



Seashore

The Incomplete Guide 2.3

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Introducing Seashore

Product Summary

Seashore is an open source image editor for Cocoa. It features gradients, textures and anti-aliasing for both text and brush strokes. It supports multiple layers, alpha channel editing and Core Image effects. It uses the same native file format as the GIMP.

Technical Requirements

Seashore requires Mac OS 10.6 or later. Seashore only works on Intel based Macs. Seashore takes advantage of Mac OS Core Image framework to provide access to a wide range of effects.

Development Notice

Seashore is very stable but there may be bugs. Save important work often. Also please report any bugs you find using the “Report a Bug” menu item.

Seashore’s Philosophy

Seashore highlights the qualities I value in software: it’s sleek, well-documented and open source. It also integrates tightly with the Mac operating system and is thoroughly object-oriented. It aims to serve the basic image editing needs of most computer users, not to provide a replacement for Adobe Photoshop.

Seashore and the GIMP

Seashore is not the GIMP (GNU Image Manipulation Program), because I didn’t want a Mac version of the GIMP. Rather Seashore marches to the beat of its own drum, but it does use the GIMP to help make it the program it is. Parts of the GIMP are present in everything from the code that drives the brush and gradient tools to the brush shapes and textures themselves. At this time however, very little GIMP code is still in use.

I owe a great debt of gratitude to the authors of the GIMP, as without the GIMP, Seashore would not be the program it is today.

See also: Miscellanea – GIMP Compatibility, The GIMP – <http://www.gimp.org/>

How do I contribute?

There are two things you can do to help Seashore. The first is to contribute bug reports and the second is to develop new features.

To help with either of these visit our web site for more information:

<http://seashore.sourceforge.net/>

If you enjoy Seashore, make sure to tell your friends. Open source software can only succeed by exposure to as many people as possible.

If you are contributing to Seashore's source code, please make sure to read the source code read-me.

Seashore and the App Store

Seashore is now primarily distributed via the Apple App Store. All of the source-code for releases is still provided, with the most current currently at <https://github.com/robaho/seashore>.

The primary reason for the change is security. Later releases of OSX make it increasingly difficult to install programs not obtained via the App Store and often for a good reason. Applications distributed via the App Store are security tested by Apple, and run in a "sandbox", offering a more secure and worry-free environment for custom application.

The Concepts

Bitmaps

A computer's screen is made up of thousands of little squares of colour called pixels. By specifying the colour of these pixels one can display pictures on the screen. A list of pixel colours that results in a picture is called a bitmap. Seashore is a bitmap editor.

Bitmaps are rectangular in shape and have a height and a width. They also have a resolution that specifies the number of pixels that should appear in a square inch of the device they are being displayed on. This is useful because devices such as printers and scanners fit different numbers of pixels per square inch depending on their quality.

Seashore asks for all three of these values when it presents the new image dialog seen in Figure 1. You can specify the width and height of a new image in pixels, inches or millimetres using the pop-down menu to the right of the units. You can also select from a range of pre-determined image sizes by using the templates pop-down menu in the lower-left of the dialog. There are also four resolutions to select from and other resolutions can be set after the document is created. 72 dpi is generally the preferred resolution for most purposes with higher resolutions useful for better results when printing or applying various visual effects. The dialog also asks for the colour mode to be used by the image. This is covered in the next section.

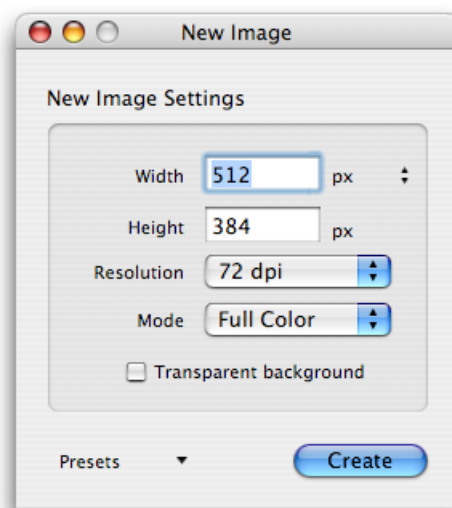


Figure 1 – The new image dialog

See also: The Operations – Changing Resolution

You can stop a new image being created when you start Seashore by using the Preferences dialog accessible through the “Seashore” menu.

Seashore uses an image’s resolution to determine its size at 100% zoom. If the image has a value higher than 72 dpi, each display pixel will represent multiple image pixels. The reverse is true for resolutions lower than 72 dpi. Using the pop-down menu in the Preferences dialog, you can tell Seashore to ignore the image resolution when displaying images. You can also adjust the resolution of a single image using the “Image” menu.

Colours

Seashore works with two colour modes. They are full colour and greyscale. They correspond to the colour modes of 24-bit RGB colour and 8-bit greyscale colour respectively. When Seashore encounters a file that is not in one of these colour modes it converts the file to the nearest appropriate colour mode for loading. This results in the loss of information for images with a higher bit-rate but a warning will appear to tell you this.

Images can be converted between the colour modes using the “Mode” sub-menu of the “Image” menu. This is important in case you load a greyscale image that you then wish to add colour to.

Because images are often drawn onto other images, images can also have an alpha channel that specifies what parts of the image are transparent. Unless the transparent background checkbox is checked, Seashore creates all new images with an opaque background. When saving, Seashore will automatically include or exclude the alpha channel of an image based upon its utility.

See also: The Concepts – Channels, Miscellanea – Colours and ColorSync

Layers

Consider the picture of Zipf presented as Figure 2. Zipf was made using Seashore and consists of several parts – specifically the background, the frame, his body outline, his body, his left eye and his right eye. Each of these parts was placed in a separate layer. Layers are like little images (or slides) piled one on top of another to form a grand image. The layers panel manages these layers and the panel for Zipf is presented as Figure 3.



Figure 2 – A picture of Zipf

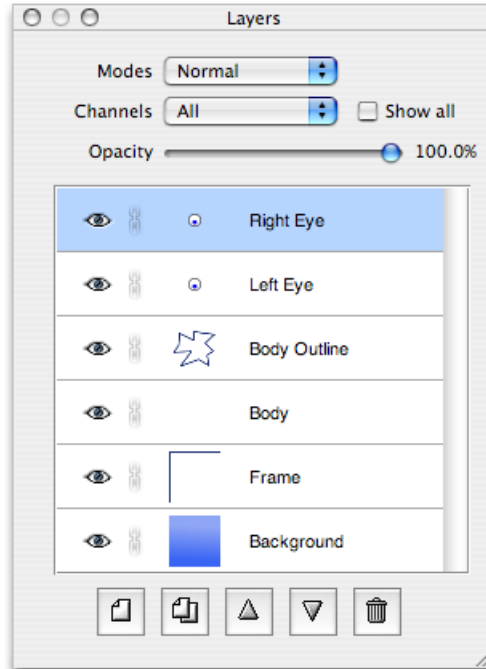


Figure 3 – The Layers and Channels panel for Zipf

The advantage of placing each part of Zipf in a separate layer is simple – each part can be manipulated without affecting the others. For example, suppose you wanted to change the colour of the background. To do this you would simply select the background layer by clicking on its thumbnail and fill the background with the new colour. This action along with any other drawing action only affects the selected layer – in this case the background.

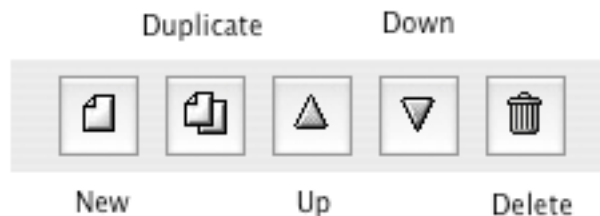


Figure 4 – The various layer buttons

Apart from drawing, layers can be manipulated in a range of ways some of which involve using the layer buttons pictured in Figure 4. Table 1 details these actions.

