

TANDY®

Cat. No. 26-3280

BIOSPHERE

Save a doomed planet with your Color Computer.



HARVEY

Biosphere Program:
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Introduction

As Captain of the starship Arkworld, you've visited hundreds of planets in Earth's spiral arm of the Milky Way. You've seen everything from golden seas of Starphalange plants blooming in a single instant to the terrifying spectacle of Janusian Ripsaw Cats flashing thick, serrated tentacles through herds of gentle Gnumen. You've seen plants that walk, animals that talk, and rolls that rock. You've seen beauty and beasts.

But you've never seen a sight as terrible as the one you witness now: **the destruction of a planet and all its creatures.**

Beneath you, on the surface of this dry and desolate planet, you see the last colony of a race of animals struggling for survival. All plant life has perished, the seas are dry, and the atmosphere is quickly dissipating into space. Sadness overwhelms you as you peer through Arkworld's telescope.

All life is important to you. As the Captain of a Space Animal, Vegetation, and Ecological Survey (S.A.V.E.S.) starship, you've collected plants and animals from hundreds of worlds throughout the galaxy. The holds of your spaceship are filled with 200 species of plant and animal life that had to be relocated from their native worlds when their environments were upset by pollution and climate changes.

But the Arkworld's holds are full . . . and it seems inevitable that this last, pitiful species of animal must follow the same path to extinction as Old Earth's dodo birds, passenger pigeons, and house cats.

Suddenly, you jump from your seat, order the crew to the cages below, and fire up Arkworld's massive Tandy Color Computer System. There might be a way to save these creatures . . .

Instead of helping the creatures by taking them off the planet, you realize that **the only way to save them is to repopulate the planet with the plants and animals aboard the Arkworld.** But this task is no simple matter: you must carefully weigh the needs of each species and predict the effect of interrelationships between plants and animals on the planet's environment.

As talented and smart as you are, you realize that you need the help of the starship's Color Computer to save the creatures and their planet. To create a workable ecology, you must balance many variables: what gasses do your plants and animals breathe and expel, what foods do they eat, what temperatures and humidities do they need to survive?

Using your computer to search the ship's plant and animal manifests, you look for combinations of life forms that work together to preserve the planet and its last surviving animals.

And then you wait . . .

Seasons pass; plants bloom and wither; large animals feed on smaller ones. Time tests the web of life that **you** created.

Anxiously, you sit by the computer watching the read-outs from the computer sensors on the planet. When oxygen levels increase, you add plants that use oxygen; when herbivores begin to die, you add food-bearing plants. Day after day you struggle to stabilize the ecology of the planet.

Finally, when you think you've created an environment that can save the planet's last, lonely creatures, you go into Arkworld's hyper time acceleration chamber and let the days and months quickly pass by.

How good an ecologist were you?

Your next look at the planet should tell you.

Loading the Simulation

Biosphere is an ecological simulation designed for a 64K Color Computer running the OS-9 operating system.

To start the simulation, insert the Biosphere diskette into Drive 0 and type:

DOS (ENTER)

After OS-9 boots, answer the date and time prompts, and then type:

BIOS (ENTER)

This loads the Biosphere program and enters the Title Display Mode.

Note: Since Biosphere runs on the OS-9 Operating System, use your standard OS-9 boot procedure to start the program. If you do not have a standard OS-9 boot procedure, refer to the Appendix — Starting OS-9 from BASIC.

