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EL-FISH™

USER'S MANUAL
FOR MACINTOSH

PRESENTED BY

MAXIS

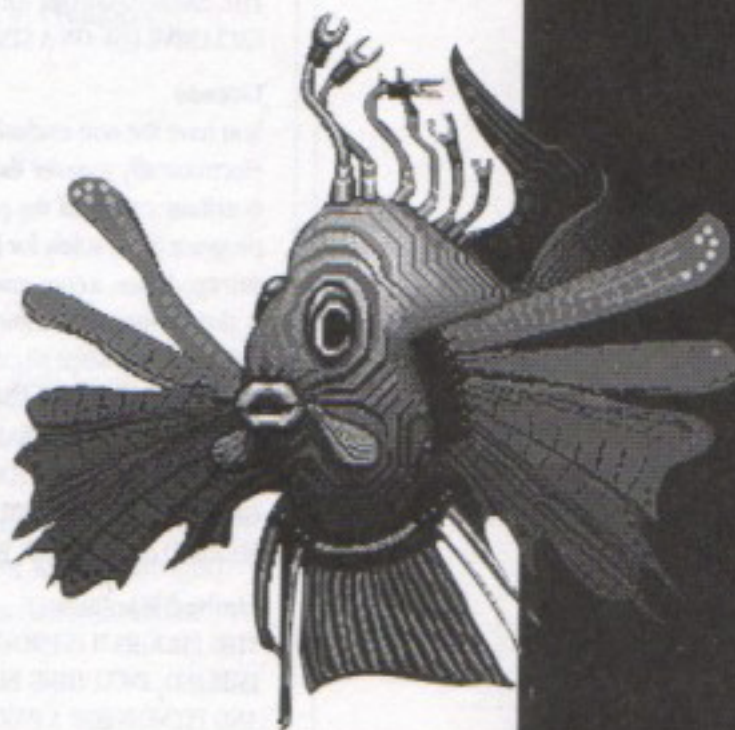
CREATED BY

ANIMATEK

EL-FISH™

The Electronic Aquarium

USER'S MANUAL



by
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EL-FISH

PREFACE

A FISHY HISTORY OF LIFE

It all began a few billion years ago, when a few very bored complex molecules decided there had to be something better to do than hang out reacting with any old chemical that came by. They decided to try life. Before long, life became a very popular bonding experience among molecules and was soon practiced around the world.

As time passed, life went along its merry way, evolving and mutating, eating and being eaten, living and dying—and then fish evolved.

Fish, like other forms of life, went about their merry ways, evolving and mutating, eating and being eaten, living and dying, until a few fish got together and discussed the nature of life and being. They decided that the evolving, living and eating parts of life were just fine. Even the mutating part was OK within certain aesthetic limits. But the dying and being eaten parts were extremely counterproductive to a long, happy, contemplative existence.

They came to the conclusion that, because of the being eaten and dying parts, life was broken, and that they should fix it. After long deliberation, they decided that the best solution was to create an artificial world to live in, where there was no one to eat you, and no death. After exploring and rejecting a number of options, including a few to do with alternate universes as proposed by the science fiction writings of Phillip Jose Flounder, they chose to live in an electron-based, computer-generated world. (The group of fish that made this decision was called the Piscean Undeath Network, or P.U.N.)

The first experiments in creating computers were disastrous. It soon became evident (due to a failed experiment where the entire research team was electrocuted) that computers would have to be built on dry land. The solution was to evolve a select group of fish that would be able to live on land to build the computers.

Thus began a major setback to the project: the lawyers got involved. Representing Roe (fish eggs—the future generations of fish), they claimed that it was beneath the dignity of fish to evolve in a direction that would have them dragging themselves about on dry land, wading around in the muck and dirt.¹

1. This law case went into the history books as Roe vs. Wading.



After eons of litigation, the pro-land faction won out, and a team of fish evolved to live on land. Once there, they realized that they had a ways to go before they could build computers: they couldn't hold soldering irons in their fins without cooking themselves. So they set off to evolve into a form that could build computers.

They tried many shapes and sizes, and all failed. Dinosaurs were a real fiasco. Fishkind tried for millions of years to get dinosaurs to build computers, but they wouldn't. So the fish wiped them out and started over with mammals.²

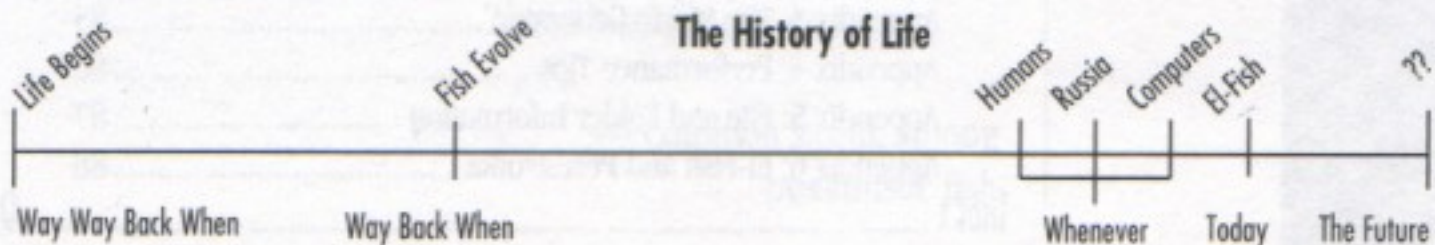
Mammals showed promise. And when they tried the human form of mammal, there was real hope among the fish scientific community. When the humans invented Russia, at first the fish thought that it was a dead end because of the Russian tendency to eat caviar, but as it turns out, Russia was a major step forward toward the goal of fish immortality.

While humans in Russia went about their lives, preparing to do their part in the fish scheme of things, humans in other parts of the world started building computers (finally).

The next breakthrough for fishdom was the beginning of experimentation with Artificial Life. Popular in both science and computer games, it grew in stature and complexity, and eventually, much to the delight of fish everywhere, a group of mathematicians, programmers and game designers in Moscow created El-Fish—an electronic computer-generated environment for fish where there was no death and no one to eat them.

So, we humans were created by fish in order to build the computers that could give fish immortal life in an electronic form in El-Fish. Next, they need to train us not to ever turn off our computers. And of course, if we don't behave, we could go the way of the dinosaur.

2. The real reason why dinosaurs are extinct.





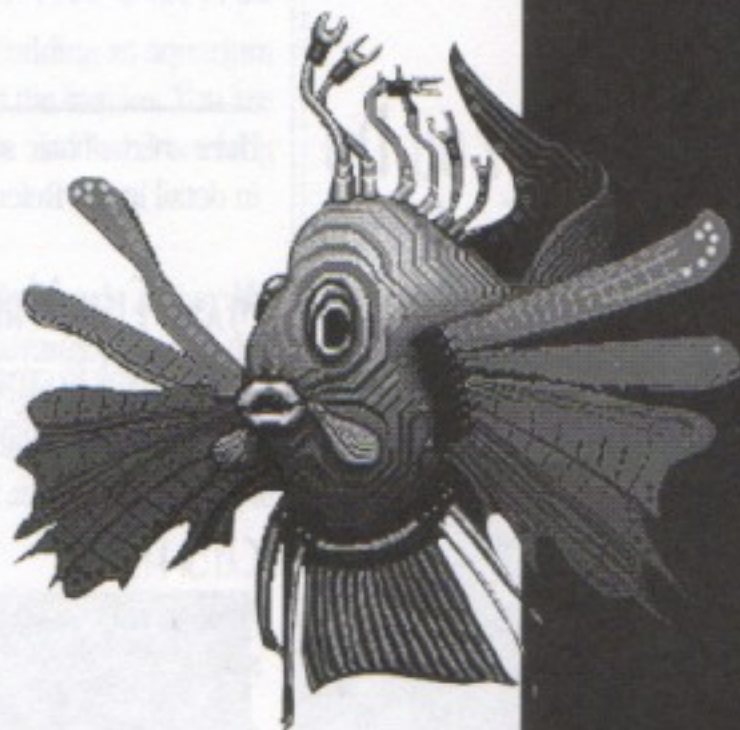
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EL-FISH™

The Electronic Aquarium

INTRODUCTION



There's always a catch.

— Common saying among
pessimistic fish

EL-FISH

INTRODUCTION

WHAT IS EL-FISH?

El-Fish is a new type of creativity software. A kind of toy that can only exist in the age of computers. When you play with El-Fish, you build aquascapes out of electronic fish, plants, and other objects. Much more than just an electronic aquarium, El-Fish is a tool for creating animated 3-D sculptures. It combines art, science, technology and life so you can create *living art*.

Unlike the usual fare of electronic fish on your computer screen, these fish swim in three dimensions—they swim towards you, away from you, in front of, behind, between and even through plants and objects in the tank. They move and behave like real fish. And you can breed them, evolve them, even mutate them into new, never-before-seen types of fish.

And perhaps best of all, with El-Fish there are no spills, no odors, no tanks to clean and no dead fish!

WHAT DO YOU DO WITH EL-FISH?



Catching Fish

Here are the basic steps of playing with El-Fish. Each step here will be explained in detail in the Reference section.

MAKE FISH WHILE THE SUN SHINES

You're going to create aquariums, so you need fish. That's why we call it El-Fish. If you didn't need fish, we'd have called it El-noFish. You can get fish in a number of ways. You can:

CATCH FISH

Drop your hook and line, and the fish will literally jump out of the water onto your screen.

BREED FISH

Why settle for the fish you can catch—breed your own new species. To breed new fish, just choose any two fish you already have. The computer will analyze their genes and produce a variety of possible offspring from the pair. Keep the ones you want and throw the rest back. By choosing the fish you like, you can breed for color, size, shape, movement, or simply for beauty.



EVOLVE FISH

Here's something you can't do with real fish: accelerated evolution. See what the fish you caught might look like after generations of breeding. You control how different the evolved fish can be from the original, but if you make them too different, they become mutants, which can't reproduce.

GENERATION OF ANIMATION

Once you've caught, bred and/or evolved some fish that you like, it's time for the computer to go to work. It analyzes each fish's genetic code and uses 3-D rendering to generate up to 256 animation frames for each fish. This part can take a while, but you can select a number of fish and let the computer work at night while you sleep.

BECOME THE ART DIRECTOR

Now that you have fish, you need a place to display them. Building an aquarium can be hard work—but El-Fish gives you creativity without the hassles. You are the Art Director, and your staff is one very cooperative and hard-working computer.

Compose basic aquascapes from the many supplied backgrounds and gravel types. Grow and place computer-generated plants. Add and arrange plants, rocks, shells and other objects. Add your choice of animated objects and animals. (If you like to draw, you can import your own pictures or scanned images into your tanks.) When you're done, all that remains is to add fish and attach a musical style to the tank.



Evolving Fish



Start with an empty tank



Add plants, rocks and decorative objects



Add animated objects and fish

EL-FISH



VIEW YOUR CREATION

Your work (and the computer's) is done. It's time to enjoy the art you've created, the grace and beauty of the fish, the sounds and music. You can view tanks individually, or in a sequence, like an exhibition at an aquarium. Watching an El-Fish aquarium is a relaxing, meditative experience, as soothing and blood-pressure lowering as a real fish tank, but even more so because of the pride you have in your own creation, and the knowledge that if you forget to feed your fish, they won't die.

EXTRA FEATURES

And of course, there are a number of extra goodies included with El-Fish to make your life a little ... fishier.

- You can set up animated Exhibitions of multiple tanks. Set your tanks in order and set the timer, and tank after tank will fill your screen and bring happiness, peace, joy and fish to all within eyesight.
- Unlimited free electronic fish food! Just click a key to drop food in the tank. Your fish will school around the food and eat their fill. They'll love you for it.
- Music in eight different styles. Music for El-Fish tanks is actually generated by your computer, following certain rules that make the music make sense to humans.
- Import your drawings from paint programs or scan in images and add them to your library of objects that you can place in tanks. We've supplied you with quite a number of objects to decorate your tanks and keep your fish company, but if you want to add your own personal touch, we make it easy.
- Built-in screenshot capability lets you capture your tanks to paste into the Scrapbook as standard-format paint files. You can also save them to the Desktop to crop in TeachText. You can load the tanks into paint programs for editing and printing, or send the files to a service bureau to make color slides or posters of your tanks.
- Built-in facilities for making copies of fish, objects or complete tanks for trading, sharing and archiving purposes.
- Ability to reduce fish to their genetic essence (called roe) for trading, sharing and archiving without taking a lot of disk space or modem time.



A LITTLE BIT OF BACKGROUND

You're probably getting *antsy* (oops—wrong game³) ... er ... anxious to dive into El-Fish, but here's some fascinating information on the inner workings of El-Fish and the future potentials of its technology.

THE BASICS BEHIND EL-FISH

El-Fish is very easy to use, and you'll be taking a tour of its features soon—but if you're interested in how it works and why it exists, here are four basic concepts to understand:

GENES AND EL-FISH

Genes are instructions for making life. They define the size, shape, structure and function of all living things. We have genes. Plants, amebas, viruses, and second cousins also have genes. So do fish. Our genes determine just about everything about us, including our height, hair color and eye color.

We inherit our genes from our parents (which is why we usually resemble our parents—at least we usually resemble them more than we do a tree or the milkman).

Genes don't determine everything about a living creature. They just set the physical limits that can be attained by the owner of the genes. Environment also plays a big part in how living things turn out. If our genes allow us to be tall, strong and healthy, but we are undernourished while growing up, or get sick, then we may be less than tall, not so strong, and not very healthy. And of course, we can change our hair color or do other things that make us appear differently from the way our genes would have it.

In tech-talk, the way your genes want you to be is your *genotype*, and the way you actually turn out (due to the combination of genes and environment) is called your *phenotype*.



3. This slip of the tongue has been a shameless plug for SimAnt®, another Artificial Life-based product from Maxis.

EL-FISH

To summarize:

- All living things have genes that determine their physical limits, or genotype.
- Genes are inherited from parents.
- The way living things actually turn out—the phenotype—is influenced by environment.

And in El-Fish:

- Electronic fish have genes that determine their physical limits—their size, shape, color, movement and behavior—their genotype.
- Electronic fish genes are inherited from their parents.
- To find out about the electronic phenotype, read the next section.

ARTIFICIAL LIFE AND EL-FISH

Artificial Life (A-Life) is a new field of science that is giving us a new way to look at biology, evolution and life itself. The idea is to create simple lifelike behavior in a computer (or other artificial media), and watch/let/help it evolve into something more complex.

While A-Life has similar ultimate goals as Artificial Intelligence (AI), it takes the opposite approach. AI is the top-down approach—you want to simulate a human brain, so build one in a computer. A-Life is the bottom-up approach—you want to simulate complex life, so start by simulating simple life and let it evolve into something more.

The future of A-Life holds much potential and promise. The tools and techniques being developed now will someday allow us to grow or evolve designs for complex systems ranging from software to airplanes to intelligence.

The present of A-Life is experimentation, exploration, and entertainment. Most Maxis games make use of A-Life technology in one way or another. Our forays into A-Life are “soft,” consisting of software in a computer. A-Life also involves hard (mechanical robots) and wet (biological test-tube stuff) research.

What does all this have to do with El-Fish? Everything. The heart of El-Fish is a genotype-to-phenotype converter. Now in English:



Like every living thing, each fish in El-Fish has a set of genes. When electronic fish mate, their offspring inherit a combination of their parents' genes, and have their own individual genetic code. El-Fish uses new breakthroughs in A-Life techniques to analyze the offspring's genes to determine how big it is, what it looks like, how it moves, and how it behaves. Next El-Fish actually builds (draws and animates) the fish (the phenotype) from its genetic instructions (the genotype).

3-D RENDERING AND EL-FISH

Rendering is creating realistic-looking images of three-dimensional objects on a computer. El-Fish uses a modified Phong's algorithm to render images of fish.

Rendering takes a lot of computer power. It can take many hours to generate a single frame of a complex image—even on a graphics workstation or a supercomputer. Since El-Fish generates up to 256 pictures of each fish (to animate every viewing angle and type of movement), and since you don't have a supercomputer, and since it wouldn't be very much fun to wait a week or two for each fish, we simplified the process a little. El-Fish only renders one object (one fish) at a time, and is limited to one light source and one point of view to cut down on the calculations and save time.

But simplified or not, be sure to allow El-Fish some time for rendering. It won't take days to generate a fish, but it will take minutes to hours, depending on the power of your computer and the size of the fish. Just remember: Good things swim to those who wait.

LIVING ART

Living Art is a rather grandiose-sounding term, but it describes El-Fish better than anything else we could think of. With El-Fish, you create animated 3-D sculptures (that's the "art" part) of fish tanks filled with "living" fish.

OK, OK, we admit we're stretching the truth. Strictly speaking, no, they aren't really alive—at least not yet. But they look like they're alive. And they behave like they're alive. As technology advances, artificial life-forms (and the computers they live in) will become more sophisticated. Eventually, they will behave so lifelike that we will have difficulty proving that they *aren't* alive.

This, of course, opens a whole can of ethical, political, and legal worms, and will start a debate that will make the Scopes Monkey Trial look like an open-and-shut case. Some of the issues that we'll have to decide are:

EL-FISH

- Do artificial life-forms have legal rights?
- If you create an artificial life-form, will you be personally, legally, morally and financially responsible for its protection, care, feeding and upbringing—just as you would be for a pet or even a child?
- If you turn off your computer without first saving an artificial life-form to disk, is it murder?

So, we're not exactly lying about this living art stuff: We're just jumping the gun a little on the technology.

THE FUTURE OF EL-FISH TECHNOLOGY

El-Fish is a large step forward in Artificial Life technology, but it's just the beginning. The heart of El-Fish, the genotype-to-phenotype converter that takes an artificial organism's genetic code and animates it to move and behave in a lifelike way, will combine with other technologies and change the look of software forever.

For instance, in the future, El-Fish technology will be wedded with simulation technology, for example, the ecosystem and evolution simulation in a simulation like SimLife™.⁴ As you evolve your organisms in SimLife, their appearances will reflect small changes in their genes. Offspring will look more like their parents than others of the same species. The simulation will look and seem more real.

Since both SimLife and El-Fish tax the powers of today's computers to their limits, it will be a few years before this marriage of simulation and animation will make it into our homes. But eventually, as computer power increases and computer costs decrease, we'll wonder how we ever put up with two-dimensional computer creatures.

In the long run, El-Fish technology will play a big part in creating lifelike dwellers in virtual reality worlds. And perhaps someday in the far future we will be able to generate virtual duplicates of ourselves from our own genetic codes to represent us in virtual worlds. And then we can download the contents of our brains into our virtual selves and we'll live forever! (This is beginning to sound a little fishy....)

Alright, back to reality. On with El-Fish!

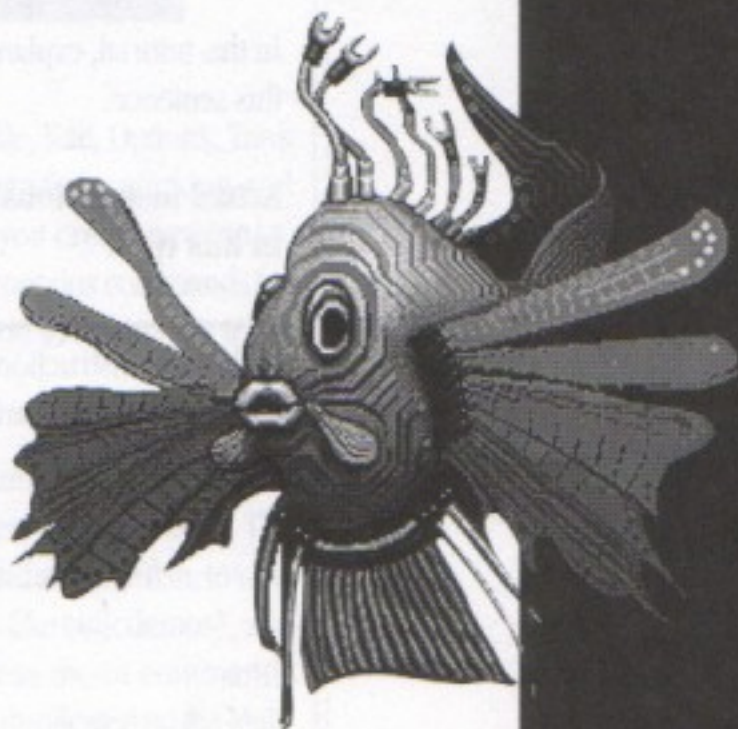
⁴ Yet another wonderful Artificial Life-based product from Maxis. (Shameless plug #239)

EL-FISH™

The Electronic Aquarium

GETTING TANKED:

A QUICK TOUR OF EL-FISH



*There's a suckerfish
born every minute.*

— P.T. Barnacle

EL-FISH

GETTING TANKED—A QUICK TOUR OF EL-FISH

INSTALLING AND STARTING EL-FISH

This tour of El-Fish will swim you through the basics of the program to get you started. For complete information on every feature and function, as well as optional activities and performance tips, see the Reference section.

Time to go fishing. Here's what we're going to do:

- Install and start El-Fish
- Inspect the included fish, tanks and objects
- Catch a couple of fish
- Breed a new fish
- Animate (render) a fish
- Create a new tank
- Behold what you hath wrought

In this tutorial, explanations and general information will be in the same type as this sentence.

Actual instructions for you to carry out on your computer will appear in this type.

Follow the instructions in your machine-specific Addendum/Quick Start Guide for installing and starting El-Fish.

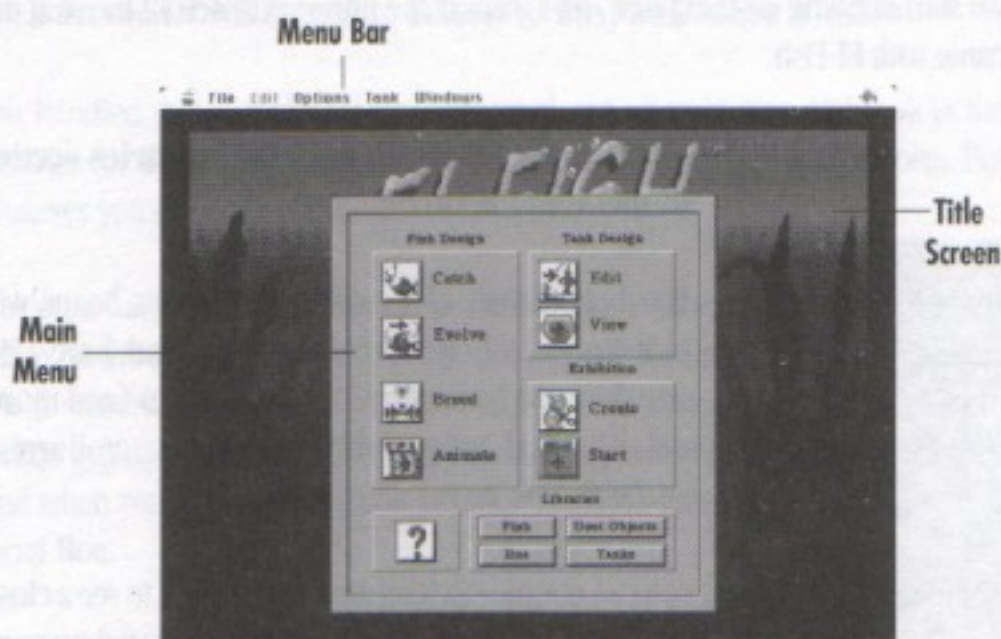


When you make fish that are so beautiful that all your friends tell you that you are wonderful, is that considered fisbing for compliments?



THE GRAND OPENING

When the title screens go away, you will be looking at the Main Menu window.



The Opening Screen

At the top of the screen is the Menu Bar. It contains the File, Edit, Options, Tank and Windows menus, which all provide game commands by clicking and holding on their respective names. The File menu lets you create new tanks, open and close tanks, and quit the game. The Edit menu contains commands for manipulating tank objects. The Options menu allows you to customize some aspects of the program relevant to your computer.

