, pronounced *BEZ-ee-ay*, are named after Pierre Bezier, a French engineer who developed the concept while working on computer systems for automotive design.

A Bezier path isn't a selection itself. But once you have a path, it's easy to tell GIMP to select everything inside.

You can also use paths for other purposes. You can stroke a path, just as you can a selection. You can even export it to a vector-graphics format such as SVG.

However, for the purposes of this chapter, you'll mostly use paths to define the outlines of a selection.

Defining a Path

The easiest way to understand Bezier paths is to see them in action. So open a photo and choose something you want to cut out of it. Then select the Bezier Paths tool in the Toolbox (Figure 5-7).

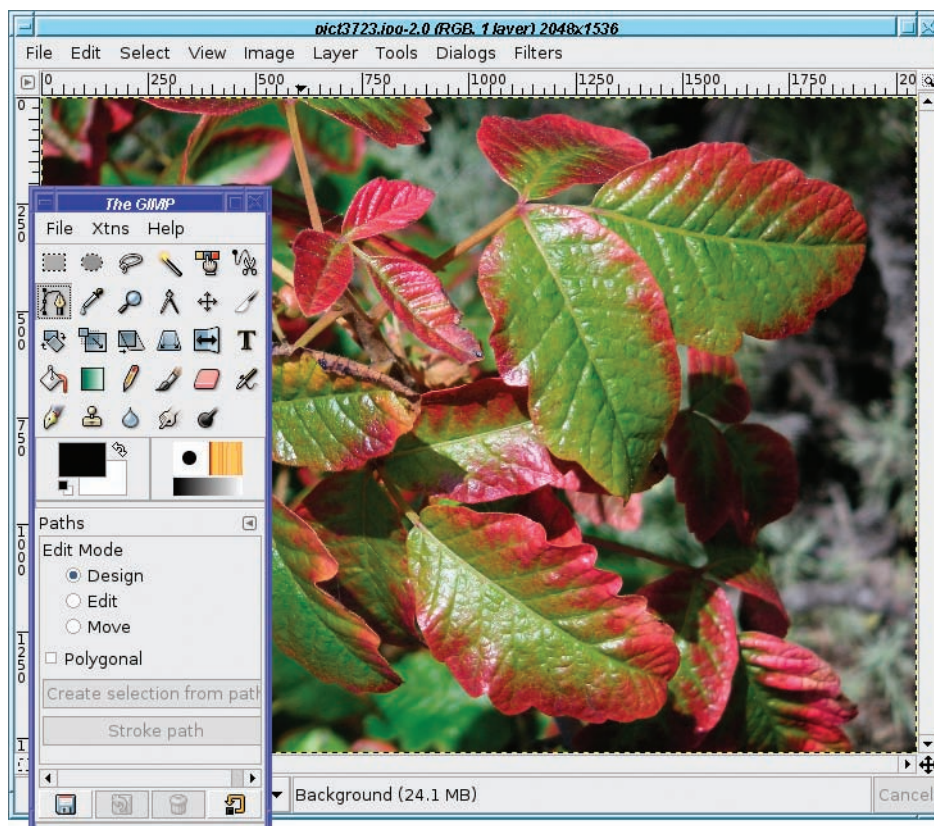


Figure 5-7. *The Bezier Paths tool*

I'm going to cut a single leaf from this photo so that I can paste it into other images. (It's poison oak! Picking a leaf and taking it home was *not* an option.)

Rule 1 for making a good path is: zoom in. Zoom *way* in. You probably want a zoom factor of 200% or more, depending on hand steadiness and how good your close vision is. Zooming in lets you place your control points *exactly* on the edges of the object you're choosing.

It doesn't matter if the object you're trying to select becomes larger than the window. The biggest advantage of Bezier paths versus a simpler tool like Lasso Select is that you can stop between points. That means you can rest for a while (making a complicated selection can be a tiring and time-consuming operation). You can also scroll the image or resize the window as much as you need to see exactly what you're selecting. Best of all, if you don't get it perfect the first time, you'll be able to go back and edit it later.

Time to get started!

Just click in the image window, selecting points you want to connect (Figure 5-8). Use as many or as few control points as you need, depending on how precise you want your selection to be.

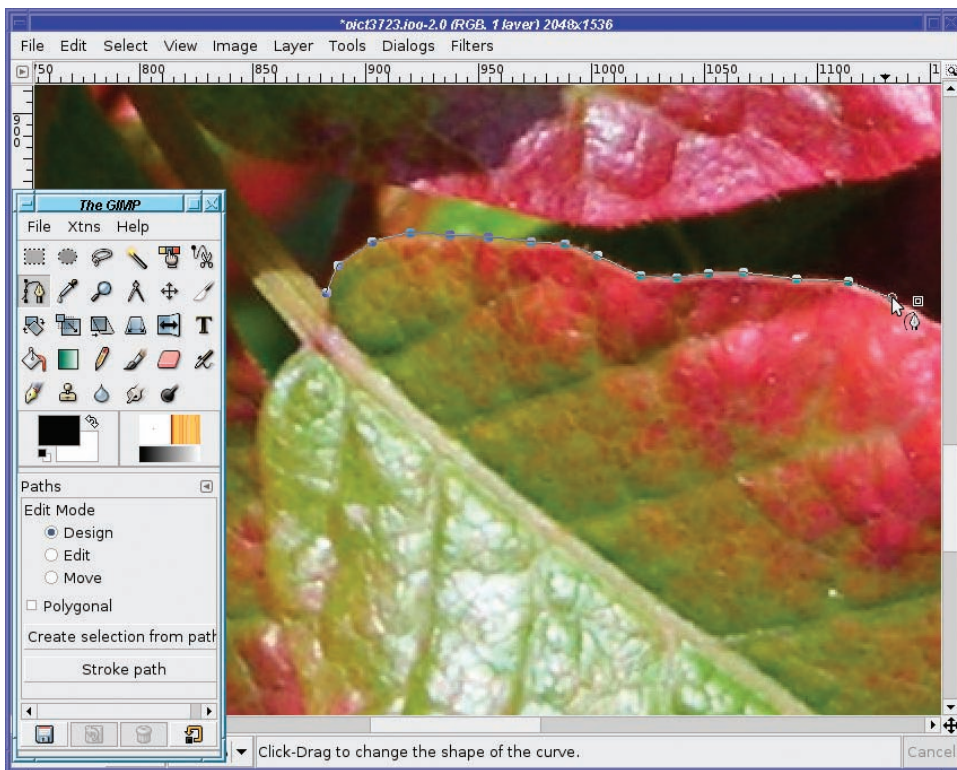


Figure 5-8. *Beginning a Bezier path*

Keep clicking to place points around the outline of the image until you get back to the starting point. You can zoom and scroll as much as you need between points.

If you place a control point in the wrong place, you can click on the point again and drag it to the right place. You can even go back and click on points you added earlier, and drag them to new positions. As always, watch the cursor carefully as you move your mouse near the point.

When it changes to show crossed arrows, similar to the Move tool, that's your cue that you're over an existing control point and can drag it. (However, it can be difficult to tell the crossed arrows cursor from the simple cross cursor you see when you're adding a new point. If you look closely enough, you'll see the difference.) Undo (Control+Z) also works to remove the last point you added, and further undos will remove earlier points.

When you have gone all the way around, Control-click on the starting point (hold the Control key while clicking on it) to close the path.

You don't actually need to Control-click if you're just making a selection. Converting a path to a selection will usually work just fine if you just click normally on the original point. But for other operations such as stroking, it's a good idea to get in the habit of closing paths. It never hurts to Control-click on the first point once you get back to it.

The Paths Dialog

In addition to being visible in the image, your path appears in the Paths dialog. That dialog is usually docked as a separate tab in the same window as the Layers dialog (Figure 5-9).

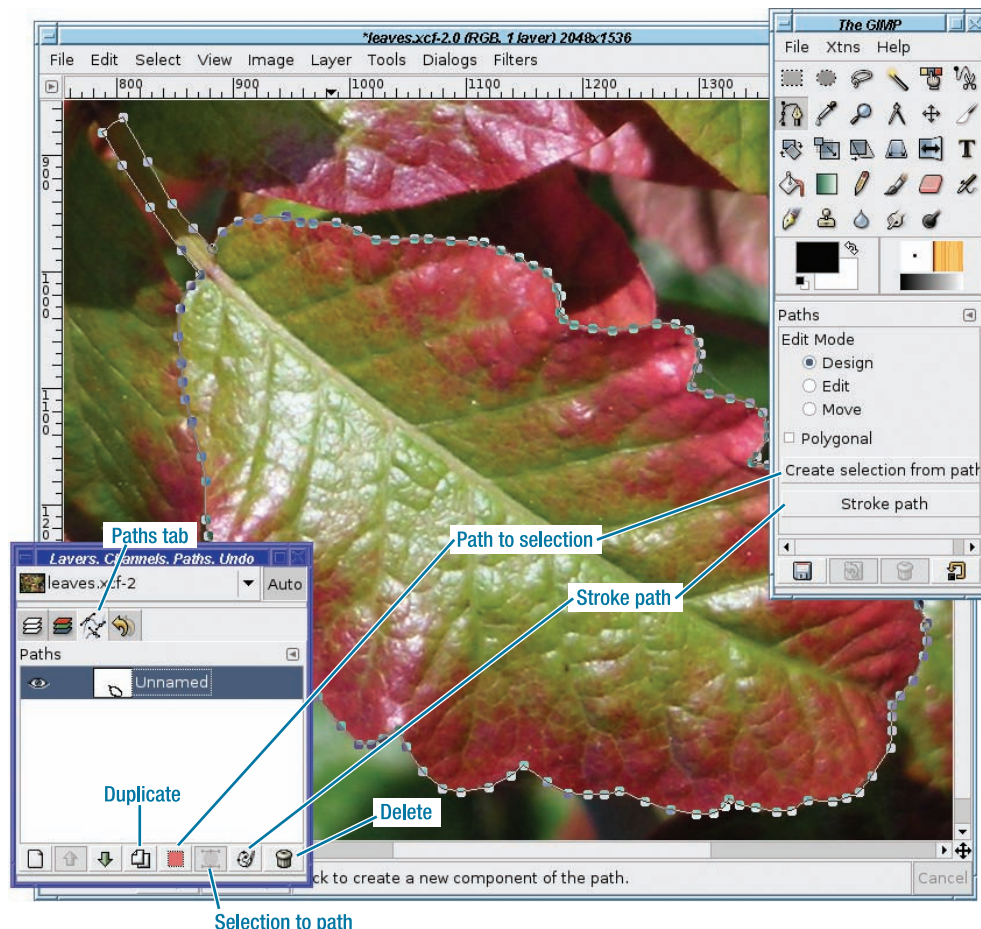


Figure 5-9. The completed path, showing the Paths dialog

Most of the components of the Paths dialog should be familiar to you from working with layers. You can manage multiple paths just as you would manage layers in the Layers dialog. Each path has the following:

- A small preview showing the general shape of the path
- A visibility icon (the “eyeball”)
- Space for a “chain link” between the eyeball and the preview, so you can link several paths and move them together

Most of the time, you probably won’t need to use more than one path at one time, but it’s good to know you can link them if the need should sneak up on you.

Paths are saved when you save to GIMP’s native file type, XCF. So if you spend a long time creating a path, it’s a good idea to save the image as XCF.

You can *Duplicate* a path (make a copy of it) in case you accidentally destroy what you spent so much work creating. Of course, there’s a *Delete* button for paths you no longer need.

Selection to Path converts an existing selection to a path. This is useful if you want to edit the path further, or use the shape for some other purpose, such as saving to a vector-graphics format like SVG. *Stroke Path* does much the same as *Stroke Selection*, which you used in Chapter 4.

But our immediate interest in the Paths dialog is *Path to Selection*.

Creating a Selection from a Path

There are several ways to create a selection from a path.

The easiest way is to hit return. Voilà! You can also use the *Create Selection from Path* button in the Paths tool options, the *Path to Selection* button at the bottom of the Paths dialog (it has a pink square on it), the *Path to Selection* menu item in the context menu you get when right-clicking on a path in the dialog, or the *Select ▶ From Path* item in the image window’s menu.

Try it! Once you’ve defined your path, convert it to a selection. At this point, you’ll see both the path and the selection. If you find that distracting, you can hide the path by clicking the “visibility” eye button in the Paths dialog. Or simply switch to any other tool in the Toolbox (paths are only visible when the Paths tool is active).

To see what you’ve created, *Copy* the selection and (from the image window menus) open *Edit ▶ Paste as New*. GIMP will create a new image containing only your selection, on a transparent background (Figure 5-10).

Of course, you can also paste the selection into another image, or anywhere you want (Figure 5-11).

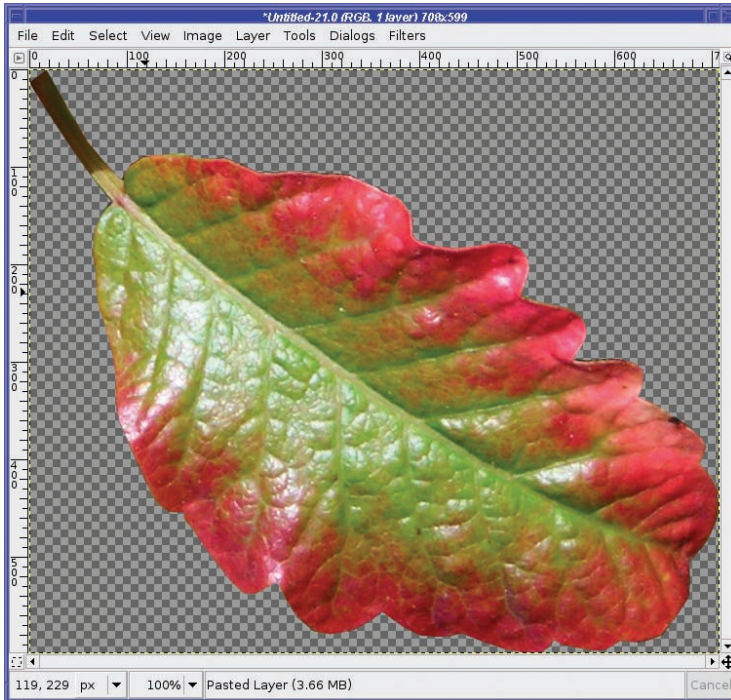


Figure 5-10. *The selection, pasted as a new image with a transparent background*



Figure 5-11. *The leaf pasted into another image*

The boundaries of the leaf are sharply defined, and it looks just fine pasted into other images. But often the boundaries don't work out quite so well, and the selection looks odd when pasted somewhere else. Other times, there is no sharp edge—imagine trying to select a photo of a shadow or a cloud.