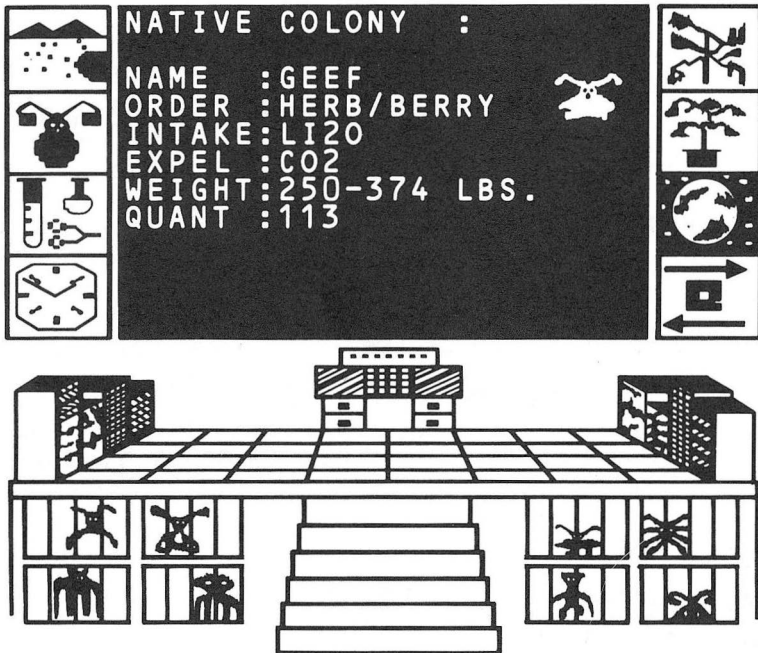
Press any key (other than (BREAK)) to begin the simulation.

Press (BREAK) during the Title Display Mode to halt the program and return to the OS-9 system prompt.

The Biosphere simulation ends when the last of the colony of native animals perishes.

The Color Computer Screen

The Color Computer screen depicts the interior of your spacecraft.



Centered at the top of the screen is Biosphere's computer information display. The four icons on each side of the display represent the various computer functions needed to run the simulation.

Beneath the ship's computer center are Arkworld's animal cages.

Space Animal, Vegetable, Ecological Survey (S.A.V.E.S.) Instructional Dossier

Biosphere is a complex ecological simulation that demonstrates the interchanging relationships of living things to each other and to their environment.

Although the simulation is set up on an imaginary planet with alien plants and animals, the ecological principles behind the program are real and immediate.

Although you are anxious to get to the important task of saving an animal species from extinction, you decide to review some notes you jotted down at Ganymede School of Ecology. After all, this planet's ecosystem parallels the ecosystem of Planet Earth.

Notes

An ecosystem is an area — as small as a pond or as large as a planet — in which living and non-living elements interact, exchange the materials of life, and continue this process over and over again.

Every ecosystem has four main elements:

1. The **biosphere** which consists of all the non-living substances in an environment — from the chemicals and elements in the atmosphere to the minerals and soil in a planet's crust.
2. **Food producers**, usually green plants, that trap the sun's energy and make it available to other creatures as food.

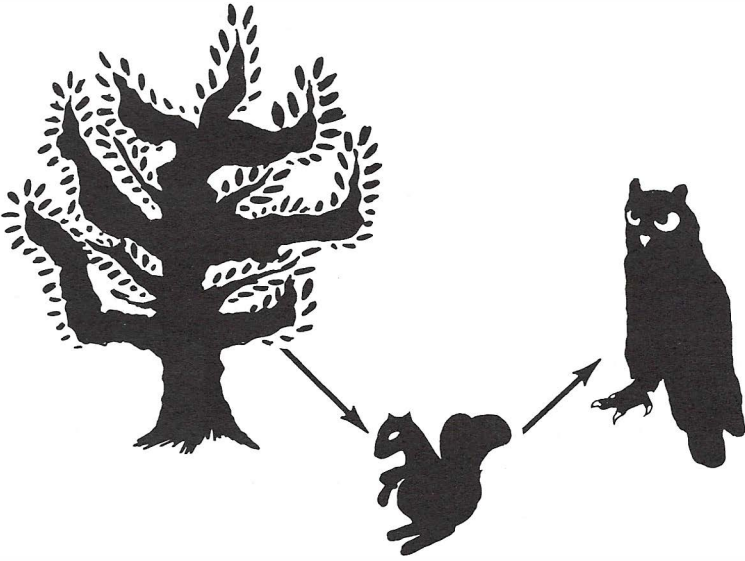
3. **Food consumers** of three types: **herbivores** that feed on plants; **carnivores** that feed on other animals; and **omnivores** that feed on both plants and animals.
4. **Decomposers**, like bacteria and fungi, that break down living matter.