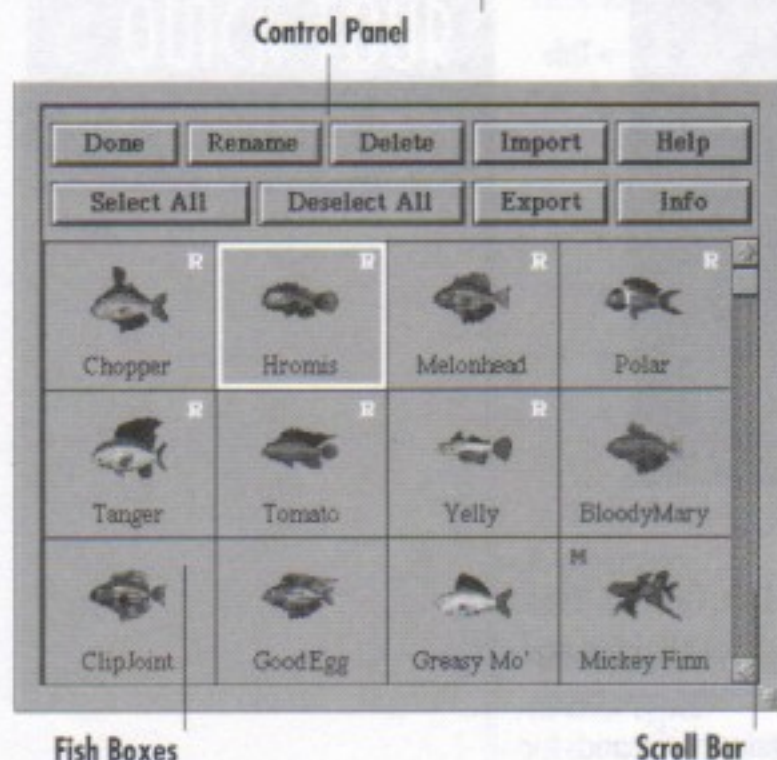
The Tank menu gives you commands to customize your tank design and lets you have entry to all of the object libraries to fill your watery wonderworld. The Windows menu gives you powers to catch, evolve, breed and animate fish, to view and edit tanks, to create and view Exhibitions (slide show-like tank demos), and to create and restore Roe, your fish "eggs." Some of these menu commands are unavailable unless a tank is active; most of them are duplicated on the Main Menu window.

The middle of the screen displays the Main Menu window. From the Main Menu you can also access those windows to design fish, design and view tanks, design and view Exhibitions, and inspect and modify your libraries of fish, tanks and objects. Bringing the "fish" cursor to any edge of the window transforms it into a four-arrow crossbar. You can click and drag the menu window (and other El-Fish windows) in any direction using the crossbar cursor.

EL-FISH

CHECKING OUT THE LIBRARIES

Fish, tanks and things to put in the tanks (objects) are all stored in libraries. Before we start creating anything new, let's inspect the libraries to see all the stuff that came with El-Fish.

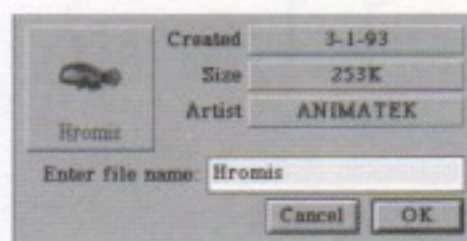


Click on the FISH button in the Libraries section of the Main Menu window.

The bottom half of the window displays boxes with pictures of all the electronic fish you currently have. Later on, when you have more fish, these boxes (and more) will all be filled, and you will need to use the scroll arrows on the right to access all of them.

You can double-click on an occupied box to see a close-up view of the fish along with some other vital personal fish information. You can also click on a fish and then hit the INFO button for the same opportunity.

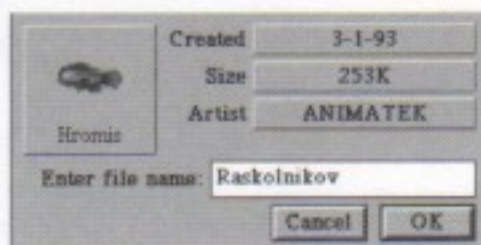
The top half of the screen is a control panel for performing various library operations. To perform these operations, first select one or more fish, then click the operation button. We'll try out a simple operation—rename a fish—then return to the Main Menu.



Click on any fish to highlight it.

Click on the RENAME button.

A dialog box will open with a large picture of the fish and lots of other personal information.



Type in a new name (it will fill the highlighted name box), then hit the Return key or click OK.



You'll be returned to the Fish Library.

Click on the DONE button to return to the Main Menu window.

You handled that so well that you may go ahead on your own and look at the libraries for User Objects and Tanks. Come back here when you're done. But whatever you do—don't look at the Roe library!

Welcome back. And wipe that sneaky grin off your face; I know you probably looked at the Roe library. We won't be playing with Roe in this tutorial, but since you're so curious, Roe (in El-Fish) are electronic fish eggs—fish stripped down to their genes. We included Roe in El-Fish as a way to save disk space and modem time when you archive and trade fish. See the Reference section for more info about Roe.

LETTERS AND MUTANTS

There may be letters in the upper-right and/or upper-left corners of the fish boxes. The letter in the upper-right corner gives the fish's animation status. (A fish has to be completely animated before it can be put into a tank.) If it is the letter "R," then it means the fish is all animated and ready to swim. If the letter is "I," then the animation is incomplete, and must be finished before the fish can go into a tank.

An "M" in the upper-left corner of a box signifies that the fish is a mutant. Mutants can look very strange and beautiful—or really yucky—but cannot breed or evolve.



EL-FISH

THERE'S ALWAYS A CATCH

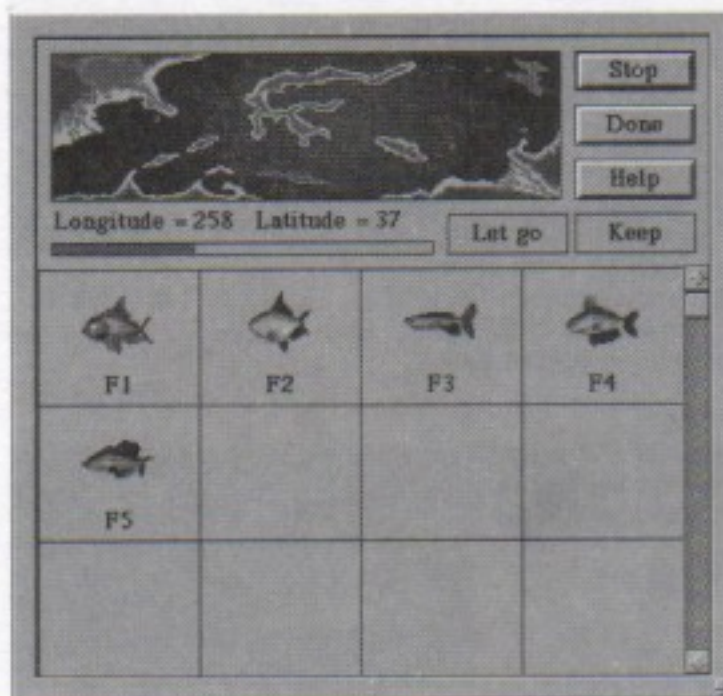


You should be looking at the Main Menu window now. If you're not, cancel out of any open windows, or if it's available, choose Main Menu from the Windows menu.

Now we're going to catch some fish. The fish we catch can be put right into tanks (after they are animated), or we can use them as breeding stock for making new fish.

Click on the CATCH button on the Main Menu.

The bottom of the Catch screen holds empty boxes for storing the fish you catch. At the top of the screen is a map of a bay known for quality fish. Your cursor will turn into a fishhook within the map boundaries.



Caught in the Act

Click anywhere on the map.

Catching fish may take a while (10–20 seconds on a IICI, 5–7 minutes on a Color Classic), so be patient. One by one, the fish will be caught and put into boxes.

After you have four or five fish, click on the STOP button.

Click NO in the dialog box asking you to throw away unsaved fish. Take a look at your fish. If you like any of them, click on them to select and highlight them.

Click on at least three fish (but not all of them), then click on the KEEP button. (Hold down the Command key and click to select multiple fish.)

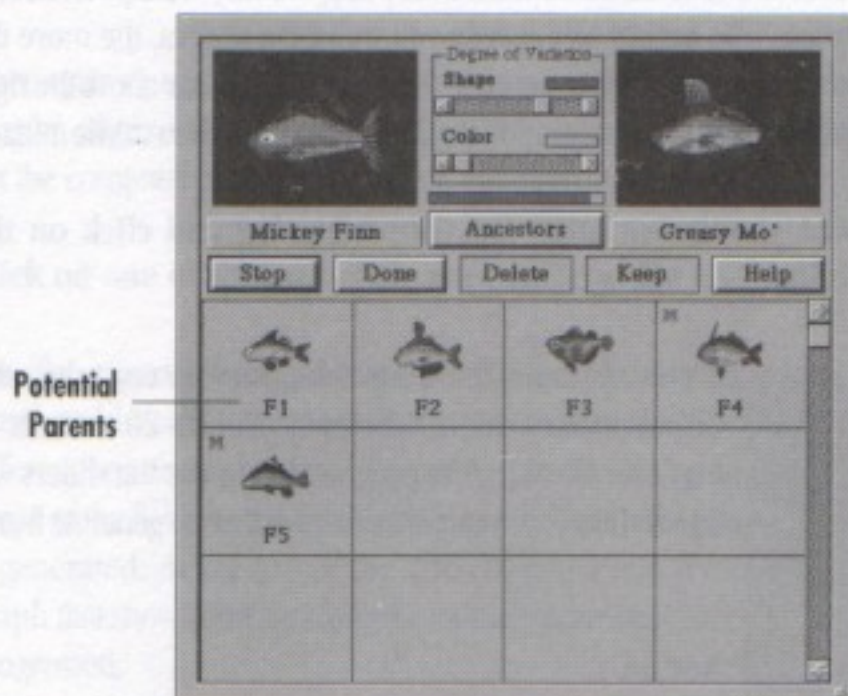
One-by-one, for each fish you decided to save, a dialog box will open and give you the chance to rename the fish and add a comment if you wish. There's also some fishy information in the box.



When you're done, click **KEEP** for each fish.

Click the **DONE** button and then click **YES** in the throwaway dialog box. You will return to the Main Menu.

Once again, you should be looking at the Main Menu. If not, hit the Escape key on your keyboard until you get there.



Breeding Fish Screen

Click the Main Menu **BREED** button.

Once again the bottom of the screen is filled with boxes of fish. Notice that your new fish are there. The top of the screen is a control panel with boxes for two parent fish, a few buttons and two slider bars.

Click on one of your new fish.

GOOD BREEDING

Render Unto
SEAFISH



EL-FISH

An enlarged version of the fish will appear in one of the parent (Ancestors) boxes.

Click on another of your new fish.

Now you have two parents from which to breed new, never-before-seen fish. Since these fish are actually different species, they won't breed the way fish in the wild breed. It's more of a genetic engineering gene-splicing process, which is quite complicated—but the computer does all the work, so don't worry about it.

At the center of the control panel are two sliders. They let you adjust the gene-splicing process and control how much the offspring will vary in shape and color from the parents. The farther to the right you move the sliders, the more the variation. If you move either slider too far to the right, the little bar above the right side of the slider will turn red to warn you that the offspring will be a sterile mutant.

Choose some genetic variation for your offspring and click on the BREED button.

Gene-splicing takes a lot of calculations, and depending on your computer, this can take from a few seconds to a few minutes for each fish (10–20 seconds on a IIci, 5–7 minutes on a Color Classic). The progress bar under the sliders will indicate time to completion. Give your computer enough time to generate five to ten fish.

Click on the STOP button.

Click NO in the dialog box asking you to throw away unsaved fish.

The control panel will give you a few new options. You can continue breeding, or click on ANCESTORS to choose a new breeding pair, then continue. You can also delete all the fish, or select the ones you want to keep, and dump the rest. You can double-click on your keepers to see an enlarged picture.

Command-click on a few of your new fish to select and highlight them, and click KEEP.



Just as when you caught your fish, a dialog box will open for each fish allowing you to change its name and add comments. When all the fish are saved, return to the Main Menu.

Click on the DONE button and choose YES in the throwaway dialog box to return to the Main Menu window.

Now we'll generate (render) the animations for one of your new fish.

Click on the ANIMATE button on the Main Menu.

Once again we are looking at boxes of fish and a control panel. This screen works like the others: select one or more fish, then click on the ANIMATE button. Let's get the computer started, then check out the control panel.

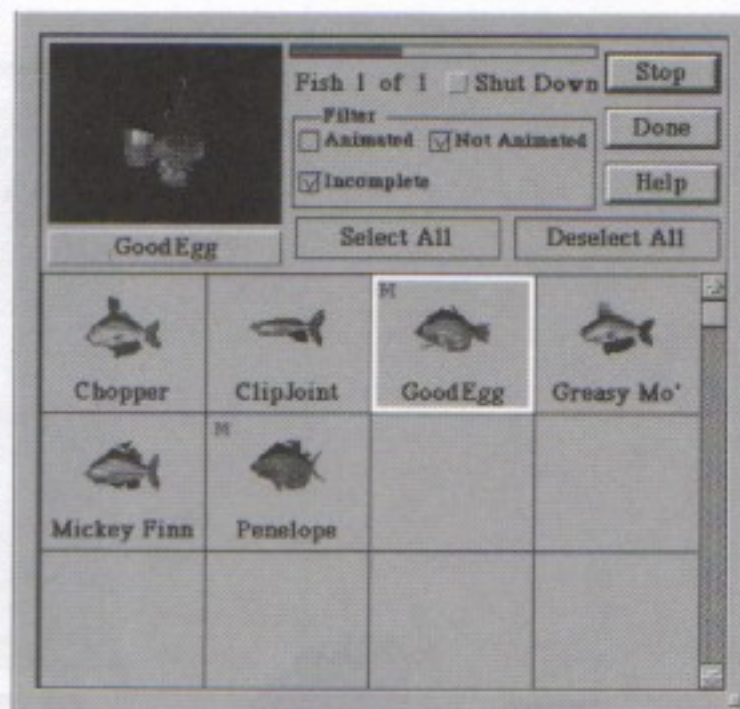
Click on one of your new fish, then click on the ANIMATE button.

Your fish moves to the large box on the left side of the control panel, and the computer goes to work, generating up to 256 different animation frames (depending on the size and shape of the fish) for the fish. Each frame is displayed as it is generated. At the top of the control panel is a bar graph that shows how far along the animation process has progressed.

As you may have noticed, animating a fish is a fairly slow process. On a ILCi it can take from 30 to 40 minutes depending on the fish. On a Color Classic it can take more than six hours.

While you're waiting, look at the control panel. The section called FILTER gives you a little control over which fish are displayed in their boxes. Animated, when checked alone, displays those fish that are ready to be put into tanks. Not Animated, when checked alone, displays those fish yet to begin the animation process. Incomplete, when checked alone, displays only the fish that aren't yet completely animated. If all

RENDER UNTO SEAFISH



Animate Screen

EL-FISH

three are checked, you'll get the total fishy picture.

The Animation... command under the Options menu allows you to influence the fishes' size and resolution quality (time- and memory-hungry events), but we'll leave that be for now.

If you have a slow computer (closer to the Classic than the IIfx), you may want to go ahead with the rest of the tutorial and come back to animating later. This might be a good time to browse through Appendix 2: Things to Do While El-Fish Generates Fish Animations.

When your fish is completely animated, or you get tired of waiting, return to the Main Menu. But if your fish isn't completely animated, you won't be able to put it into the aquarium we're about to build.

Click on the DONE button to return to the Main Menu.

GOING AFTER BIG FISH

Here's a clue about how to get really huge fish — at the Main Menu window, select Animation . . . from the Options menu. Click the Determined by Genes box off and drag the slider to Max. Stand back!

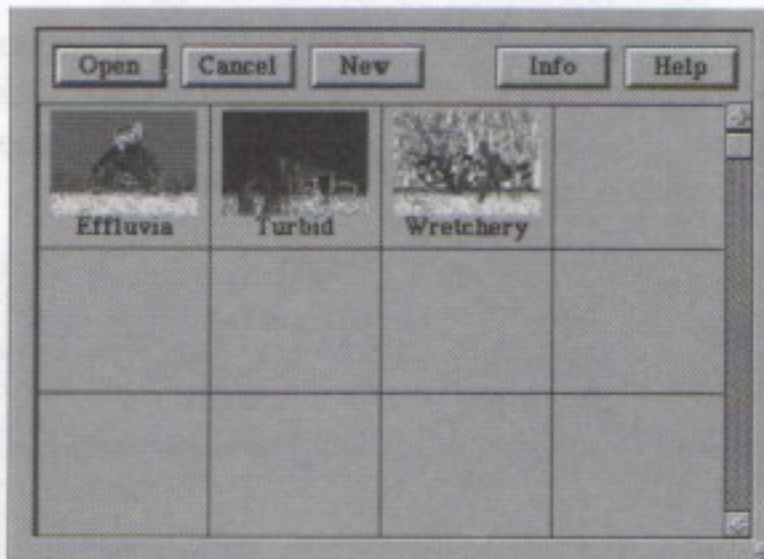




TANKS A LOT

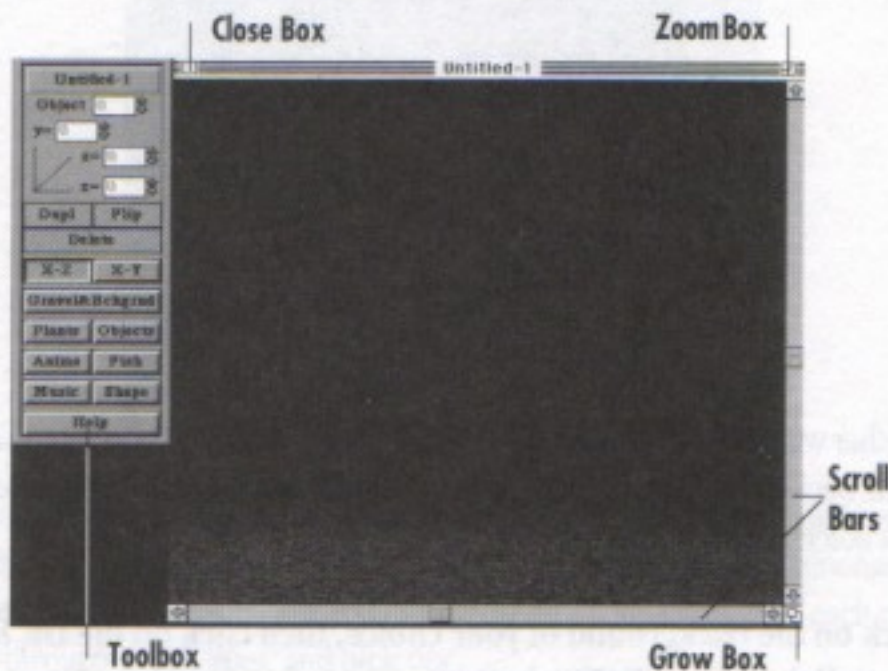


Click on the **EDIT** button in the **TANK DESIGN** section of the Main Menu.



The bottom of the window is filled with boxes, some of which contain existing tanks. The top of the screen is a control panel.

Click on the **NEW** button in the control panel.



You are now looking at a new, empty tank. You can resize it by clicking in the Zoom box at the top-right or by clicking and dragging the Grow box at the bottom-right. On the left of the screen is a moveable toolbox window with various tank-building tools.

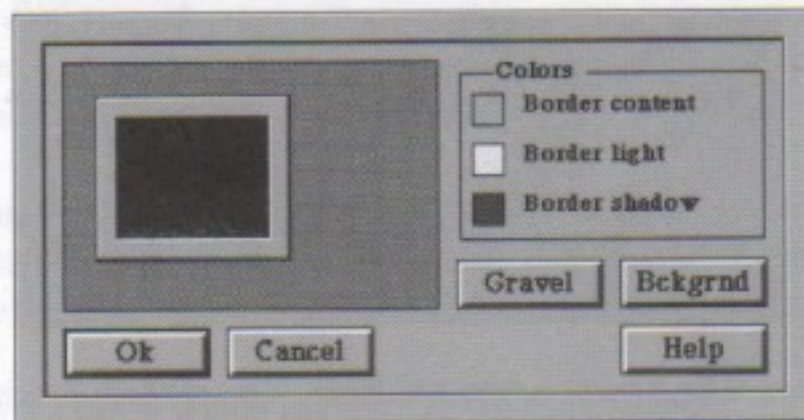
EL-FISH

Gravel&Bckgrnd

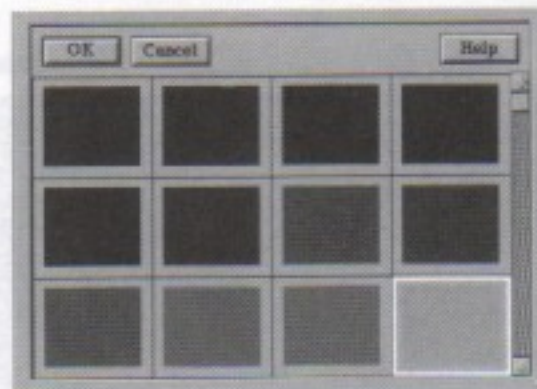


Click on the Gravel&Bckgrnd button in the toolbox.

A small window opens to let you choose a colored border, background (back) and gravel for your tank. If you've chosen a certain tank shape, clicking on the items in the Colors box lets you customize aspects of the frame that borders your tank, but for now, leave it be.



Click on the BCKGRND button.



Another window opens with lots of different colors and patterns that you can use as the background for your tank. Use the scroll arrows on the right to look at all the choices, then pick one.

Click on the background of your choice, then click on the OK button. Next, click on the GRAVEL button.

Yet another window opens with lots of different choices for the bottom of your tank. Use the scroll arrows on the right to look at all of them, then pick one.



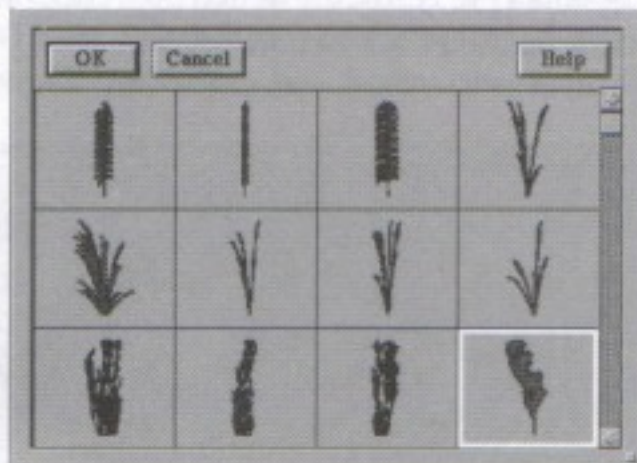
Click on the bottom of your choice, then click on the OK button.

Your tank is redrawn with the new rear and bottom, and the toolbox reappears.

Click OK in the Colors box.

Click on the PLANTS button.

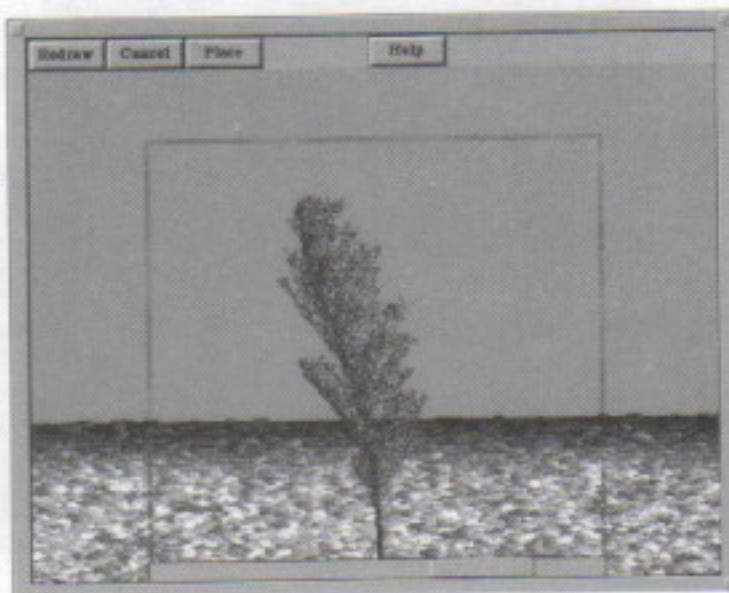
Plants



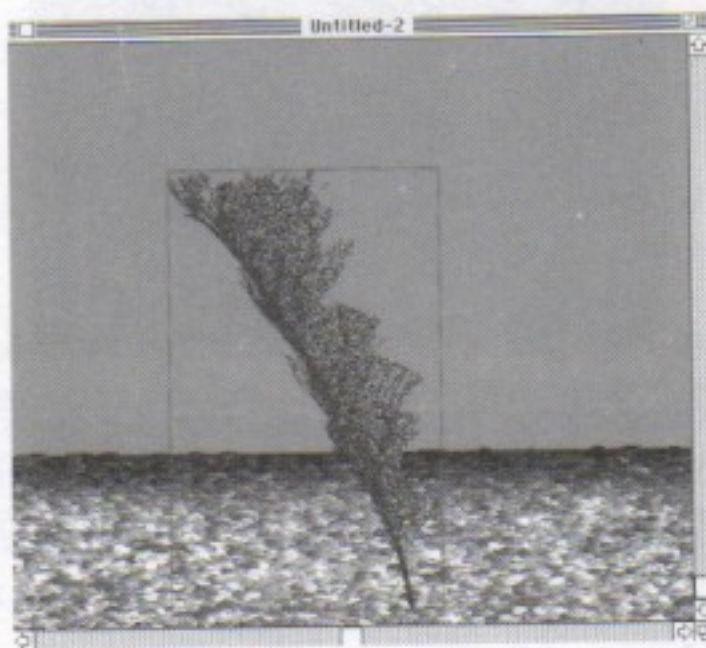
A selection of plants appears. These plants, unlike the other objects that you will be putting in your tank, are not pre-drawn. They are mathematically generated by the computer. This means that you can adjust the shape and size of each plant. Scroll through the choices, and pick one.