You can also have problems if you make a relatively sloppy path. For instance, the path in Figure 5-12 doesn't follow the contours of the leaf very well.

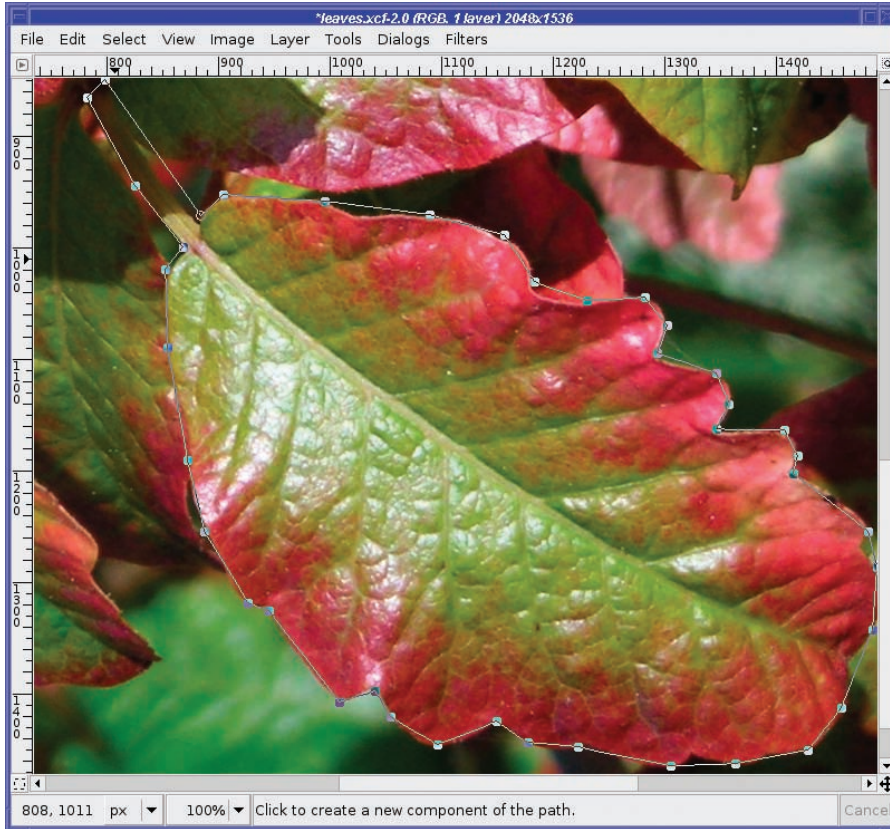


Figure 5-12. A sloppy path

If you make that path into a selection and paste it into another image, the ragged edges show up and the result looks artificial (Figure 5-13).

You can make a sloppy selection look better by *feathering* it to make its edges softer. It's not a complete solution—but sometimes it's the best bet.



Figure 5-13. *A sloppy selection looks artificial when pasted into an image.*

Most of the selection tools (such as Rectangle, Ellipse, and Lasso) offer feathering as a tool option. But Paths doesn't, so you'll have to feather the selection after the fact, using *Select ► Feather...* from the image window. (Some people prefer feathering after selection anyway as it gives you more chance to increase or decrease the feathering as needed.)

This brings up the Feather dialog (Figure 5-14), which lets you choose the amount of feathering, specified in pixels.

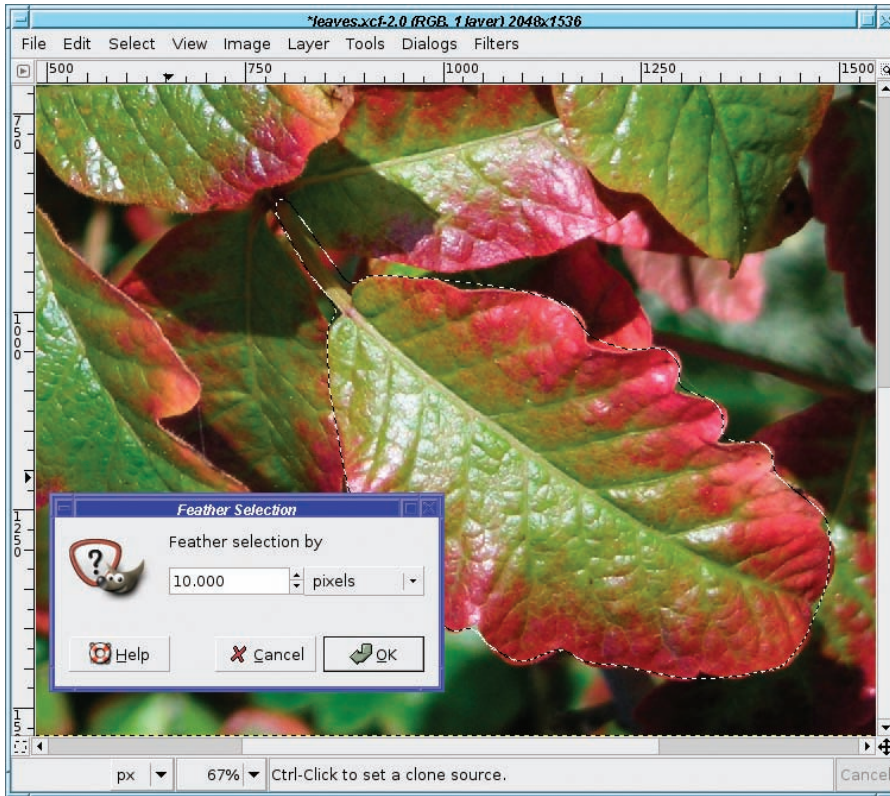


Figure 5-14. Feathering a selection

The amount of feathering you need depends on how large your selection is, how ragged it is, and where you're pasting it. You will probably have to experiment and try several different settings to find the perfect value, undoing each feather before trying something different.

In this case, the default value of 10 pixels wasn't quite enough. A feathering of 15 pixels smoothed the selection enough for it to look okay when pasted (Figure 5-15). You can still see the problems around the edge of the leaf, but now they look more like shadows than image-editing artifacts.



Figure 5-15. *Feathering a sloppy selection makes it look better when pasted.*

Curved Paths

So far, you've only used straight lines between path nodes. But a Bezier path can include curved lines as well. The key is the three edit modes in the tool options: *Design*, *Edit*, and *Move*. By default, you're in *Design* mode, which is best for adding nodes to a path or for moving existing nodes.

Each control point on a Bezier path can have two *handles* that control the curvature of the lines on either side. These handles are accessed via the *Edit* mode toggle button.

Tip Pressing the Control key while dragging on a control point will also switch to *Edit* mode and let you create handles for that point. As always, watch the mouse cursor when you press the Control key with the mouse over the control point. GIMP will tell you, via the mouse cursor, which mode you're in.

Figure 5-16 shows what the handles look like when you're using them. GIMP changes the cursor to a "pointing hand" when you're over a handle (though not all GIMP versions use the same cursors for editing paths, so watch what your own GIMP installation does). Drag the handle in the direction you want the curve to go. Experiment and get a feel for the sorts of curves you can make.

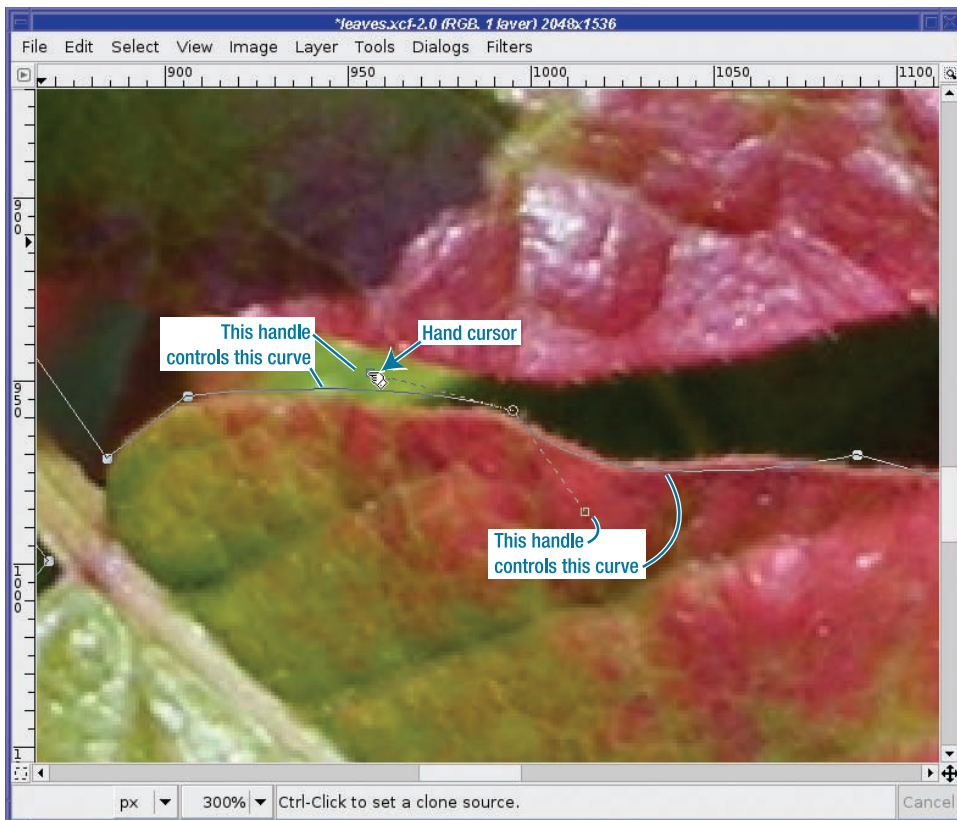


Figure 5-16. The handles for a Bezier control point

Basically, making the handle longer will make the curve stronger, while rotating the handle around its axis (the control point) will move the apex of the curve.

If you don't like the handles, you can just click on the path segment and drag it directly.

You can use paths that are composed of all straight lines, all curved lines, or any combination of the two. Usually, it's easiest to use straight lines for most of the path, and then curve only the few segments that follow tricky outlines. (Alternatively, you can just use more points for the tricky sections, and never use handles or curved segments at all.)

Tip A path consisting only of straight lines is called *polygonal*. You can prevent handles from appearing on new points by checking the *Polygonal* box in the Paths tool options. (If you have existing points whose handles you've adjusted, *Polygonal* won't remove their handles.)

Adding Nodes or Segments and Moving Paths

Edit mode is useful for more than just curving line segments. You can also use it to add a new control point between two existing points. Just click along the path (make sure the cursor is a "+") wherever you want the new point.

This can be slightly confusing, because Edit mode assumes you want handles, so the new point will be created with two handles already visible. If you don't intend to use handles, you can avoid this confusion by checking the *Polygonal* box in the Paths tool options. Even if you *do* intend to use handles, you can still use this trick. Check *Polygonal* first, lay out your path, and then uncheck *Polygonal* and make handles for any control points you wish to use for curves.

You can also make a path that includes several disconnected path segments. Pay attention to which points are drawn with a closed circle versus an open or dotted circle. Any point that's open or dotted is *selected*.

Most of the time when you're creating paths, only one node, the last one created, will be selected. Creating a new point draws a line from the selected point to the new one.

But you can deselect a node by Shift-clicking on it, or select more than one node by Shift-clicking on each new point you want to select. If there are no nodes selected, or more than one, or a node that isn't the end of a path, then clicking in a new location will begin a new disconnected path segment.

Disconnected paths are useful mostly for making discontinuous selections or figures. They can be a time-saver since you can stroke or fill several areas at once. They're not generally used for making selections.

If you have multiple points selected, dragging any one of them will also move other selected nodes by the same amount.

Moving or Modifying an Existing Path

The Paths tool has one more mode: Move mode. This allows you to move the entire path (not just one point, as in Design mode). Just click anywhere on the path and drag it to a new location. If you have more than one path segment, only the segment you drag will move. If you want all path segments to move, using Shift-drag will move them all at once.

If you change windows or choose another tool after working with a path, when you go back to the window the path is no longer visible. How do you go on working with an existing path?

First, make sure that the right path is selected in the Paths dialog, and that its visibility icon (the eyeball) is on. This will show the path, but not its control points, in the image window.

Now, with the Paths tool selected in the Toolbox, click on the path in the image. The control points should appear, and you're ready to continue editing it.

The Intelligent Scissors

The Intelligent Scissors tool (Figure 5-17) works somewhat like Bezier paths, but with a twist: it tries to follow the boundaries of an object. Use it the same way you would the Paths tool: click close to where you want your selection boundary to be, and in theory, GIMP will make a more complicated path which follows the edges it can detect in the image. The result will be a selection, not a path.