Biosphere simulates the interactions of the first three elements of an ecosystem, and demonstrates that **all** biotic communities are bound together in a complex web of interrelationships. For example, a forest is a small ecosystem that points out the balance that must be maintained for a living community to survive.

A forest is more than a haphazard collection of trees, squirrels, and owls that just happen to live together in the same place. They are actually dependent on each other. In fact, they can't survive **without** each other. If the trees died, the squirrels and other small animals would perish because they would have lost their food supply and shelter. Without squirrels and rodents to eat, the owls would migrate to another community.

But what if all the owls died of some disease?

With no natural enemies left in the forest, the rodent population would increase so dramatically that they would soon strip the forest trees in their search for food. Once again, the community collapses.



Every element of a successful ecosystem is necessary; every lifeform is linked in a “food chain” that supports another lifeform. Trees feed the squirrels which, in turn, feed the owls. This type of stable community where all plants and animals survive and reproduce in a continuous, orderly balance is called a “climax” community.

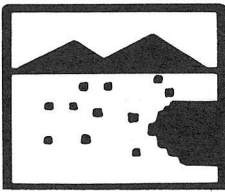
This type of climax community is what you must try to produce in Biosphere.

Computer Display Controls

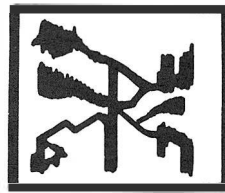
As the pride of the S.A.V.E.S. fleet of starships, Arkworld has been outfitted with a massive Color Computer and an advanced environmental REACT (Remote Ecological Adjustment Computer Technology) System.

The REACT information display at the top center of the computer screen displays all of the information you request while setting up the simulation and also monitors the planet when you actually run the simulation.

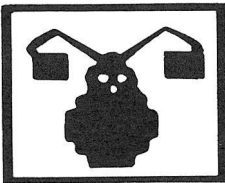
Your simulation controls are "user friendly": they are icon-driven and prompt you when input is required. Following are the eight icons and a brief description of each:



1 Native Animal Colony



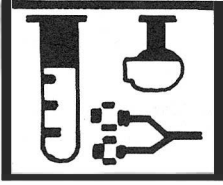
2 Planetary Environment



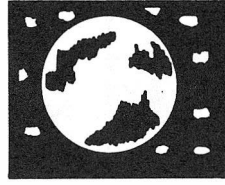
3 Animal Manifest & Monitor



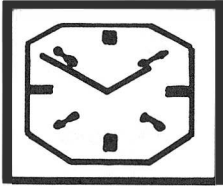
4 Plant Manifest & Monitor



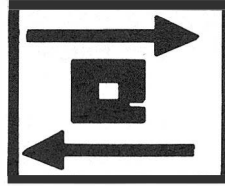
5 Genetic Engineering



6 Window view



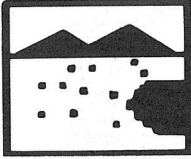
7 Time Control



8 Archives

Use the Color Computer's left and right arrow keys to select the icon representing the computer function you need. Selected icons flash on and off, and the REACT display screen changes to offer the requested information.

For example, when you start Biosphere by pressing a key at the title page, the Native Animal Colony Icon is automatically selected. To see the planet's environmental conditions, press the right arrow key. The Planetary Environment Icon flashes, and atmospheric conditions are displayed on the REACT screen.



Native Animal Colony

The information displayed on this screen concerns the animals on the planet that you are trying to save. Study this vital information about the native animals first. Later, you will need to add plants and animals to the planet to produce conditions that will enable this colony to survive.

If the native animal colony is a group of GEEFs, your REACT screen **might** look like this:

```
NAME      : GEEF
ORDER     : HERB/BERRY
INTAKE    : LI20
EXPEL     : CO2
WEIGHT    : 250-374 LBS.
QUANT     : 1237
```



Note: The native animal colony and information about it is randomly generated when you press a key to begin the simulation. No two simulations will ever be exactly the same.