Click on a plant, then click on the OK button.

A resizable window with a sample of the plant appears. Notice the dotted box around the plant. Dragging an edge of the dotted box with your cursor will resize the box. Then when you click on the REDRAW button, the plant will be redrawn to fit the new size of the box.



Drag the box boundary to resize the dotted box, click on the REDRAW button, then click on the PLACE button.



Your tank reappears along with the new plant, ready for placement. You're back in the Edit Tank window. Each time you place any object, you will return here.



Click and drag the new plant to a location you like.
Click on the DUPL (Duplicate) button to make a copy of your plant.
Click on the FLIP button.
Click and drag the duplicate plant to a location you like.

Notice that you can click on either plant to highlight it. The highlighted plant (or object) is ready to move, flip, duplicate or delete. You can also click on the Object box arrows on the toolbox to cycle through all of your objects.

There are more buttons that take a little explaining: X-Z and X-Y. The tank is three-dimensional: it has width, height and depth. When you move things around in the tank, you can move them three ways:

- Left and right along the X axis (width);
- Up and down along the Y axis (height); and
- Forward and backward along the Z axis (depth).

The left and right part is pretty straightforward and doesn't confuse the computer at all, but when you move something closer to the bottom of the screen, the computer won't know if you want to move it forward, closer to you, or down, lower to the ground. That's where these buttons come in handy.

When you choose X-Z, you can move things left-and-right and in-and-out. By moving things in-and-out, you can place things in front of other things, and give fish room to swim around, in front of, and behind them.

When you choose X-Y, you can move things left-and-right and up-and-down. By moving things up-and-down you can float objects at different heights or partially bury them in the gravel.

This may take a little experimenting to master, so go ahead, take a few minutes, and move your two plants around. Use both the X-Z and X-Y button settings until you're comfortable with their functions.

Now we'll add some decorative objects to the tank.

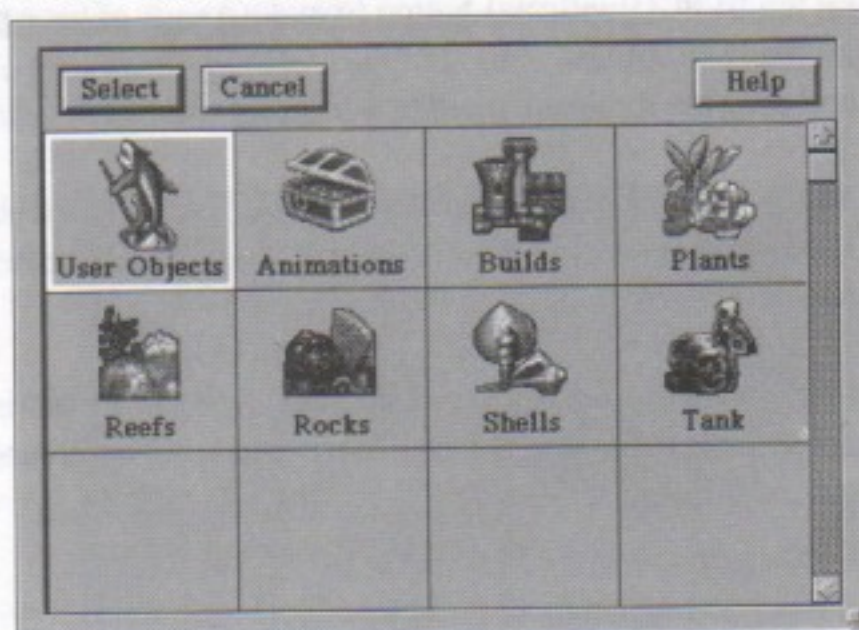
Dupl

Flip

EL-FISH

Objects

Click on the OBJECTS button.



The bottom of the screen has boxes filled with what look like objects, but what are actually whole libraries of objects to place in your tank. User Objects are the ones we looked at earlier in the User Object Library. These are called User Objects because you (the user) can add your own paintings or scans to the existing one (see Advanced Features in the Reference section). Let's add one to the tank.

Double-click on the USER OBJECTS button.

When the USER OBJECTS window appears, click on the SHARK (pool shark), then click the PLACE button.

You are now back in the tank, ready to position the shark.

Move the shark to a spot that suits your fancy, then click the Objects button again. Click on the CHANGE LIBRARY button.

Take a few minutes to look at each of the libraries.

Double-click on the Builds (Buildings) Library and scroll through all the options.

Click on the CHANGE LIBRARY button on the control panel, then select the next library and explore it.



Repeat for all the libraries.

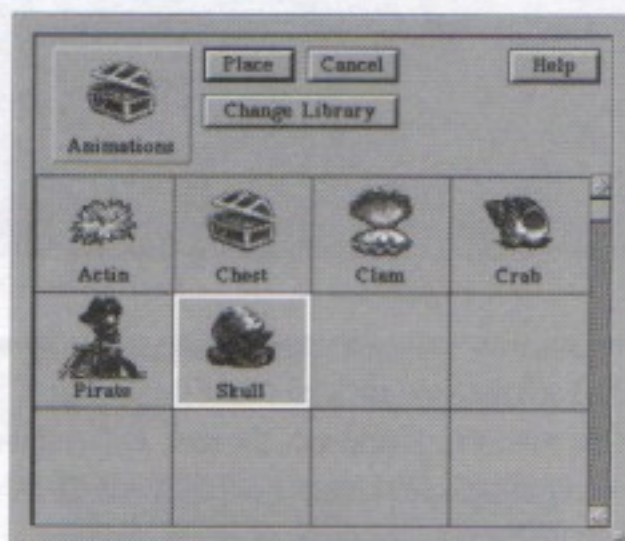
Once you've looked at all the possibilities, place one or more objects in your tank, then return to the Library Selection window when you're done.

Click on an object of your choice, then click the PLACE button.

Click and drag the object to an aesthetic spot in the tank. Repeat for as many objects as you wish.

Click on the OBJECTS button to return to the Library Selection window. (After you have initially chosen an object library, the next time you click on the OBJECTS button, the object library that was last chosen will be displayed.)

Double-click on the ANIMATIONS box.

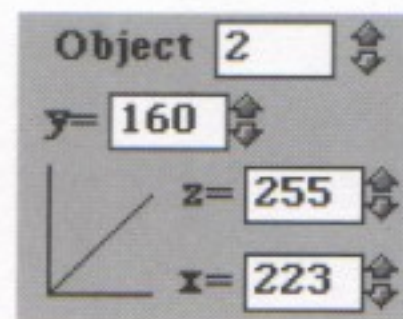


This is a library of objects that are stationary in the tank (fixed in one spot), but they are animated so they have some sort of motion (like a clam opening and closing), sometimes on their own, and sometimes when you click on them.

Click on the SKULL, then click on the PLACE button to go to the Edit Tank window.

Drag the skull to its new home in your tank.

You've probably noticed that as you drag various objects around your tank that the numbers next to the X,Y, and Z axis boxes change, reflecting the new pixel position of your objects. The up- and down-arrows next to the boxes let you make

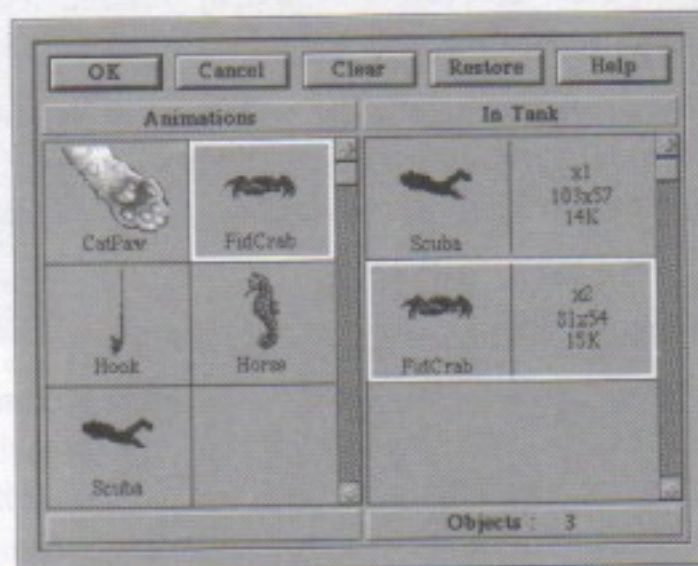


EL-FISH

Anims

incremental changes in object positions with more precise control, and the arrows next to the Object box let you cycle through selected tank objects. Try those techniques for a bit, and then we'll add some moving (as opposed to fixed) animated objects.

Click on the ANIMS button.



A new window opens, with various representations of moving animated objects along the left side. Each time you click on one of these objects, it is placed in the IN TANK part of the window and added to the tank. Click on the object again to add another one to the tank. Click on the object in the IN TANK section of the window to remove the object from the tank.

Since these objects move on their own, you don't have to place them. Some of these animated objects react if you click on them in your tank.

Click once on the SCUBA diver on the left side of the window.

Click three times on the FIDCRAB on the left side of the window.

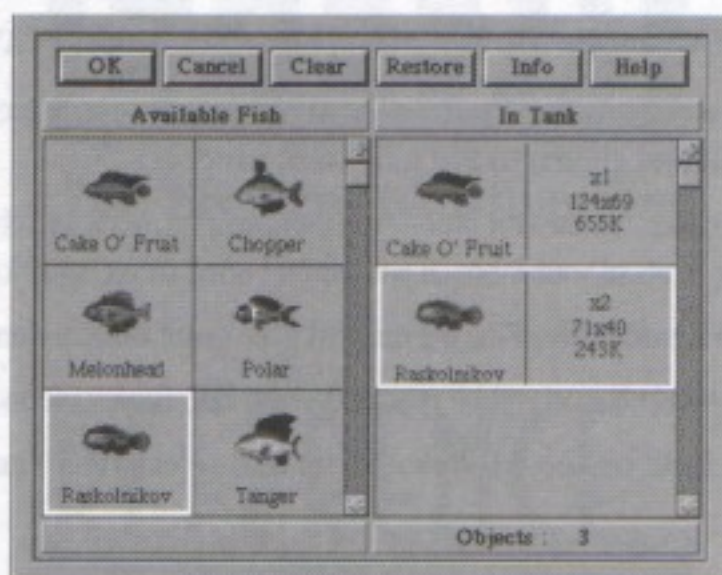
Click once on the FIDCRAB in the IN TANK section of the window to remove one of them.

Click the OK button to return to the Edit Tank window.



Fish

Click on the FISH button.



The Add Fish window works just as the Add Animated Objects window does: click on the fish on the left to add them to the tank, click on the fish in the INTANK section to remove them. Since fish swim around on their own, you don't have to place them.

Click twice on your new fish to add two of them to the tank.

Add a couple of other fish.

Click OK to return to the Edit Tank window.

Click on the MUSIC button.

Music



The Music Styles window lets you attach music to the tank.

Now we'll generate some new music, and attach it to your new tank. At the top of the box are a number of musical styles. To make the computer generate music, select (click on) a style. The style will appear to the right of the word MUSIC. Once it appears, you can PLAY it to see if it's suitable. Once you generate music, click on OK to automatically attach it to the current tank, and when you save the tank, the music will be saved along with it.

EL-FISH

Click on the OCEAN button.

When OCEAN appears in the MUSIC box, click on the PLAY button.

Listen for a short while, then click on the OK button to attach the music to the tank and return to the Edit Tank window.

The tank is done ... at least for now—you can always go back and change it. Time to enjoy the fruits of your labor. If you haven't done so yet, save your tank.

Select SAVE under the File menu and give your tank a name.

After a few seconds, you will be returned to the Edit Tank window.

Click and hold on the Windows menu and select View Tank.



Your tank is redrawn, the animated objects move around, the fish swim into view and your creation lives. Click on the Fidcrab to see what happens.

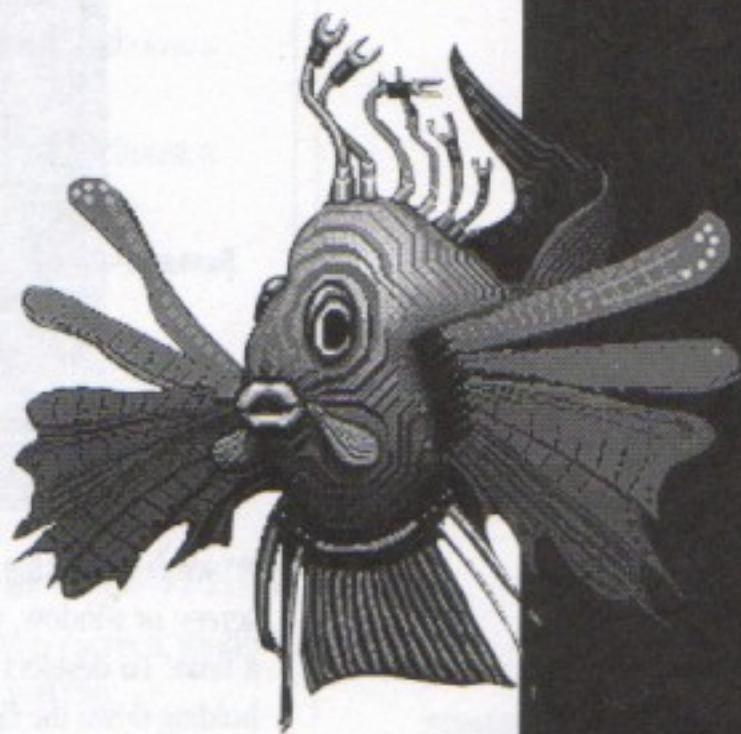
Also notice that the Tank menu has some newly active choices. LIGHT toggles the tank light on and off. FOOD drops some fish food for your little darlings to eat. HIDE MENU removes the menu bar for full-screen tank display. Clicking up where it used to be will bring it back. Under the Options menu, MUSIC toggles the sounds on and off. If you can tear yourself away, click in the Close box to return to the Main Menu window.

At last! The end of the tutorial. Now go forth and create. Check out the Reference section and the rest of the manual when you need more details on different areas of the program, or want to learn about the advanced features.

EL-FISH™

The Electronic Aquarium

REFERENCE



All that glitters is not goldfish.

— Advice from the SageFish

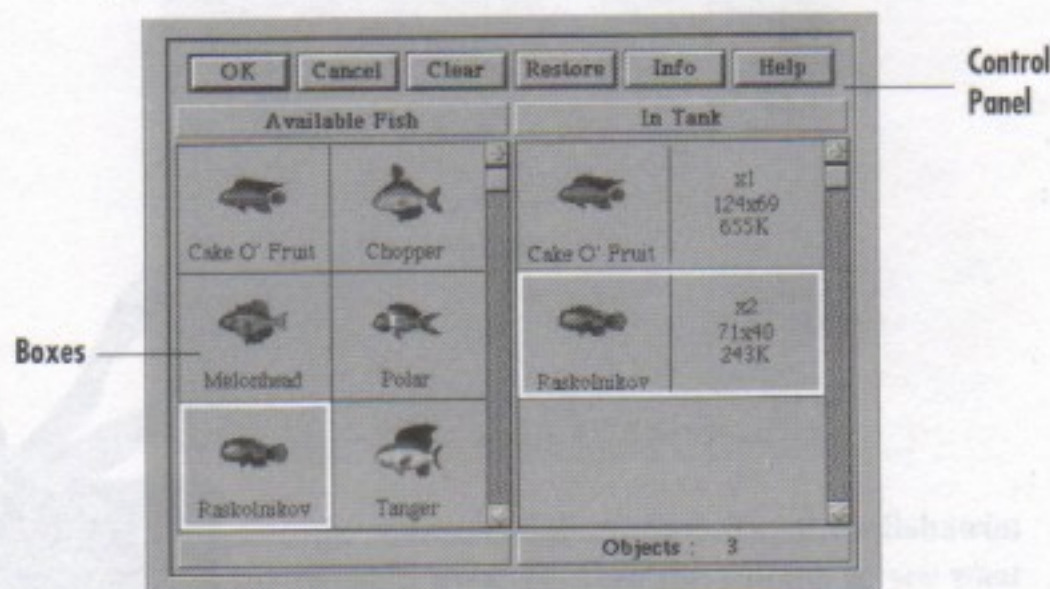
GENERAL INFORMATION

This section of the manual provides a complete reference to every feature, function, box and button in El-Fish.

Here's an explanation of a few of the basics of El-Fish.

BOXES AND CONTROL PANELS

Fish, tanks, plants, and other objects are often displayed in "boxes" so you can look them over and select one or more of the items being displayed. Whether in the libraries or in different design screens, these boxes all work in basically the same way.



To select something, move the cursor over it and click. Depending on the current screen or window, you may or may not be able to select more than one item at a time. To deselect something that has been selected, click on it again while holding down the Command key.

Often there are more items in a library than can be seen on the screen at one time. In these cases, you can click on the up and down scroll arrows to the right of the boxes.

Some boxes, whether they contain fish, tanks, plants or objects, will give you information on their contents when you double-click on their box or when you select the item and click on the INFO button.



Most of the time when you see boxes of items, there will be a control panel above them. Sometimes you can select and deselect items from the control panel.

Control panels consist mostly of buttons that let you manipulate the items in the boxes. To use a control panel, first select one or more items, then click on the relevant button.

MOUSE AND KEYBOARD

A mouse is required to play with El-Fish. It is possible to carry out some El-Fish functions with only a keyboard by using the arrow keys to move the cursor and using the Return key to “click,” but some things, including clicking-and-dragging, absolutely require a mouse. Everything is faster and easier with a mouse.

Here are the main keyboard keys that you will use:

- **Command-P** will bring up the Tank Selection window to choose a tank for viewing.
- **Command-E** will bring up the Tank Selection window to choose a tank for editing.
- **ESC** cancels an operation (in some windows) just like clicking on any CANCEL button does.
- **RETURN** will cause the default button in a window to be pushed. Return also lets the computer know you are done typing in a name or comment.

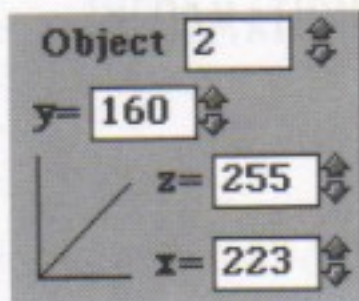
THE HELP SYSTEM

On-screen context-sensitive help is available for just about every screen, window and dialog box in the program. Whenever you need help, you can:

- Select HELP under the Windows menu.
- Click on the HELP button in any open windows.
- Click on the Main Menu button with the question mark on it.

When you are done with the help message, click on it to make it go away.





THE TANK

The El-Fish fish tank is your medium for creation. It is your empty canvas, your hunk of marble to sculpt and shape into a work of art. To best create and use the tank, it helps to understand dimensions, depths and axes.

Like the real world, the tank has three dimensions: height, width and depth. This means that things you put into your tank can be moved: up and down (height), left and right (width) and forward and backward (depth).

These three types of movement are often referred to as axes. When things move left and right, they move along the X axis. When things move up and down, they move along the Y axis. When things move forward and backward, they move along the Z axis.

Unlike the real world, the three-dimensional tank is displayed on a two-dimensional surface (your computer screen). This can cause confusion for you and your computer. Moving things left and right is clear (even for a computer). But when you move something from the bottom of the screen to the top of the screen, the computer can't tell whether you want the thing you're moving to be moved up towards the top of the tank, or backward, towards the rear of the tank.

The solution is to tell the computer first, then do the moving. Whenever you are moving things around inside a tank, there are buttons that let you tell the computer how you want something to move. You can choose either the X-Z or X-Y buttons. When you select X-Z, you can move things left-and-right and in-and-out. When you choose X-Y, you can move things left-and-right and up-and-down.

"What's the difference, anyway?" you may ask. "The monitor screen is two-dimensional, so it doesn't matter whether the computer knows up and down from forward and back. It all looks the same." But it's not the same and it does matter—it matters to your art and it matters to your fish. Taking advantage of depth (the Z axis) in your tank is very important. You can put things in front of and behind other things. And fish can swim around and between things at different depths.

Getting the hang of moving things along the different axes may take a little time and experimentation, but the end results are worth the effort.



BACKGROUND MUSIC

El-Fish has capabilities to play background music while displaying a finished aquarium. El-Fish also has the capability of generating music in a number of different styles that you can attach to tanks. This gives you a never-ending supply of different tunes to listen to while enjoying your art de fish. See Appendix 3: The Music Generator for an explanation of what it does and how it works.

THINGS THAT GO IN TANKS

If the tank is your canvas, the things you put in it are your paints. Here are all the things you can put into your tanks:

Bottom Gravel—There are 48 different sets of gravel with which you can cover the bottom of your tanks.

Background—There are 60 different backgrounds with which you can cover the back of your tanks.

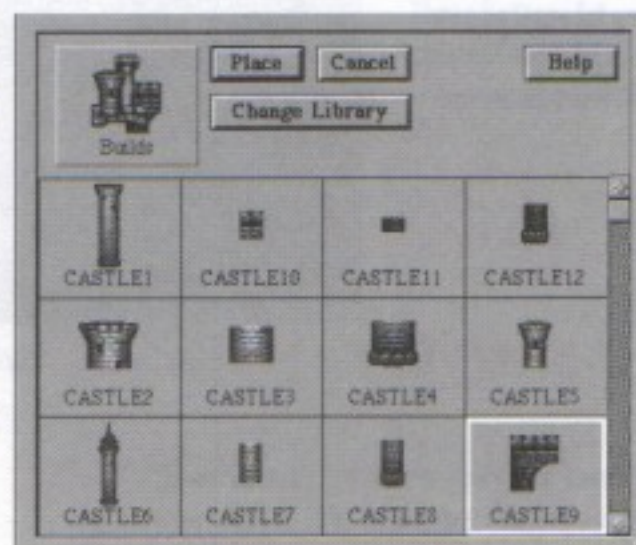
Computer-Generated Plants—There are 54 different species of plants that you can place in your tanks. Because these plants are not pre-drawn, but are generated as you need them, you can set their size and shape to suit your tastes and your tank.

Stationary Objects—These are pre-drawn objects to put in your tanks. They can be flipped, but not resized. These objects include buildings, plants, reefs, rocks, shells, and miscellaneous objects.

User Objects—These are also stationary objects, but are in a special library that is expandable. You (the user) can add your own drawings or scans to this library and put them into tanks. See the Advanced Features section for more information.

Fixed Animated Objects—These are objects that once placed in a tank stay in a fixed location, but are animated, like clams that open and close or hermit crabs that peek out of their shells.

Moving Animated Objects—These are objects and animals that move around or across the tank.



An Object Lesson

EL-FISH

Fish—These are your creations. A few come with El-Fish, but you can catch, evolve or breed as many as you like. The only limit to the number of fish you can have is disk space.

There is a range of fish sizes. You can choose your fish size and the quality of its resolution with the Animation... item in the Options menu. But remember: the larger and better quality of the fish, the longer it takes to animate. Larger fish also take a lot of processor power and RAM, when swimming around in a tank. Unless you have a very powerful computer with a lot of RAM, or a lot of patience, you may want to keep your fish of moderate size and quality.

You ain't nothing but a dogfish...



El-Fish Presley

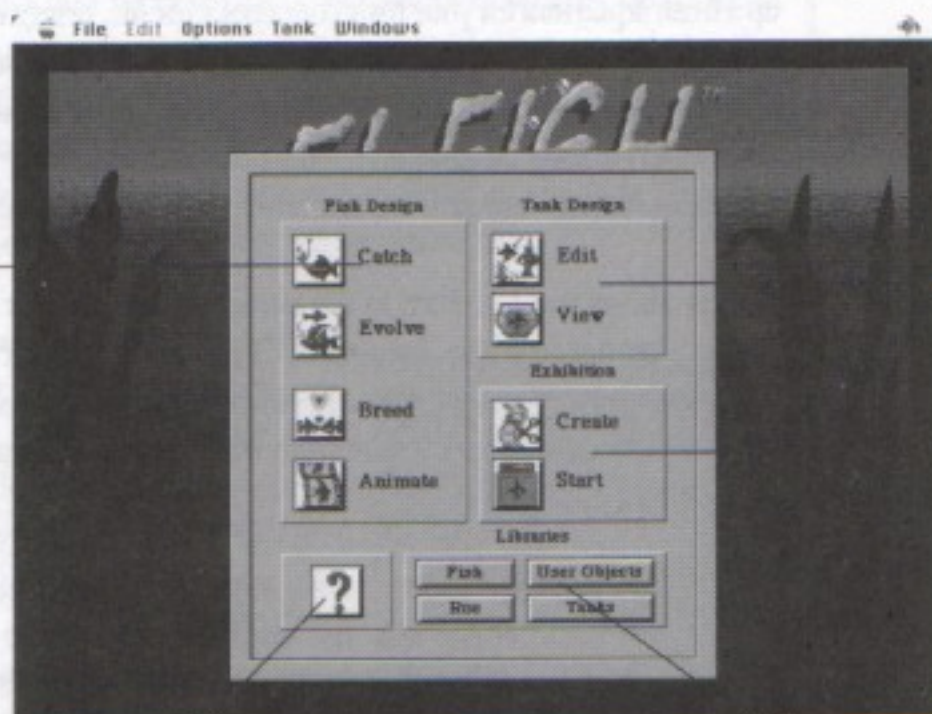


MAIN MENU WINDOW

When El-Fish starts, it presents you with the Main Menu window. It is your departure point for all El-Fish activities. Just click on the various buttons to activate the powerful tank creating, editing and viewing tools. The menu bar above replicates a number of tank commands as well as providing the program's system and file commands.