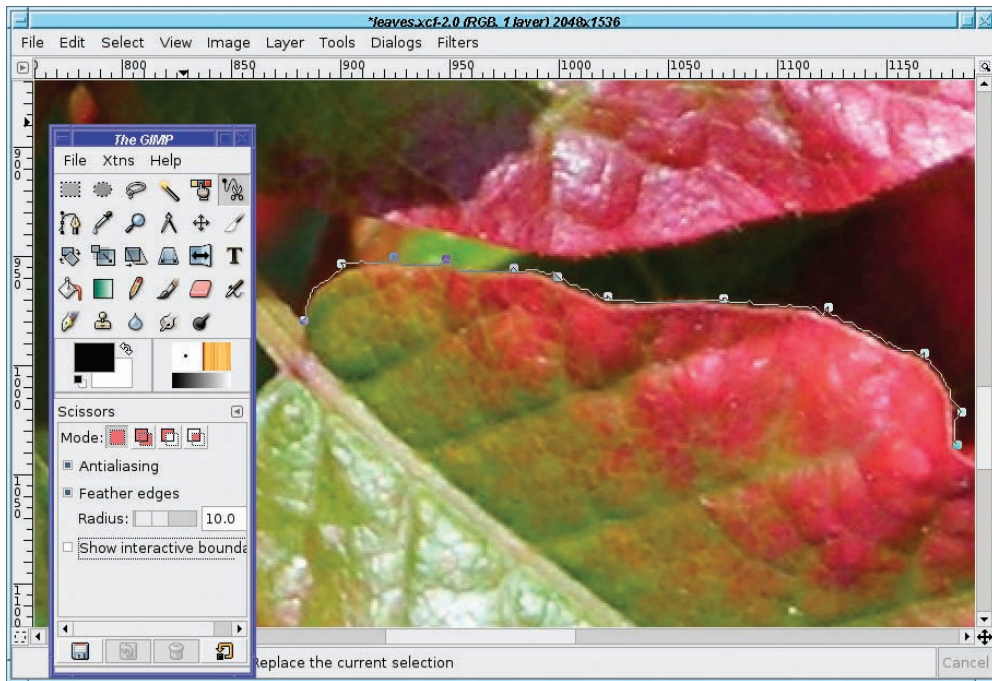


Figure 5-17. *The Intelligent Scissors tool*

When you've finished defining the outline of your selection, click on the first point to close the path, and then click inside the path to select.

When it works, Intelligent Scissors can make a selection that's more accurate and detailed than you would likely make yourself using the Paths tool. But unfortunately, it doesn't always get it right. Do try the tool, but most people find the regular Paths tool more useful. If you find that the cursor sometimes “jumps” to put a point somewhere where you didn't want it to be, Shift-clicking might help that.

If the Intelligent Scissors tool gets close, don't give up! You can go back and move existing points or add control points to fine-tune your work, at least until you click inside the selection to “finish” it. Even after you finish the selection, you can still rework it by converting it to a path, or through other means such as the QuickMask (which will be discussed later in this chapter).

Intelligent Scissors only makes selections. You can't use it to make paths for other uses. Therefore, it has the normal selection tool options: *Mode*, *Antialiasing*, and *Feather*.

It also has an additional option: *Show interactive boundaries*. With this enabled, you can see as you mouse down where the tool would put the boundaries, then drag the mouse left, right, up, and down before you release the button to get the selection exactly where you want it. On anything except a very slow machine, you'll probably find this option helps a great deal.

Modifying Selections with Selection Modes

It often happens that you use one of the selection tools and it gets it *almost* right—but there's a little bit that's wrong. If you could just add a little to the selection, or subtract a little, it would be perfect.

For example, I used Fuzzy Select on the sky in this image of the observatory domes on Mauna Kea (Figure 5-18).

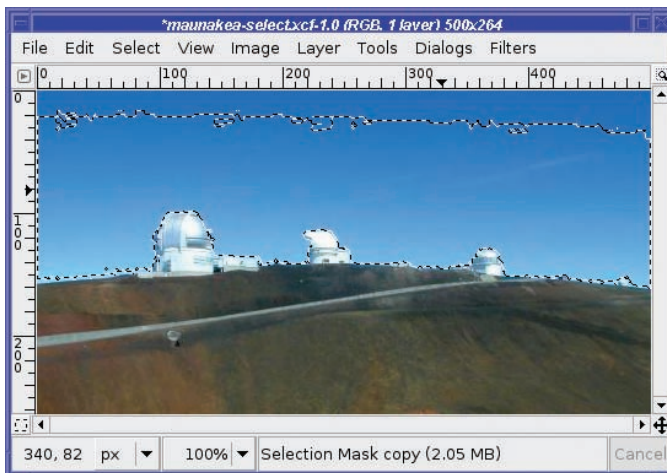


Figure 5-18. Sky partially selected with Fuzzy Select

The hard part—the selection around the domes and near the ground—is fine. But the very top of the sky isn't included. (Changing the Fuzzy Select's *Threshold* doesn't help—it just selects the domes and the road in addition to the sky.) If I could just add the top part of the sky to the existing selection, everything would be perfect.

Modes come to the rescue. Every selection tool has four modes (Figure 5-19) represented by buttons at the top of the tool options area.

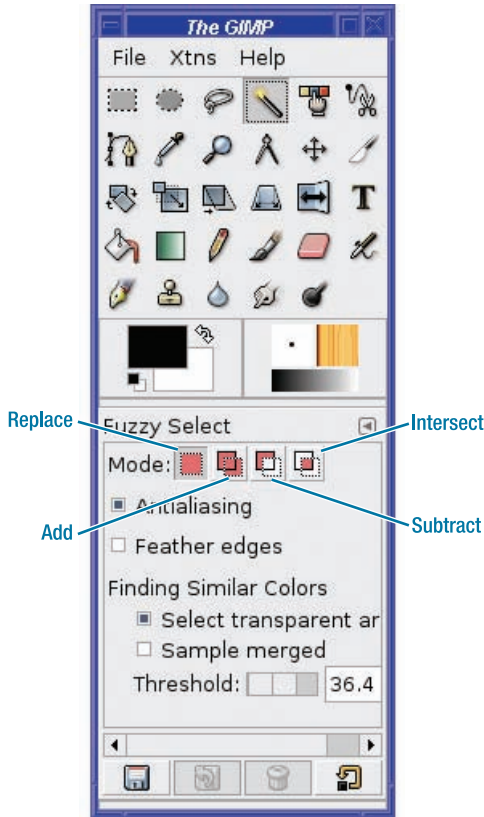
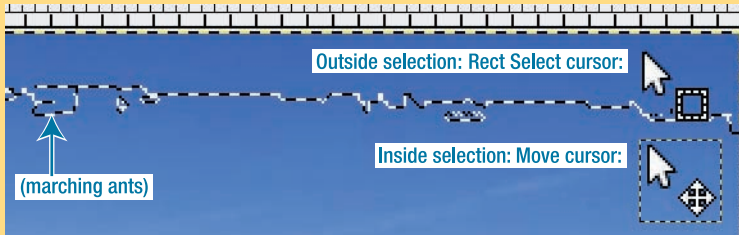


Figure 5-19. Selection modes

The default mode, on the far left, is *Replace*. Making a selection in *Replace* mode removes the current selection, and replaces it with the new one.

STARTING SELECTIONS

You may remember that with most selection tools, clicking *inside* an existing selection will move the selection contents, rather than beginning a new selection. So Replace mode only replaces if you start the new selection *outside* the boundaries of the old one. The same holds for the other selection modes: any new selection must usually be started outside the boundaries of the existing one. An exception is the Rectangle Select tool in GIMP 2.4, which does allow you to start a selection inside an existing one.



Watch the cursor carefully whenever you start a selection, if there's already a selection active. The "Move" component of the cursor will tell you when you're still inside a selection. If you're outside, the cursor will show the icon for the selection tool you're using (Figure 5-20). You can't depend on the marching ants to tell you: if the selection is feathered, it may extend beyond the marching-ants boundary.

Add mode adds the new selection to the existing one. In the Mauna Kea example, that's what I want: to keep the existing selection, but to add the sky at the top of the frame.

The easiest way to do this is to choose the Rectangle Select tool, and set the mode to Add. Then make a rectangular selection that includes everything from the top of the frame down into the existing selection (Figure 5-20). A fast way to do this in GIMP 2.4 is to start inside the existing selection and drag upward and over to one corner, and then adjust the other side of the rectangle so that it covers the other corner. With earlier GIMP versions, you can't do that because starting a new selection inside an existing one, even in Add mode, moves the contents of the existing selection; and you can't adjust the size of a rectangular selection once it's made.

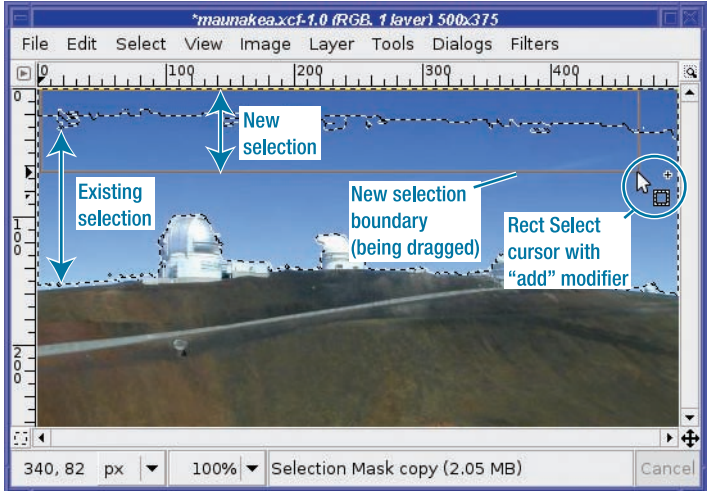


Figure 5-20. Use the Rectangle Select tool to add a selection at the top of the sky to the existing selection.

The two selections are added together. Consequently, the entire sky is selected.

Now you can do operations such as *Clear* to remove the sky. Or you can make the sky a separate layer (with *Float*, or just cut and paste it), put it at the bottom of the layer stack, and interpose another object between the foreground and the sky (Figure 5-21).

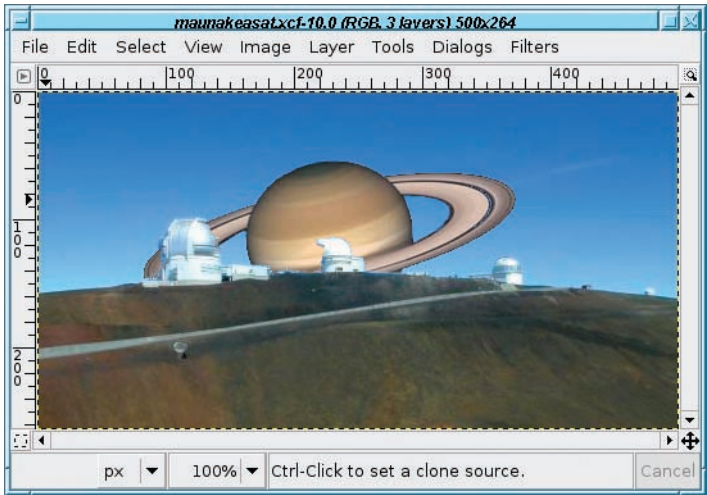


Figure 5-21. Interposing another object between foreground and sky

One way to obtain this effect is to invert the selection (*Select ► Invert*) so you'll now have the foreground selected. Copy, then paste the foreground and make it a new layer. After that, you can paste the transparent Saturn (or anything else you want) between the two layers.

Subtract mode is the inverse of Add mode: it subtracts from the selection. This is particularly handy when confronted with the opposite of your previous problem: an automated tool has selected just a little bit too much.

USING MODIFIER KEYS FOR SELECTION MODES

Pressing the Shift key before dragging out a selection will enable Add mode. However, the Shift key also has another meaning in some selection tools: in Rectangle and Ellipse Select, it constrains the selection to be a square or circle. (If you find this confusing, use the Mode buttons in tool options when you want to add to or subtract from the selection.)

Then how do you constrain a selection to a square or circle if you *don't* want Add mode? The trick is to start dragging, and *then* press Shift. This will turn on the constraint without changing the mode.

Likewise, pressing the Control key will enable Subtract mode, but in some tools it has another effect. In Rectangle and Ellipse Select, Control makes the selection expand outward from the starting point, instead of using that point as the upper-left corner. The trick is to hold down the Shift key while you start the drag, and then release it while still dragging.

Intersect mode adds to the selection *except* where the old and new selections overlap: there, it will deselect what was selected previously.

The QuickMask

Sometimes, outlining just isn't the best way to select an object. You may catch yourself wondering, "Isn't there a more direct way to say that I want to select *here* and *here* but not *there*?"

GIMP has an answer: the QuickMask.

The QuickMask lets you see the selection visually superimposed on the image instead of the usual "marching ants" view. Everything selected will look normal; everything *not* selected will have a translucent red mask over it.

You can paint on the mask with all the usual tools, like the Pencil and Paintbrush. Everywhere you paint in white will be selected; paint black to deselect. Painting in gray, or with the edge of a fuzzy brush, will partially select.

The QuickMask is one of those mind-bogglingly useful features that lots of people don't know about. It's easy to miss. I used GIMP for years before I stumbled onto it. Don't make that mistake, because the QuickMask can make complex selections easy. Just remember that red means *not* selected.

Flip to QuickMask mode by pressing the small square button at the bottom-left corner of the image window (Figure 5-22). You can flip back and forth between QuickMask mode and normal (marching ants) mode at any time with that button.