Action	Method
Select a layer	Click on the layer's thumbnail
Add a new layer	Press the new button
Delete a layer	Press the delete button
Change the order of a layer in the image	Select the layer and press the up or down buttons (or use the "Layer" menu)
Duplicate a layer	Select the layer and press the duplicate button
Change a layer's visibility	Click on the eye next to the layer's thumbnail
Change a layer's opacity	Use the opacity slider
Change a layer's compositing mode	Use the mode pop-up menu
Rename a layer	Click on the layer's title
Move a layer	Use the position tool or click on the layer's title

Table 1 – Layer actions and methods

Changing a layer's compositing mode changes the way that layer blends with other layers. Using this in combination with the layer's opacity you can subtly change an image's colours. An example of this is presented near the end of this manual in "A Final Word". The layer modes are probably best discovered by experimenting with them. It is important to note a layer using a compositing mode other than normal will only affect the non-transparent pixels of the image. As a result, layer modes only make sense if you have at least one normally composited layer in the image.

All layers in Seashore have their own boundaries. You can reveal a layer's boundaries using the "Show Layer Boundaries" menu item in the "View" menu and you can adjust a layer's boundaries using the "Layer Boundaries..." menu item in the "Layer" menu.

After you have finished working on a layer you might want to shrink the layer so that there is as little empty space as possible. This reduces the memory requirements of the layer resulting in faster layer operations. To do this, simply select the “Condense to Content” menu item from the “Auto-trim” sub-menu of the “Layer” menu. If you want to edit the layer again simply select the “Expand to Document” menu item from the same sub-menu.

Reducing a layer’s size also helps with aligning the layers. You can centre a layer in the main image using the “Centre Horizontal” and “Centre Vertically” menu items of the “Alignment” sub-menu of the “Layer” menu. You can also align the left, right, top or bottom of two or more linked layers using the same menu. To link layers simply press the chain icon that appears next to their thumbnails in the layers and channels panel. All layers with an undimmed chain icon are considered linked. Remember to always include the active layer when you link layers together – this will be the layer that all other layers are aligned with.

You can also merge linked layers together by selecting “Merge Linked Layers” from the “Layer” menu. Merging layers is a destructive process, so you can’t separate layers once you have merged them. However it is useful for keeping the number of layers in your document to a minimum (this helps Seashore to run faster). If you want to merge all layers into one you can also use the “Flatten Image...” menu item in the “Image” menu.

Finally, you can copy layers to other documents by holding the mouse down on the active layer’s thumbnail and dragging the layer to that document’s window. This transfer preserves layer’s properties such as its title, opacity, offset and visibility. You can also drag a layer’s thumbnail to the trash to delete that layer or to another application to copy that layer. Remember that to drag a layer’s thumbnail it must already be the active layer.

See also: The Operations – Adjusting Boundaries, The Tools – The Position Tool

Channels

Each layer in Seashore has either two or four channels. In the case of a greyscale image these are the grey and alpha channels and in the case of a colour image these are the red, green, blue and alpha channels.

The alpha channel determines a layer’s transparency. Where the alpha channel is white the layer is opaque and where the alpha channel is black the layer is transparent. The other channels are known as the primary channels and determine the layer’s colour.

Seashore typically works on all channels at once. For example, dragging the paintbrush across a layer adjusts both the layer’s primary and alpha channel together. Seashore also

allows you to edit the primary or alpha channels individually using the “Channels” pop-down menu in the layers panel. Figure 5 shows why editing the primary and alpha channels individually is useful.



Figure 5 – The primary and alpha channels of a layer and the end result

Although all layers have an alpha channel, the alpha channel of some layers are disabled. This means that the alpha channel cannot be selected and using the eraser will not create a hole in the layer but rather just fill it with the background colour. You can enable or disable a layer’s alpha channel using the “Enable Alpha Channel” menu item of the “Layer” menu but in order to disable a layer’s alpha channel the layer must be fully opaque. The background layers of most new images have their alpha channel disabled but all freshly-created layers have their alpha channel enabled. This set-up makes it easy to create images with semi-transparent layers set upon solid backgrounds – the preference of most graphics artists. If you do not wish to have a background layer you can delete it as soon as you have created another layer to take its place. You can also create images with

transparent backgrounds by checking the “Transparent background” checkbox in the “New Image” dialog.

Selections

Selections are a means of highlighting part of an image for manipulation. Selections can be made using the selection tools but can also be made using various operations in the “Edit” menu. Selections can be cancelled by using the “Select None” menu item in the “Edit” menu.

Selections can be either anchored or floating.

Anchored selections constrain the part of the layer that can be impacted upon by drawing operations. They are also useful for determining what part of the layer should be used for copying operations. Seashore permits pixels to be partially selected – a case that is encountered when using the selection tool with an elliptical shape or the lasso tool. Users must be careful when using partially selected pixels, as they are an imperfect concept. For example, repeatedly filling an elliptical selection with multiple colours will cause a multicolour fringe to appear around the shape.

Floating selections can be derived from anchored selections by using the “Float Selection” menu item in the “Selection” menu. This causes the selection to be floated and its residue cleared. Unlike anchored selections, floating selections can be moved about the canvas using the position tool and while the selection is floated the selection tools are disabled. Floating selections can be anchored using “Anchor Selection” in the “Selection” menu or by clicking outside the selection with the position tool. Floating selections can be moved between layers using the up and down buttons in the layers panel. Floating selections are also the way pasted (or duplicated) material is added to the document. If part of a floating selection is outside the boundaries of a layer when it is anchored that part of the selection will be lost.

To further understand selections you might consider reading the sections listed below particularly the one on “Advanced Selections”.

See Also: The Tools – Selection Tool, The Tools – Colour Selection Tool, The Operations – Selection Effects, Miscellanea – Advanced Selections

Seashore uses shading to identify a selection. Grey shading is used by default but this is problematic for images that are predominately black. To cycle through other shading

colours press the apostrophe key in combination with the command key or use the “Rotate Selection Shading” menu item in the “Selection” menu.

If you are using one of the selection tools, you can float an anchored selection by option-clicking on it. This is equivalent to right-clicking on the selection when using a two-buttoned mouse.

The Tools

The Toolbox

The tools of an image editor are the basic weaponry of the graphics artist. In Seashore, they can be accessed through the toolbox shown in Figure 1. The toolbox serves two purposes:

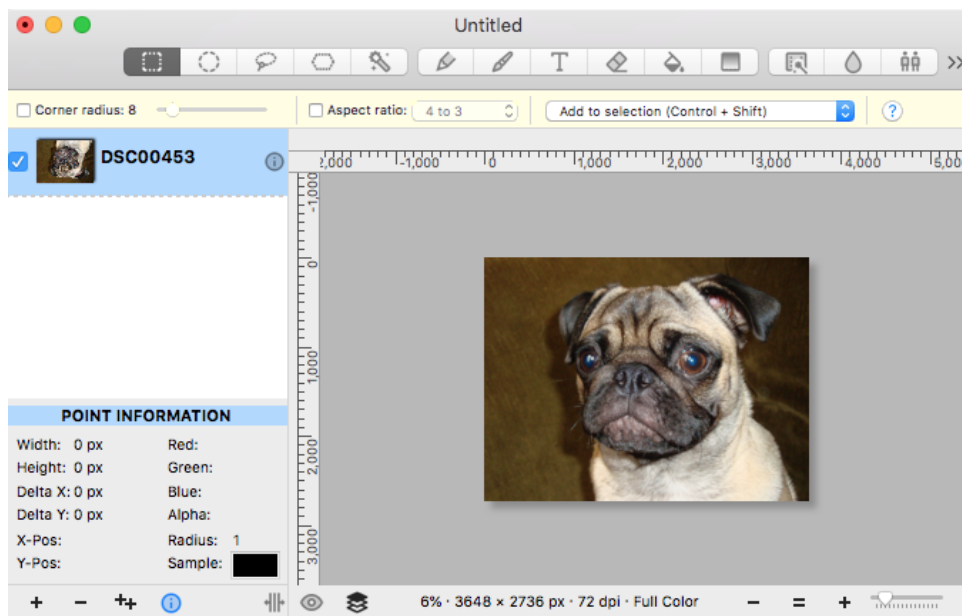
- i) It allows the user to select the colours to be used when drawing.
- ii) It allows the user to select the active tool from a matrix of sixteen tools.