The first line shows the name of the native animal.

The **ORDER** of the animal tells what type of food the creature eats. Animals can be **HERB**ivores, **CARN**ivores or **OMNI**vores. Herbivores eat only plants; omnivores eat both plants and animals; and carnivores eat only animals.

Plants in the Biosphere simulation produce one of four types of food — fruit, vegetable, berry or leaf. If the native colony consists of herbivores, their preferred food plant is listed after **HERB /**.

Though the preferred food plant of omnivores is listed after **OMNI /**, these creatures can also eat animals whose weight is less than or equal to their own. (See **WEIGHT** below.)

Carnivores can eat only animals whose weight is less than or equal to their own.

In our sample native colony, the **GEEF** is a herbivore whose diet consists of berries. When you later populate the planet with plants, you must be sure to add enough berry-bearing plants to feed the colony.

The **INTAKE** and **EXPEL** information specifies which atmospheric elements the native animal breathes and exhales. Just as plants on Earth take in carbon dioxide and give off oxygen, so all the plants and animals in Biosphere breathe one of four elements and exhale another of those four elements.

The four elements that comprise the atmosphere of the planet and that are needed by your plants and animals are: Dilithium Oxide (**LI2O**); Carbon Dioxide (**CO2**); Beryllium Nitrate (**BEN2**); and Carbon Nitrite (**C2N**).

Since the **GEEFs** in the above example breathe (**INTAKE**) Dilithium Oxide, you will need to populate the planet with plants and/or animals that exhale (**EXPEL**) **LI2O**.

Remember, you also have to keep **those** plants alive by adding plants and/or animals that produce the atmospheric element that **they** breathe!

WEIGHT information is important only for omnivores and carnivores, which need to eat other animals as food. There are four weight classifications in Biosphere: **0-124 LBS.**; **125-249 LBS.**; **250-374 LBS.**; and **375-499 LBS.** If, for example, your native colony consists of carnivores weighing from 125-249 pounds, you must populate the planet with creatures in the two lower weight categories as your native colony's food source.

The last line of the Native Animal Colony display is the **QUANT**ity of animals that you find on the planet when you first land.



Planetary Environment

The information on this screen describes the environmental conditions on the planet on which you landed and found the native animal colony. Environmental conditions include: temperature, humidity, wind and weather systems, and the elemental composition of the atmosphere.

Note: The planetary environment is randomly generated when you press a key to begin the simulation. No two simulations will ever be exactly the same.

Below is a typical Planetary Environment screen:

```
TEMP..... 0 DEG F
HUMID..... 61 %
WIND..... EAST
LI20..... 25 %
CO2..... 24 %
BEN2..... 16 %
C2N..... 35 %
```

These readings are the ideal conditions for the native animals and must be maintained to assure the survival of the colony.

The planet's **TEMP**erature and **HUMID**ity limit the plants and animals that will survive when you transfer them from Arkworld to the surface. The temperatures that the lifeforms in your cargo holds require vary in four ranges: **0-49 DEG F**; **50-99 DEG F**; **100-149 DEG F**; and **150-199 DEG F**. Only those plants and animals which fall in the **0-49 DEG F** range will survive in the sample world above. All others will die after a few days.

There are also four humidity ranges: 0-24%; 25-49%; 50-74%; and 75-99%. Arkworld lifeforms with humidity tolerances in the 50-74% range will flourish in the above sample world.

Random changes in WIND direction identify approaching storm fronts and signal shifts in temperature and humidity. Northerly winds indicate decreases in both temperature and humidity, while southerly winds presage increases in temperature and humidity.

The quantity of each element in the atmosphere also affects the temperature and humidity of the planet. As the simulation progresses and the percentages of each atmospheric element shift, temperature and humidity change according to the following chart:

	TEMP	HUMID
An increase of LI2O signals	decrease	decrease
" " CO2 "	increase	increase
" " BEN2 "	increase	decrease
" " C2N "	decrease	increase

When you later populate the planet with plants and animals from Arkworld's cargo holds, you must look for combinations of lifeforms which not only keep alive the native animals but also maintain the balance of atmospheric elements.