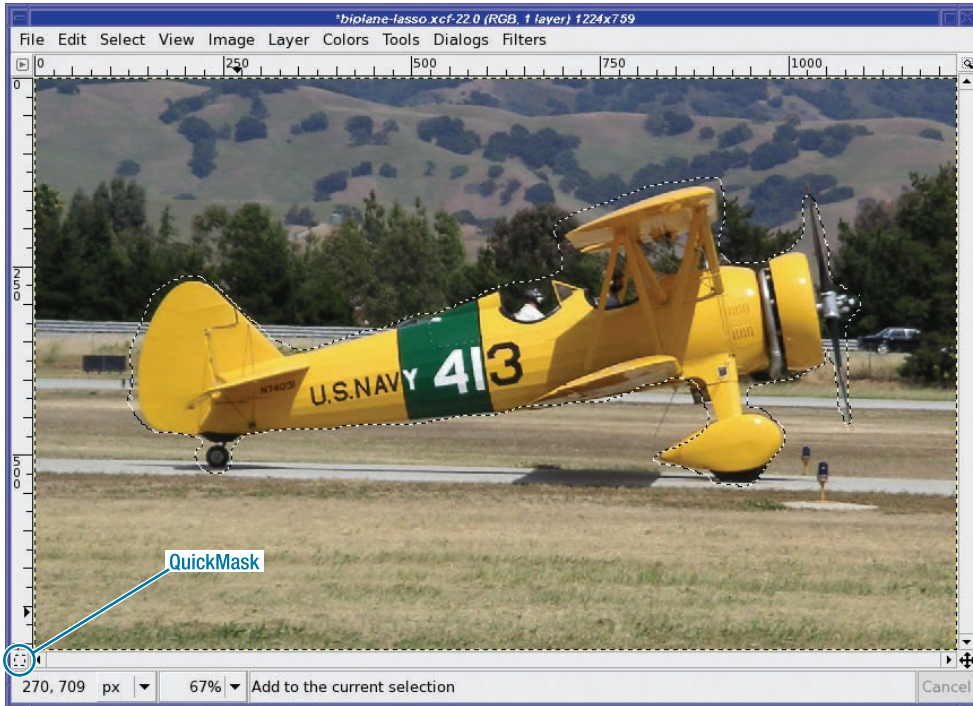


Figure 5-22. The QuickMask button. A rough selection of the biplane has already been made with Free Select.

Note Areas that are partially selected (such as the edges of a feathered selection) will have some red, but the mask will be more transparent than usual. This is not always easy to see, particularly on color images which themselves have red; but it still gives you a better idea than the marching ants would. You can make the QuickMask use a different color by right-clicking on the QuickMask button and choosing *Configure Color and Opacity*.

So how do you use the QuickMask?

It's often best to use some other tool to make an approximate selection, and then use the QuickMask to clean it up. For instance, I'll select the biplane, which you may remember from the animation back in Chapter 3. I'll begin by making a quick outline with the Free Select tool, as Figure 5-22 shows. My selection isn't very accurate; I just want something approximate.

Now press the QuickMask button. The marching ants disappear, and everything that wasn't selected before is overlain with a translucent red mask (Figure 5-23). Notice that the appearance of the button has changed, to show you that you're in QuickMask mode. Press the button again, and you'll go back to seeing the marching ants.

When it's time to draw on the QuickMask, Rule 1 is the same as for paths: *Zoom in!* You want to be able to see individual pixels, so you can paint precisely even if your hand isn't that steady.

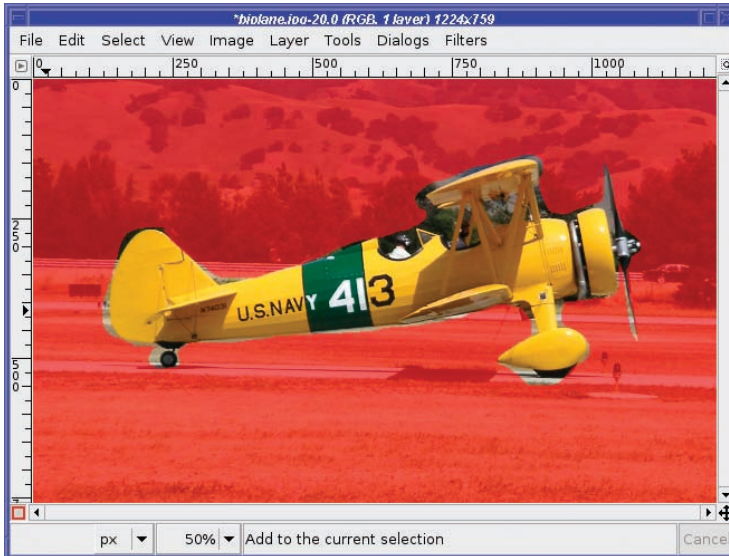


Figure 5-23. *The QuickMask view of the biplane Lasso selection*

If you want a feathered selection (which is usually best for selecting an object out of a photograph), use a fuzzy brush. For a sharp-edged selection, stick to a sharp-edged brush. The size of the brush you choose will depend on the size of your image and the complexity of your subject.

Then start painting! (Figure 5-24.) Shift-clicking to draw straight lines will come in handy here.

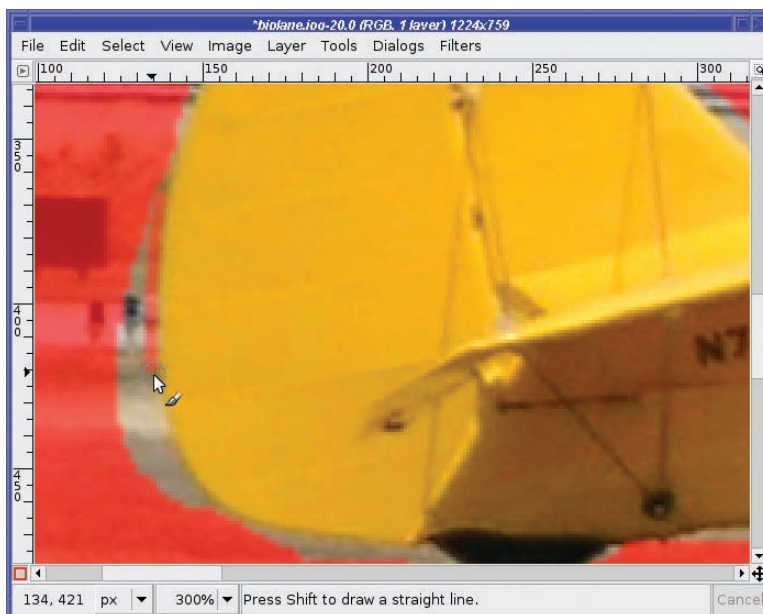


Figure 5-24. *Painting on the QuickMask with the Paintbrush tool*

Use short strokes. That way, if you draw somewhere you didn't intend to, Undo will correct the mistake without losing much.

Remember, when you paint on the QuickMask, use black for areas you *don't* want selected. For areas you *do* want selected, use white or the eraser (assuming your background color is white). Using gray, or any other color, will only darken the QuickMask partially: the area will be partially selected.

You might think you can't select areas and fill them—after all, the QuickMask defines an existing selection! If you make a new selection, won't that destroy the one you're trying to refine?

Fortunately, GIMP lets you make “selections” and fill them while you're painting in QuickMask mode. So go ahead and use the drawing techniques you learned in Chapter 4, including making shapes to be filled with black or white (Figure 5-25).

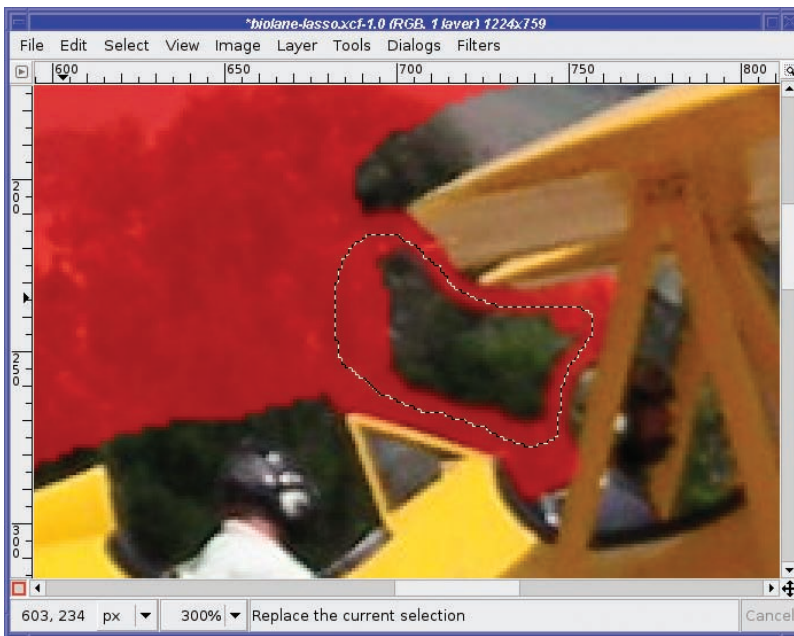


Figure 5-25. Use the QuickMask to fill in gaps.

Tip It often helps to use a drawing tool such as the Paintbrush to outline an area, and then use Free Select to fill the remaining real estate. That way, you can fill large areas quickly using only crude Free Select strokes. Figure 5-26 shows a free selection about to be filled.

Continue painting, switching tools as needed to cover areas and fill gaps until you're happy with the result (Figure 5-26). Then click on the QuickMask button to return to the normal view.

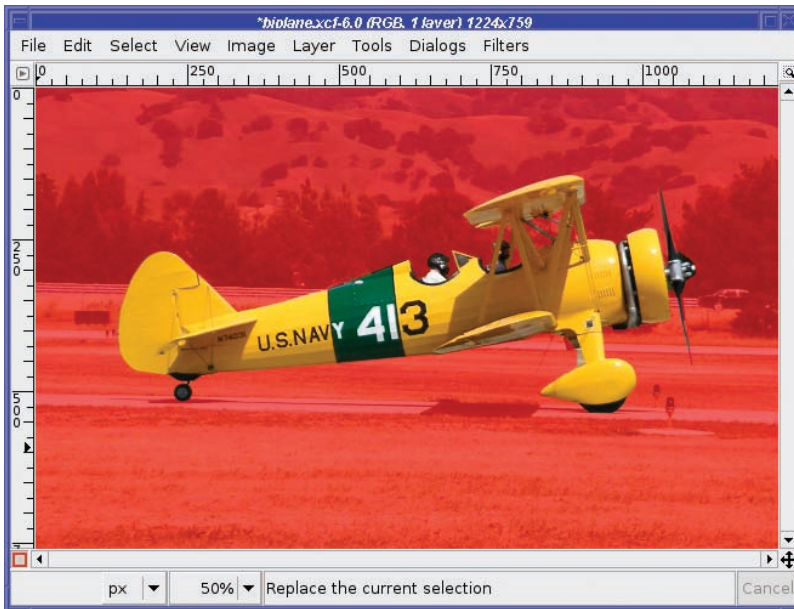


Figure 5-26. The QuickMask is finished, and ready to be turned back into a selection by pressing the QuickMask button again.

Then you can Copy and Paste as New (Figure 5-27), or use your selection any way you choose.

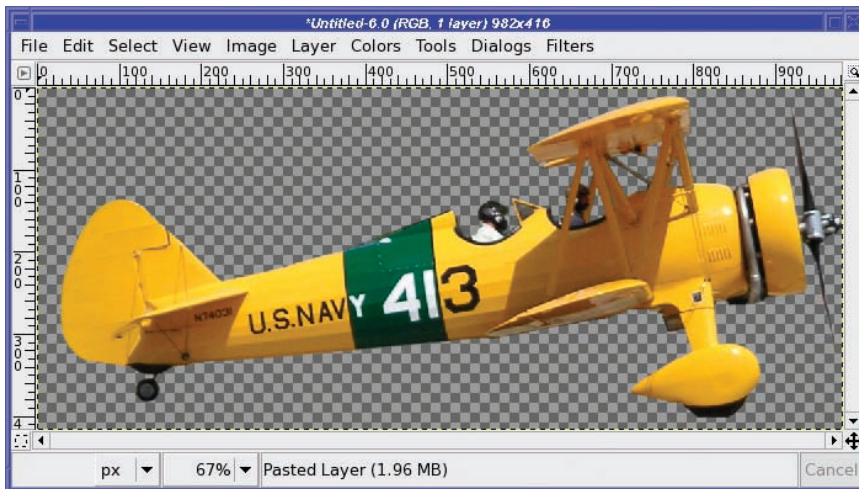


Figure 5-27. The object selected with the QuickMask is now pasted as a new image.

Highlighting Foreground Objects

What can you do with a selection, besides copying it and pasting it somewhere?

Pretty much anything, as it turns out. Nearly all of the GIMP's operations will operate only on the selection, if one exists. For instance, GIMP's brightness tools, discussed in Chapter 2, will lighten or darken only the selected part of an image.

Figure 5-28 has a background that distracts from the flower in the foreground. Can GIMP de-emphasize the clutter to make the subject stand out more?

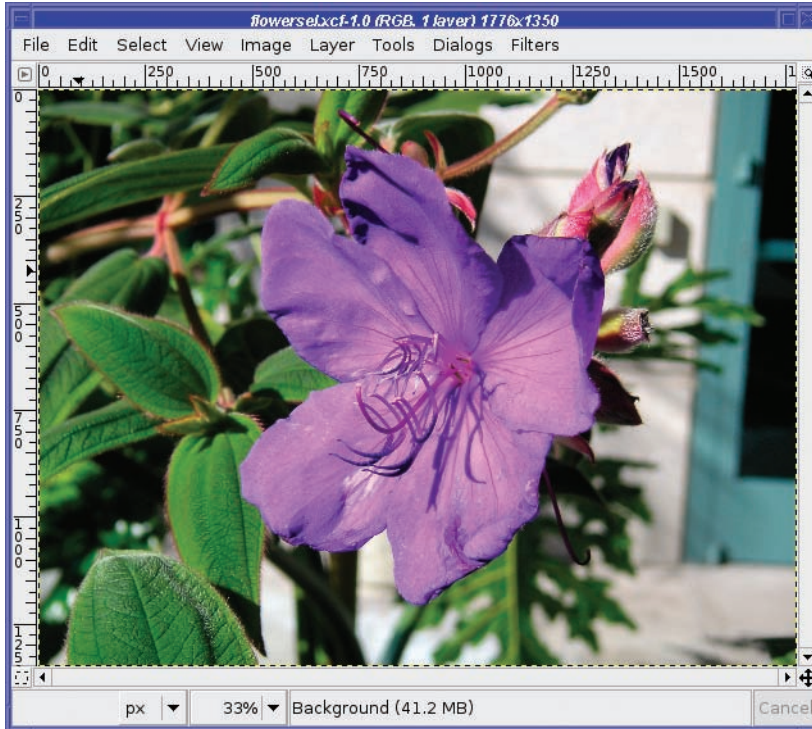


Figure 5-28. *Nice flower, distracting background*

First, select the flower using any combination of the techniques already discussed. Select by Color gets most of it, and correcting with the QuickMask fills in the rest. Then invert the selection: since the goal is to change the background, you want the background selected, not the flower.