The menu bar holds the system commands under File, object manipulation under Edit, customization commands under Options, Tank creation and editing under Tank, and access to all game windows under the Windows menu.

These buttons are for catching, modifying and animating your fish.



These buttons let you edit and view your fish tanks.

These buttons let you set up and view multiple tanks in animated exhibitions.

Main Menu Window

Click here for on-screen help with the Main Menu window. You can also select Help from the Windows menu.

These buttons let you inspect and modify your stock of fish, tanks, and things you can put in your tanks.

EL-FISH

THE MENU BAR

The El-Fish menu bar is the host for a range of powerful commands for creating, editing, organizing and customizing your aquariums, as well as for some structural, “behind the scenes” components of the program. Just click and hold on menu names to see their command lists, and select list items to execute commands.

Many windows brought up by menu commands can be moved around on-screen, resized, and scrolled if they contain object libraries. Highlighted window buttons or icons can be “pushed” by clicking on them or hitting the Return key. Some commands are not available in certain windows; active buttons will appear three-dimensional. Most windows have Help screens, accessed by clicking on the Help button or by selecting Help under the Windows menu.

FILE

The File menu contains the system commands for the program. **New** will open up a fresh aquarium for your fishy concepts. **Open...** brings up the Tank Library window to choose an existing tank for your nefarious purposes. **Close** will close open tank windows, prompting you to save any changes. **Save** will keep all of your watery artistry on disk, even if the oceans dry up. **Save As...** gives you the chance to rename and save existing tanks or to save new tanks.

Revert allows you to return to the last saved version of a tank, if your new changes are not desirable. **Import PICT** lets you bring your own PICT files into the User Objects window to place in tanks. See the Advanced Features section for details. **Quit** will remove you from the El-Fish wonderworld back to your own—think twice.

EDIT

The Edit menu contains commands for manipulating aquarium objects. Many of its commands are duplicated in the toolbox window. **Undo**, when available, lets you undo the last tank change you’ve made. **Cut** will remove selected objects from the tank to the Clipboard. **Copy** will make a copy of a selected object, that you can then place with the **Paste** command. **Delete** will delete any selected object.



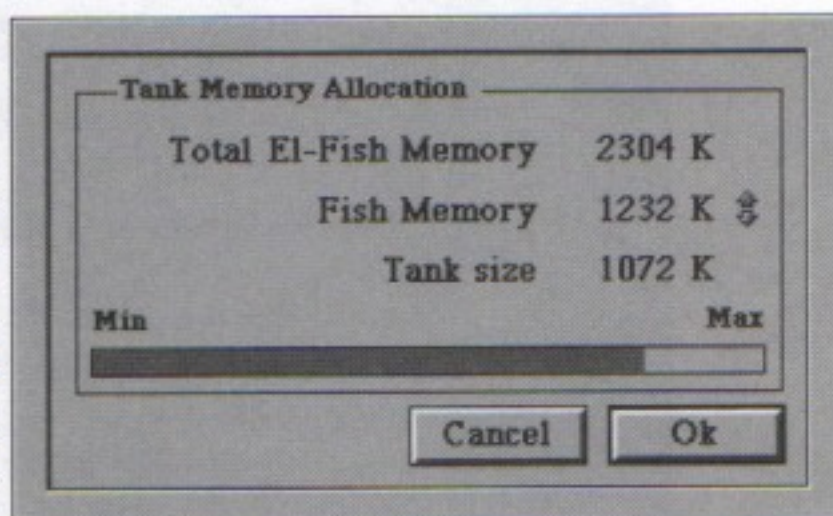
Show Clipboard will reveal the “pastable” contents of the Clipboard. **Select** has a submenu with the commands **Prev** and **Next**, that allows you to cycle through your tank objects for selection. **Duplicate** will make a copy of any selected object. **Flip** will flip a highlighted object on its Y axis. **Axis** allows you to toggle between the X-Y and X-Z axes for highlighted objects.

OPTIONS

Active options will have a check mark to their left. **Info**, when available, will display information for tank objects, such as file size, creation date, and creator. You can sometimes rename the object through this window. **Allow Background Processing** will allow other programs “time slices” of the processor (for example, if you were doing some graphics processing in the background and still wanted to play El-Fish). If you select this option, performance will be degraded, unless you have a very powerful computer.

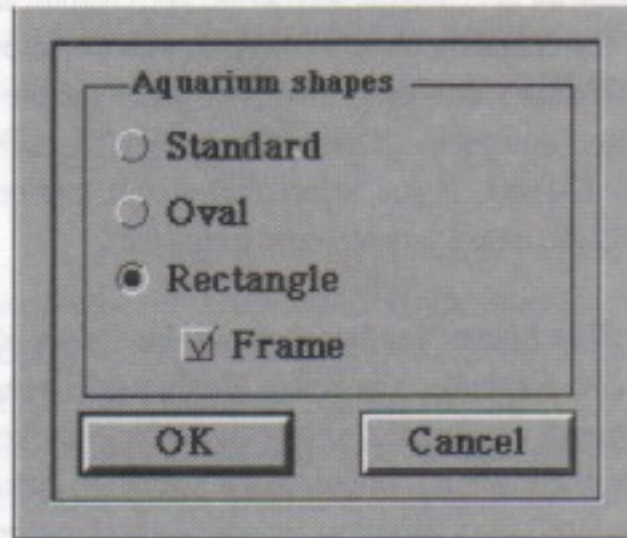
Hide Finder will black out exposed areas of your Mac desktop so that the dreamy loveliness of El-Fish dominates your vision. **Music** toggles between playing the tunes you’ve attached to your tank or hearing nothing but the ticking of your creative impulse. **Animation...** brings up the Animation Parameters window, which allows you to influence the size and image quality of your animated fish. See the Animating Fish section later in Reference for elaboration.

Memory... brings up the Tank Memory Allocation window, which displays the total memory available to El-Fish. Click on the up or down arrows next to Fish Memory to give more RAM for the display of your fish; the memory allocated to the tank will change accordingly. If you give a great deal of RAM to your fish, more of them can appear at once in your tanks, but the size of your aquarium will be restricted. The Min/Max bar indicates the tank size changes. **Save Options** will preserve all of your Options choices for the current and new tanks.



TANK

The Tank menu gives you access to the ocean of items available to stock your aquariums. **Gravel & Bckgrnd** opens a window for selecting your tank frame colors, and the tank's background and bottom gravel. **Select Music** opens the Music Styles window for generating music and attaching it to your tank. **Select Shape** opens the Aquarium Shapes window, letting you frame your tank with the usual Mac title and scroll bars, as an oval, or as a framed rectangle. See the Tank Shapes page later on in Reference.



Shape Your Aquarium

Add Object opens the Objects Libraries window, from which you can access all of the building blocks of tank-designer fame. **Add Plant** opens the Plant window, offering many plant choices open to your reshaping. **Add Fish** brings up the Fish Library to populate your tank with finny fiends. **Add Animation** opens the Animations Library, where the moving animated objects are available.

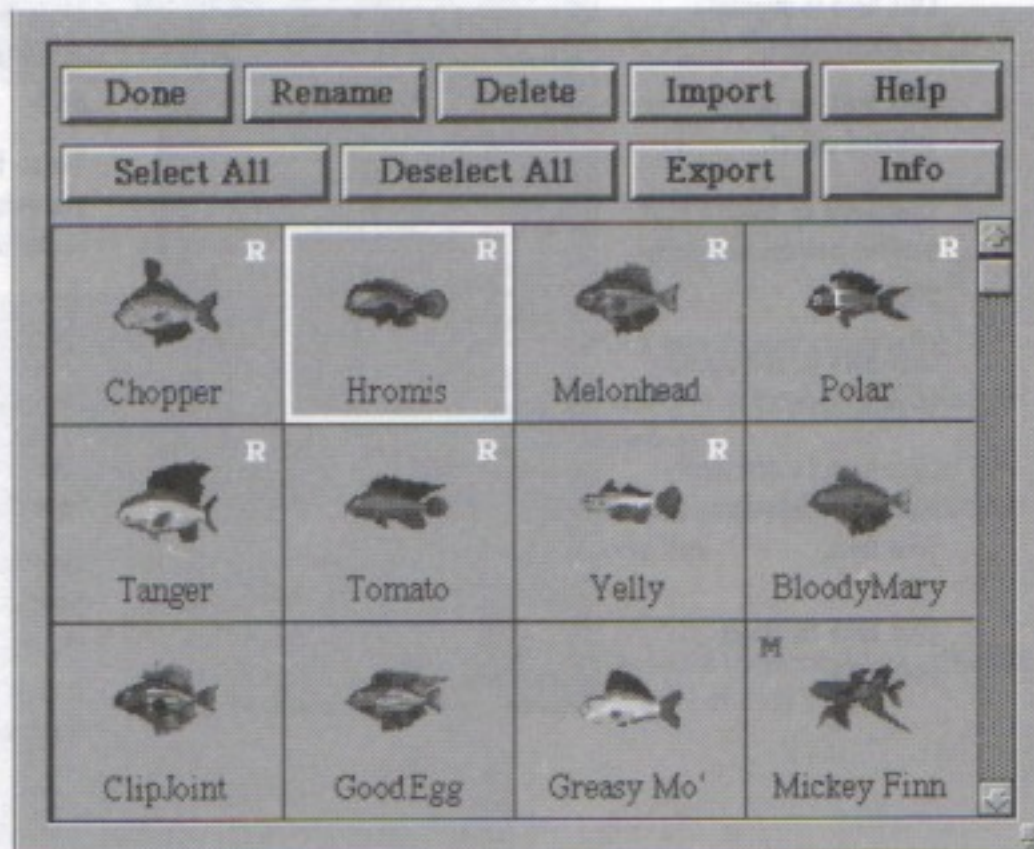
Food drops a healthy handful of fish food into your tank, around which your fish will float with humming appetites. **Light** toggles on and off the aquarium lighting, in case you want your pets to relax in darkness. **Next** and **Prev** function only when you are viewing Exhibitions, either moving back a tank or forward a tank in the Exhibition display. **Hide Menu** removes the menu bar from your tank view; clicking in the menu bar area will restore it.



WINDOWS

The Windows menu commands open the program's significant windows for fish and tank design and enhancement. **Main Menu** brings up the Main Menu window, the diving board for almost all El-Fish activities. **Catch Fish**, **Evolve Fish**, **Breed Fish** and **Animate Fish** bring up the respective windows for going from "no fish" to "flow fish" in your aquariums. **Edit Tank** and **View Tank** open the windows for manipulating all of your tank objects and then viewing your manipulations.

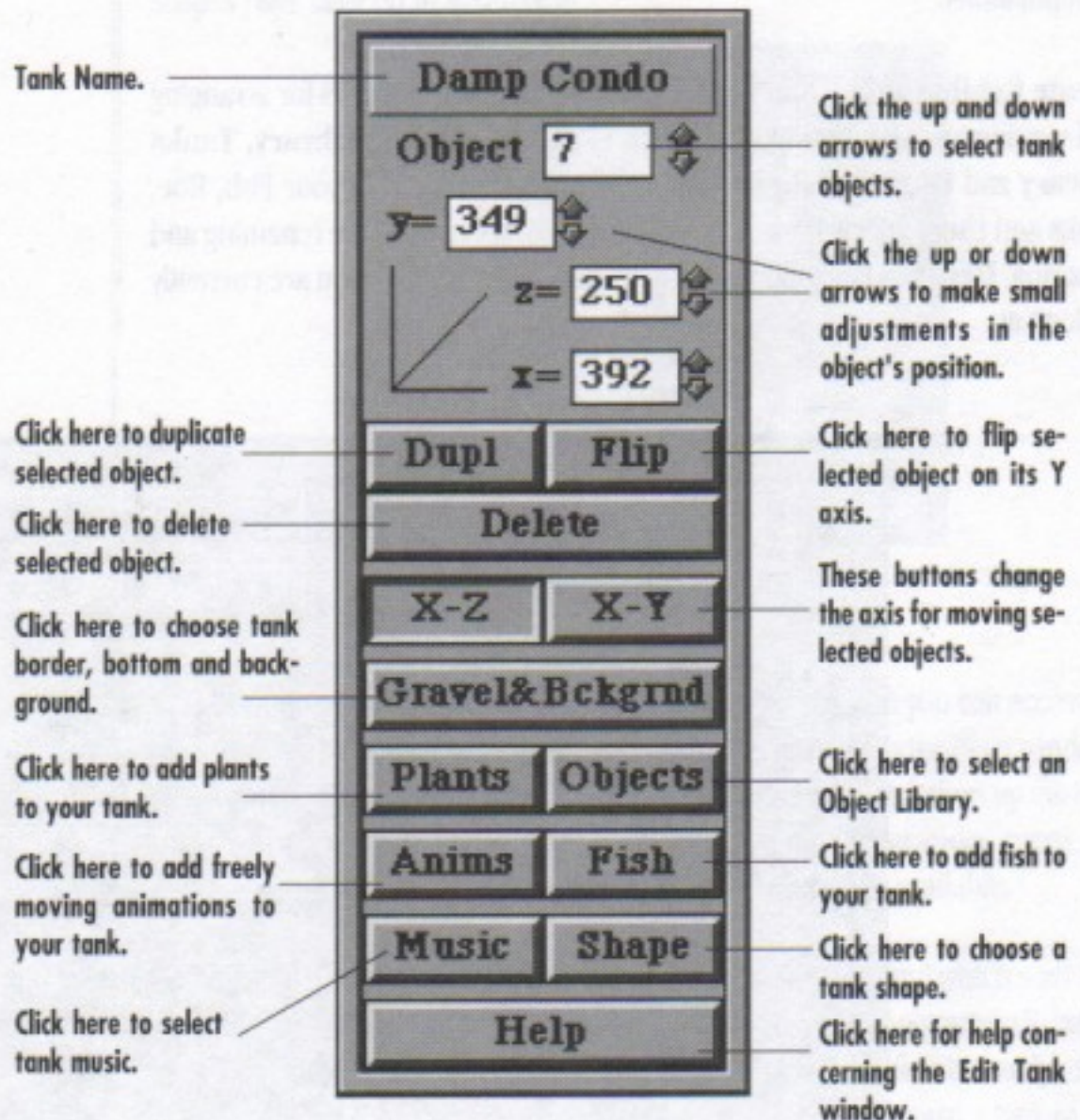
Create Exhibition and **Start Exhibition** bring up the windows for arranging and viewing an exhibition of your tanks. **Fish Library**, **Roe Library**, **Tanks Library** and **UserObj Library** will respectively display all of your Fish, Roe, Tanks and User Objects for inventory and library operations like renaming and restoring. **Help** will bring up help text relevant to the window you are currently looking at.



A Library That Swims

THE TOOLBOX

The Toolbox window appears when you are in the Tank Edit window. It contains the command buttons to manipulate your tank and tank objects. Many of its commands are duplicated in the Edit and Tank menus. The Toolbox can be moved around on-screen by clicking and dragging its borders.

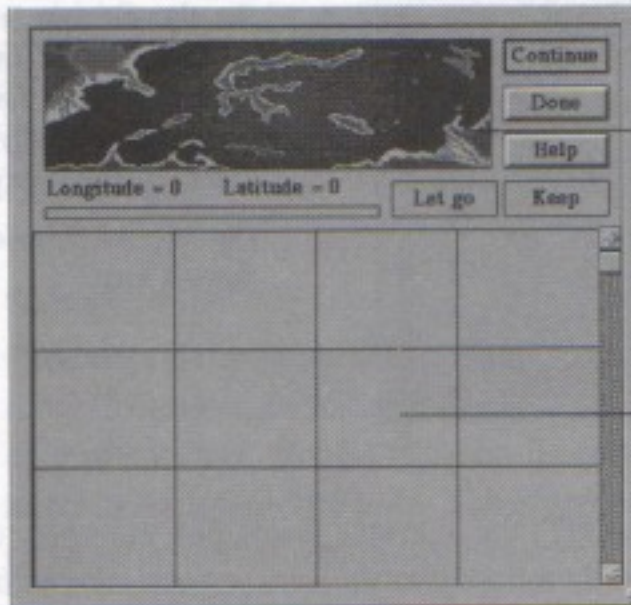




CATCHING FISH

Catching fish is your way of gathering inhabitants for your aquariums, but more importantly, it is the gathering of genetic data for breeding and evolving new, never-before-seen-or-even-imagined fish.

To catch fish, click on the CATCH button in the Main Menu window, or select Catch Fish from the Windows menu.

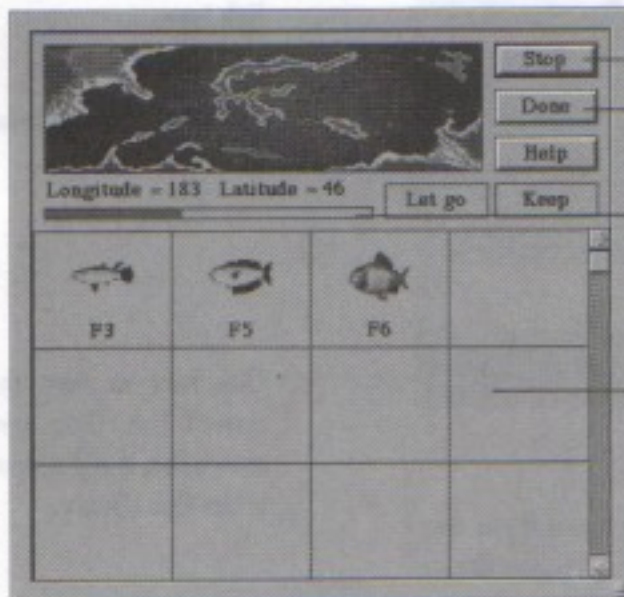


Choose your fishing spot on the map and click on it to begin fishing.

As you catch fish, they will occupy these boxes.

Catch Fish Screen

Once you begin catching fish, the screen will look like this:



Click here to stop catching fish.

Click here to leave the Catch Fish window.

The bar graph will fill as you reel in a new fish.

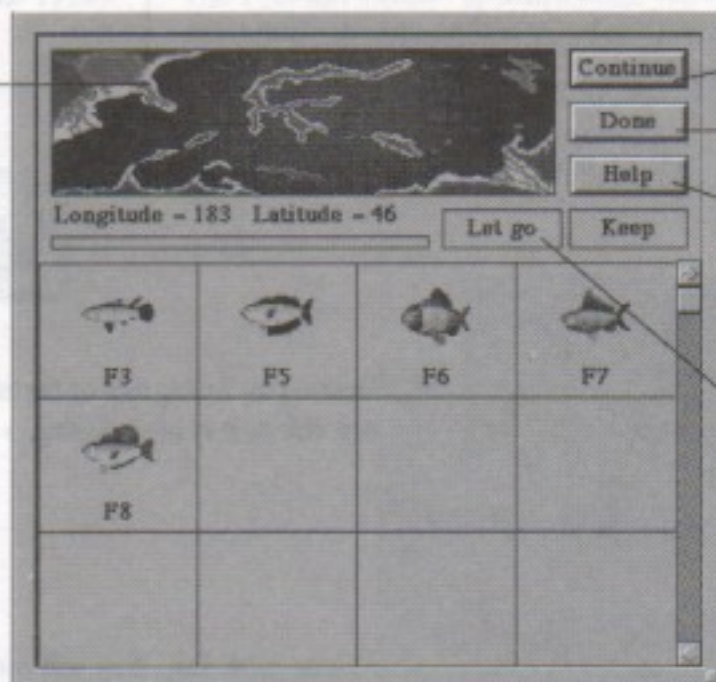
The boxes fill with a picture of the fish after it has been caught.

Catching Fish

EL-FISH

Once fishing has stopped, the screen will look like this:

Click on a new location on the map to fish from a new spot.



Click here to resume catching fish from the same spot.

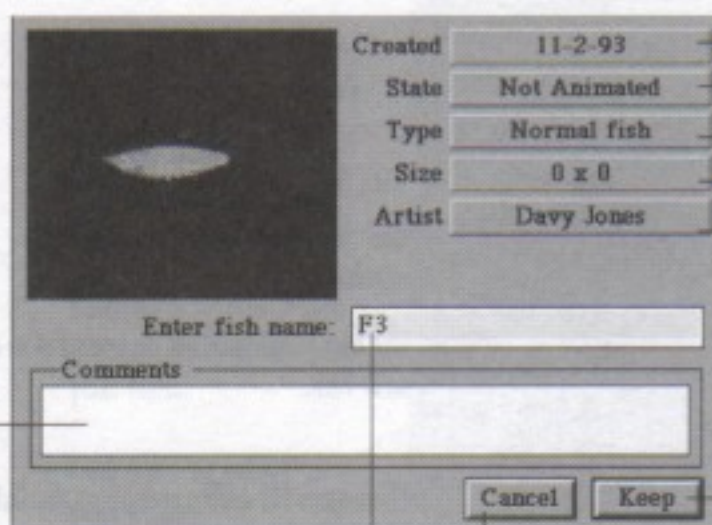
Click here to return to the Main Menu window.

First select (click on) the fish you like, then click here to keep the ones you chose and remove their pictures from the Caught Fish boxes. Once kept, they will appear in the Fish Library.

Click on a fish then click here to throw it back.

Not Catching Fish

When you select fish, then click on KEEP, the following dialog box will open for each selected fish. It displays a large picture of the fish and gives you some personal information about it. You can also change the fish's name and add a comment.



The current date.

The fish's animation status.

Fish type.

Fish pixel size.

The genius responsible for all this.

If you want to save a comment or description of your fish, click here and type in the comment.

Save Fish Dialog Box

If you want to change the fish's name, click here and type in the new name.


Click here if you don't want to save the current fish.

Click here to save the current fish. Once you save a fish, it will appear in the Fish Library.



CATCHING FISH SCREEN NOTES

- Different shapes and sizes of fish live in different places on the map. You'll have to experiment a little to find your favorite fishing spots.
- As you catch fish, the computer assigns them a temporary name, consisting of the letter "F" and a number. You can change the names when you save the fish to disk.
- Fishing will automatically cease when you have caught 64 fish.
- The CONTINUE button will be unavailable if all the fish boxes are full.
- If you want to closely inspect a fish you have caught before you decide whether to keep it or throw it back, double-click on it. An information window will open, with a large picture of the fish and some fishy information.

	Created	11-2-93
	State	Not Animated
	Type	Normal fish
	Size	0 x 0
	Artist	Davy Jones
Enter fish name:		FishStick
Comments		I want to join the circus!
		<input type="button" value="Cancel"/> <input type="button" value="Keep"/>

That's funny, you don't look like El-fish . . .



EL-FISH

EVOLVING FISH

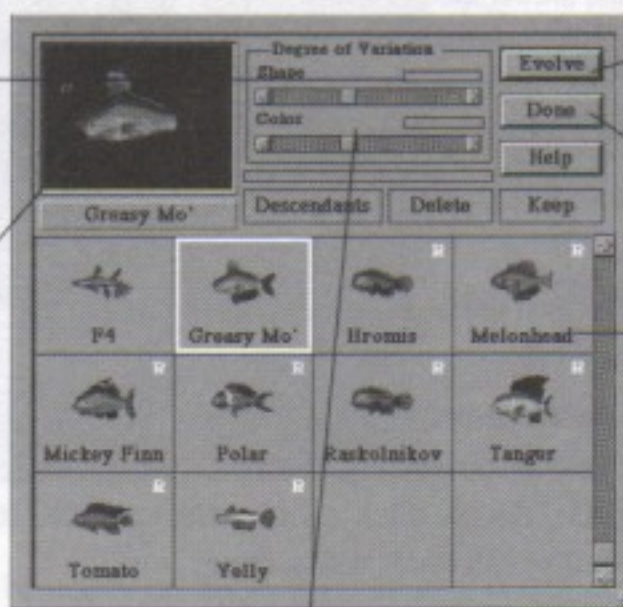


If either slider is set too high, these bars will turn red to warn you that the evolved fish will be mutants.

The fish you select appears here.

Evolving fish is a way to simulate time passage and see what a particular fish may evolve into in a number of years.

To reach the Evolve Fish window, click on the EVOLVE button in the Main Menu or select Evolve Fish from the Windows menu.



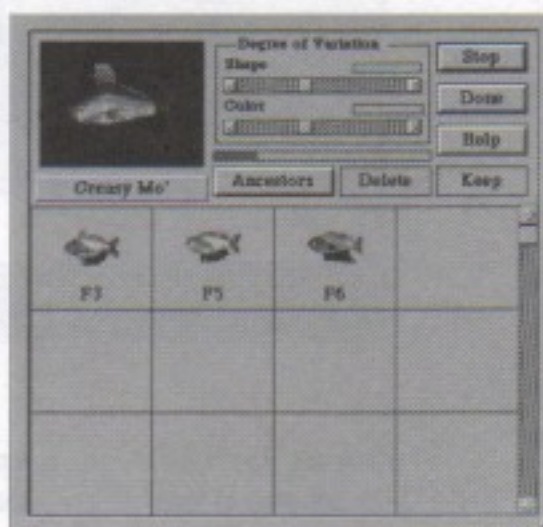
Click here to begin evolving the selected fish.