For example, if your native GEEFs need LI2O to breathe, you will place plants that expel Dilithium Oxide on the planet. However, if you use too many LI2O-expelling plants, you might upset the atmospheric balance and endanger other species that require the other elements in order to survive.



Animal Manifest/Monitor

Arkworld contains 100 species of animals that you have collected during your travels in the galaxy. Each of these lifeforms has a unique combination of environmental and food requirements.

Press the right or left arrow key until this icon begins to flash. The first screen might look like this:

```
NAME :AFFU
ORDER :HERB/LEAF
INTAKE:LI20
EXPEL :C20
WEIGHT: 0-125 LBS.
TEMP :150-199 DEG F
HUMID : 0-24%
QUANT :105
```



The Animal Manifest/Monitor screen is a dual-function display. When you first select the icon, the Animal Manifest section appears.

Arkworld's creatures are listed alphabetically. The **AFFU** is the first animal in your manifest. The creatures in your manifest remain the same from simulation to simulation; the number of each on Arkworld, however, changes with each new scenario.

Use the Color Computer's down and up arrows to scroll through the entire manifest and examine other onboard animals individually.

Note: The Animal Manifest contains five blank screens for genetically created animals. See the “Genetic Engineering” section for instructions on how to create these animals.

The explanation of each of these animal screens is the same as the explanation under the Native Animal Colony icon. Temperature and humidity requirements for the native colony are the same as the planetary environment. The animals on board, however, have different requirements, so **TEMP**erature and **HUMID**ity categories are added to each screen.

Animals reproduce at the highest rate when the planetary temperature and humidity fall in the middle of the animal’s temperature and humidity ranges. If the planet’s temperature and/or humidity exceeds the animal’s requirements by 50% or more, the animal will perish.

The temperature and humidity requirements of the above **AFFU** are well outside the sample planet’s **0 DEG F TEMP** and **61% HUMID**.

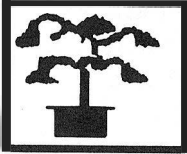
These animals would die soon after you placed them on the surface.

The **QUANT**ity of each Arkworld species is randomly generated at the beginning of each simulation.

The **QUANT**ITY? line at the bottom of the screen prompts you for the number of animals you wish to send to the surface of the planet. When you decide that a species can survive on the planet and can help to produce a stable environment for the native animals, enter a number less than or equal to the **QUANT**ity of animals you have on board. In the example, you could send 1 to 105 **AFFU**s to the planet.

You can also use the Animal Manifest/Monitor screen to monitor all the animals that you send to the planet's surface. Press the space bar at this icon to see the names and numbers of every animal you send to the planet. If you place more than eight animals on the planet a **(MORE)** prompt appears at the bottom of the REACT display. Use the up and down arrow keys to move backward and forward through these 8-line pages.

To return to the Animal Manifest screen, press the space bar again.



Plant Manifest/Monitor

Arkworld contains 100 species of plants that you have collected during your travels in the galaxy. Each of these lifeforms has a unique combination of environmental and food requirements.

The first screen might look like this:

```
NAME : ABRY
ORDER : FRUIT
INTAKE: LI2O
EXPEL : CO2
TEMP  : 0-49 DEG F
HUMID : 0-24 %
QUANT : 475
```



The Plant Manifest/Monitor screen is a dual-function display. When you first select the icon, the Plant Manifest section appears.

Arkworld's plant life is listed alphabetically. The **ABRY** is the first plant in your manifest. These plants remain the same from simulation to simulation; the number of each on Arkworld, however, changes with each new scenario.

Use the Color Computer's down and up arrows to scroll through the entire manifest and examine other onboard plants individually.

Note: The Plant Manifest contains five blank screens for genetically created plants. See the "Genetic Engineering" section for instructions on how to create these plants.