This chapter introduces each of the eighteen tools available in Seashore as well as colour, brush and texture selection. You can select a tool using the window toolbar or via the Main Menu -> Edit -> Tool, or its shortcut key. Some tools use the same shortcut key and in this case the shortcut key toggles between the two tools.



Figure 1 – The toolbox

After selecting a tool, the options appear above the main content.



Colour Selection

Seashore's tools use at most two colours for drawing, a foreground colour and a background colour. These two colours are presented inside two boxes in Seashore's toolbox with the foreground colour's box overlapping the background colour's box. In Figure 1, black is the foreground colour and white is the background colour.

Clicking on either colour's box causes Apple's colour picker to appear, which can be used to change the colour. In Seashore, the opacity of a colour is an intrinsic part of the colour. This means every drawing tool (including the gradient tool) can support transparency. To change a colour's opacity, simply adjust the opacity slider at the bottom of Apple's colour picker.

Texture Selection

A number of tools also support textures including the pencil, the paintbrush and the paint bucket. If you are using a tool with texture support, you can select the texture to be used by clicking on the "Textures" button of the options panel (pictured as Figure 2). You can also specify the opacity of the texture in this tab.

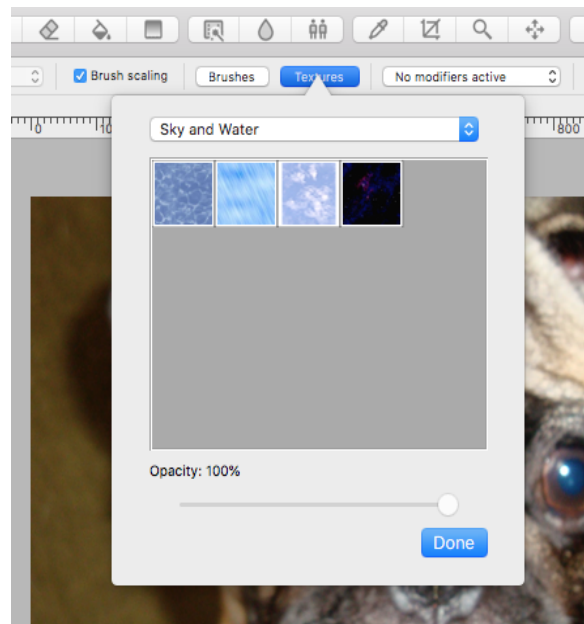


Figure 2 – The options panel's "Textures" tab

When a texture is selected for a tool that supports textures, the foreground colour's box will be filled with that texture. You can change back to solid colours by clicking on the foreground colour's box and changing to the appropriate colour in Apple's colour picker.

See also: Miscellanea – Adding Textures

Brush Selection

A number of tools also rely upon a brush shape to work including the paintbrush, the eraser and the smudge tool. You can select the active brush shape by clicking on the “Brushes” tab of the options panel (pictured as Figure 3). You can also specify the spacing between each plot of the active brush by using the slider at the bottom of the tab. The spacing is important as if it is too large, some brushes will not blend properly. Alternatively if it is too small, some brush strokes will appear very dense. The spacing only affects the paintbrush, clone and eraser tools, not the smudge tool.

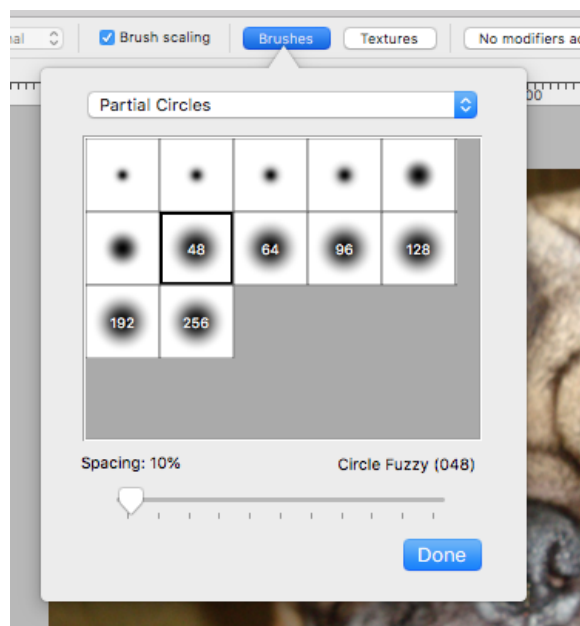


Figure 3 – The options panel's “Brushes” tab

All brushes have default spacing and reselecting or changing brushes will revert to that default spacing. This spacing can be edited using Brushed.

See also: Miscellanea – Adding Brushes

The Rectangular Select Tool

Shortcut key: M

Description

The rectangular select tool allows the user to select part of a layer for copying, selective drawing, floating or cropping. As suggested by the name, the rectangular select tool selects a rectangle or rounded rectangle. To select part of a layer for copying or selective drawing simply drag the cursor across that area. Unlike previous versions of Seashore, clicking on a selection that has already exists will now move that selection but not its contents. To prevent this and instead make a new selection, simply hold down the control key while clicking.

To float a selection, press Command-F or option-click with the tool. Both these actions will automatically take you to the position tool (and upon anchoring return you to the selection tool).

Modifier Keys

Option – Floats the current selection so it can be moved.

Shift – Ensures the selection has a 1:1 aspect ratio.

Control – Forces a new selection (as opposed to moving the existing selection).

Control-Shift – Adds to the current selection.

Option-Shift – Subtracts from the current selection.

Delete – Removes the current selection. This causes it to be transparent if the alpha channel is enabled or replaced by the background colour if the alpha channel is disabled.

Options

Corner radius – When checked, specifies the radius of the circles used for the edges of the rounded-rectangle.

Aspect ratio – When checked, constrains the selection to the specified aspect ratio or size. Two standard ratios are provided (1:1 and 4:3) and a custom ratio or size can be specified using the “Custom...” menu item from the adjacent pop-up menu. The size can be specified in pixels, inches or millimetres using the pop-up menu in the panel that specifies the custom size.

See also: The Concepts – Selections

If you have a two-button mouse, you can also right-click to float and move a selection. In fact, right-clicking is functionally equivalent to option-clicking for all tools in Seashore.

The Elliptical Select Tool

Shortcut key: M

Description

The elliptical select tool is functionally similar to the rectangular select tool except where as the rectangular select tool selects a rectangle the elliptical select tool selects an ellipse. To select part of a layer for copying or selective drawing simply drag the cursor across that area. Unlike previous versions of Seashore, clicking on a selection that already exists will now move that selection but not its contents. To prevent this and instead make a new selection, simply hold down the control key while clicking.

To float a selection, press Command-F or option-click with the tool. Both these actions will automatically take you to the position tool (and upon anchoring return you to the selection tool).

Modifier Keys

Option – Floats the current selection so it can be moved.

Shift – Ensures the selection has a 1:1 aspect ratio.

Control – Forces a new selection (as opposed to moving the existing selection).

Control-Shift – Adds to the current selection.

Option-Shift – Subtracts from the current selection.

Delete – Removes the current selection. This causes it to be transparent if the alpha channel is enabled or replaced by the background colour if the alpha channel is disabled.