Now bring up your favorite brightness tool. In this case, Curves is particularly helpful, because it lets you reduce the brightness of the white wall with respect to the green leaves (Figure 5-29). After darkening the background, you may also want to try blurring it a bit with *Gaussian Blur* (see the section in Chapter 6 on Gaussian Blur for more details).

Tip You'll probably want to make the selection invisible with *View* ► *Show Selection*. Then you can make sure the boundary between the flower and the background isn't too obvious. If you can see a line at the selection boundary, or the object looks like it has a "halo" around it, you probably need to feather the selection more.

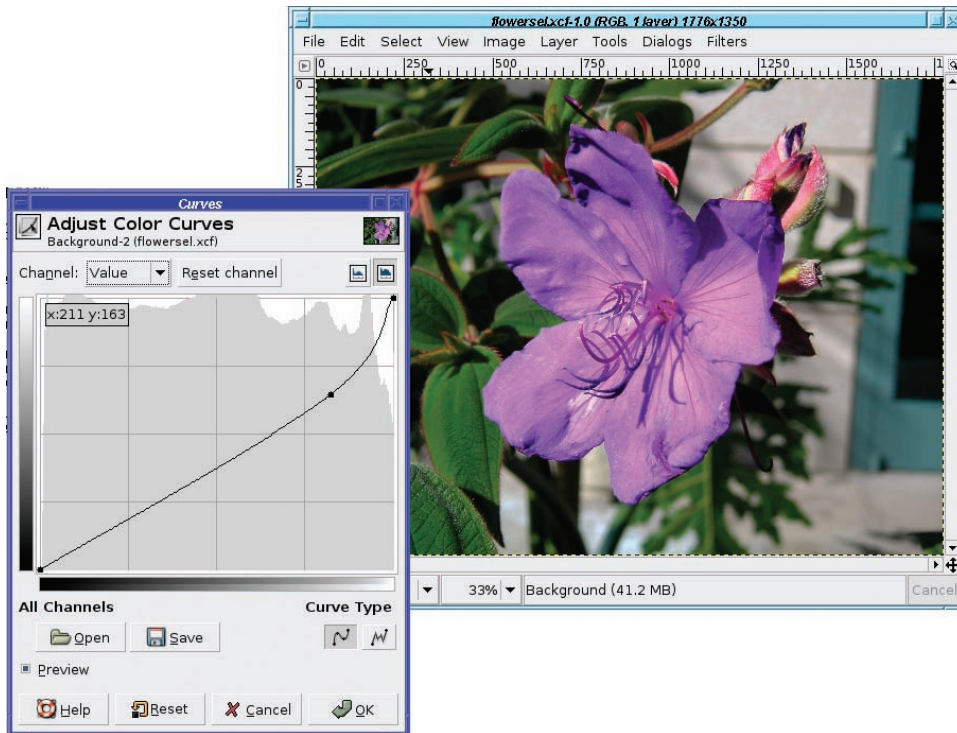


Figure 5-29. Use Curves to dim the bright background.

Using Channel Masks to Save a Selection

Sometimes it would be really nice to be able to save a selection.

Perhaps you have a selection you've spent a lot of time refining, but you temporarily need to make another selection somewhere else in the image. Or maybe you've made a selection in one image, but you want to be able to use that selection in another related image.

Of course, you can convert the selection to a path, and give the path a name. But a path won't store all the information about your selection: if you've spent oodles of time feathering the edges just right, converting to a path will forfeit all that work.

The answer is a *channel mask*.

Channel masks are black-and-white images (similar to the QuickMask) that represent some aspect of an image. To work with channel masks, you need the Channels dialog, usually docked as a tab between Layers and Paths (Figure 5-30).

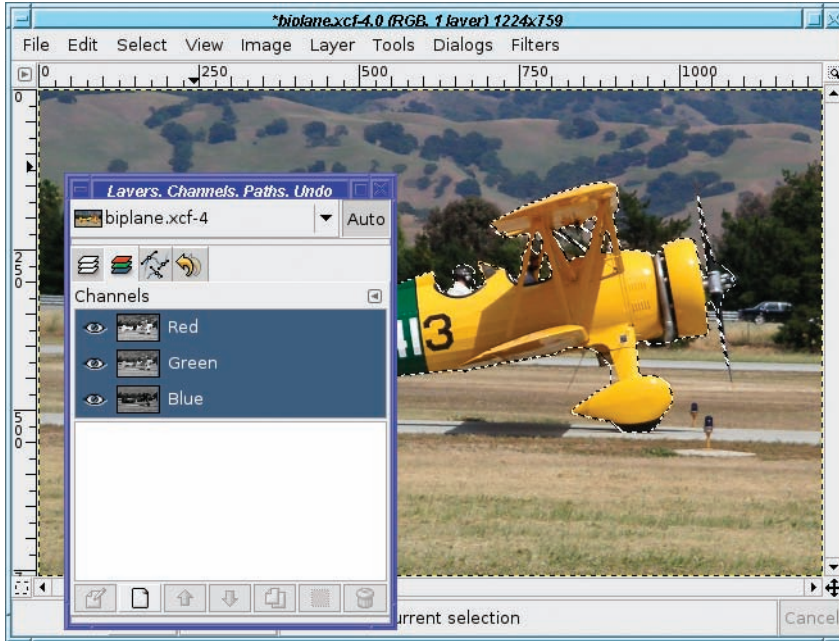


Figure 5-30. *The Channels dialog*

Notice that there are three channels already there, for the three colors in an RGB image: Red, Green, and Blue. If your image has transparency, there will also be a channel for Alpha. Each channel has a visibility button next to it, just like layers do. Click on the eyeballs to turn off individual colors and watch what happens to the image.

But you won't be using color channels now (for more on color manipulation, see Chapter 8). Instead, you'll be creating a special channel to hold the selection.

Note If you view the Channels dialog when you have the QuickMask active, you'll see that the QuickMask is also a channel.

To save a selection as a channel, use *Edit* ► *Save to Channel* (Figure 5-31).

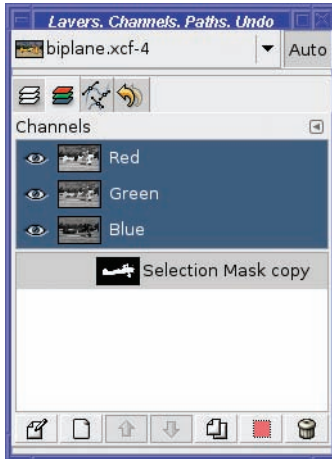


Figure 5-31. The selection is now saved as a channel.

Notice that the selection channel doesn't have its visibility button turned on—by default it's invisible. You can show it by clicking in the spot where the “eye” would be.

The channel will appear as a translucent overlay, like the QuickMask, except it will be dark gray, not red. (You can change the color with *Channel Attributes*, as you'll see.)

Like the QuickMask, you can paint on a channel using the normal drawing and filling tools, with a few caveats:

- A channel must be visible (have an “eye”) in order to paint on it.
- If you still have a selection active, you won't be able to paint outside the selection. If you convert a selection to a channel, and then paint on it, you'll want to do *Select ▶ None*.

You can save as many selection channels as you wish. You can rename channels in the same way that you rename layers: double-click on its name in the channel dialog and type in a new one. Once you've saved a selection, you can make another selection and save that, too (Figure 5-32). The small preview in the Channels dialog will give you an idea of what each selection channel looks like.



Figure 5-32. Two selections saved (and renamed)

To convert a saved selection channel back to an active selection, right-click on the channel to get a context menu (Figure 5-33).

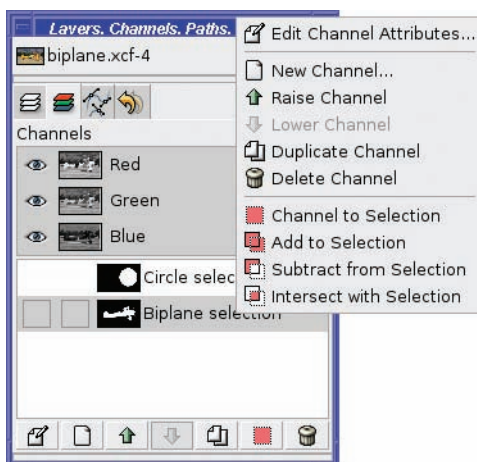


Figure 5-33. The Channel dialog's context menu

Channel to Selection is the simplest operation: just replace any existing selection with the selection saved in the channel. But you can also use the other selection modes: *Add to Selection*, *Subtract from Selection*, and *Intersect with Selection*. They let you combine several selections in fairly complex ways. Of course, you can also make a copy (*Duplicate Channel*) or *Delete Channel*.

You can also make a *New Channel*. By default, it will be all black (which will appear as a gray overlay), and then you can paint on it. In Figure 5-34, I've scribbled on the biplane's fuselage with the Paintbrush tool and a large brush.

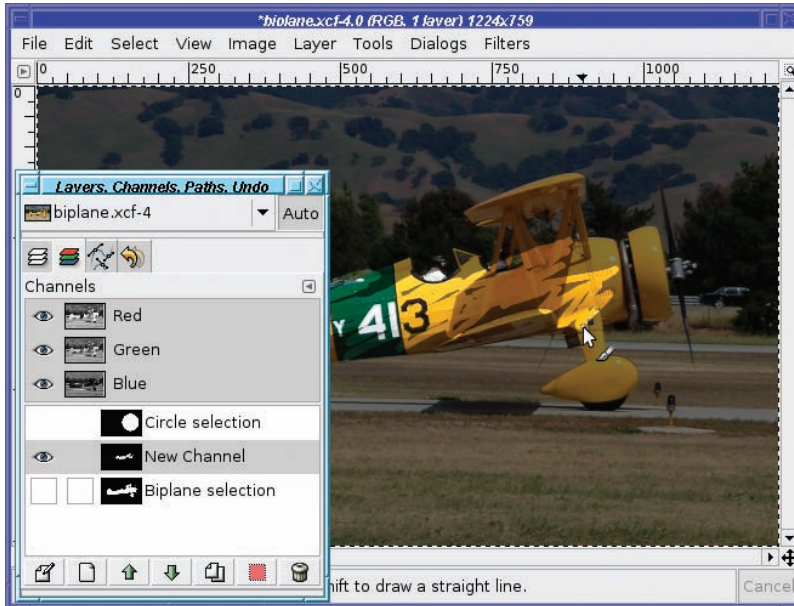


Figure 5-34. *Painting on a new channel*

The first item in the context menu, *Edit Channel Attributes*, gives you another place to change the channel's name. In addition, it lets you change the *Fill Opacity* (Figure 5-35).

On some images, it may be nearly impossible to see what you're doing when the image is covered by the translucent dark gray of a channel. Changing *Fill Opacity* can make the overlay lighter or darker.

You can also change the color by clicking on the color box. Figure 5-36 shows the result.

Channels don't get in your way because you can switch them off at any time. They won't disturb your current selection until you explicitly ask for that using the context menu.

Of course, channels are included when you save as XCF, so all your stored selections will still be there the next time you edit the image.

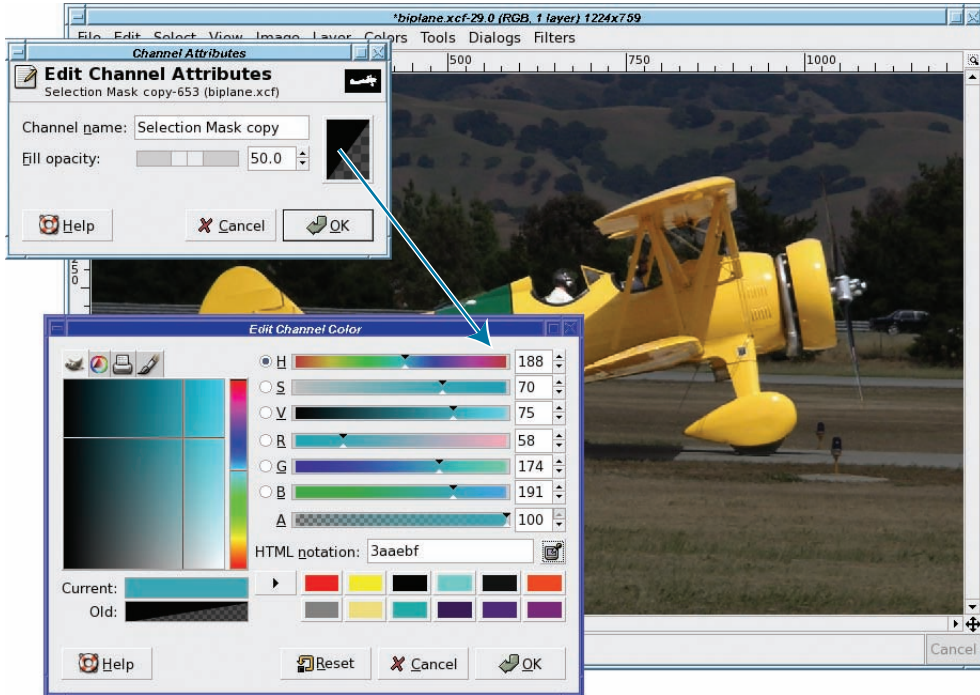


Figure 5-35. Channel Attributes. Click on the color button to bring up a color dialog.