Click here to return to the Main Menu.

These are all the fish in your library. Select one to evolve. Mutants, the ones with an "M" in the upper-left corner of the box, cannot be evolved.

These sliders control the amount that the evolved fish will vary from the original fish. The farther to the right, the more difference there will be. If you set either slider too high, the fish will be sterile mutants.

Once you begin evolving fish, your screen will look like this:



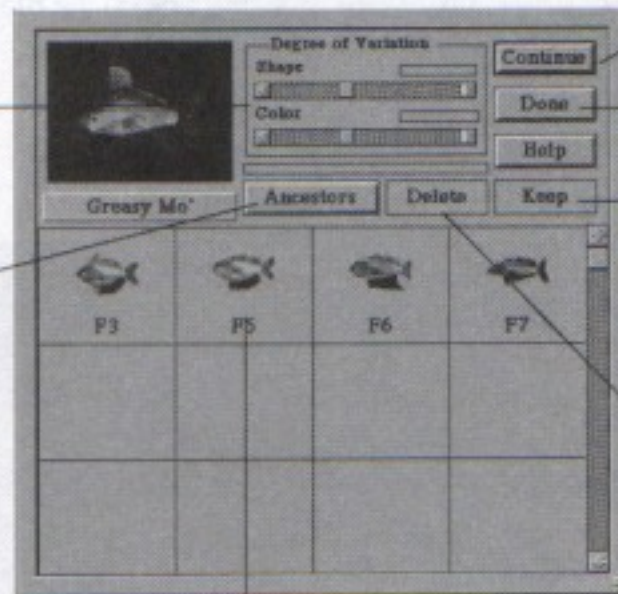
Click STOP to cease evolution.



Once you stop evolution, the control panel will change to look like this:

You can adjust these sliders before continuing to evolve the same fish or after selecting a new one.

Click here to redisplay the Fish Library so you can select another fish to evolve without saving or deleting the current evolved fish.



Click here to resume evolving the current fish.

Click here to return to the Main Menu.

First select (click on) the fish you like, then click here to save them to disk. Once saved, they will appear in the Fish Library. Command-click to select multiple fish.

Click here to send the selected evolved fish into oblivion.

You can double-click on a fish box to see an enlarged image of your fish and some fishy information.

EVOLVE FISH SCREEN NOTES

- To replace the original fish with one of the evolved fish, click on the original fish picture in the upper-left of the window, then click on one of the evolved fish. Click on the big picture again to return to Keep/Delete mode.
- As you evolve new fish, the computer assigns them a temporary name, consisting of the letter "F" and a number. You can change the names when you save the fish to disk.
- Evolving will automatically cease when 64 boxes are full.
- The CONTINUE button will be unavailable if all the fish boxes are full.
- See the section on Catching Fish above for details on the Save Fish dialog box.
- If you want to closely inspect a fish before you evolve it, or an evolved fish before you save it, double-click on it. An information window will open, with a large picture of the fish and a lot of fishy information.

MUTANTS: PROS AND CONS

- The good thing about mutant fish is that they look strange (if you like strange).
- The bad thing about mutants is that they look strange (if you don't like strange).
- The other bad thing is that mutants are sterile and can't evolve or breed.
- The other good thing is that they are sterile and can't breed.



EL-FISH

BREEDING NEW FISH



Click on a parent box and then on a fish to replace the current parent with a newly selected fish.

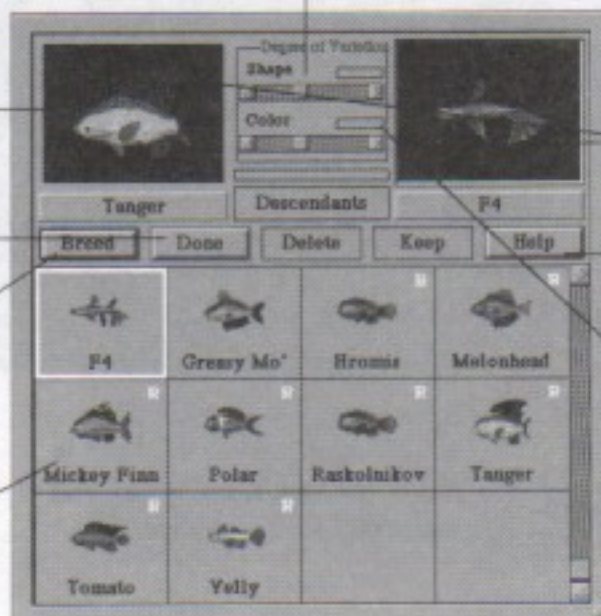
Click here to return to the Main Menu.

Click here to begin breeding the selected fish. This button is unavailable unless two parents are selected.

These are all the fish in your library. Select two fish to be the parents (gene donors).

Breeding is a way to create new types of fish from the genes of two other fish. To reach the Breed Fish window, click on the BREED button in the Main Menu or choose Breed Fish from the Windows menu.

These sliders control the amount that the newly bred fish will genetically vary from their parents.

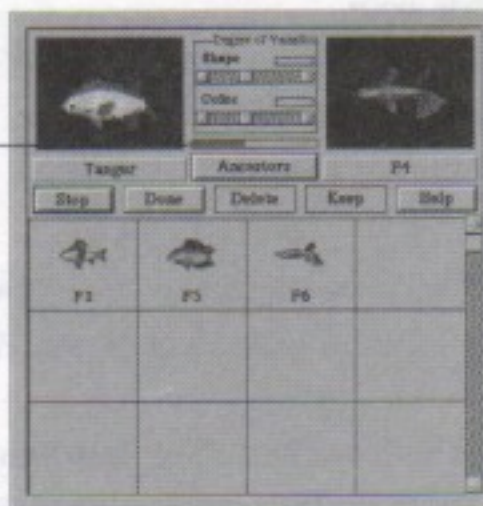


Selected parent fish appear here.

Help Window

If the sliders are set too far to the right, your bred fish will be sterile mutants, indicated by these bars turning red.

Once you begin breeding fish, your screen will look like this:



The progress bar indicates how much time remains before the next fish is bred.

Click STOP to cease breeding.

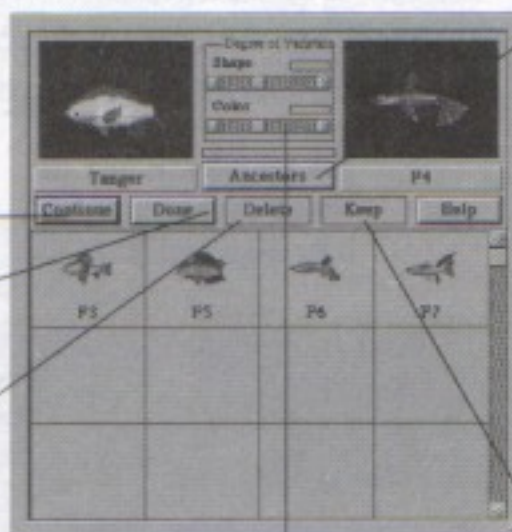


Once you stop breeding, the control panel will change to look like this:

Click here to resume breeding with the current parents.

Click here to return to the Main Menu. You'll be asked if you want to throw away unsaved fish.

Click here to send selected newly bred fish into oblivion.



You can adjust these sliders before continuing to breed, using the same parents or after selecting new ones.

Click here to select new parents from your original fish. When you click this button, it will change to say DESCENDANTS. Click on it again when you are finished choosing new parents to see the original offspring (from which you can also choose new parents).

First select (click on) the fish you like, then click here to save them to disk. The selected fish will appear in an info window allowing names and comments. Once saved, they will appear in the Fish Library.

BREEDING FISH WINDOW NOTES

- The two parents must be different types of fish. If you want offspring from two parents of the same type, you can get the same results with the Evolve Fish window.
- As you click on potential parent fish, they will keep going to the same Parent Box, replacing the last fish, until you select the other box to direct the fish to the other Parent Box.
- The farther to the right you set the Degree of Variation sliders, the greater difference there will be between the newly bred fish and their parents. If you set either slider too high, the fish will be sterile mutants. The bars above each slider will turn red to warn you of impending mutants. (Sometimes mutants will be bred even if the bars are only set close to mutation levels.)
- As you evolve new fish, the computer assigns them a temporary name, consisting of the letter "F" and a number. You can change the names when you save the fish to disk.
- Evolving will automatically cease when all 64 boxes are full; the CONTINUE button will be unavailable.
- Note that you can select the newly bred fish as parents and then select their offspring as parents, and their offspring, etc., without saving any of them to disk.
- See the section on Catching Fish above for details on the Keep (Save Fish) dialog box and file names.
- If you want to closely inspect a fish you have bred before you decide whether to keep it or dump it, double-click on it. An information window will open, with a large picture of the fish and a lot of essential fishy information.

EL-FISH

ANIMATING FISH

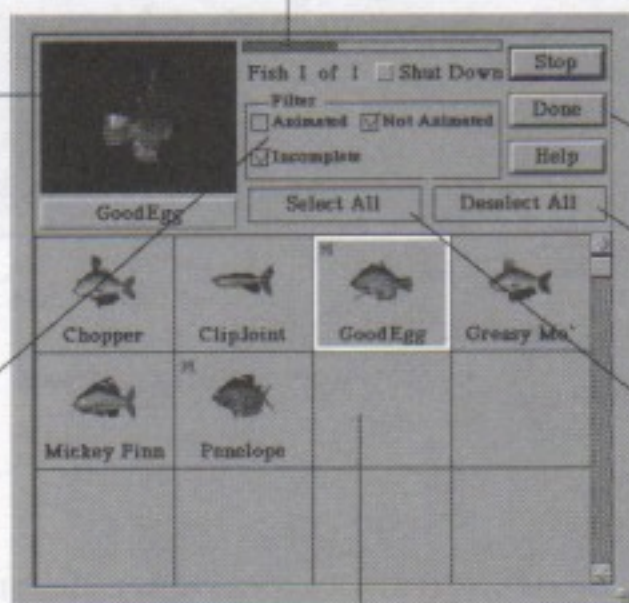


The fish currently being animated appears in this box. During animation, each frame that is generated is shown here.

These buttons let you choose which fish from the library are displayed here. **ANIMATED** displays all the already animated fish in the library. **NOT ANIMATED** displays only the fish that still need animation before they can go in tanks. **INCOMPLETE** fish are those only partially animated. You can check all of these filters to see your holdings for the combined categories.

Fish must be completely animated before they can be put into tanks. To reach the Animate Fish window, click on the **ANIMATE** button in the Main Menu or select **Animate Fish** from the **Windows** menu.

This bar indicates how far along the animating process is for the current fish.



Click here to **START**, **STOP**, or **CONTINUE** animating.

Click here to return to the **Main Menu**.

Click here to **deselect** all the fish that have been selected.

Click here to **select** all the fish in the library.

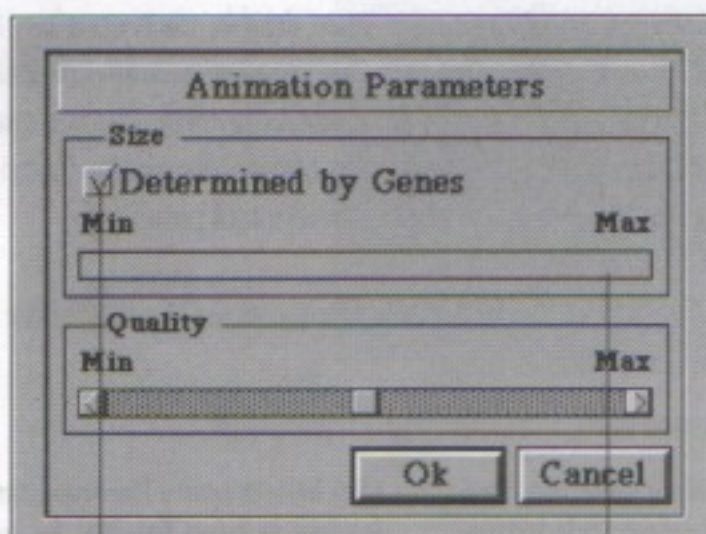
These are all the fish in your library. Select (click on) one or more fish that you want to animate. Command-click for multiples. If there is an **"R"** in the upper-right corner of a box, the fish is already animated and is ready to be put in a tank. If there is an **"I"** in the upper-right corner of the box, the fish is partially animated and must be finished before it is ready for a tank. If there is no letter in the upper-right corner of the box, the fish isn't animated at all. An **"M"** indicates the fish is a mutant.

Once you begin animating a fish, the different animation frames will be shown in the large box on the control panel, the progress bar will display the progress of the current fish, and the **ANIMATE** button will change to **STOP**.

Click on **STOP** to stop the animation process. Once you have stopped animating, the **ANIMATE/STOP** button will change to **CONTINUE**. Click on it to resume animation. At this time you can also **deselect** selected fish or **select** new ones before resuming animating.



The size of your fish and their image quality is set in the Animation Parameters window, which can be reached by selecting Animation... under the Options window. Remember that the larger the fish and the higher its image quality, the more memory necessary for storage and display.



Leave this button checked if you want to allow your fish to have their size determined by their current genetics.

Adjust these sliders after unchecking the Size box to affect the growth and image resolution of your animated fish.

ANIMATE WINDOW NOTES

- Animating fish, especially large fish, can take a long time. It is a good idea to set your computer to animating multiple fish before you go for that long lunch and deserved nap.
- If you have a very fast computer, or want a fish animated RIGHT NOW, you may wish to browse through Appendix 2: Things to Do While El-Fish Generates Fish Animations.
- The Filters do not change the contents of the Fish Library; they only change which fish are displayed in the Animate window.

Fish you were here.



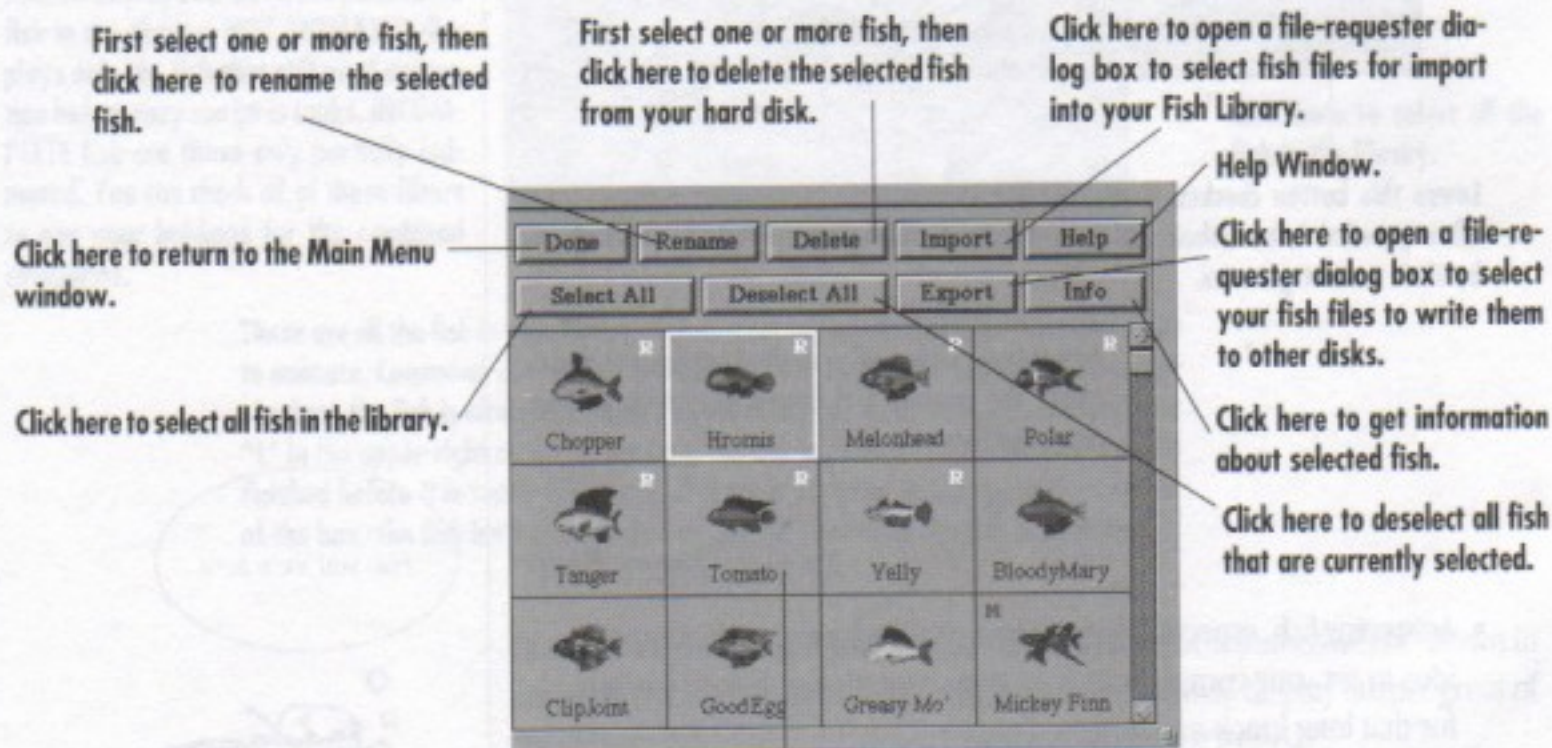
EL-FISH

FISH LIBRARY

There are four libraries that you can modify (add to, copy, delete, etc.): Fish, User Objects, Roe and Tanks. There are other libraries of objects and animations to put in tanks, but they cannot be modified.

All libraries consist of two parts: boxes and a control panel. The boxes contain the items in the library. In some libraries, you can double-click on a box for more information about the item it contains. (The amount and type of information varies with the library.) The control panels have buttons that let you manipulate the objects. To modify library items, first select one or more items from the boxes above, then click on the relevant button in the control panel.

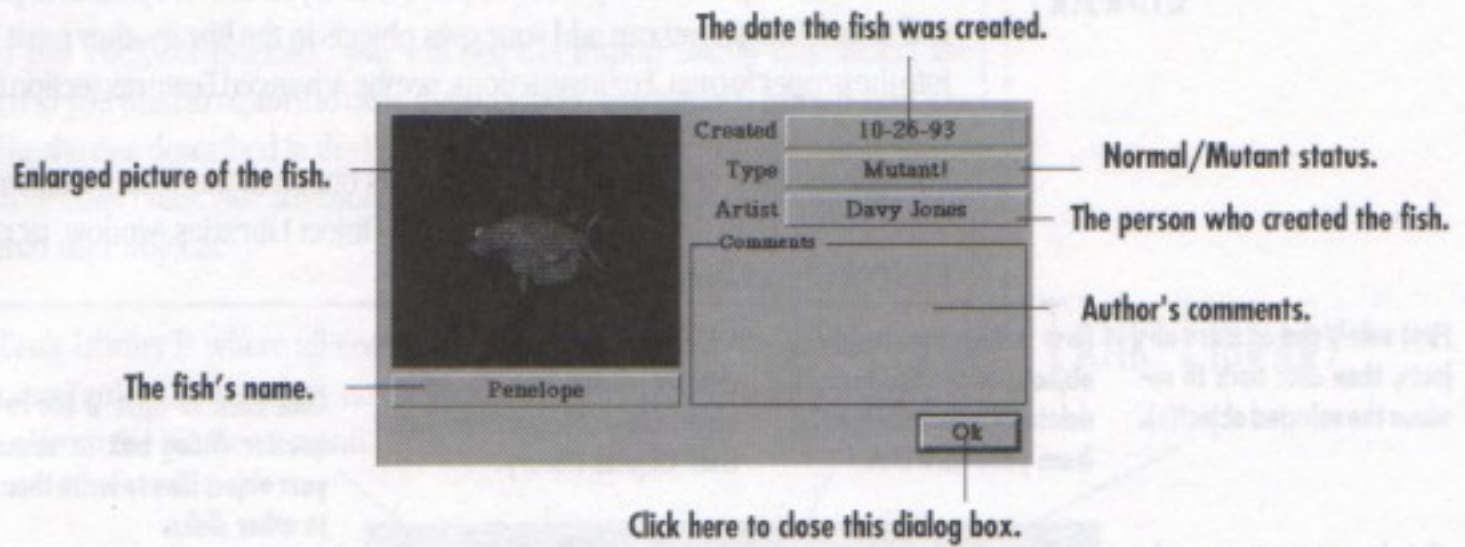
To open the Fish Library, click on its button in the Main Menu window or select Fish Library from the Windows menu.



These are all the fish in your library. Select (click on) one or more fish that you want to modify. Command-click for multiples. If there is an "R" in the upper-right corner of a box, the fish is already animated and is ready to be put in a tank. If there is an "I" in the upper-right corner of the box, the fish is partially animated and must be finished before it is ready for a tank. If there is an "M" in the upper-left corner of the box, the fish is a mutant and is sterile.



When you double-click on a fish box, you will be presented with the fish's vital statistics.



You can copy fish files to disk in order to store them or give them to friends. Just click on a fish and then on EXPORT and you'll see the Mac's file-requester dialog box, where you can rename the file if you wish and then save it to disk. Use the IMPORT button to restore fish from a disk back to the Fish Library using the file-requester dialog box.

EL-FISH

USER OBJECTS LIBRARY

Objects in the User Objects Library are non-animated things you can put into your tanks. There are other libraries of non-animated things to put in your tanks, too. But the User Objects Library is the only one where you can add your own pictures and scans. Before you can add your own objects to the library, they must be put into the proper format. For instructions, see the Advanced Features section below.

To open the User Objects Library, click on its button in the Main Menu window, select OBJECTS in the Toolbox to get to the Object Libraries window, or choose UserObj Library from the Windows menu.

First select one or more objects, then click here to rename the selected object(s).

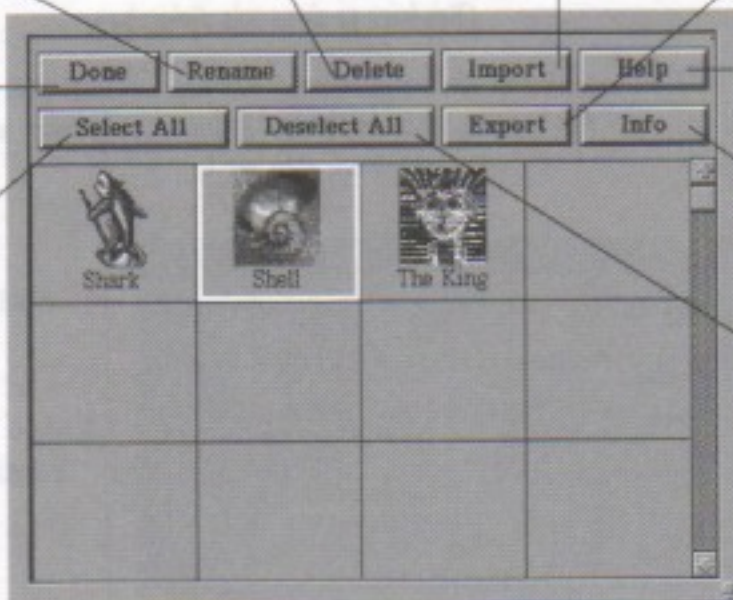
First select one or more objects, then click here to delete the selected object(s) from your hard disk.

Click here to open a file-requester dialog box to select object files for import into your User Objects Library.

Click here to open a file-requester dialog box to select your object files to write them to other disks.

Click here to return to the Main Menu.

Click here to select all objects in the library.



Help Window.

Select an object and click here to see information about the object.

Click here to deselect all objects that are currently selected.

When you double-click on an object box, you will be presented with an enlarged picture of the object.





When you Click on the EXPORT button, you will see the file-selection dialog box, where you can choose where you want to copy or move the object(s). See the Fish Library section above for details on using the Choose Destination dialog box.

When you click on IMPORT, you will see the Import dialog box. Select the object(s) you want to restore to disk, then click OK. The Import dialog box works just like the one described in the Fish Library section above, except it only shows available object files. See advanced features for information on converting PICT files into user objects.

The Tank Library is where all completed and in-progress tanks are stored. To open the Tanks Library, click on its button in the Main Menu or select Tanks Library from the Windows menu.

TANK LIBRARY

First select one or more tanks, then click here to delete the selected tank(s) from your hard disk.

Click here to open a file-requester dialog box to select tank files for import into your Tank Library.

Click here to open a file-requester dialog box to select your tank files to write them to other disks.

Click here to return to the Main Menu.

Click here to select all tanks in the library.

Click here to bring up an information window about a selected tank.

Click here to deselect all tanks that are currently selected.

Help Window.

Tank Library

EL-FISH

When you double-click on a tank box or click on the INFO button after selecting a tank, you will be presented with the Tank Information Window, filled with vital tank statistics.

The amount of disk space the tank uses.