Like Biosphere's animals, plants breathe one atmospheric element and expel another. They also require a certain planetary temperature and humidity to grow. Plants reproduce at the highest rate when the planetary temperature and humidity fall in the middle of the plant's temperature and humidity ranges. If the planet's temperature and/or humidity exceeds the plant's requirements by 50% or more, the plant will perish.

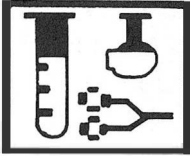
The above ABRY could endure the temperature on the sample planet, but the 61% humidity would eventually cause the plant to die.

The **QUANT**ity of each Arkworld species is randomly generated at the beginning of each simulation.

The **QUANT**ITY? line at the bottom of the screen prompts you for the number of plants you wish to send to the surface of the planet. When you decide that a species can survive on the planet and can help to produce a stable environment for the native animals, enter a number less than or equal to the **QUANT**ity of plants you have on board. In the example, you could send 1 to 475 ABRYs to the planet.

You can also use the Plant Manifest/Monitor screen to monitor all the plants that you send to the planet's surface. Press the space bar at this icon to see the names and numbers of every plant you send to the planet. If you place more than eight plants on the planet a **(MORE)** prompt appears at the bottom of the REACT display. Use the up and down arrow keys to move backward and forward through these 8-line pages.

To return to the Plant Manifest screen, press the space bar again.



Genetic Engineering

Since Arkworld carries a limited number of plants and animals, you might, in the course of designing a balanced ecology, need a plant or animal with special characteristics not found in your cargo manifests. The genetic engineering option lets you create up to five new plant species and five new animal species.

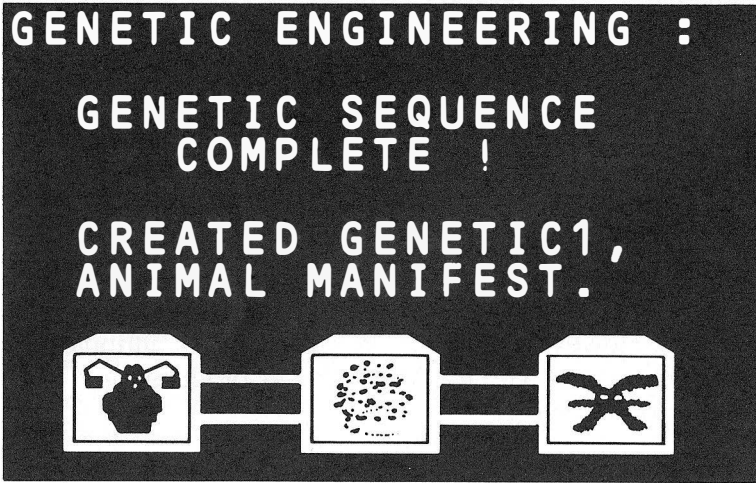
If, for example, you need a berry-bearing plant that intakes Li_2O and expels CO_2 — but you don't have one in your manifest — you might try to engineer one from a berry plant and another plant that uses the proper atmospheric elements. However, since the cross-breeding of attributes is a random process, you might not always produce the species you hoped for!

To enter Arkworld's genetic engineering laboratory, press the right or left arrow keys until the Genetic Engineering icon flashes. Press **(A)** to engineer an animal; press **(P)** to create a plant.

Note: Once you produce the maximum number of animal mutations, you can only engineer plants at the Genetic Engineering icon. If you later produce five plant mutations, the genetic engineering icon displays a **NO MORE CELLS AVAILABLE** message and prohibits further experiments.

The screen then prompts you to select **LIFEFORM 1:**. Use the up and down arrow keys to scroll through your manifest to select the first plant or animal for your experiment. Press **(ENTER)** to place the lifeform in the left test tube.

Use the same process to select a **different LIFEFORM 2** : . Press **(ENTER)** to place the lifeform in the right test tube and begin the random genetic engineering experiment. The newly-created plant or animal is created before your very eyes in the middle test tube.



Since Arkworld cannot accommodate another lifeform, the mutation is automatically placed on the planet — even if it doesn't have the characteristics you were trying to produce!