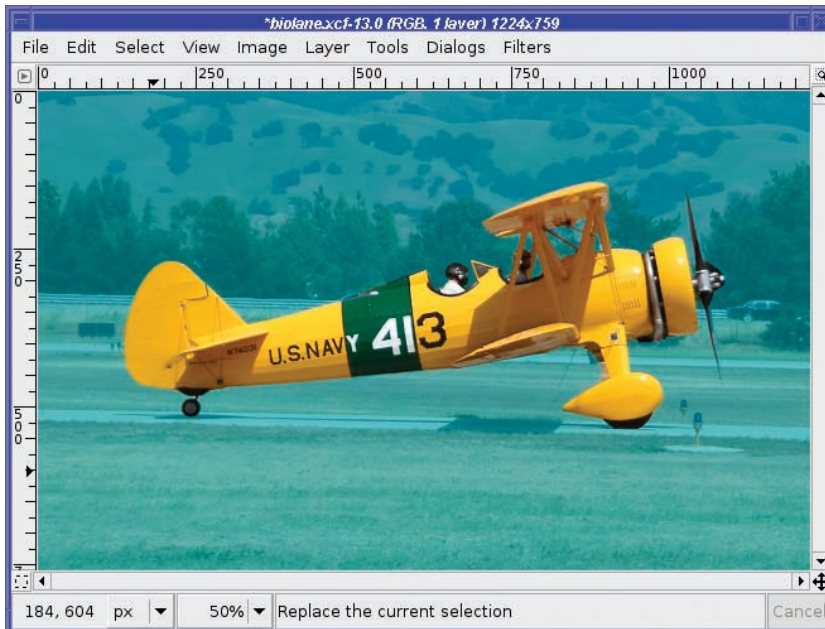


Figure 5-36. The channel's overlay is now a different color.

Layer Masks

A layer mask defines how much, and which parts, of a layer will be visible.

Layer masks are not actually a selection tool. But you can use them in many of the same ways you'd use a selection. For some jobs, a layer mask may be easier and more intuitive than using a selection.

A layer mask is actually a black-and-white image, like a channel or the QuickMask. It represents the “alpha channel” of the layer. The whiter the mask is, the more the affected layer shows through—the less transparent it is. Wherever the channel mask is dark, the image will appear transparent.

It may help to think of the mask as a film negative placed on top of your image. Anywhere the film is black, you can't see your image; anywhere the film is clear (or in this case, white), the layer can be seen.

Layer masks are particularly useful when combining images. For instance, I have an ostrich (Figure 5-37) and a giraffe (Figure 5-38). What if I want to make an ostraffe?

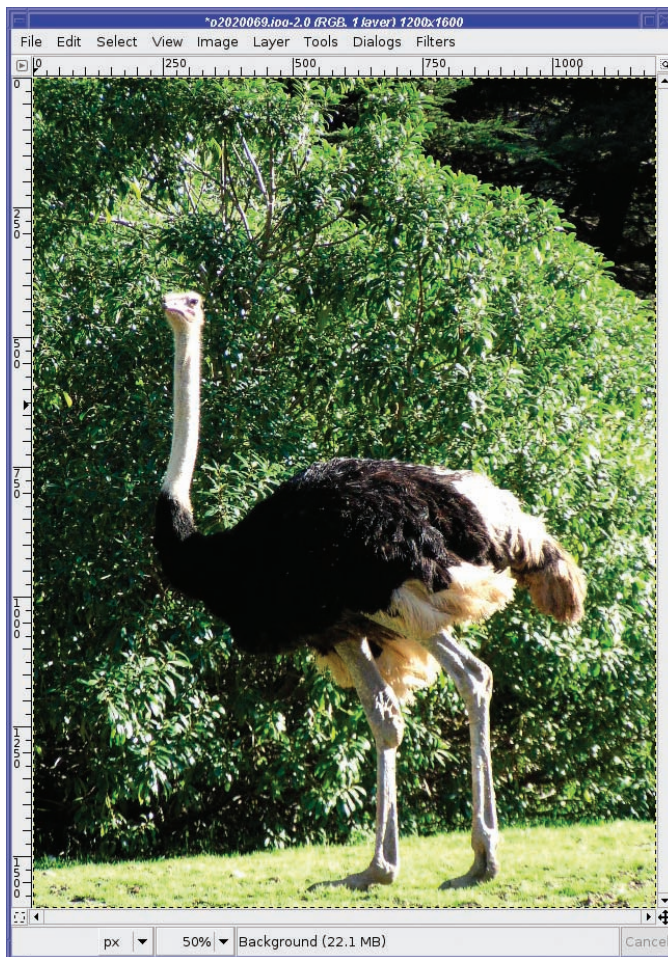


Figure 5-37. An ostrich

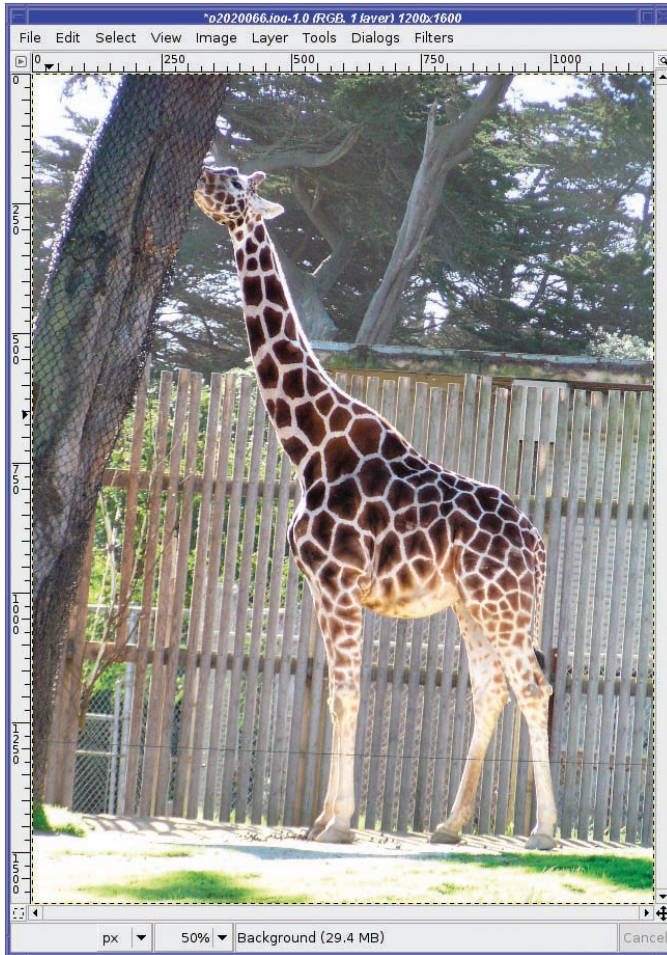


Figure 5-38. A giraffe

Start by pasting the ostrich onto the giraffe image. Copy from the ostrich photo, paste over the giraffe, then go to the Layers dialog and click the *New Layer* button. Rename the layers so you'll remember which is which.

The next step is to line up the two images. But that's hard since you can't see the giraffe once the ostrich is on top of it. The *Opacity* slider in the Layers dialog saves the day. Set opacity to about 50% (or whatever makes it easy to see both images), and it's no problem to line them up (Figure 5-39).

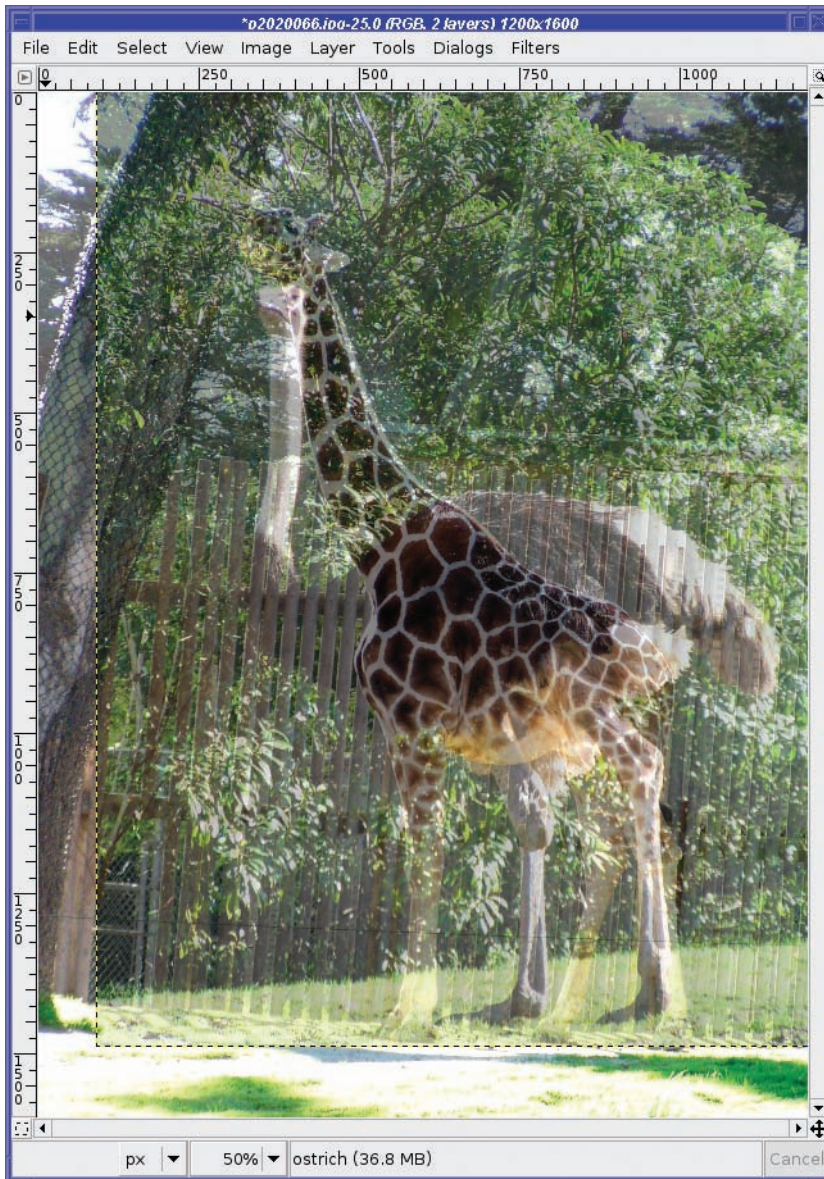


Figure 5-39. Make the top image translucent in order to line up the two images.

Now it's time for the layer mask. Right-click on the ostrich layer in the layers dialog and select *Add Layer Mask...* (Figure 5-40).

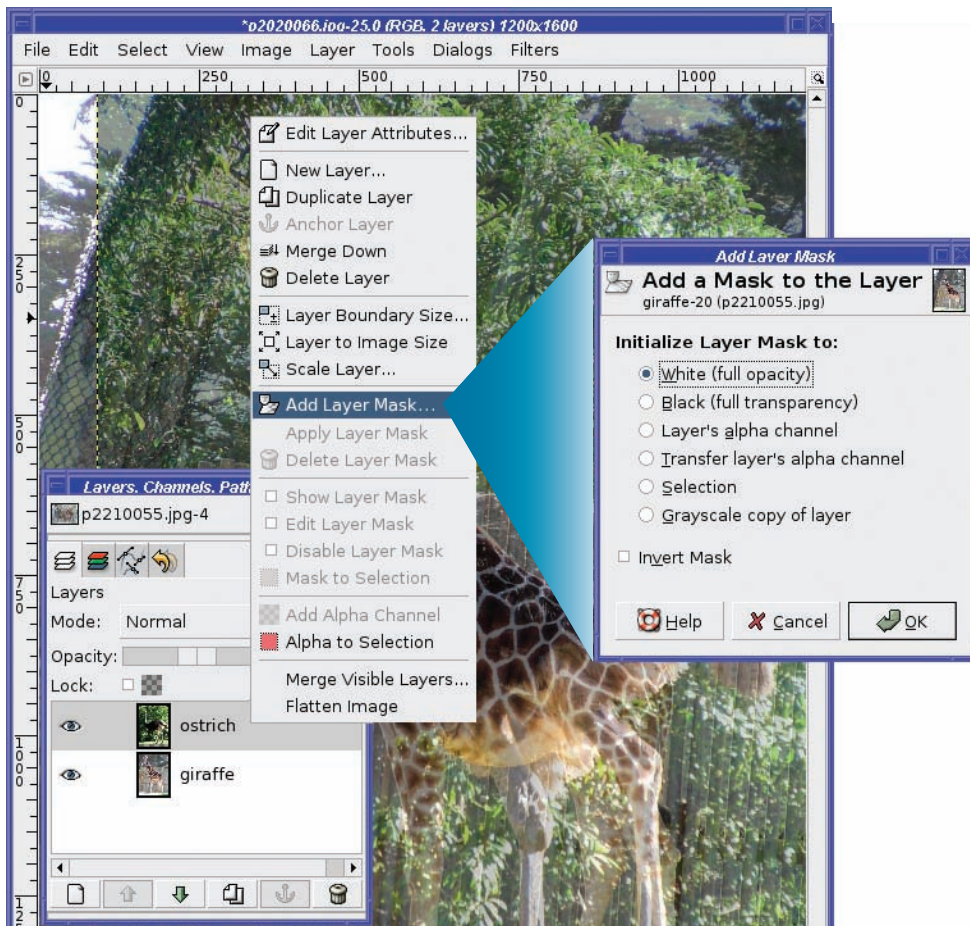


Figure 5-40. Adding a layer mask

The Add Layer Mask dialog lets you specify the color of the new layer mask. The default, *White*, means the full layer remains visible at first (until you change that by painting some black on the mask). This is almost always what you want, but the other options are there if you need them.

The new layer mask shows up as a thumbnail preview in the Layers dialog (Figure 5-41). There are two important points to note about the layer mask preview.