The name of the person that created the tank.

The total number of objects in the tank, including fish and plants.

The number of fish species in the tank.

The total number of fish of all species in the tank.

The number of different moving animated objects in the tank.

The total number of moving animated objects in the tank.

The total number of fixed animated objects in the tank.

Click here to close the Tank Information Window.

Tank Name	Pristine	
Size	29K	
Author	Davy Jones	
Statistics	Species	Total#
Fish	3	3
Animations	2	3
Fixed Animations		1
Objects		7
OK		

When you copy or move tanks using the EXPORT button, you will see the file-selection dialog box, where you can choose where you want to copy or move the tank(s). See the Fish Library section above for details on using the Choose Destination dialog box.

When you click on IMPORT, you will see the Import dialog box. Select the tank(s) you want to restore, then click OK. The Import dialog box works just like the one described in the Fish Library section above, except it only shows available aquarium files.



ROE LIBRARY

Electronic fish can take up a lot of disk space, especially after they've been completely animated—sometimes more than 1,500KB! This can be a real pain if you want to give some fish to friends to put in their tanks, upload or download a number of fish to or from a BBS, or clear up some hard disk space without losing fish or filling up dozens of floppies.

That's why we included electronic Roe. Roe, in the non-electronic world, are fish eggs—the containers of fish genes, the seeds from which real fish can be grown. Electronic Roe is a stripped-down version of an electronic fish that contains only its genetic code. The Roe for any fish is less than 3K. The space savings of Roe are immense, considering that an unanimated medium-large fish can take up about 14KB, and fully animated it can be that disk-crushing 1,500KB.

These are all the fish, just as they appear in your Fish Library. First select one or more fish, then click here to create Roe files for the selected fish.

Clicking on these filter buttons will display or remove from view the fish of each button type.

Click here to return to the Main Menu.

Help Window.

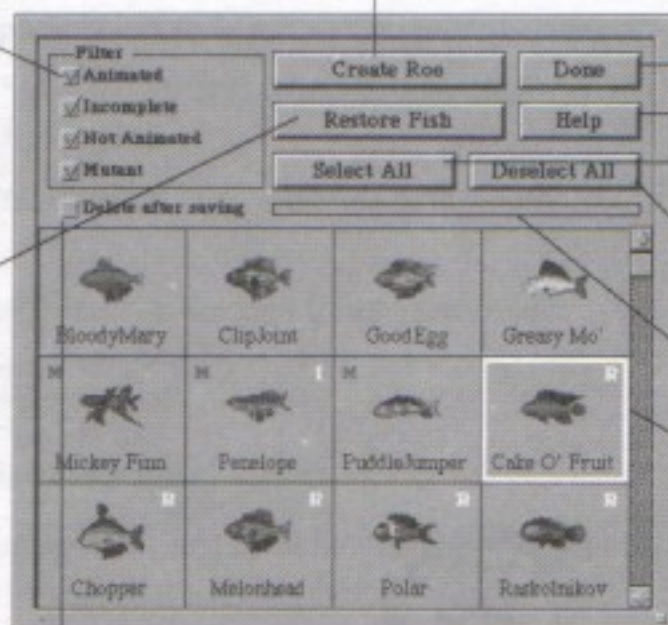
Click here to select all fish in the library.

Click here to deselect all fish that are currently selected.

Roe transformation progress bar.

Double-click on a fish box for some fish information. You can rename the fish from this info box.

Click here to bring back fish that you transformed to Roe, or load Roe you receive from friends or BBSs into El-Fish. You do not have to select a fish before using Restore Fish. You will be given access to the Mac file-selection dialog box.



Roe Library

Click here if you want your selected fish to be deleted from your disk after its transformation to Roe.

EL-FISH

Unlike the other libraries, the Roe Library doesn't actually contain Roe. What it does is show you all your fish and let you create Roe from them or load (restore) Roe in and convert it into fish. To open the Roe Library, click on its button in the Main Menu or choose Roe Library from the Windows menu.

When you double-click on a fish box, you will be presented with the same Fish Information window that you see in the Fish Library.

When you click on RESTORE FISH, you will see the standard Mac file-selection dialog box. Select the Roe you want to restore (you may have to search other disks and drives outside of the Roe folder), then click OPEN. The Restore Fish dialog box works just like the one described in the Fish Library section above, except it only shows available Roe files.

After your fish has been restored, you will see an information window where you can rename your fish. Click on KEEP to save it to disk.



My favorite song is
"Good Breeding"
by the Young RasScallops



TANK SCULPTURE 101

While your computer will spend many hours and billions of computations generating and animating the fish, most of *your* creative time with El-Fish will be spent sculpting tanks.

Tanks vary as much as the people who create them. Some people like simple, basic, clean-looking tanks with few fish and fewer objects. Others like busy, bustling tanks filled with fish and plants and rocks and shells and moving objects.

If you have an art or design background, then you can think about form, function, balance, line, color, texture, structure and composition as you create your tank. But you can also take the personal approach and think, "If I were a fish, where would I want to live?" It's your game and your computer, so make tanks that suit you.

The steps involved in tank sculpting are:

- Select an existing tank to modify or create a new one.
- Select the gravel for the tank bottom.
- Select a background for the tank.
- Select the size and color of the border options around the tank.
- Grow, place and arrange computer-generated plants.
- Add various still objects to the tank (rocks, plants, shells, buildings, treasure chests, etc.).
- Add stationary animated objects to the tank (clams that open and close, etc.).
- Add moving animated objects to the tank (divers, seahorses, crabs, etc.).
- Add fish to the tank.
- Attach a musical score to the tank.

Breeding and evolving strange new fish is fun. Watching and enjoying your final created work of living art is fulfilling. But sculpting the tank is the part of El-Fish where you have the most control. It is where your talent shines. It is the true art of El-Fish.

A finished tank is a fine thing, but when you sculpt your tank, take your time. Relax. Enjoy the process. The journey is the thing.

EL-FISH

TANK SELECT WINDOW

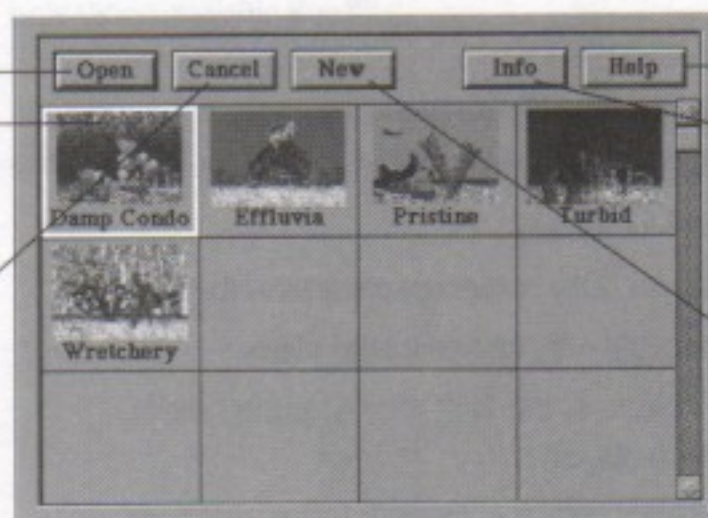


The Tank Select window is where you choose an existing tank to edit or create a new one. You can also rename and delete existing tanks. To open the Tank Select window, click on the EDIT button in the Tank Design section of the Main Menu or select Edit Tank from the Windows menu.

The Tank Information window accessed from this window provides the same information as that seen in the Tank Library window.

These are all your existing tanks. Double-click on one to select it for editing, or select one and click here.

Click here to return to the Main Menu.



Help Window.

Click here to open an info window about the selected tank.

Click here to create a new tank and go to the Edit Tank window.

Tank Select Window



TANK EDITING WINDOW

The Tank Editing window is the designing floor where you add and arrange the things that go in your tank. You can also save your tank to disk. You get to the various tank-object windows by clicking on the toolbox buttons or through selection in the Windows menu. After selection in those screens, you will return here. All your latest changes and additions will be displayed.

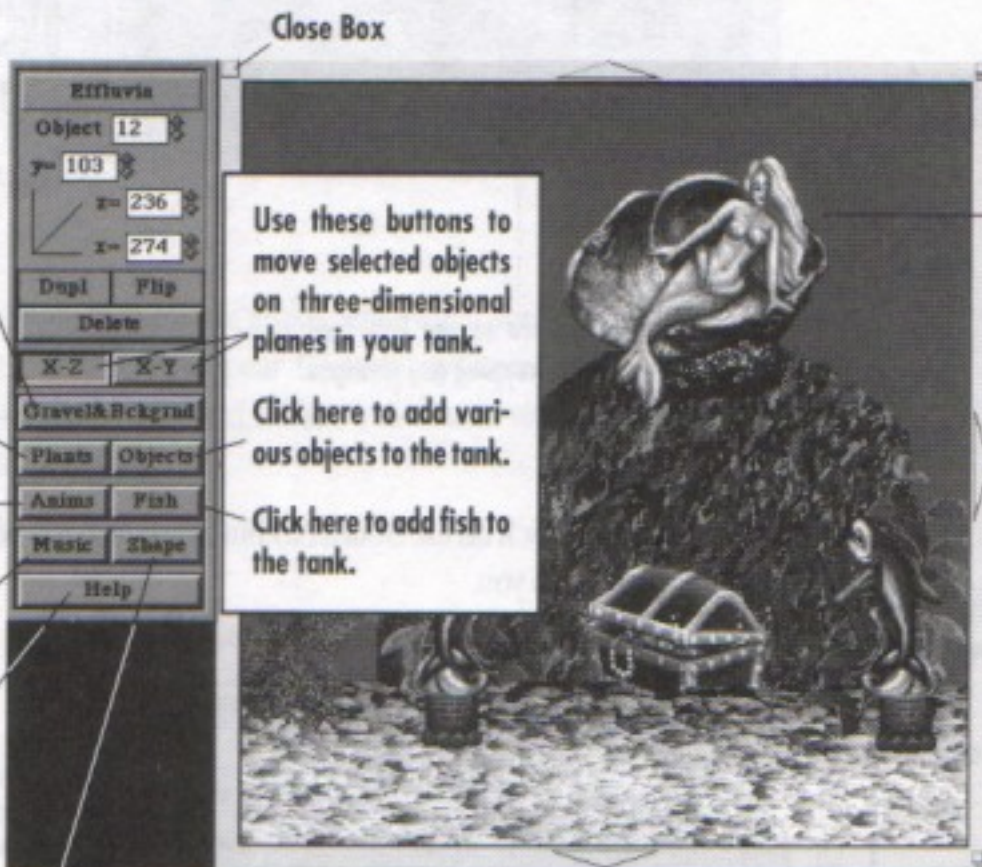
Click here to modify the tank's background, bottom gravel and frame color and size.

Click here to grow and add computer-generated plants to the tank.

Click here to add moving animated objects to the tank.

Click here to attach a musical score to the tank.

Help Window



Close Box

Zoom Box

Click on an object to select it for manipulation.

Scroll Button

Grow Box

Click here to choose a shape for your tank.

Edit Tank Window

Choose Save in the File menu to save the tank to disk.

Click on the Close box to return to the Main Menu window. If you haven't saved the tank yet, or you've made changes since your last save, you will be prompted to save before exiting.

EL-FISH

BACKGROUND, BOTTOM AND FRAME

Gravel&Bckgrnd

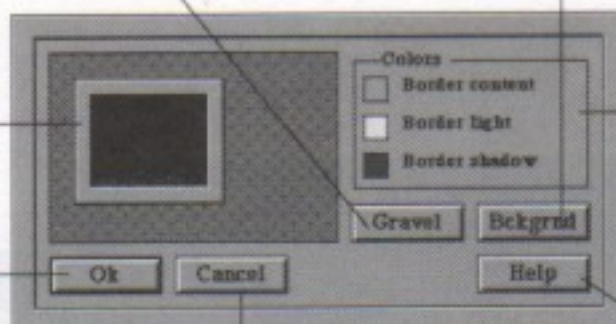
To change the tank's background, bottom and/or frame, click on the GRAVEL&BCKGRND button in the toolbox or choose Gravel&Bckgrnd from the Tank menu.

Click here to choose new bottom gravel for the tank.

Click here to choose a new background for the tank.

This box shows the color and size of the tank's frame and your current gravel and background choices.

Click here to accept your changes and return to the Edit Tank Screen.



Click on any of these boxes to open a palette of colors from which you can select for the tank's frame and its borders. (Only for rectangle tanks using the Shape command.)

Help Window

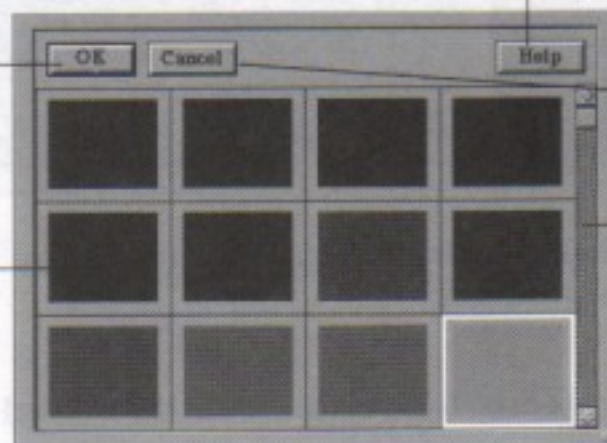
Click here to return to the Edit Tank window without keeping any changes.

When you click on the BCKGRND button, a selection of tank backgrounds will be presented to you.

Help Window.

Click here to accept the selected background.

Click on a background to select it.

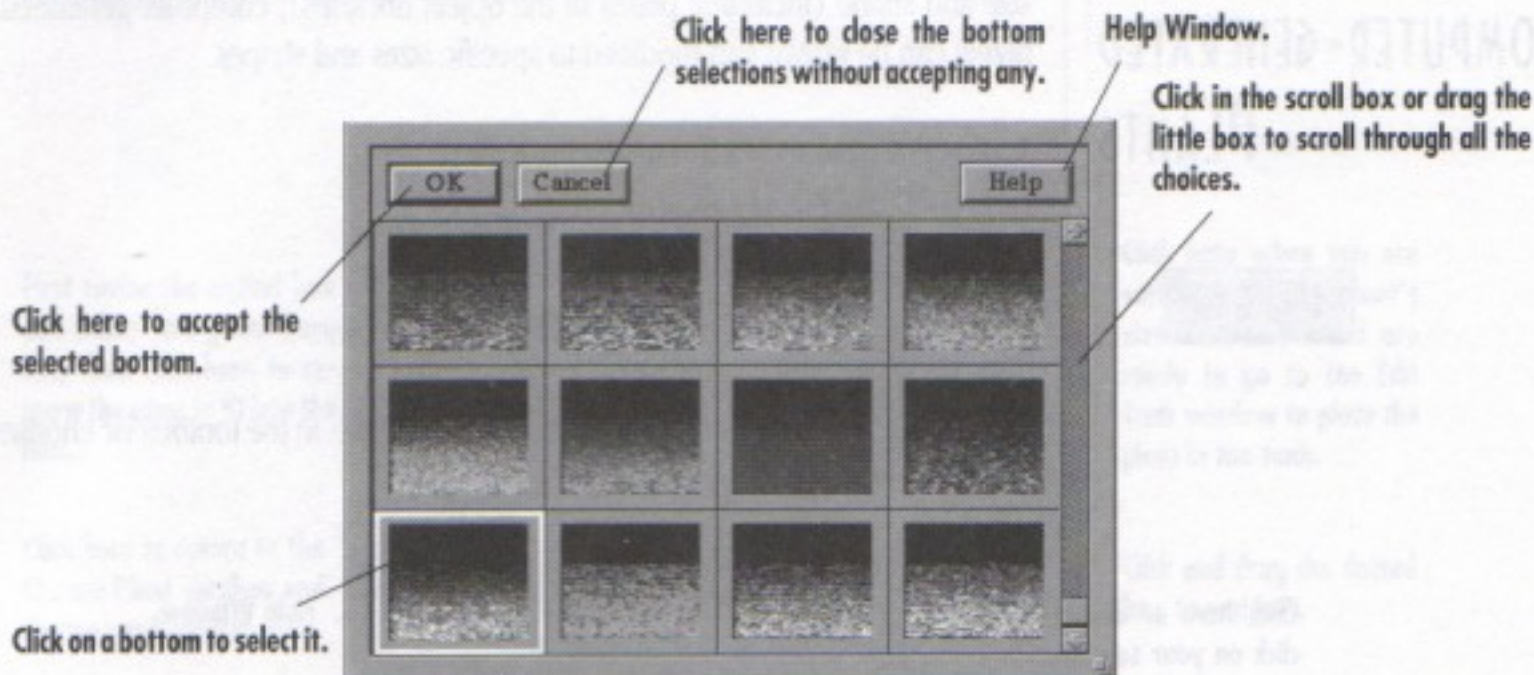


Click here to close the background selections without accepting any.

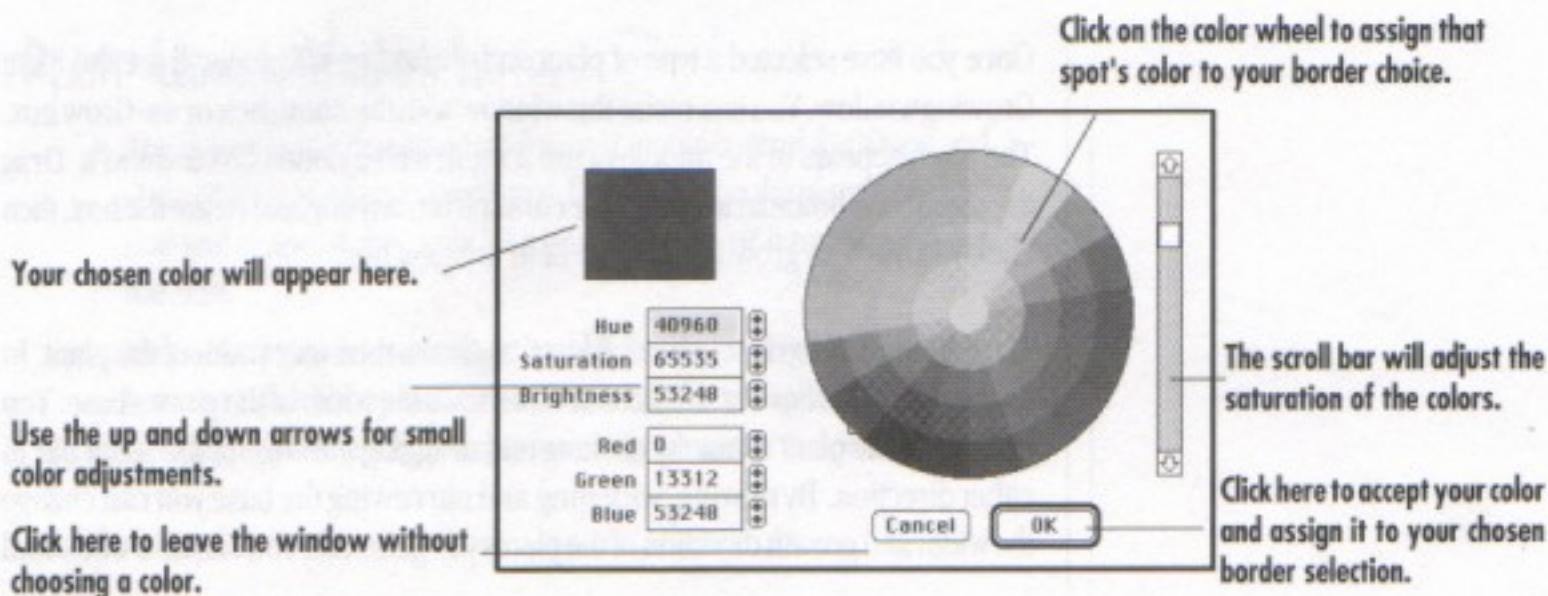
Click in the scroll bar or drag the little box to scroll through all the choices.



When you click on the GRAVEL button, a selection of tank bottoms will be presented to you.



If you've chosen the Rectangle with Frame tank shape, when you click on the Colors boxes, the Apple Color Wheel will appear. Clicking anywhere in the wheel's radius will select the associated color and assign it to whichever Colors box (border content, etc.) you've chosen.



EL-FISH

GROWING AND ADDING COMPUTER-GENERATED PLANTS

Plants

Unlike other objects that you can put in your tank that are pre-drawn to a specific size and shape (including plants in the object libraries), computer-generated plants can be grown and modified to specific sizes and shapes.

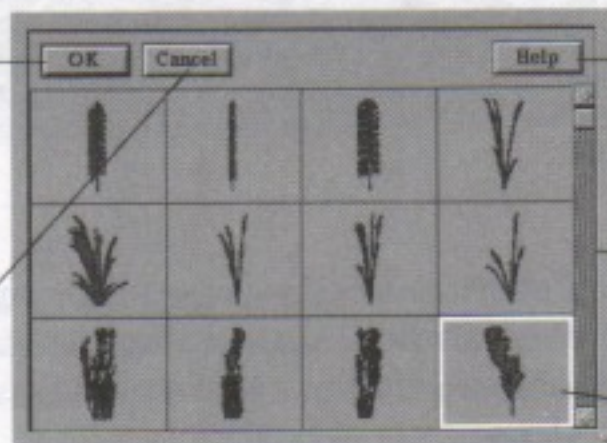
Adding these plants is a three-step process:

1. Choose the type of plant.
2. Set its size and grow it.
3. Place it into the tank in the Edit Tank window.

To select the type of plant, click on the PLANTS button in the toolbox or choose Add Plant from the Tank menu.

Click here or double-click on your selection to accept the selected plant.

Click here to close the plant choices without accepting any, and return to the Edit Tank window.



Help Window.

Click on the arrows or drag the little box to scroll through all the choices.

Click on a type of plant to select it.

Select Plant Window

Once you have selected a type of plant and clicked on OK, you will see the Plant Growing window. You can resize this window with the Zoom box or the Grow box. The plant appears in the middle of the screen, with a dotted box around it. Drag the dotted box boundaries with your cursor from any angle to resize the box, then click REDRAW to grow the plant to fit in the new box.

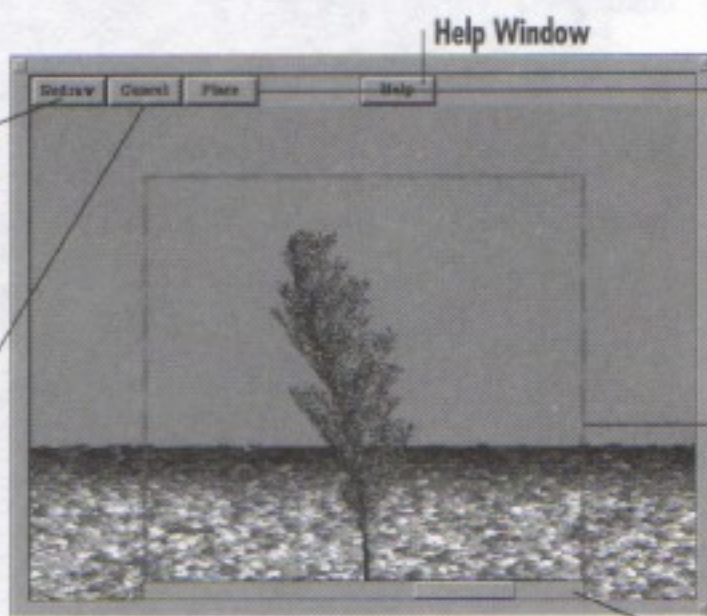
At the bottom of the box is a small bar that shows the outer width of the plant. In the center of that bar is a smaller bar that shows the width of the plant's base. You can widen the plant's base by clicking and dragging the edge of the small bar in either direction. By moving, widening and narrowing the base you can change the width and growth direction of the plants you generate. You can also click and



drag the newly widened bar and place it in a new spot. When you click on REDRAW, the plant will be repositioned.

First resize the dotted box and adjust the plant base bar, then click here to regrow the plant to fit into the box.

Click here to return to the Choose Plant window and choose a new plant to grow.



Plant Growing Window

Help Window

Click here when you are satisfied with the plant's size and shape and are ready to go to the Edit Tank window to place the plant in the tank.

Click and drag the dotted box to resize it.

Control the width and position of the plant base by clicking and dragging and/or moving this bar.

PLANT GROWING WINDOW NOTES

- The dotted box influences but does not totally control the shape and size of the plant when it is regrown. Depending on the plant's original size and shape, it may only fill part of the box, or it may extend out the side.
- On plants that only have a single branch for a base, adjusting the small bar won't widen the plant's base, but it can affect the plant's direction of lean. It will take a little experimenting to master the possibilities.