Options

Aspect ratio – When checked, constrains the selection to the specified aspect ratio or size. Two standard ratios are provided (1:1 and 4:3) and a custom ratio or size can be specified using the “Custom...” menu item from the adjacent pop-up menu. The size can be specified in pixels, inches or millimetres using the pop-up menu in the panel that specifies the custom size.

See also: The Concepts – Selections

The Lasso Tool

Shortcut key: L

Description

The lasso tool allows you to select an arbitrary shape. To do so, simply click-and-hold at the point where you want the shape to begin, trace out the shape with the mouse button still down and release once complete. The point of release will be connected back to the initial point to form the arbitrary shape. As with the rectangular selection tool, the selection can be floated and moved by clicking on the selection with the option key held down. In this version of Seashore, the lasso tool's selection is always anti-aliased. While useful for quick and rough selections, for information on how to make more exact arbitrary selections consult the "Advanced Selections" section of this guide.

Modifier Keys

Option – Floats the current selection so it can be moved.

Control – Forces a new selection (as opposed to moving the existing selection).

Control-Shift – Adds to the current selection.

Option-Shift – Subtracts from the current selection.

Delete – Removes the current selection. This causes it to be transparent if the alpha channel is enabled or replaced by the background colour if the alpha channel is disabled.

Options

None.

See also: The Concepts – Selections, Miscellanea – Advanced Selections

The Polygon Lasso Tool

Shortcut key: L

Description

The polygon lasso tool allows you to select a polygon with an arbitrary number of vertices (or corners). To do this, click at the point where you want the shape to begin. Then click at the points where you want each vertex of the polygon to appear and, finally, double click to close the shape. Alternatively you can click near the initial point to close the shape. As with the selection tool, the selection can be floated and moved by clicking on the selection with the option key held down. In this version of Seashore, the lasso tool's selection is always anti-aliased. While useful for quick and rough selections, for information on how to make more exact arbitrary selections consult the "Advanced Selections" section of this guide.

Modifier Keys

Option – Floats the current selection so it can be moved.

Control – Forces a new selection (as opposed to moving the existing selection).

Control-Shift – Adds to the current selection.

Option-Shift – Subtracts from the current selection.

Delete – Removes the current selection. This causes it to be transparent if the alpha channel is enabled or replaced by the background colour if the alpha channel is disabled.

Options

None.

See also: The Concepts – Selections, Miscellanea – Advanced Selections

The Colour Selection Tool

Shortcut key: W

Description

The colour selection tool selects all pixels on a single layer that surround a given pixel and are within a given tolerance range. This allows the user to select all nearby pixels of similar colour. To use the tool simply click on the desired base pixel.

Technically speaking, a pixel is selected if each channel is within the given tolerance range of the base pixel and the pixel is vertically or horizontally adjacent to a selected pixel. If the base pixel has a fully transparent alpha channel only the alpha channels are compared.

Modifier Keys

Option – Floats the current selection so it can be moved.

Control – Forces a new selection (as opposed to moving the existing selection).

Control-Shift – Adds to the current selection.

Option-Shift – Subtracts from the current selection.

Delete – Removes the current selection. This causes it to be transparent if the alpha channel is enabled or replaced by the background colour if the alpha channel is disabled.

Options

Tolerance – The colour selection tool requires a tolerance range to operate. The tolerance range determines the range of pixels that are acceptable for selection. Low values indicate only pixels that closely match the base pixel's colour are acceptable where as higher values allow more flexibility. Taken to the extremes, a value of 0 indicates only pixels of identical colour are acceptable where as a value of 255 indicates all pixels are acceptable.

See also: The Concepts – Selections

The Pencil



Shortcut key: B

Description

The pencil allows you to draw blocks on the current layer. The blocks can range in size from 1 to 21 pixels. The pencil deliberately does not use anti-aliasing as it is intended for users who wish to edit a handful of pixels in a very precise manner. The pencil is also useful for drawing borders as it can draw in a straight line if the control and shift keys are held down.

To draw a single square using the pencil simply point-and-click at the centre point of where the square is to be placed. To draw multiple squares click-and-drag. To draw lines, hold down the shift key, click at the start of the line and then click at the end of the line (do not drag the cursor between the two points).

Modifier Keys

Option – Act as an eraser.

Shift – Draw a line between the points clicked on while the shift key is held down. These lines may be of any angle.

Shift-Control – Draw lines that are either strictly horizontal, strictly vertical or at an angle of 45° to the horizontal or vertical.

Options

Pencil size – The number of pixels wide the pencil's drawing square should be.

See also: The Tools – Colour Selection, The Tools – Texture Selection, The Tools – The Eraser

The Paintbrush



Shortcut key: B

Description

The paintbrush allows you to draw various brush strokes on the current layer. By default Seashore comes with a range of brush shapes and, using Brushed, users can add their own. The paintbrush uses anti-aliasing so as to create smooth flowing brush strokes.

To draw a single brush stroke simply click-and-drag the cursor across the layer. To draw lines, hold down the shift key, click at the start of the line and then click at the end of the line (do not drag the cursor between the two points)..

The appearance of the brush stroke can be fine-tuned by adjusting the brush's spacing under "Brushes" tab of the options panel. This is especially helpful in improving the look of fading brush strokes.

Modifier Keys

Option – Act as an eraser.

Shift – Draw a line between the points clicked on while the shift key is held down. These lines may be of any angle.

Shift-Control – Draw lines that are either strictly horizontal, strictly vertical or at an angle of 45° to the horizontal or vertical.

Options

Fade-out – When checked the brush stroke will fade after a certain length proportional to the fade-out slider value. The fade-out may appear smoother with a low spacing value.

Pressure sensitive – When checked the paintbrush is sensitive to the pressure reading of tablets. The opacity of each brush plot is then varied based upon this value.

There are three transformations that can be applied to the pressure readings. These are the quadratic, linear and square-root transformations – corresponding to the lighter, normal and darker modes.

Brush scaling – When checked the brush stroke decreases in size as it fades. This fading may be caused either by a set fade-out value or by pressure sensitive tablet readings. For aesthetic reasons the brush only scales to at most seventy percent of its original size.

See also: The Tools – Colour Selection, The Tools – Texture Selection, The Tools – Brush Selection, The Tools – The Eraser, Miscellanea – Adding Brushes

If your computer is not fast enough, brush strokes can appear jagged. By unchecking the "Faster drawing (mouse coalescing)" checkbox in the preferences panel (which can be accessed through the "Preferences..." menu item of the "Seashore" menu), this jagged appearance can be prevented but as a result drawing may trail your cursor.

The Colour Sampling Tool

Shortcut key: I

Description

The colour sampling tool allows you to set the foreground (or background) colour to that of a pixel or a group of pixels on the canvas. To achieve this simply click on the position of the pixel or pixel group that you want to use for the foreground colour.

You can set whether the colour is grabbed from just the current layer or from all visible layers using the tool's options. The sampled colour includes the alpha channel, which means that if the block you are sampling is slightly transparent the foreground colour will be slightly transparent too. If either the primary or alpha channel is selected, then the tool takes the colour from that channel only. When the tool's options specify a sample size greater than one, the average component values of each of the pixels in the block is used to find the colour.

Modifier Keys

Option – Sets the background colour as opposed to the foreground colour.

Options

Sample size – This option specifies the number of pixels wide that the square used by the tool should be.

Use sample from all layers – If checked, the sample is taken from all layers on the canvas. If unchecked, the sample is taken from just the active layer (and where appropriate the active channel).

See also: The Tools – Colour Selection, Miscellanea – The Information Panel

You can use the point information panel to preview the colour chosen by the colour selection tool. To reveal the point information panel simply select “Show Point Information” from the “View” menu.