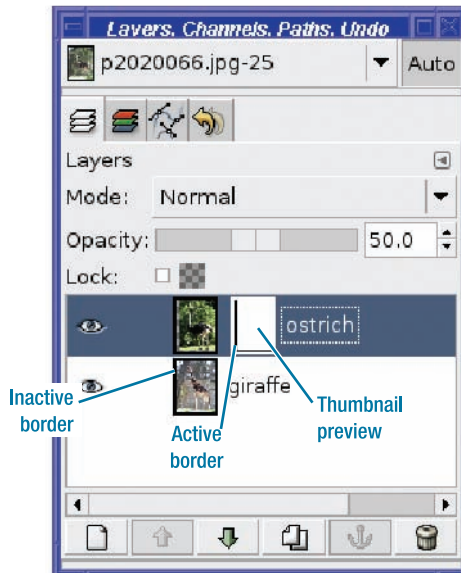


Figure 5-41. A preview appears for the new layer mask.

First, it shows you what the layer mask looks like. The new mask is all white, so it looks like a white rectangle. Once you start drawing in the mask, you'll see that the preview will give you an approximate idea of the mask's appearance.

Second, and more important: the border of the preview is white, indicating that it is *active*. That means if you draw in the image, you'll be drawing on the layer mask (just as you drew on the QuickMask or on a selection channel), not on the image itself.

This can be quite confusing. An image normally shows no visible indication of whether there's a layer mask active. When working with layer masks, it's important to keep the Layers dialog visible. Use the preview border colors to tell you whether you're working with the layer or with its mask. The one that has a white border is the one that's active.

You can select the layer at any time by clicking on the layer preview in the Layers dialog. Click again on the mask to select it. Or use *Edit Layer Mask* in the context menu to toggle between the two.

Caution When a layer mask is selected, drawing isn't the only GIMP operation that will be affected. The Move tool will move the mask, not the layer (if you had the mask lined up with the layer, it won't be lined up any more). Fortunately, Undo fixes minor mistakes like that. Also, saving to some file types will issue warnings if you try to save when you have a layer mask selected. You can cancel the save, go back and select the layer, and then save again.

Now try drawing on the layer mask, to see for yourself how it works. Gradients are particularly useful with layer masks. I'm going to keep the head, neck, and back of the ostrich, while making the legs invisible. The ostrich's upper body should blend in to the giraffe's lower body. That means I need the top of the ostrich's layer mask to be white, the bottom black, and a fade (a gradient) in between, right where I want the two images to merge.

With the layer mask still selected, I choose the Gradient tool in the Toolbox and drag a vertical line where I want the fade (Figure 5-42).

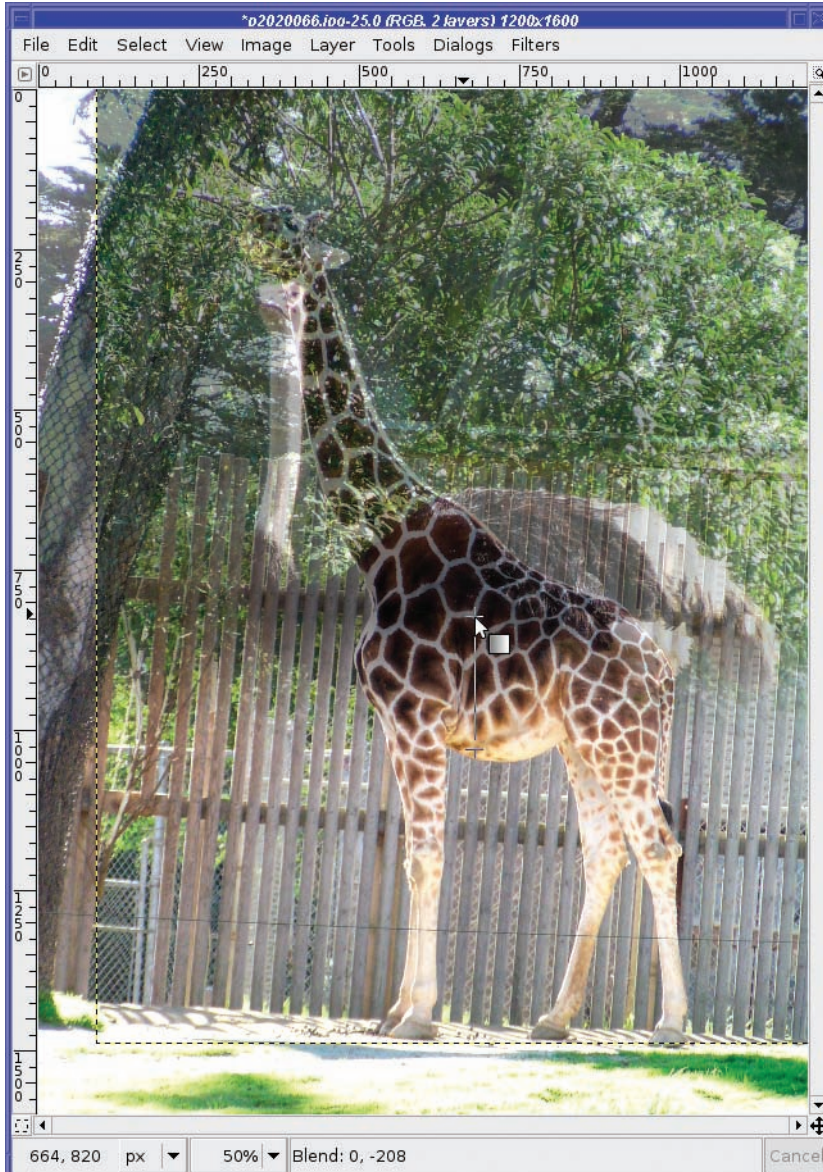


Figure 5-42. Drag where you want the gradient to be.

It's fairly easy to forget in which direction to draw a gradient, and end up blackening what you wanted to whiten, and vice versa. (Remember, the layer mask preview will show you a thumbnail of what the mask looks like.) Fortunately, that's easy to fix: just draw another gradient in the opposite direction. You don't even need to undo!

Don't forget that holding the Control key down as you drag a gradient constrains it to a multiple of 15 degrees. That's an easy way to get a gradient that's exactly vertical or exactly horizontal.

Once you've drawn on the layer mask, the image doesn't look that different, because of that translucent top layer. It's finally time to slide the opacity of the top layer back to 100%. You could have done that earlier, but without being able to see the bottom layer it would have been difficult to see where to place the gradient.

With the top layer made fully opaque again, now the image becomes Figure 5-43.

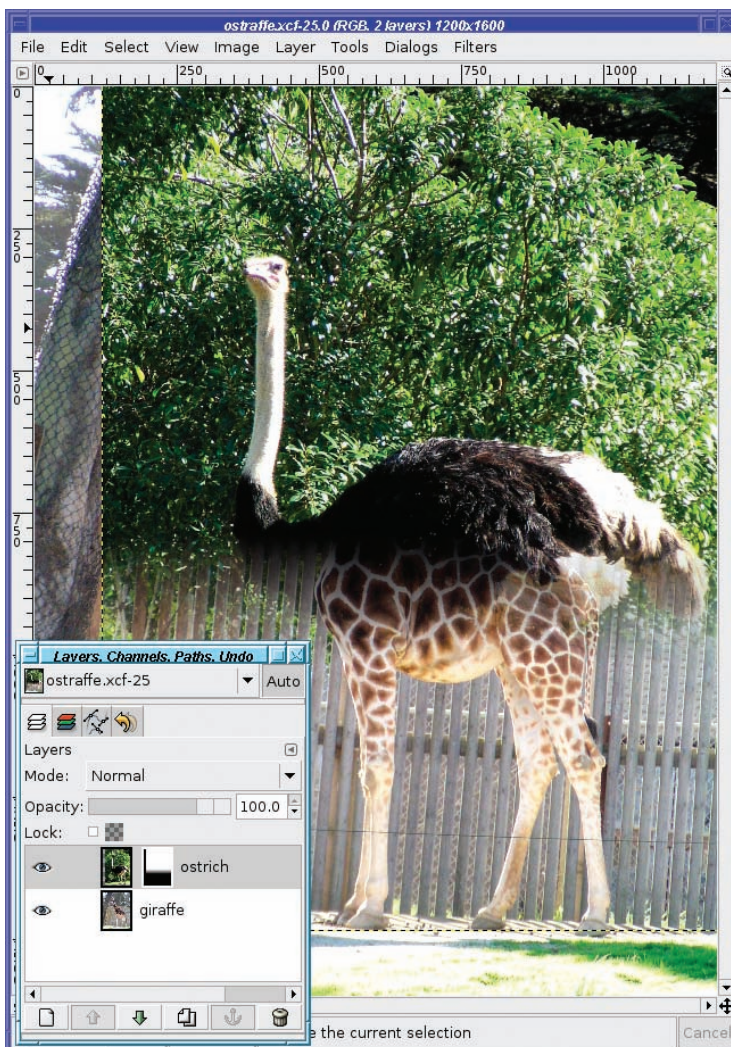


Figure 5-43. A gradient on the layer mask, and top layer back to fully opaque

Notice the layer mask preview has become fuzzy on the bottom: this is the gradient that has been drawn on the layer mask.

To see the layer mask at full size, use *Show Layer Mask* from the right-click menu in the Layers dialog (Figure 5-44). A shortcut for *Show Layer Mask* is to Alt-click (or Alt-Shift-click) on the layer preview; another Alt-click will show the image normally again. Notice that the layer mask's boundary changes to green in the dialog preview. Also notice that the layer mask applies only to the area where the ostrich image is; the edges, from the giraffe photo, are not affected.

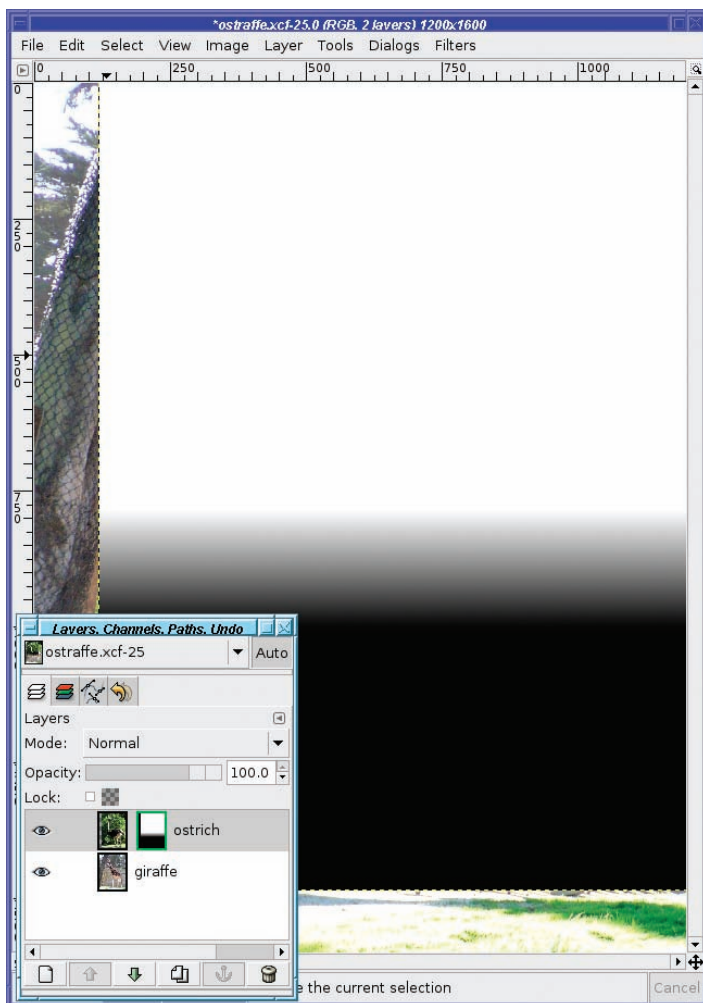


Figure 5-44. *Show Layer Mask*

Now play with the image. You may want to change the location of your gradient slightly (by drawing a new gradient higher or lower), or use the Move tool to adjust the relative positions of the two layers. (Don't forget to select the layer, not the mask, before moving.)

When you're satisfied that you have everything aligned just right, it's a good time to crop the image. The idea is to get rid of any overhang from either original that might be noticeable around the borders. For instance, the netting-covered tree on the left side of Figure 5-43 doesn't blend well with the bush to its right.

Now it's time to tune the mask a bit with a little hand-painting. Notice the area under the ostrich's neck where the layer is partially transparent and doesn't blend well into the giraffe's chest? Remember, a mask is just a black-and-white image. You can paint on it with paint tools, just as you painted on the QuickMask and channels earlier in this chapter. Anywhere you paint white will become opaque.

Choose a fuzzy brush with the Paintbrush tool, or use the Airbrush, and paint in the area where you want more of the upper image to show up (Figure 5-45). You may find it helpful to flip back and forth between "Show Layer Mask" mode and normal mode to see what you're painting. A quick way of doing that is by Alt-clicking on the layer mask preview (Alt-Shift-click will also work on systems that use Alt-click for other purposes). The border of the preview will go green to show that you're seeing the layer mask itself, not its effect on the image.

If you ever need to disable a layer mask temporarily, a quick way to do that is to Control-click on the layer preview. The border will turn red, to show the mask is disabled. Of course, you can always show, hide, enable, or disable layer masks through the context menu you access by right-clicking in the Layers dialog.