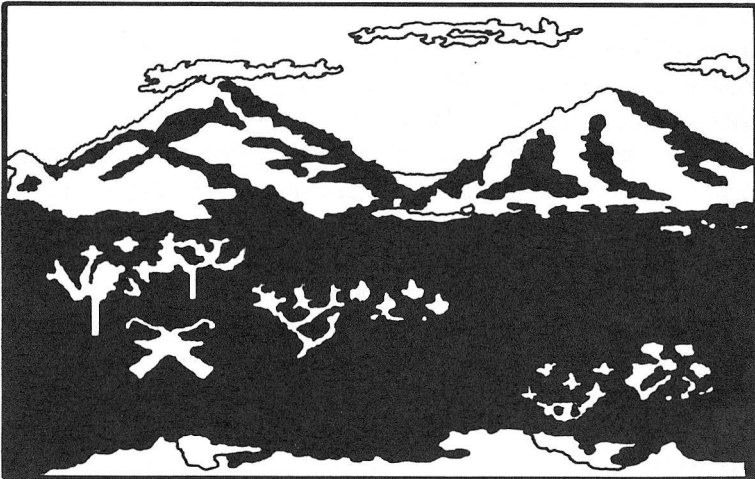
Genetic Engineering always produces between 100 and 200 of the new species.

Note: If you have already sent all of a lifeform to the planet, you cannot use that lifeform in a later genetic engineering experiment.



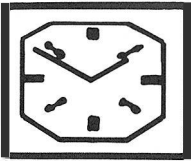
Window View

Arkworld has a huge view screen that affords you a first-hand view of the plants and animals on the planet's surface. When you move to the Window View icon, the REACT computer screen slides aside to reveal a breathtaking "window view" of the planet.



Animals walk from side to side, and plants grow from the planet. This cycle of life continues as long as you remain at this icon. Each time you send a new species to the planet, it appears — along with its predecessors — outside your view screen.

The beautiful sight of that teeming lifescape is the thrill that makes you glad you chose to be an ecologist.



Time Control

The Time Control icon displays the current time mode and the number of “days” that the simulation has been running.

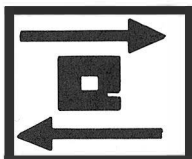
Arkworld time maintenance technology lets you run the Biosphere simulation in three time modes: normal, accelerated, and hyper.

Normal Time is real time. The simulation begins when you press a key. To run one day in Biosphere in normal time takes 24 hours. The simulation always begins in normal time. This time mode lets you spend as long as you need to do print-outs and calculations, select appropriate species from your manifests, and physically set up the simulation.

In Accelerated Time, one planetary day passes every 20 seconds. Use this time mode to test how selected lifeforms interact with the environment and other species. If some types of plants and animals begin to perish or the atmosphere becomes unbalanced, you can always go back to Normal Time to make adjustments.

Hyper Time runs the Biosphere simulation at one day per second. **Once you select Hyper Time and enter the Hyper Time Acceleration Chamber, you cannot return to the Normal or Accelerated time modes.** Once Hyper Time is locked in, the simulation must run its course — until all the native animals have perished . . . or until the ecology you created proves its stability by supporting the native colony for 65,000 days!

Enter Hyper Time only after you have tested your simulation in the Accelerated mode and are confident that the ecology is stable and self-supporting.



Archives

Move to the Archives display screen to save a current simulation, retrieve an already-created simulation, or list the directory of previously saved simulations.

To save a simulation, press **(S)**.

Answer the **RECORD NAME?** prompt by entering a name for Arkworld's archives of no more than eight characters. Then, press **(ENTER)** to send a copy of the simulation (with all the current values) to the ship's library. If you've already saved a simulation under that name, an **OVERWRITE?** prompt appears on the screen. Press **(Y)** to overwrite the old simulation with a new one. (This erases the old simulation.) Press **(N)** to return to the Archives main menu.

To retrieve a previously-created simulation from the ship's library, press **(R)** at the menu.

Answer the **RECORD NAME?** prompt by entering a name of no more than eight characters. Then, press **(ENTER)** to retrieve your copy of the simulation. If you misspelled the name or tried to retrieve a non-existent simulation, a **RECORD NOT FOUND** error message appears on your screen. Press any key to return to the Archives main menu.