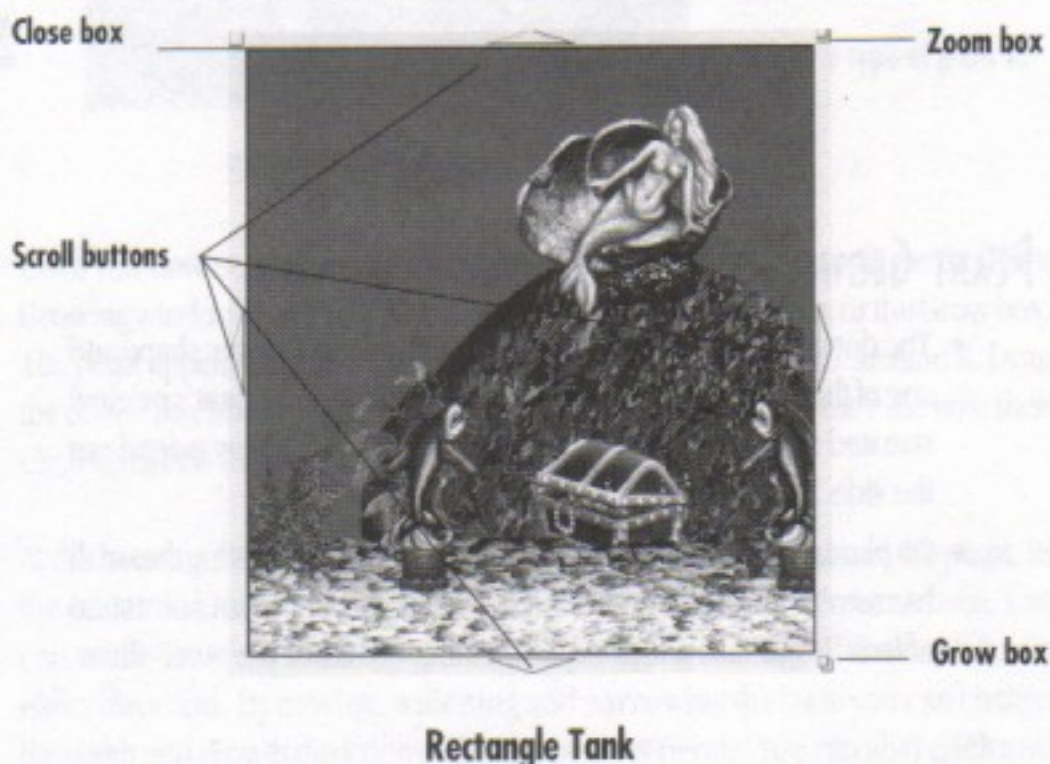
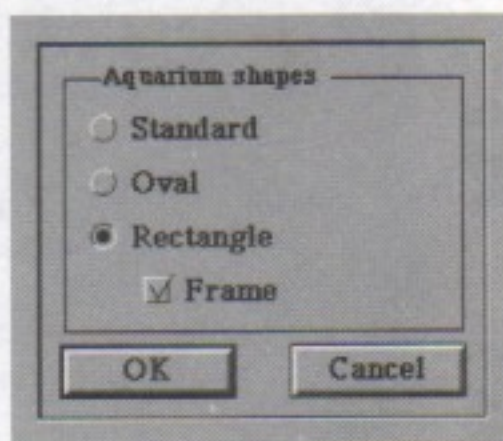
EL-FISH

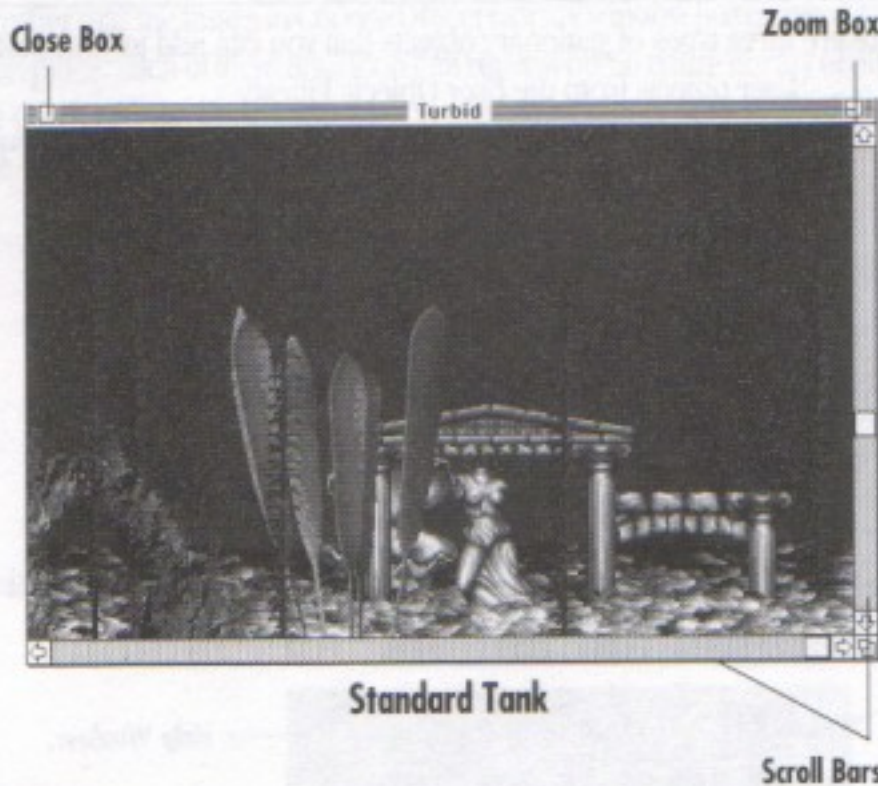
TANK SHAPES

Shape

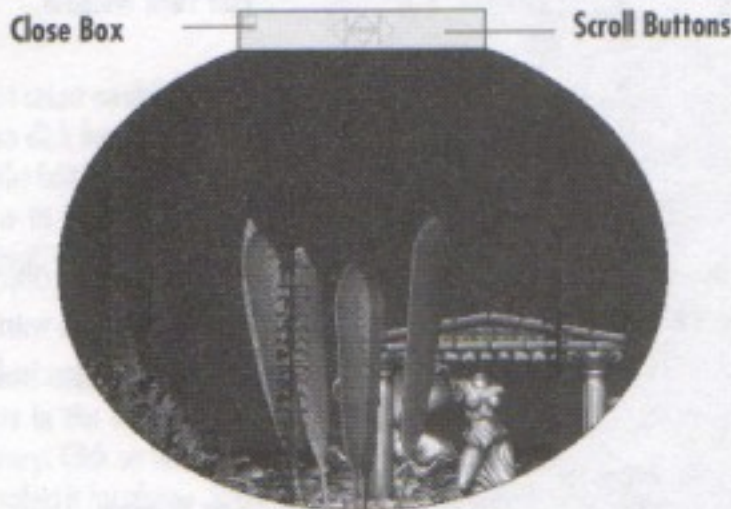
You can select a variety of tank shapes in El-Fish, each with different characteristics. You can make these decisions by selecting Shape in the toolbox or by choosing Select Shape from the Tank menu. Any choices made for border colors in the Gravel&Bckgrnd window can only be applied to tanks with the Rectangle button and Frame selected.

The Standard tank will appear with the usual Mac scroll bar, Close box and Zoom box. The Oval tank will have a pleasing oval shape, but it's not resizeable.





Standard Tank



Oval Tank

*I'm a union fish—a
Pisces working for scale.*



TANK SHAPE NOTES

- A rectangle tank with no frame still contains a Close box, Zoom box, Grow box and scroll buttons — you just can't see them. If you move the cursor just inside the tank border where any of those objects would normally be, the cursor will change to the corresponding button/box.

ADDING STATIONARY OBJECTS

There are three types of stationary objects that you can add to your tank:

1. User objects from the User Objects Library.
2. Other objects, including buildings, plants (not computer-generated), reefs, rocks, shells and more.
3. Fixed (stationary) animated objects.

The way you place objects in your tank is to:

1. Choose the type of object you want to place.
2. Choose the object you want to place.
3. Go to the Edit Tank window and place the object.

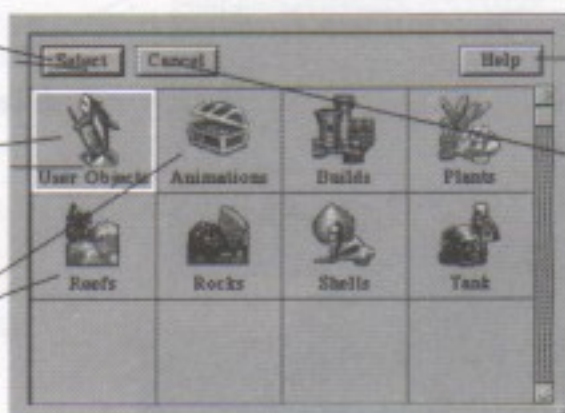
Objects

Click on the OBJECTS button in the Edit Tank window to open a menu that lets you choose the type of object you want to add to your tank.

Click here to open your selected library.

Click here to place objects from the User Objects Library into the tank.

Click on the various icons to see libraries of objects that don't move around the tank.



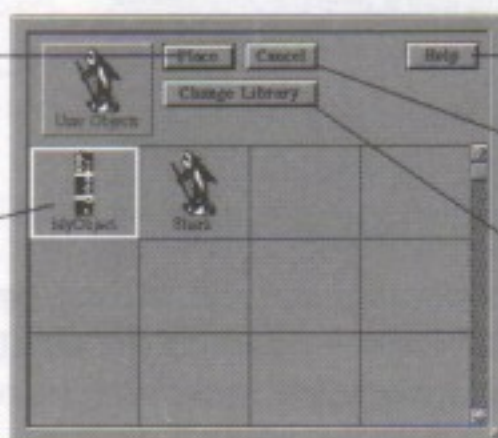
Help Window.

Click here to return to the Edit Tank window.

When you click on the User Objects icon and click the SELECT button, the objects from the User Objects Library will be displayed. Click on the object you want to put into your tank, then click on the PLACE button to go to the Edit Tank window and position the object.

First select an object, then click here to go to the Edit Tank window to place the selected object.

These are the objects in the User Objects Library. Click on one to select it.



Help Window.

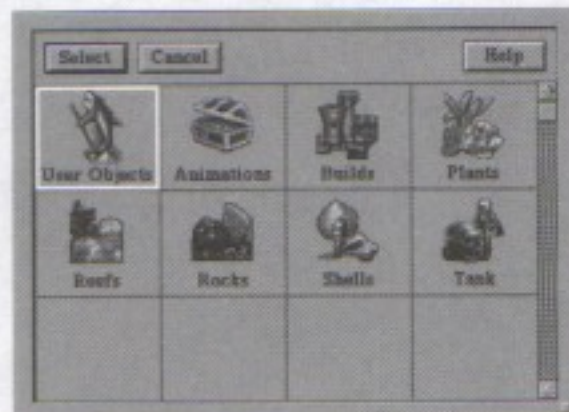
Click here to return to the Edit Tank window without placing any objects.

Click here to return to the Choose Object Library window to see other object libraries.

You can also double-click on objects to place them.



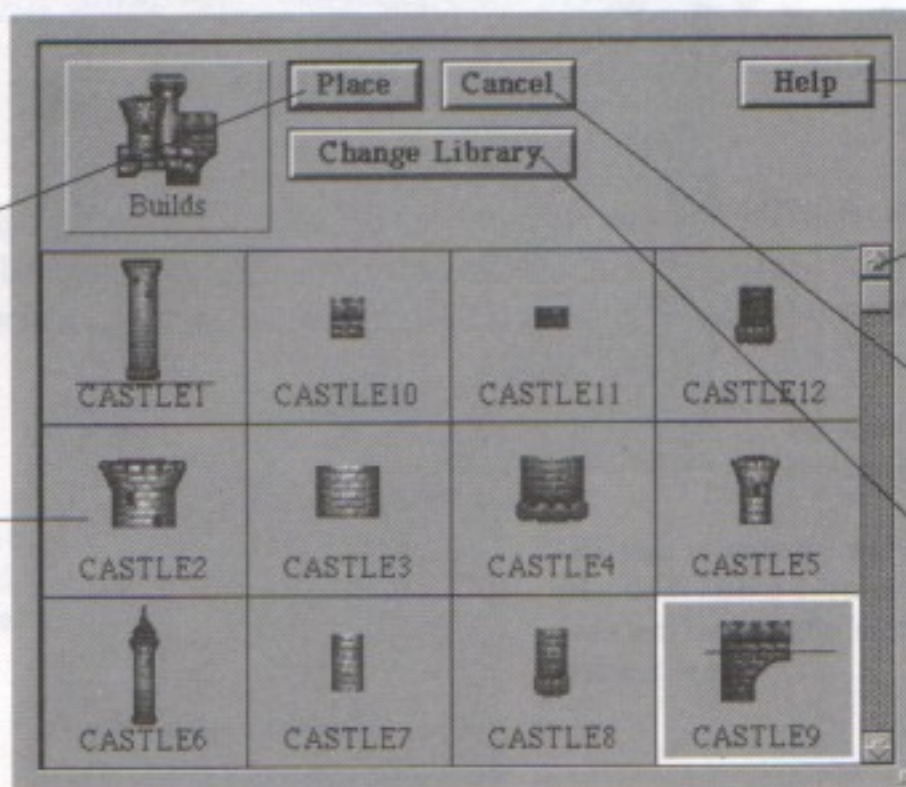
Remember that the things in Choose Object Library window boxes aren't objects you can place. Each of them is an icon that represents an entire library of objects. Select (click on) the library you want to choose an object from to display all the usable tank additions. Most of the libraries work the same way.



Choose Object Library Window

First select an object, then click here to go to the Edit Tank window to position the object.

These are the objects in the current library. Click on one to select it for placement in the tank.



Builds (Buildings) Library

Help Window.

Click on the arrows or drag the little box to scroll through all the choices.

Click here to return to the Edit Tank window without placing any objects.

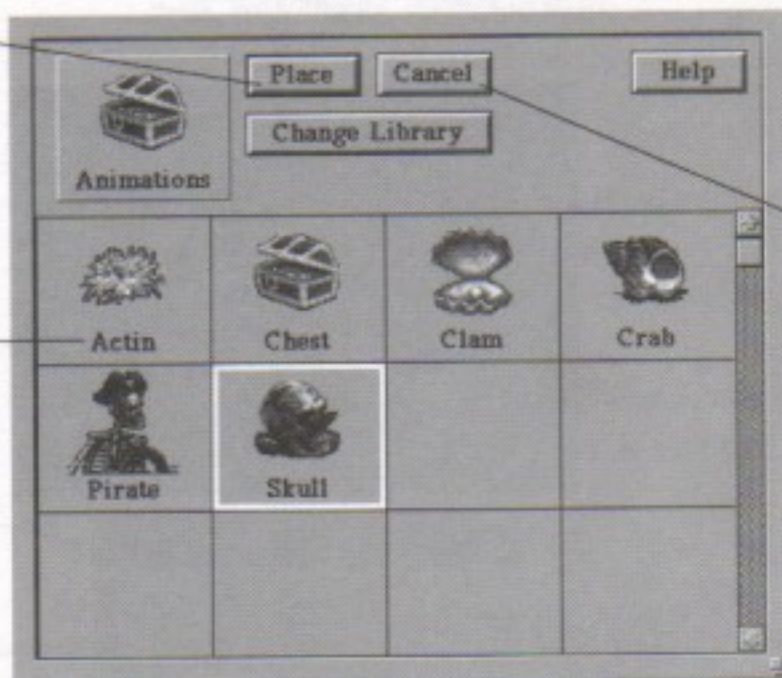
Click here to close the current library and choose another.

EL-FISH

When you click on the Animations button, you will see a selection of objects that, while animated, do not move around on the screen.

First select an object, then click here to go to the Edit Tank window to place the selected object.

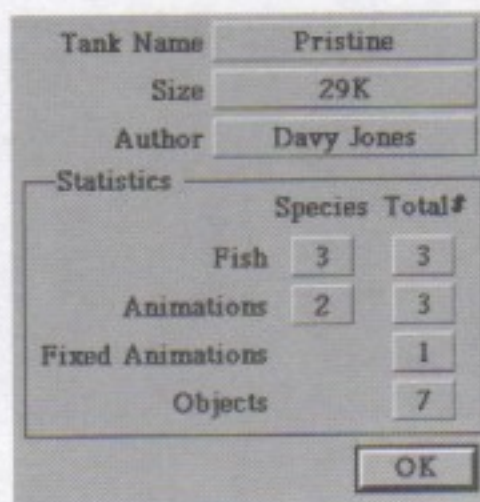
These are all the available fixed animated objects. Click on the one you want to select.



Click here to return to the Edit Tank window without placing any objects.

Fixed Animated Objects

The Tank Information window, available in the Select Tank window, will give you a sense of the numbers and types of objects in your tank, and the tank size. Fixed Animated Objects are called Fixed Animations in this window.



Tank Information Window



ADDING MOVING ANIMATED OBJECTS

Anim3

El-Fish includes a number of moving animated objects that you can add to your tank. For these, you just select the objects you like and the number of each that you want in the tank. You don't have to place them, since they move around on their own.

To place moving animated objects, click on the ANIMS button in the Edit Tank window or choose Add Animation under the Tank menu.

Click here to remove all moving animated objects from the tank.

Click here to return to the Edit Tank window without placing any objects.

Click here to accept the objects in the In Tank section and return to the Edit Tank window.

Each time you click on an object, one will be added to the tank. If you click one object three times, three will be added to the tank.

The objects that have been added to the tank appear here. Click on the objects to remove them from the tank.

If there are more objects than can show on the screen at once, click on the arrows or drag the little box to scroll through all the choices.

Help Window.

The number of times this object appears in the tank.

The size of the object in pixels.

The amount of disk space the object takes up.

The total number of moving animated objects in the tank.

Click here to reset the number and selection of moving animated objects to the way they were the last time the tank was saved.

Animations		In Tank	
			x1 103x57 14K
			x2 81x54 15K

Objects: 3

Add Moving Animated Objects

EL-FISH

Clicking on some of the moving animated objects can sometimes provide amusing rewards.



FidCrab Mamba

I'm into nuclear fisbin'.





ADDING FISH

Fish

Only fish that have been completely animated can go into tanks. To place fish, click on the FISH button in the Edit Tank window, or choose Add Fish from the Tank menu.

Click here to reset the number and selection of fish to the way they were the last time the tank was saved.

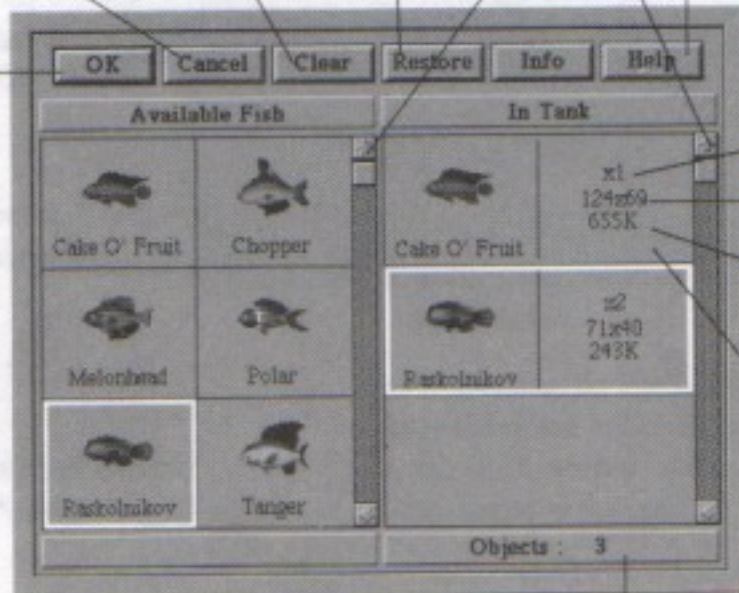
If there are more fish than can show on the screen at once, click on the arrows or drag the little box to scroll through all the choices.

Click here to return to the Edit Tank window without placing any fish.

Click here to remove all fish from the tank.

Click here to accept the fish in the In Tank section and return to the Edit Tank window.

Each time you click on a fish, one will be added to the tank. If you click one fish three times, three will be added to the tank.



Help Window.

The number of this type of fish that are in the tank.

The size of the fish in pixels.

The amount of disk space the fish takes up.

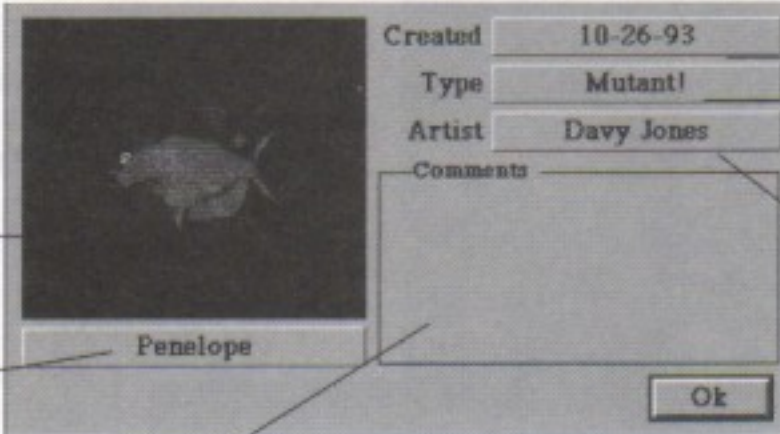
The fish that have been added to the tank appear here. Click on the fish here to remove them from the tank.

Add Fish

The total number of fish in the tank.

EL-FISH

You can click on the INFO button after you select a fish to open an information window with some seriously fishy information.



Enlarged picture of the fish.

The fish's name.

Author's comment about the fish.

Created 10-26-93

Type Mutant!

Artist Davy Jones

Comments

Ok

The date the fish was created.

Normal/Mutant status.

The person who created the fish.

Click here to close this window.

*Any friend of yours is an
anemone of mine.*





ADDING & GENERATING MUSIC

You can attach musical scores to your fish tanks that will play when the tank is being viewed. The quality of the sound will vary depending on what kind of computer and sound equipment (if any) you may have. The original scores can also be regenerated as wholly new compositions based on the initial rhythms.

To attach music to a tank, click on the Music button in the Edit Tank window or choose Select Music in the Tank menu to open the Music Selection dialog box.

Music

Click on any of these buttons to choose one of eight musical styles and generate a new music file. The music is immediately generated, the name of the style appears in the Music box, and the music is attached to the tank.

This is the name of the music style that is currently attached to the tank.

Click here to play the music currently named in the Music Name box.

Click here to stop playing the chosen music. Selections will remain until cleared.

When you re-open this music section box after having chosen a style, it will say "Current" in the music box. You can play it to remind you of its haunting melody, regenerates the tune, or choose another.

Music Styles

Ocean Whale Sushi Flounder

Stingray Shark Hermit Squid

Music : Ocean Clear Restore

Play Stop Help Cancel OK

Help Window.

Click here to close the Music Generation dialog box and return to the Edit Tank window without saving changes to the tank.

Click here to clear the file in the music name box and from your tank. Clicking again on your original choice and choosing PLAY will generate a variation of the original tune.

Click here to reset the music to the version last saved with the tank.

Click here to attach the current music style to your tank.

MUSIC GENERATION NOTES

- When you generate music, it is immediately attached to the current tank. You can just click OK and go back to the Edit Tank window—the music will be saved along with the tank when you leave the Edit Tank window.
- Once you generate music, click on PLAY to listen to it. To give the widest range of music styles, the music generator allows some discordant melodies and instrument combinations. If you like the style, but not the particular tune, click on the same style button again, then listen again.
- For more information on the inner workings of the computer-generated music, see Appendix 3: The Music Generator.

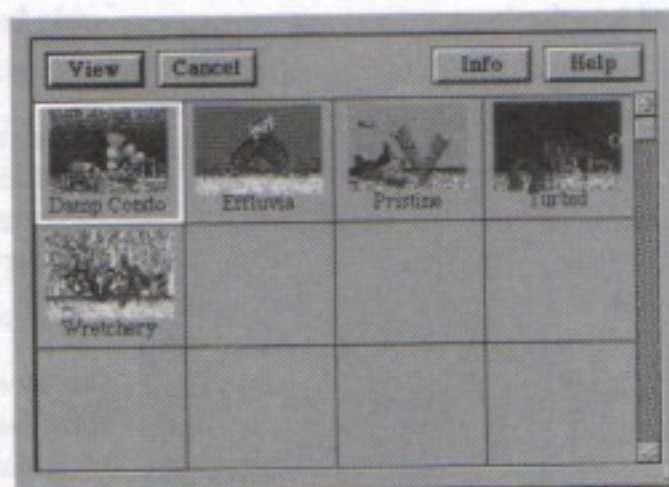


VIEWING A SINGLE TANK



There are two ways to view a single tank (as opposed to viewing an Exhibition of a series of tanks).

The most direct way is to click on the VIEW button in the Tank Design section of the Main Menu window. This opens a window with boxes containing all of your tanks. Double-click on the tank you want to view, or select a tank and click on the VIEW button or hit the Return key.