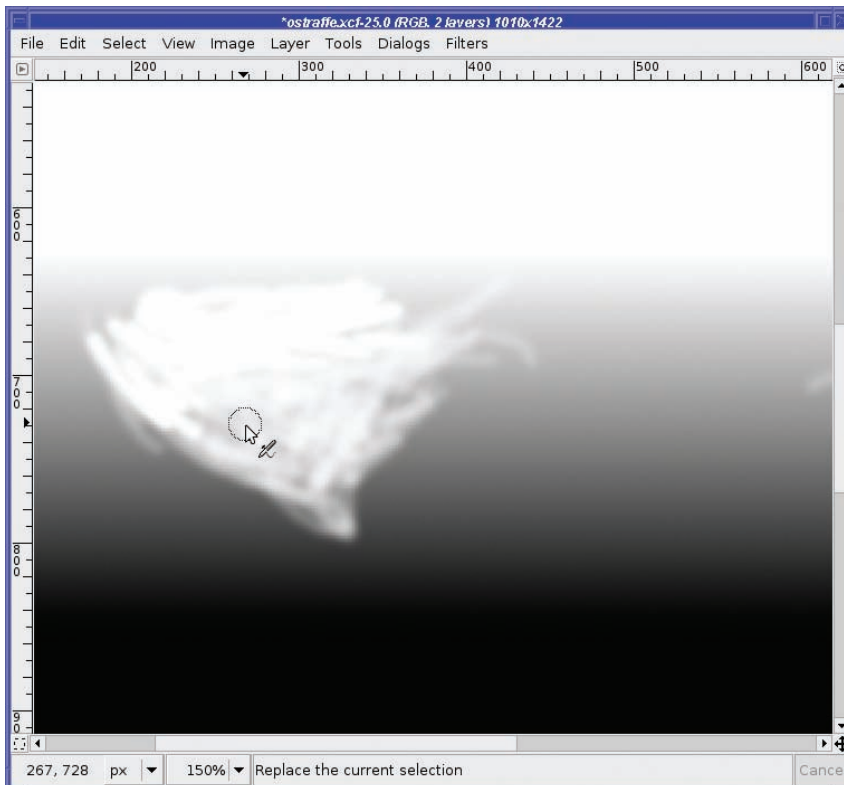


Figure 5-45. Use Show Layer Mask while painting. Use painting tools to touch up areas where the gradient isn't quite enough.

After touching up the layer mask, Figure 5-46 shows the final result.

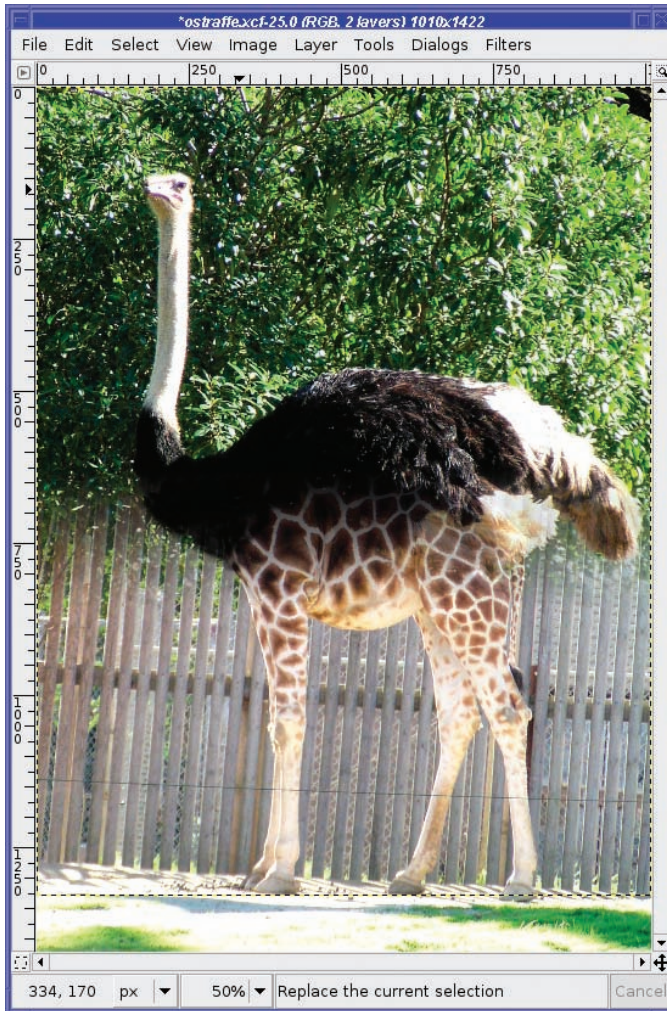


Figure 5-46. *The only ostraffe in captivity!*

Of course, the backgrounds from your two images may not match up. You can paint on a layer mask—much as you would on a QuickMask—to hide one background completely and use only the other. Or you can hide the backgrounds on *both* images with layer masks, and then add *another* background layer to place your creation anywhere you want. The choice is yours!

Extracting Foreground Objects with SIOX

A brand-new tool in GIMP 2.4 is the Foreground Object Extractor (Figure 5-47). It's also called SIOX, which stands for *Simple Interactive Object Extraction*.

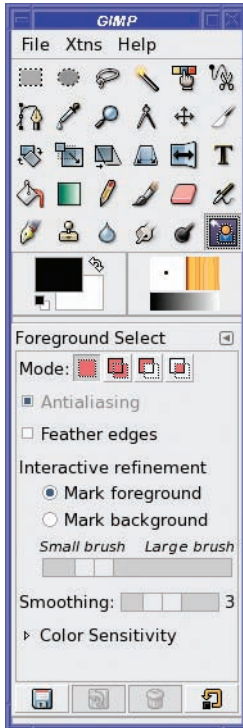


Figure 5-47. *The Foreground Object Extractor*

There are two steps to using SIOX. First, draw an outline around and outside the object you want to select. You have to do this in one motion, as if you were using the Free Select tool.

Don't try too hard to get close to the borders of the object. Just make sure that every bit of your object is inside the border. When you're finished, release the mouse button: everything outside the region you selected will be masked off in dark blue (Figure 5-48).

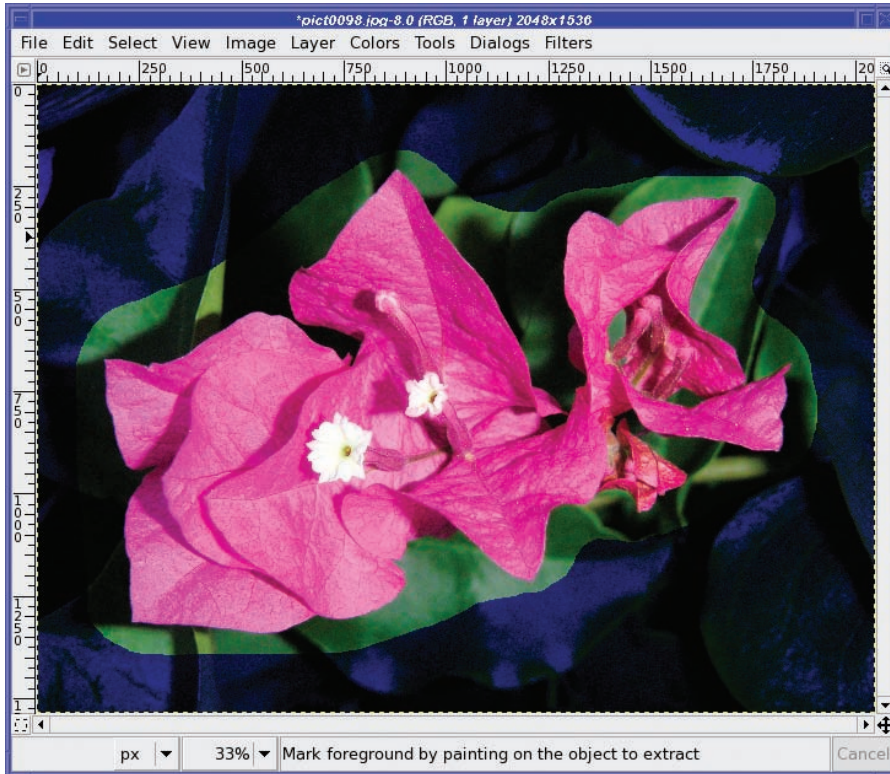


Figure 5-48. Define the region of interest.

The second step is marking the foreground. Drag the mouse across the part of the image you *do* want to select, being careful to stay away from parts of the image you *don't* want. The tool will draw a black trail wherever you drag, so you can see what you've already marked (Figure 5-49).

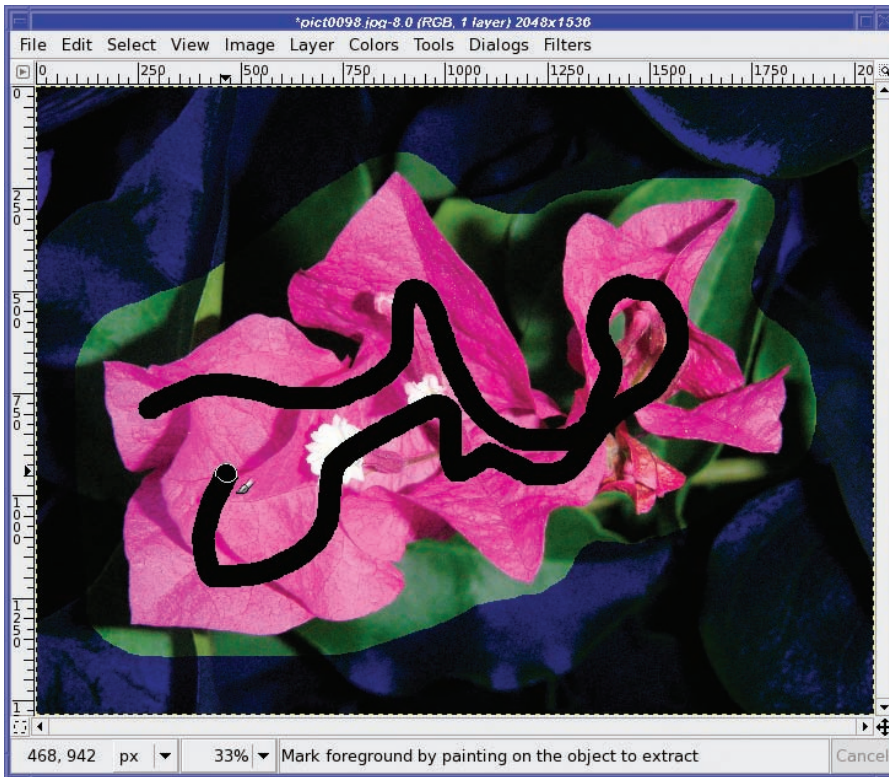


Figure 5-49. Drag to define parts of the object you want to select.

You can drag multiple short trails or one long one. I usually find that one long trail works best—sometimes as I add new trails, I lose parts of the image that were previously marked. But each image is a little different, and you'll have to experiment.

When you release the mouse button after drawing a trail, the tool goes to work finding all parts of the region that are similar to the parts you dragged (Figure 5-50). This may take a few seconds, or longer for a large image or a long trail.

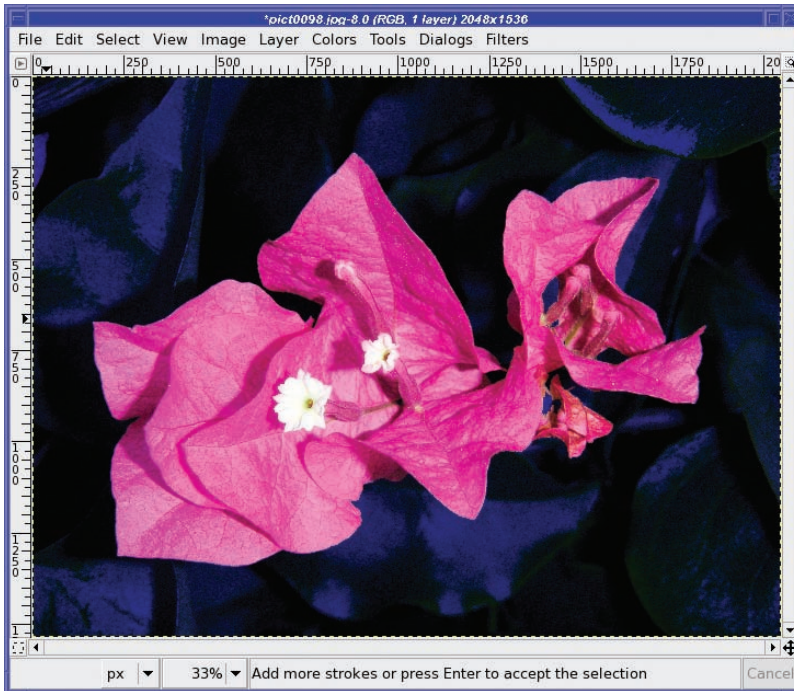


Figure 5-50. *The tool has done its work.*

Once you're happy with the result, hit the Return key to turn the mask into a selection.

The tool options (back in Figure 5-47) include the usual *Antialiasing* and *Feather* options, and an adjustment for the brush size (you will want to adjust this if you're trying to select very small objects, or to mark thin structures like branches). There's also a *Smoothing* control, which lets you adjust the coarseness of the areas selected, and a *Color Sensitivity* expander that lets you play with how the tool determines what's close enough to the trail you dragged.

The SIOX tool is very young, but it shows a lot of promise. Since it's new, the GIMP developers are still adjusting it, and it's likely to evolve over the next few versions. It doesn't work for everything. I find it works best when you have significant color differences (like a magenta flower against a green background), and not so well for objects that include colors similar to the background (like a brown squirrel perched in a tangle of brown branches).

Try it out. For certain types of images, the tool works very well indeed, and should be a part of your selection arsenal.

Summary

By now, you should be familiar with a wide range of selection techniques. You're familiar with the marching ants, but you know how to turn them off when they get in the way. You can make selections using color or contiguous regions, Bezier paths, the Intelligent Scissors, or the QuickMask. You can make simple selections into more complex ones by combining several selections in Add or Subtract mode, or by editing them in the Paths tool, the QuickMask, or as a channel mask.

In addition, you've seen how you can change the appearance of an image by using tools on only a selected part of that image, and you've worked with layer masks and seen how you can use gradients in a layer mask to combine two layers smoothly. You can save a selection to a channel or path, and restore earlier selections you saved that way.

Selections are useful in every aspect of image editing, but nowhere are they more useful than when working with digital photographs—especially photos that have something wrong with them that needs to be corrected. In the next chapter, let's take another look at digital photographs, and explore some techniques for touching them up . . . or editing problematic objects out of an otherwise good photo.