The Text Tool

Shortcut key: T

Description

The text tool allows you to place one or more lines of text anywhere on the current layer. To place the text, simply click where you want the baseline and left-most character of the text to go. Then in the following dialog type the text you want written and press the “Add” button. As you type a live preview of the text will appear in the document.

The text will be rendered using the current foreground colour or texture. By clicking the “Fonts...” button in the options panel, you can select any of Mac OS X’s fonts to be used for the text.

Once placed the text becomes part of the bitmap and cannot be altered. As such it is often best to place text in a separate layer so it can be erased using the eraser without affecting other parts of the image.

In this version of Seashore, it is possible to adjust the position of text after the initial click. You can do this by pressing the “Move...” button in the dialog that follows. Doing this will present a second dialog with instructions on how to move the text. If you press “Done” in this dialog, the text will be committed and the dialog will disappear. If you press “Cancel”, you will be returned to the text-typing dialog where you can make final adjustments.

While the text-moving dialog is active, you can use the arrow keys to move the text slowly and combine them with the option key to speed up the process. You can also use the ‘h’ and ‘v’ keys to centre the text horizontally and vertically in the layer.

Modifier Keys

None.

Options

Text alignment – Specifies whether the text should be aligned to the left, centre or right. This is only relevant for multi-line text. Whatever choice, text will always appear to the left of where you initially click (see above for how to move it from that point).

Outline – When checked, draws outlined text using the specified thickness. If you first draw the text without the outline and then align the outline over that text you can have text of one colour with another colour outline.

Font – Specifies the font to be used by the text. All text will be rendered in this font.

The Eraser



Shortcut key: E

Description

The eraser allows you to erase pixels from the current layer. In the case of a layer with its alpha channel disabled, this means setting pixels to the background colour. In the case of a layer with its alpha channel enabled, this means making the pixels transparent. The eraser uses the same brush shapes as the paintbrush and is functionally similar to the paintbrush when the option key is held down. The eraser is also anti-aliased and has an opacity setting.

To draw a single brush stroke simply click-and-drag the cursor across the layer. To draw lines, hold down the shift key, click at the start of the line and then click at the end of the line (do not drag the cursor between the two points).

Modifier Keys

Shift – Draw a line between the points clicked on while the shift key is held down. These lines may be of any angle.

Shift-Control – Draw lines that are either strictly horizontal, strictly vertical or at an angle of 45° to the horizontal or vertical.

Options

Opacity – This option specifies the strength of the eraser. At 100%, full strength parts of the brush shape will totally erase a pixel. However at 50%, full strength parts of the brush shape will only partially erase a pixel. In this way the eraser can be used to achieve fading.

Mimic paintbrush fading – When checked the eraser adopts the same fading options as the paintbrush tool. This includes the pressure sensitive, fade-out and brush scaling options. If this option is not checked the eraser does not fade and is insensitive to pressure readings.

See also: The Tools – Colour Selection, The Tools – The Paintbrush

The alpha channel of a layer can be enabled or disabled through the “Layer” menu, but the alpha channel can only be disabled if the layer is fully opaque.

The Paint Bucket

Shortcut key: G

Description

The paint bucket allows you to flood an area of similar colour with a single colour or texture. To determine what area of the layer to flood the paint bucket relies on a tolerance range that works the same way as the colour selection tool. To use the paint bucket, simply point-and-click on the pixel from which you want to start flooding. If you hold down the option key you will flood all selected space. In combination with the selection tool this allows for smooth ellipses or rounded rectangles. The active selection affects what pixels the paint bucket floods but not the way the tool calculates what pixels to flood. When the paint bucket is used on the primary or alpha channels it ignores the other channels.

Modifier Keys

Option – Flood all selected space ignoring the tolerance range. This causes the entire layer to be flooded if there is no active selection.

Shift – Preview the flood, which means that the flood is shown when the mouse button is pressed but not committed when the mouse button is released. This allows users to fine tune the tolerance settings.

Options

Tolerance – The tolerance range determines the range of pixels that are acceptable for flooding. Low values indicate only pixels that closely match the base pixel's colour are acceptable where as higher values allow more flexibility. Taken to the extremes, a value of 0 indicates only pixels of identical colour are acceptable where as a value of 255 indicates all pixels are acceptable.

See also: The Tools – Colour Selection, The Tools – Texture Selection, The Tools – The Colour Selection Tool

The Gradient Tool

Shortcut key: G

Description

The gradient tool allows you to create a gradual shift from the foreground colour to the background colour. The area affected by the tool is constrained to the selected area of the active layer or the whole layer if no area is selected. There are eight styles of gradient and three repeating patterns. The gradient tool is also aware of transparent or semi-transparent colours allowing for a wide range of effects.

To apply the gradient, simply click at the point where you wish the gradient to begin and drag to the point where you wish the gradient to end. It is important to stress that the length over which you drag the cursor affects the gradient's direction and appearance.

Modifier Keys

Control – Draw lines that are either strictly horizontal, strictly vertical or at an angle of 45° to the horizontal or vertical.

Options

Gradient style – The gradient style determines the shape of the gradient. There are eight gradient styles to select, six of which are illustrated in Figure 4.

Figure 4 – The linear, bilinear, radial, square, conical (symmetric) and spiral (clockwise) gradient styles

Repeating pattern – The repeating pattern determines how the gradient repeats at the end of its style. Repeating patterns only affect the first four gradient styles (specifically linear, bilinear, radial and square). Figure 5 illustrates all three repeating patterns with the linear gradient style.

Figure 5 – The none, sawtooth wave and triangular wave repeating patterns

See also: The Tools – Colour Selection

The Crop Tool

Description

The crop tool allows you to adjust the boundaries of an image so that they match a particular rectangle. This rectangle is formed by a click-and-drag operation similar to what you would use to select items in the Finder. Once you have a rectangle you can drag it around the canvas like a selection. Once you have selected the desired rectangle, press the “Crop” button (from the tool’s options box) to finalize the change.

Unlike other tools, the crop tool is not affected by a layer’s boundaries or the active selection so these are not shown when the crop tool is selected. The crop tool only affects the image’s margins not those of the layers therefore once cropped you can reposition layers using the position tool to perfect your image.

Modifier Keys

Shift – Ensures the crop rectangle has a 1:1 aspect ratio.

Control – Forces a new crop rectangle (as opposed to moving the existing rectangle).

Options

Crop - Pressing this button completes the crop.

Aspect ratio – When checked, constrains the crop rectangle to the specified aspect ratio or size. Two standard ratios are provided (1:1 and 4:3) and a custom ratio or size can be specified using the “Custom...” menu item from the adjacent pop-up menu. The size can be specified in pixels, inches or millimetres using the pop-up menu in the panel that specifies the custom size.

You can view the width and height of a crop using the point information panel read the “Miscellanea - The Information Panel” section for further details.

See also: The Operations - Adjusting Boundaries, Miscellanea - The Information Panel

The Clone Tool

Shortcut key: S

Description

The clone tool allows you to duplicate any part of the canvas in another place. To do this you first need to set a source point. You can do this by option-clicking on the part of the canvas you wish to duplicate. A cross should then temporarily appear. If you then click-and-drag the mouse around another part of the canvas the source will be duplicated there. Note the duplication process is reset as soon as the mouse is released.

Consider Figure 6, the centre and far right images were both produced using the clone tool. The path the clone tool followed to achieve this effect is illustrated in Figure 7. Each cross indicates a position where there was a mouse click and each line indicates a drag. Note that the first click, indicated by the red cross, must have been a option-click to set the source point. Also note that the brush settings have a notable impact on the result.



Figure 6 – Clone tool effects with source (far left), simple stroke using the partial circle brush (centre) and complex stroke using the window brush (far right)



Figure 7 – Clone tool strokes with source placement (far left), simple stroke using the partial circle brush (centre) and complex stroke using the window brush (far right)

The clone tool works between layers (i.e. you can set one layer as the source and then move to another layer to duplicate). Through the tool's options, you can also use the whole canvas as opposed to a single layer as the source. Among other uses the clone tool can prove helpful in touching up photographs (e.g. you can clone pieces of sky or ocean to colour out small specks of dust).