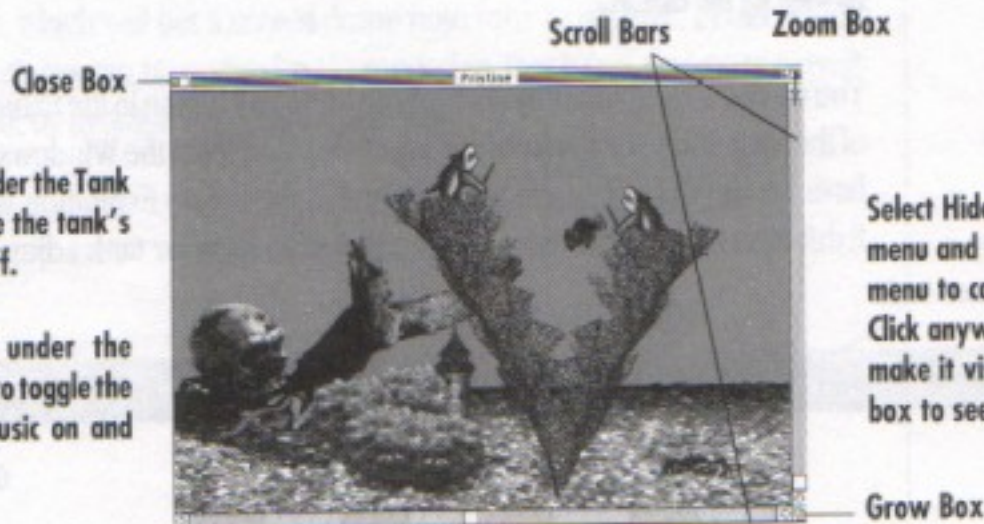
Once the tank has been opened, your screen will fade to black, then the tank will appear: first the tank itself, then the objects, then the fixed animated objects, then fish and moving animated objects.

Select Food under the Tank menu to sprinkle some electronic fish food into the tank.

Select Light under the Tank menu to toggle the tank's light on and off.

Select Music under the Options menu to toggle the background music on and off.

Select Hide Finder under the Options menu and Hide Menu under the Tank menu to conceal your Mac's desktop. Click anywhere on the menu bar to make it visible again. (Use the Zoom box to see a full-screen tank view.)



Standard Tank

EL-FISH

CREATING AND VIEWING EXHIBITIONS



Click here to accept the tanks and times in the Exhibition and return to the Main Menu.

These are all the tanks from the Tank Library. Click once on a tank to include it in the Exhibition for one minute. Click again to add a minute to the tank's viewing time. You can select a tank and click on INFO to see the Tank Information Window.

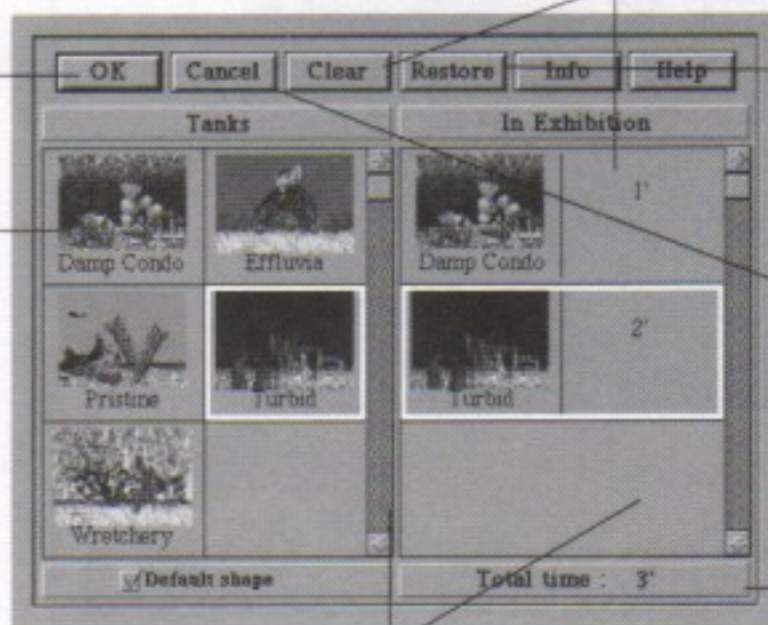
When it's time to enjoy the spawn of your creative juices, you can create and watch an animated "Exhibition" of your tanks. To begin, click on the CREATE button in the Exhibition section of the Main Menu window, or choose Create Exhibition from the Windows menu.

The tanks that are in the Exhibition appear here, along with their viewing time. Click on a tank to remove one minute of viewing time. When the time reaches zero, the tank is removed from the show.

Click here to remove all tanks from the Exhibition.

Click here to reset the selection of tanks and their time to the way they were the last time the Exhibition was edited.

Click here to return to the Main Menu without changing the Exhibition.



Total time of Exhibition.

If there are more tanks than can show on the screen at once, click on the arrows or drag the little box to scroll through all the choices.

You can view Exhibitions by clicking on the START button in the Exhibition section of the Main Menu or by choosing Start Exhibition from the Windows menu. If you have left the Default Shape box checked in the Create Exhibition window, each Exhibition tank will have a control panel at its base for tank adjustments.

Close box Choose last/next tank

Zoom box



Scroll buttons

Grow box

Default Shape Control Panel



ADVANCED FEATURES

Here is an explanation of some of the El-Fish utilities, customizing options, and file-sharing techniques.

TAKING SCREENSHOTS

El-Fish has the built-in capability to grab screenshots of tanks or tank objects and write them to disk files. Screen-grabbing can work both when viewing and editing tanks, either singly or in an Exhibition.

Why take screenshots? To document your art. To expand El-Fish artistry into another medium. To be able to load screens into paint programs and edit them, or take parts of them and use them in other paintings or in other programs. To access the objects that are in the User Objects Library and modify them, then bring them back in. To make posters, slides, greeting cards, letterhead, or anything that could use colorful fish.

To save a picture of a tank, press Command-C in View Tank mode. Your tank will be copied to the Clipboard and from there can be pasted into any color paint or image-editing program (e.g., SuperPaint®, PhotoShop®) and saved in varied formats. Using the same command in Edit mode will take a picture of any selected object.

If you have memory constraints, you can paste the images from the Clipboard into the Scrapbook, and edit them in a paint program later. You can also use the Mac's built-in screen-capture method by hitting Command-Shift-3 while viewing the desired tank, which will put a screen dump onto your hard drive. Under System 7.X, these pictures can be opened and cropped in TeachText (memory permitting), printed, or brought into a paint program.



Object Copied from Edit Window to Clipboard

EL-FISH

SCREEN GRABBING NOTES

- Files saved by using the Mac's built in screen-shot tool will appear on your system drive. They will be named Picture 1, Picture 2, and will automatically increment so you won't accidentally overwrite an earlier screenshot. Double-clicking on them will open them in TeachText.
- Full-screen tanks saved to your drive can be 250K and up; objects saved to the Clipboard become PICT files, and can be 75K and up. However, loading these files into paint programs and saving them as various formats (PICT, TIFF, etc.) can cause sizes to vary widely, as each program may or may not have a built-in compression scheme according to the file format.
- Look in your local phone book under Service Bureaus to find places that can print your screenshots in color, or transform them from disk files to slides or posters.
- Fish and tanks can be used artfully even when printed in greyscale. We hope this manual proves the point.

Don't smell fish—play El-Fish!





SHARING FISH, OBJECTS AND TANKS WITH OTHERS

After creating your masterpiece, you'll probably want to share your art with friends or broadcast it to the BBS world. Great! You have the right to share, trade or give away any data files you create with El-Fish, including fish, tanks, and objects. You **may not** share, trade or give away any of the files that come with El-Fish, including the main program, viewing or converting utilities, or libraries. Most often, you'll probably want to trade fish. Since completely animated fish can take up massive amounts of disk space and hours of modem time, trade Roe, not fish. You can create Roe from the fish in the Roe Library. Roe files are less than 3KB, fish can be over 1,500KB.

If you make your own objects by painting or scanning, you can trade them in the PICT format, available as a Save option in most Macintosh paint or image-editing programs.

Trading tanks is a little trickier. The actual tank file contains the tank back and bottom, computer-generated plants, non-animated objects and the music—no fish, no fixed animated objects and no stationary animated objects.

The reason the tank file doesn't contain everything is that it would be so big that it couldn't fit on a floppy disk (or two or three). There's no need to include the animated objects (moving and fixed) in the tank file, since anyone who would want your tank would already have them with their copy of El-Fish.

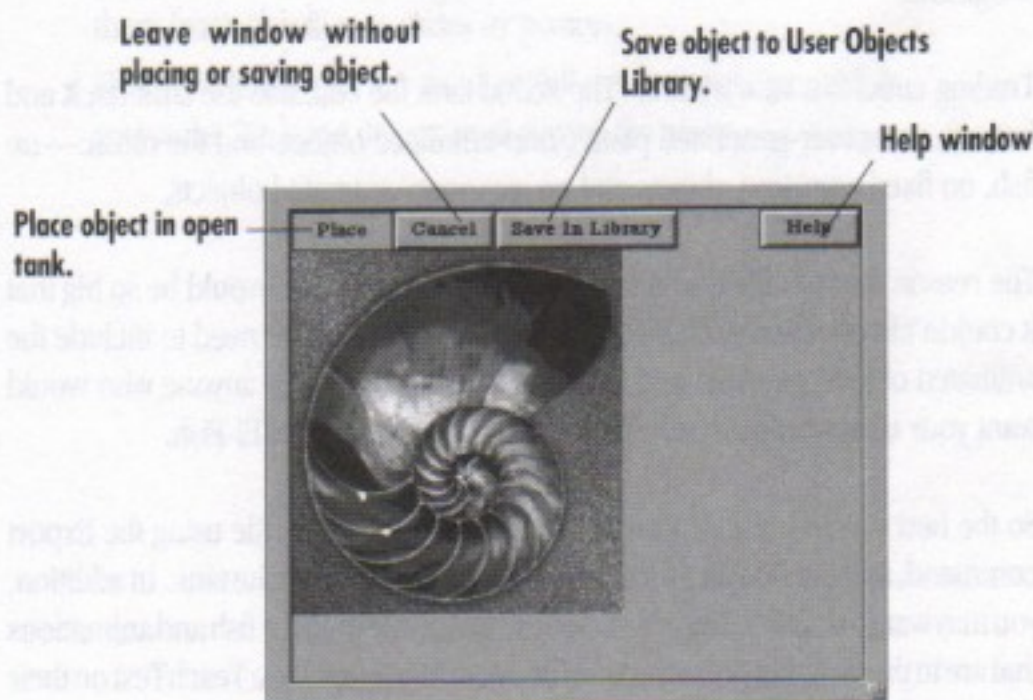
So the best way to trade or share tanks is to send the tank file using the Export command, and the Roe files for each type of fish included in the tank. In addition, you may want to include a tank's packing list: a text file of all the fish and animations that are in the tank, but not in the tank file. Most Mac users have TeachText on their machines, so that seems like a good bet for creating the list.

ADDING YOUR OWN PICTURES AND SCANS

Adding your own paintings, pictures or scans to El-Fish is a two-step process:

1. Convert the picture to the PICT format in an appropriate program.
2. Load the picture into the User Objects Library.

The method for adding to the User Objects Library is simple: under the File menu there is a command called Import PICT. If you select it from the Main Menu window, you can only save objects to the library. If you select it while you are editing a tank, you can place the object directly into the tank. After selecting Import PICT you will see the standard Mac open-file dialog box. Locate the file you want to import and open it. You'll then see the Import Object dialog box (below), from which you can place the object without putting it into the library, or make it permanently available as a User Object.



FILE CONVERSION NOTES

- To modify an existing object in the User Objects Library, select the object in Edit Tank mode and take a snapshot (Command-C). Open it in your print program, edit it, and bring it back to the User Objects Library with the Import PICT command.



APPENDIX I: TROUBLESHOOTING FISH IN A BARREL

Here are some commonly asked questions about El-Fish (and their answers).

Q: I placed a plant or other object and the outline appears, but the object doesn't. What are you trying to pull here?

A: When placing plants or other objects into tanks, remember that the tank has depth—you might be placing your object behind something. Make sure you choose the X-Z button, so you can move the object along the Z (depth) axis.

Q: Oh yeah? Well, I did that but it still won't show up.

A: You may have to choose X-Y and move it out into plain view somewhere, then select X-Z to adjust the depth.

Q: When breeding fish, how come you don't tell us which one is the mommy fish and which is the daddy fish?

A: In El-Fish we don't distinguish between mommy-fish and daddy-fish because we aren't breeding the way real fish breed. We're actually splicing the individual genes. But if you want, you can write MOMMY and DADDY on pieces of paper and tape them to the bottom of the monitor.

Q: What if you try to breed two fish and they don't like each other?

A: Change the polarity on your monitor (just kidding).

Q: When fishing in the Catch Fish window, why can I catch fish even when I click on land?

A: The fish you catch aren't really on land—they're in streams that are too small to show up on the map.

Q: Do you really catch different fish from different parts of the lake?

A: Yes, but don't take my word for it. Go fishing and find out for yourself.

Q: Do the fish ever get too fat from eating too much electronic fish food?

A: Not that we've noticed, but let us know if it happens to your fish.

Q: How many fish and animated objects can I place in a single aquarium?

A: The total number of animated objects—fixed and moving combined—is eight. The total number of fish and animated objects that you could possibly put into a tank is 128—but there are considerable limitations. The amount of memory you have and your computer's speed can lower the limit. Also, El-Fish loads fish and moving animated objects dynamically. If you put, say, 100 fish into a tank, there probably won't be enough memory to hold them all at once,



so El-Fish will load as many as it can, then when they swim off-screen, it will delete them and load in other fish, until all the fish you want get some swimming time.

Q: Do some of the fish travel in schools? Are these the smart ones?

A: Yes and no. Where there are a few of the same kind of fish in a tank together, they will exhibit schooling behavior and swim along together. These aren't necessarily the smart ones, because the smartest ones have already graduated.

Q: How many non-animated objects can I put in an aquarium?

A: The absolute most that you can put in a tank is 128, but it could be many fewer depending on your computer's memory and speed.

Q: Is it true that an electronic fish's beauty is only skin deep?

A: No. It is eight bits deep.

Q: What's this stuff about mutants?

A: If a fish you breed or evolve differs too much in size or shape from the parents or the original fish being evolved, it will be marked as a mutant. El-Fish is a very democratic society, and mutant fish have all the social rights as other fish: they can be animated and they can swim around in tanks. In addition, mutant fish can look very weird and wonderful. The only disadvantage suffered by a mutant fish is sterility. Mutants cannot breed or be evolved. If you want, you can call mutants "mules." It's a little nicer, and actually more correct, but "mutant" sounds more fun.

Q: How long does it take fish to eat their food? It seems like a long time.

A: Since electronic fish have no natural enemies, they can take their time to enjoy their meals. Besides, there's nowhere for them to go after dinner, so why rush?

Look, we gotta be honest. Some of the things El-Fish makes your computer do are very complex and very time-consuming. Even on a very fast computer, rendering the hundreds of animation frames for each fish takes a while. And on a not-so-fast computer it can take hours. We did the best we could to speed it up, but quality is expensive, and the price you pay for quality electronic fish is time.



APPENDIX 2: THINGS TO DO WHILE EL-FISH GENERATES FISH ANIMATIONS

In spite of doing our best, we feel bad about making you wait for your fish, so here's a list of things you can do to keep yourself amused while waiting for your computer.

Read the rest of this manual (just kidding).
Read the comics in your local newspaper.
Leisurely peruse the Maxis catalog and look for games that you can't live without.
Run to the local store and buy a CPU with an FPU (poetry it ain't).
Fill out and send in your registration card.
Set up a real aquarium.
Recite the Gettysburg Address from memory.
Name all the provinces in Canada.
Look in an atlas to find out where the Seychelles are and figure out how to get there.
Give your Mom a perm.
Do your spring cleaning.
Install new linoleum in your kitchen.
Balance your checkbook.
Take up knitting.
Go skiing.
Visit Nome, Alaska.
Enter a marathon.
Fill out and send in your registration card.
Fly to New York for lunch.
Count the pixels on your computer screen.
Cruise the local boulevard.
Play Rock, Scissors, Paper with a sibling.
Write a poem about El-Fish. (Rhyme hints: selfish, hellfish, well fish, smell fish.)
Find out how loud you can play your stereo before the neighbors call the police.
Write your thank-you notes from last Christmas.
Hug all the trees in your neighborhood.
Spend quality time with your spouse so they don't break your computer.
Remind your family that you still exist and aren't just an attachment to your computer.
Improve your cat-nap skills.
Raid your refrigerator.
Start the Great American Novel (since your computer's busy, you'll have to write with a crayon).
Clean your room.
Fill out and send in your registration card.
Organize your album collection by the number of grooves in the records.
Make a list of things you want but can't afford.
Make soap sculptures.
Rotate your tires.
Floss your dog's teeth.
Feed your Sea Monkeys®.



THINGS TO DO WHILE EL-FISH GENERATES FISH ANIMATIONS, PART 2

- Alphabetize a bag of M&Ms.
- Compute pi to the last digit.
- Practice channeling.
- Ponder rutabagas.
- Learn to juggle.
- Wash your parakeet.
- Try to identify the leftovers in your refrigerator.
- Find Carmen Sandiego.
- Learn new yo-yo tricks.
- Inflate your ego.
- Climb the walls.
- Fill out and send in your registration card.
- Photocopy all your body parts, cut and paste, and create a full-size replica of yourself.
- Meditate in a pyramid (Californians only).
- Think of good El-Fish puns.
- Think of bad El-Fish puns.
- Doodle.
- Find out how many holes it takes to fill Albert Hall.
- Find an English word that rhymes with *orange* (door hinge doesn't count).
- Play fifty-two card pickup.
- Wonder what kind of a president Edgar Allan Poe would have made.
- Try to make a shadow puppet in the shape of the White House.
- Draw a bath with a fountain pen.
- Count your blessings, multiply them light.
- Ponder over the next logical place for an Elvis sighting.
- Design a car out of your emotions.
- Fill out and send in your registration card.
- Mousse your hair into the shape of the Queen Mary.
- Write a one-page essay that justifies high school.
- Cling to your beliefs when time throws you overboard.
- Read the manual from another fine Maxis product (just kidding—again).
- But, whatever you do... **DON'T PRESS THE RED BUTTON!**



APPENDIX 3: THE MUSIC GENERATOR

To keep your ears happy and to protect them from suffering the indignity of ever-repeating melodies, we have included with El-Fish a music generator, known as BEMUSE, designed and programmed by Brian Conrad. The music generated can be in any of eight styles:

- | | | | |
|----------------------|----------------------|--------------------------------|-------------------------------|
| 1. Ocean (New Age) | 3. Whale (Classical) | 5. Sushi (Oriental Koto music) | 7. Flounder (Jazz) |
| 2. StingRay (HipHop) | 4. Shark (Rock) | 6. Hermit (Blues) | 8. Squid (Sea Chanty or Folk) |

You select the style, and BEMUSE does the rest. Each style has a number of templates, or frameworks, that the computer can work within to generate the music. The templates hold this information:

- Tempo and Time signature
- The chord progression
- The length of the song
- A dictionary of drum rhythms, including fills
- A dictionary of harmonic comping rhythms
- A dictionary of instruments that can be used (2–4 per track)
- A dictionary for each chord, including the bass notes, the chord notes, and the notes that can be played against the chord

The most random elements in the music are the melody and the choice of instruments. In order to get the widest range of musical moods, BEMUSE allows a certain amount of discord in the melody and clashing in the instrument choices. Sometimes music that is generated can be ... well, nasty. If you don't like it, just generate a new tune—it only takes a few seconds. But if you've made a dark, dangerous, eerie, moody tank, you might want it to be accompanied by clashing, discordant, mean, nasty music. The choice is yours.



APPENDIX 4: PERFORMANCE TIPS

El-Fish is very computation-intensive. Here are a few things that you can do to speed things up or at least make the best use of your time.

Use small fish. The smaller the fish, the faster they breed, evolve, and animate. Smaller fish are also easier to display in a finished tank.

Go for quality over quantity: put less fish into your tank. The more fish you have, the more power it takes to display them. You can experiment by adding fish to a tank, one-by-one, and then viewing it. When you notice the fish slowing down or moving jerkily, you've overtaxed your system.

Limit the number of animated objects—both fixed and moving—that you put in the tank. They can take more computer power to display than the fish.

Get a machine with a Floating-Point Unit (a chip that performs math-intensive calculations). Since El-Fish is so computation-intensive, an FPU really speeds things up, especially breeding, evolving and animating. Many 040-based computers have a built-in FPU, but many 030 chip machines do not. Prices have dropped sharply in the last year for 040-based Macs with FPUs. They also speed up spreadsheet calculations. The good thing about computers is that they keep getting better, faster and cheaper. The bad thing about computers is that the minute you buy one, it's obsolete.

Get an accelerated graphics card. This won't help with breeding, evolving or animating, but will allow you to smoothly display more and larger fish. Accelerated graphics cards are coming down in price, but are still a lot of money.

Here's a comparison chart of *approximate* times different computers take to perform the calculation-intensive El-Fish functions. Animating was timed using a normal-sized fish. Remember that animating bigger fish will take longer. So will animating at a high image quality.

Computer	Catch/Breed/Evolve	Animate
Mac Color Classic	5–7 minutes	6–7 hours
Ilci	15–35 seconds	25–35 minutes
Centris 610	7–10 seconds	7–10 minutes



APPENDIX 5: FILE AND FOLDER INFORMATION

When you install El-Fish onto your hard disk, it sets up a hierarchy structure with a main folder (EL-FISH) and six folders inside: AQUARIUMS, FISH, MOVIES, PICTURES, ROE and SUPPLEMENTS.

The main ELFISH folder contains the main El-Fish program file.

The AQUARIUMS directory is where all tanks, whether finished or in-progress, are stored.

The FISH folder is where all fish are kept, whether or not they are animated.

The MOVIES folder contains the files for moving and fixed animated objects.

The PICTURES folder is where the objects for the User Objects Library and the other non-animated object libraries are kept.

The ROE folder contains your Roe, those genetic instructions for producing full-fledged fish (if you're willing to believe fish can be fledged).

The SUPPLEMENTS folder contains various files that the El-Fish program needs to access from time to time.



APPENDIX 6: EL-FISH AND PERESTROIKA

El-Fish is truly a child of perestroika: a joint effort between American technology and Russian science. El-Fish would have been impossible a very few years ago, when Russian scientists were denied access to the powerful desktop computers commonly taken for granted in most of Europe and the United States.

It has been noted by some in the computer industry that many of the best programmers are hackers who learned on small, cheap computers. They had to understand their machines inside and out and develop ingenious, efficient code to get results from their low-powered computers. In contrast, many university- or business-sponsored mathematicians and scientists had access to powerful workstations or even supercomputers, and, while they excelled in their fields, because of the computing power at their disposal, they didn't need to optimize their code. They didn't have to squeeze every bit of performance out of their computers.

Russia seems to have produced the best of both worlds: highly trained scientists and mathematicians with the hacker mentality. Because of the limitations of their pre-perestroika desktop computers, even the best scientists had to strive for the cleanest, most efficient computer code to carry out their research. Then suddenly, trade and technology barriers were removed, and powerful IBM-compatible and Macintosh computers became readily available. Russian programmers found themselves feeling like kids in a candy shop. El-Fish is one of the first offspring from the marriage of American technology and the Russian brain.

The idea of El-Fish was conceived in 1988 by Vladimir Pokhilko, Ph.D. (psychologist and software designer at Moscow University) and Alexey Pajitnov (mathematician from the Computer Center of the Soviet Academy of Science, and author of a number of computer games including Tetris® and Weltris®). They started a company called INTEC (Intellectual Technology) in order to apply their scientific knowledge to making software, not for industry or science, but for people—or in their words, for “people’s souls.” They referred to this type of program as Human Software. Human Software is defined by three rules:

1. It has to be aesthetically beautiful.
2. It has to be constructive.
3. It has to give people new personal possibilities, sensations and feelings that they don't have in everyday life.

To this end, they came up with El-Fish. It uses the latest in computer graphics and animation for beauty. It allows the player to build and be constructive. It exposes people to artificial life and the beginnings of virtual reality.



A HISTORY LESSON

In 1989, Henk Rogers, the President of Bullet-Proof Software, went to Moscow to license the rights to Tetris. He liked the idea of Human Software in general and El-Fish in particular, and helped finance the project. With the new backing, INTEC expanded, adding a number of renowned scientists, including:

Oleg Fedotov, Ph.D., physicist and professor of cybernetics

Dmitri Tolkachev, Ph.D, physicist and mathematician

Alex Jakovlev, Ph.D. in physics and mathematics

Nikolay Strakhov, systems programmer from the Russian space program

Mikhail Tsupko-Sitnikov, Ph.D. in computational mathematics, and many others.

In 1990, Bullet-Proof and INTEC started working together on various projects, and in 1992 formed a joint venture called AnimaTek (Animation Technology). In January 1992, Maxis came into the picture. As a leading publisher of artificial life-based Software Toys® (SimCity®, SimAnt®, SimLife™, etc.), they were chosen to publish El-Fish in the US. Maxis worked closely with AnimaTek to help finish the product by preparing it for the American audience, adding the final touches to the interface, polishing the artwork, and writing the documentation.

We at Maxis are proud to be part of this international software team and look forward to working with AnimaTek on many more Human Software projects that will delight and amaze everyone with a computer.

EL-FISH

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