Modifier Keys

Option – Specifies the source point for the tool. You must set a source point before you can use the tool.

Options

Source – Presents the point and layer of the document that is the source. The clone tool cannot be used while the source is “unset.”

Use sample from all layers – When checked, this indicates that the contents of the whole canvas should be used as the source. When unchecked, this indicates only the contents of the layer where the source was set should be used.

See also: The Tools – Brush Selection

The Smudge Tool



Shortcut key: O

Description

The smudge tool allows you to smudge part of the current layer using the current brush shape. To smudge part of the layer, simply click the point where you want the smudge to begin and drag to the point where you want the smudge to end.

Modifier Keys

None.

Options

Rate – The rate of smudging affects the amount of smudging that takes place. Higher rate smudges are more pronounced than lower rate smudges.

See also: The Tools – Brush Selection

The Effects Tool



Shortcut key: O

Description

The effects tool allows you to apply various visual effects to the layer. These effects differ from the effects discussed in “The Operations – Selection Effects” section in that

they require specifying one or more points on the layer to work; hence the need for the effects tool.

To use the effects tool, select an effect from the list in the options panel and follow the instructions that appear beneath the list. As you click, the clicks remaining should decline until you reach zero. At this point, the effect may be applied instantaneously or require you to adjust some additional parameters in a sheet before application.

For details on each of the effects see the “Seashore Effects Guide” available through the “Help” menu.

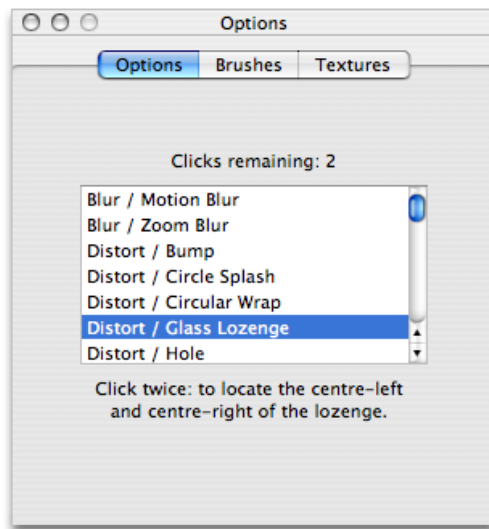


Figure 8 – The effects option panel

Modifier Keys

None.

Options

None.

See also: The Operations – Selection Effects; Seashore Effects Guide

The Zoom Tool

Shortcut key: Z

Description

The zoom tool allows you to zoom-in on any part of the canvas. To do this, simply click on the part of the canvas you wish to zoom-in on. You can also zoom-out by holding down the option key while you click.

Modifier Keys

Option – Decrease zoom level instead of increasing it.

Options

Zoom – This presents the current zoom level for the canvas.

The Position Tool

Shortcut key: *V*

Description

The position tool allows you to adjust the position of a layer on the canvas. To do so, simply click anywhere on the canvas and drag in the direction you wish to move the layer. If the layer is linked with other layers, all layers that are linked will be moved together. Layers can be linked by enabling the chain icon of multiple layers in the layers panel of Seashore.

The position tool can also be used to move floating selections and is selected automatically when a selection is floated. Depending upon the position tool's options, clicking outside the may anchor the floating selection.

The position tool also allows you to scale layers and floating selections. To do this, simply hold down the shift key and drag horizontally across the canvas in order to resize the content. A guiding box should appear to help you scale the content correctly.

Finally, the position tool allows you to rotate floating selections. To do this, simply hold down the control key and drag horizontally across the canvas in order to rotate the content. A guiding box with an indent at the top should appear to help you rotate the content correctly. It is important to emphasise that you can only rotate floating selections.

Modifier Keys

Shift – Scale the layer or floating selection as opposed to moving it.

Control – Rotate the floating selection as opposed to moving it.

Options

Do not anchor floating selections – Prevents floating selections from being anchored when you click outside of them. This can make it easier to move small floating selections. The floating selection can still be anchored using the “Anchor Selection” menu item in the “Selection” menu or the Command-F shortcut.

See also: The Concepts – Layers

You can also nudge layers and floating selections using the arrow keys on the keyboard.

You can reveal a layer’s boundaries using the “Show Layer Boundaries” menu item in the “View” menu.

The Operations

Adjusting Boundaries

Often the quickest way to adjust the boundaries of an image is with the crop tool (see the last chapter). However there are a number of reasons you may want to adjust the boundaries using the boundaries sheet pictured in Figure 1 – these include better control of the final size, the ability to expand the boundaries and the ability to adjust the boundaries with respect to the image’s actual content.

The sheet can be accessed through either the “Image” or “Layer” menu using the “Image Boundaries...” or “Layer Boundaries...” menu item. The choice of menu affects whether the sheet adjusts the image’s boundaries or the active layer’s boundaries. A label in the top-left of the sheet reflects this after the menu item choice has been made. Remember in Seashore the image and layer boundaries are independent of one another.

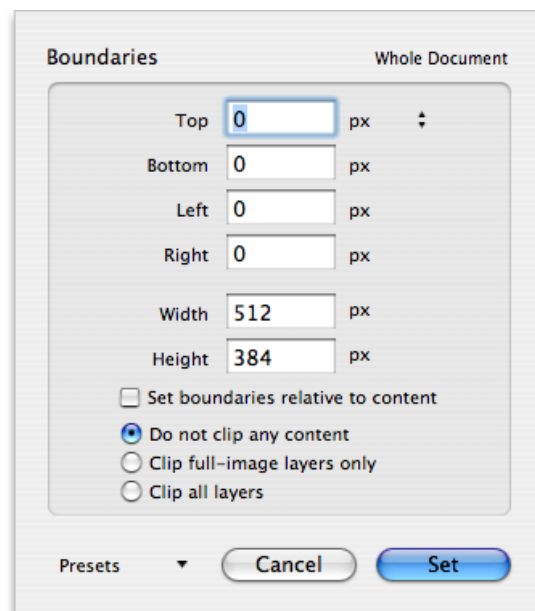


Figure 1 – The image boundaries sheet

With no checkbox checked, the boundaries sheet allows the user to specify the number of pixels the image or layer is to be expanded by. You can specify this value in inches or millimetres by selecting the correct unit from the pop-down menu to the right of the first text box. Negative values can be used to shrink the image or layer. You can also expand to a predetermined size using the presets pop-down menu.

With the “Set boundaries relative to content” checkbox checked, the boundary measurements become relative to what Seashore detects as the image’s or layer’s content. Content is detected by taking the top-left pixel’s colour and seeing how many complete rows or columns also have that colour. In the case of pixels with alpha channel values of zero the primary channels are not compared.

Typically adjusting an image’s boundaries does not affect the layer’s boundaries but this can be inconvenient when dealing with layers that you expect to cover the entire image. To resolve this situation you can also condense the boundaries of layers that span the entire image by selecting the “Clip full-image layers only” radio box. And you can condense the boundaries of any layers that extend beyond the image’s new boundaries by selecting the “Clip all layers” radio box.

Last but not least, you can now also adjust the width and height of an image directly. When you adjust the width or height, Seashore will automatically so the adjustments contribute evenly to either the left/right margins or the top/bottom margins.

See also: The Concepts – Layers, The Tools – The Crop Tool

Scaling

Scaling is done through the scaling sheet pictured in Figure 2. The sheet can be accessed through either the “Image” or “Layer” menu using the “Scale Image...” or “Scale Layer...” menu item. The choice of menu affects whether the sheet scales the image or the active layer.

The “Keep proportions” checkbox ensures that scaling occurs in an even manner – that is the proportions of the image or layer are preserved after scaling. You can specify the scaled width and height either as a percentage or a number of pixels. The text boxes in the dialog are often linked meaning changing the text of one may affect the text of others.

You can also specify an interpolation style for scaling – none, linear or cubic. The latter interpolation styles generally produce better-looking results. Like the boundaries sheet, you can change the units you specify the scale in using the pop-down menu to the right of the third text box. Alternatively, you can specify a predetermined size using the presets pop-down menu.

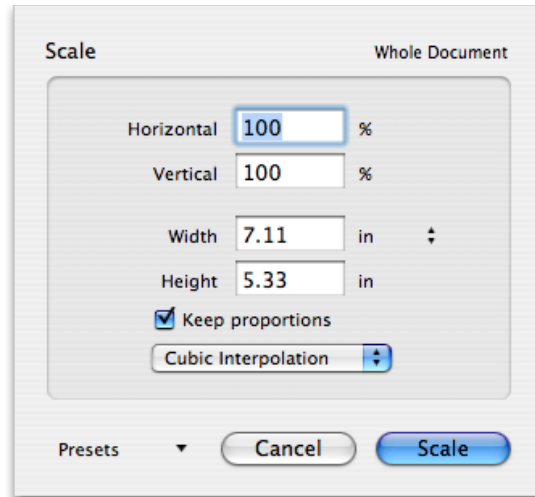


Figure 2 – The scaling sheet

Changing Resolution

In Seashore resolution is an image-wide property – that is all layers must be at the same resolution. You can change an image’s resolution using the resolution sheet. This can be accessed through the “Resolution...” menu item in the “Image” menu.

Resolutions are typically square – that is the vertical and horizontal resolutions are equal. You can force the resolution to be square by checking the “Force square resolution” checkbox. Changing the resolution will typically affect the image’s size. You can overcome this by checking the “Scale to preserve size” checkbox.

Although Seashore supports a range of resolutions it is sometimes preferable to use 72 dpi. At 100% zoom (and using Seashore’s default settings), this resolution leads to a 1:1 relationship between the image’s pixels and your monitor’s pixels. By checking the “Scale to preserve size” checkbox and entering 72 in the text box you can convert all images to this resolution and improve the speed of many editing operations.

That said, higher resolutions produce better results when printing and, occasionally, better-looking selection effects. In summary: If you are hoping to print a document you should use a resolution of at least 150 dpi. If you are hoping to post it to a web page you should use a resolution of 72 dpi. But since higher resolutions consume more memory and are more difficult for Seashore to work with, resolutions in excess of 300 dpi should be avoided.

Also, as previously mentioned, resolutions affect the appearance of an image at 100% zoom. By default, resolutions greater than 72 dpi will mean a single pixel on screen

represents multiple pixels of the image. Conversely, resolutions less than 72 dpi will mean multiple pixels on screen represent a single pixel of the image. For this reason, resolutions less than 72 dpi are not recommended.

You can tell Seashore to ignore an image's resolution by selecting "Ignore image resolution" under the "General" tab of Seashore's preferences (use the "Preferences..." item in the "Seashore" menu to access these). This will only affect the way Seashore displays the image. The image resolution will still be considered when the image printed or saved to a resolution-friendly format. You can also tell Seashore to "Use true screen resolution". This means an image on your main screen should be the same size as when you print it. While this may sound attractive, for a variety of reasons (including occasional drawing glitches) this mode is not recommended for image editing.

See also: The Operations – Scaling

Selection Effects

Seashore has a range of effects that it can apply to the current selection. These are accessed through the "Selection" menu or by using the Effects tool (see previous chapter). Each effect is implemented as a plug-in. New effects can be added using the "Get Info" panel in the Finder.

Seashore's default effects are listed in the effects guide (which can be accessed through the "Help" menu). Effects only act on the selected area of the image and may either take effect immediately or after you have specified the settings in a configuration sheet.

The configuration sheet is typically presented as a sheet and may have up to three standard buttons. "Preview" dims the sheet and previews the effect, "Ok" closes the sheet and applies the effect and "Cancel" closes the sheet and does not apply the effect. In recent versions of Seashore, there has been an effort to limit the use of the "Preview" button in favour of automatic previewing.

You can reapply the last effect using the previous settings by selecting "Reapply last effect" from the "Selection" menu. This allows you to quickly apply an effect to all layers in a document. The option remains valid between documents.

Seashore's effects may be licensed and released separately. You should consult Seashore's website for additional plug-ins (at the time of print, none were available).

If you don't like configuring effects in a sheet, you can configure them in a free-floating dialog box by checking the "Configure effects in a dialog" checkbox in Seashore's preferences.

See also: The Concepts – Selections, The Tools – The Effects Tool

Miscellanea

Adding Textures

In Seashore, textures are simply image files in the PNG format with their alpha channels ignored.

Textures can be created using "Export as Texture..." found under the "Image" menu.

Currently, added textures can only be removed by manually deleting the files from the "Cache/Seashore" folder.

See also: The GIMP – <http://www.gimp.org/>

Adding Brushes

In Seashore, brushes are stored in the GIMP's "gbr" file format. No adjustment is needed to add a "gbr" brush from the GIMP to Seashore.

There are two types of brushes in Seashore, full colour brushes are unaffected by the current foreground colour or texture and monochrome brushes are shaded with the current foreground colour or texture.

Brushes can be created using the "Export as Brush..." found under the "Image" menu. The current image type (full colour or grey scale) determines the brush type.

Currently, added brushes can only be removed by manually deleting the files from the "Cache/Seashore" folder.

See also: The GIMP – <http://www.gimp.org/>

Advanced Selections

Even together the selection tools are rarely flexible enough to meet the selection needs of most users. Thankfully any arbitrary selection is possible using "Select Alpha" from the "Edit" menu. To harness this ability simply add a new layer to the image, trace over the parts you wish to be selected and then use "Select Alpha" to make the selection. An application of this technique is illustrated in the following paragraphs.



Figure 1 – Initial plum image

In this example, a new layer was first added to the image. Next the parts of the image that were to be selected were traced over using an appropriate style brush. In this case a soft brush was used to make the selection border less sharp. You can use any foreground colour for this task but it is best to use a bright contrasting colour to make the selection obvious – in this case the colour red was used. You can adjust the layer's opacity value in the layers and channels panel to help you better see what you are selecting but do not use a semi-transparent foreground colour unless you only want the coloured parts to be partially selected. Figure 2 shows the initial image with the new layer (henceforth known as the selection layer) at sixty percent opacity.



Figure 2 – Plum image with selection layer

Next, the actual selection was made by choosing “Select Alpha” from the “Edit” menu. You can also use the Command-Shift-A key combination. The selection layer was then hidden to improve visibility and the layer of concern (the plums layer) was selected for

editing. You can hide a layer by simply clicking on the eye button in the layers and channels panel. With the arbitrary selection now made, the brightness and contrast of the selected area was adjusted using the appropriate effect from the “Selection” menu. The result of this adjustment can be seen in Figure 3.



Figure 3 – Plum image after the brightness and contrast adjustment

Finally the selection was inverted using “Select Inverse” from the “Edit” menu. By creating a new layer, filling the revised selection with green, choosing overlay for the layer mode and adjusting the opacity the final image seen on the left of Figure 4 was obtained (it is pictured next to the original on the right).



Figure 4 – Retouched plum image (left) and original plum image (right)

See also: The Concepts – Selections

ColorSync

Seashore uses Apple's ColorSync technology to allow you to transfer images between devices while ensuring that the colours appear similar.

When loading images, Seashore is aware of embedded ICC profiles in all TIFF and JPEG files. When saving images, Seashore embeds the main display's profile in all TIFF files and in certain JPEG files depending upon the selected options. Currently, Seashore does not embed ICC profiles in JPEG 2000, PNG or XCF files.

To create a JPEG with an embedded profile, select "Export..." from the "File" menu then in the following save dialog press the "Options" button in the accessory view (see Figure 5). A dialog should appear giving you the option to target the web or print. If you elect to target print, the JPEG you save will be embedded with the ICC profile of your display. Conversely if you elect to target the web, the JPEG you save will not be embedded with an ICC profile.

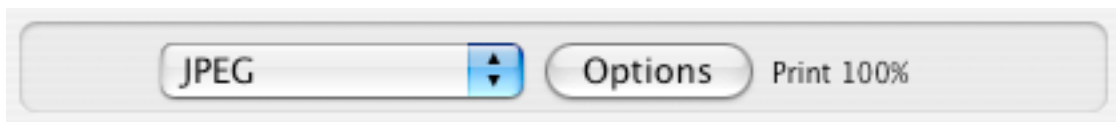


Figure 5 – The accessory view for the save dialog

Seashore represents all images internally as RGBA. However you can view your work using the current CMYK profile by selecting "CMYK Preview" from the "ColorSync" sub-menu of the "Image" menu. You can also save TIFF files using the CMYK colour space by checking the "Save using CMYK" menu item.

Seashore does not support 16-bit image editing and uses ColorSync to convert all 16-bit images to 8-bit images upon import. When this is done the user should be notified. Seashore also uses ColorSync for a number of internal colour conversions.

See also: ColorSync – <http://www.apple.com/coloursync/>

The Information Panel

The information panel, pictured in Figure 6, presents the user with information on the current cursor position, selection size and pixel group colour. Both the cursor position and selection size can be quoted in any of three measuring units – pixels, millimetres and inches. To toggle between the units use the "Units" sub-menu of the "Image" menu. The pixel group colour is based on the settings for the colour sampling tool and is displayed as individual RGBA channel values between 0 and 255.

The flexible measuring units make the information panel a valuable measuring tool. The information panel can be made translucent through Seashore's general preferences or resized so as to exclude the pixel group colour. The panel can be shown or hidden using the "Utility Windows" sub-menu of the "Window" menu.

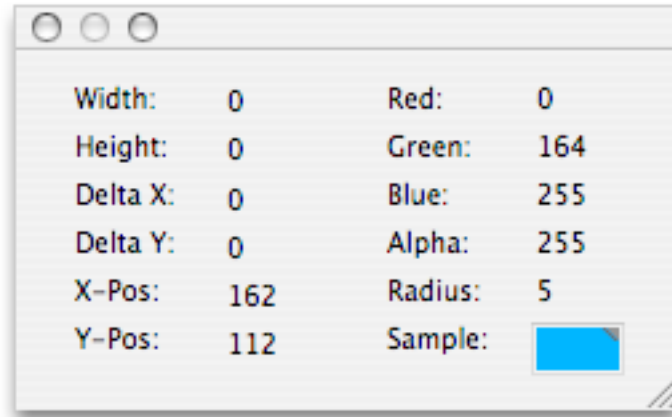


Figure 6 – The information panel

In the most recent version of Seashore, some new fields have been added to the panel. The width and height fields still display the width and height of the selection, the x and y position fields still display the current cursor position and the red, green blue and alpha channel still display the strength of those channels. However the x and y delta fields now display the offset of the current cursor position from the position of the last click, the radius field displays the radius used by the colour sampling tool and the sample field presents a sample of the colour.

On related note, Seashore also supports rulers. To show these rulers select "Show Rulers" from the "Window" menu. The rulers use the same measuring units as the information panel and so can be switched between units using the "Units" sub-menu of the "Image" menu. Both rulers and the information panel can slow down Seashore's operation.

See also: The Tools – The Colour Sampling Tool

SVG, JPEG 2000 and EXIF Support

The Scalable Vector Graphics (SVG) format is an image format that uses shapes as opposed to pixels to describe images. SVG is fast emerging as an important image format in industry and there are already a number of SVG collections available online. Seashore supports the SVG format through a Java add-on based on the Apache Software Foundation's Batik project. The add-on requires Java 1.4 or later to be installed on your computer. You can download it from:

<http://seashore.sourceforge.net/downloads.php>

The JPEG 2000 format is an image format that supersedes JPEG. Unlike its predecessor, JPEG 2000 supports alpha channels and lossless compression as well as featuring better results for low compression values. For Mac OS 10.4 users, Seashore supports JPEG 2000 without the need for additional add-ons. Support for JPEG 2000 is still limited in many web browsers, so use for this format is limited. JPEG 2000 is not supported on systems running Mac OS 10.3 or earlier.

Finally, for Mac OS 10.4 users Seashore recognises and preserves the EXIF metadata of JPEG files when editing them. Seashore will even remember the EXIF metadata if the image is saved to the XCF format (Seashore's native file format) and then later re-saved as a JPEG file. Despite this there are no facilities for editing the EXIF metadata and EXIF metadata is not preserved for any other format (including TIFF).

GIMP Compatibility

Seashore supports the GIMP's XCF file format. It ignores but preserves the GIMP's vector paths and ignores and destroys the GIMP's selection channels. It also destroys the mask of a layer by composting it on to the alpha channel of that layer. Seashore may inadvertently interfere with other aspects of an XCF file so please make sure to keep a copy of important XCF files before editing them with Seashore.

Seashore supports the GIMP's "pat" files for custom textures by allowing users to convert them to simple images using the Pat2PNG utility.

Seashore supports the GIMP's "gbr" files for basic brushes but not the GIMP's "gih" files for advanced brushes. Basic brushes can be edited or created using the Brushed utility.

Seashore supports the GIMP's dodge, burn, hard light, soft light, grain extract and grain merge blending modes as found in versions of the GIMP after 1.2.

Seashore does not support the GIMP's "gpl" files for custom palettes.

Seashore does not support text layers as found in versions of the GIMP after 1.2.

Seashore does not support the GIMP's plug-ins.

Seashore does not support "ggr" files for custom gradients.

See also: Miscellanea – Adding Textures, Miscellanea – Adding Brushes, The GIMP – <http://www.gimp.org/>

A Final Word

When I started programming Seashore I was not a talented graphics artist and I'm not one now. But what I realize now is that the way a graphics editor works and the way a graphics editor is used are two entirely separate things. Seashore is just a toolbox – it is up to you, the user, to discover how to create cool images with it. That's why this guide is incomplete, not because it doesn't describe the tools well enough, but because it doesn't describe how to use them – that you have to discover for yourself. To give you a taste of what I mean consider the figures below. You can make the original beach's sands whiter and skies bluer using the overlay layer mode and two brushes: one blue and one white. You can experiment by yourself to find out how this works or just take a look at the “Beach.xcf” sample file included with Seashore.



Figure 7 – The beach (original)



Figure 8 – The beach (whiter sands, bluer skies and no people)

Credits

Design and documentation by Mark Pazolli

Programming by Mark Pazolli, Stephen Siciliano and Robert Engels

Icon by Maksim Rogov

Rulers by Raphael Bost

Optimisations by Daniel Jalkut

Polygon fill code by Andreas Schiffler (SDL_gfx) and Raph Levien (libart)

Centred canvas code by Brock Brandenburg

Table disabling code by Paul Nelson

Supersampling bug fix by Timothy Maxwell

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Code for compositing, the XCF file format, the brush tool, the gradient tool, the smudge tool, the selection tool, the eraser tool and scaling by Peter Mattis, Spencer Kimball et al. of the GIMP project

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TIFF write support by Sam Leffler and Silicon Graphics of the libtiff project

Wilber, textures, brushes and user icons by various artists of the GIMP project

Beach image by Takuya Murata

Tiger image courtesy of the U.S. Fish and Wildlife Service

Plum image courtesy of the Agricultural Research Service an agency of the U.S. Department of Agriculture

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