To display a complete list of simulations in Arkworld's archives, press **(D)**.

Additional Computer Functions

Print Function — If you have a printer connected to your Color Computer, you can print out most of the displays on your REACT computer screen, such as plants and animals from your manifests, environmental data, or native animal statistics.

Press the **(ALT)** and **(P)** keys simultaneously to print hard copies of your REACT display. (The **(ALT)** key on the Color Computer might be the **(@)** key.)

The Print Function works on all REACT screens except Genetic Engineering and Window View.

Red/Blue Swap — To change the color of text on your REACT screen from red to blue, press the **(ALT)** and **(R)** keys simultaneously. Press the keys again to return to the Red Mode.

Color Mode Change — To alter the Color Mode and change the color combinations that your Color Computer displays, press the **(ALT)** and **(C)** keys simultaneously. Press the keys again to see all four different Color Modes.

Tips on Running Biosphere

1. Since Biosphere is randomly seeded with a new native colony, planetary environment, and numbers of Arkworld's plants and animals, no two simulations will ever be exactly the same. You might want to save your early simulation attempts and experiment with different plant and animal combinations to see which are most successful in that particular environment.
2. Always save your simulation before entering Hyper Time. Nothing is more frustrating than watching a well-planned ecology slowly deteriorate when one or two small modifications could have saved the colony.
3. Closely monitor the Native Animal, Planetary Environment, Animal Manifest/Monitor, and Plant Manifest/Monitor screens when the simulation is running in Hyper Time. The numbers on these screens change rapidly, but they clearly indicate which additional characteristics the simulation needs to become a successful climax community.
4. If you have a printer connected to your Color Computer, use the Print Function to print out the Native Animal and Planetary Environment screens of each simulation you run. This speeds your searches for suitable species in the Plant and Animal Manifests. You might also want to print out both manifests as a reference guide for future simulations.
5. Try not to send **all** of a plant or animal species to the planet's surface. You might need a few of that species later for genetic engineering experiments.
6. You might want to draw food chain, food web, and element web charts to help you visualize the interrelationships of animals and plants to each other and to the environment.

Glossary

biosphere. The thin layer at a planet's surface that can support life, consisting of rivers, lakes, and oceans, the soil, and the lower atmosphere.

biotic environment. All the living plants and animals in one area that affect each other directly, indirectly, and collectively.

carnivore. An animal that feeds on other animals.

climax community. A stable ecosystem, consisting of plants and animals in equilibrium with each other and with the environment.

ecology. The study of animals and plants and the interrelations between them, considered in relation to their non-living environment.

ecosystem. An area in which living organisms and non-living things work together, exchanging the materials of life and using them over and over again.

food chain. A linear chain of organisms in which each link in the chain feeds on the one before and is eaten by the one after. Green plants usually start a chain, and carnivores usually end one.

food web. A series of interrelated food chains. The total feeding habits of all organisms in a given ecosystem.

herbivore. An animal that feeds on plants, algae, etc.

omnivore. An animal that feeds on both plants and other animals.

Appendix

Starting OS-9 from BASIC

If you do not have a Color Computer with BASIC Version 1.1 or later or if you do not have the OS-9 System, you can type in the following program and use it to start your Biosphere program.

Enter the following program from Disk Extended BASIC.

```
10 REM *****
20 REM *BOOT OS-9 FROM BASIC
30 REM *****
40 FOR I=0 TO 70
50 READ A$
60 POKE &H5000+I,VAL("&H"+A$)
70 NEXT I
80 CLS:PRINT" INSERT OS9 DISKETTE"
90 PRINT" INTO DRIVE 0 AND PRESS A KEY"
100 A$=INKEY$:IF A$=" " THEN 100
110 EXEC &H5000
120 DATA 86,22,8E,26,00,8D,0D
130 DATA FC,26,00,10,83,4F,53
140 DATA 26,03,7E,26,02,39,34
150 DATA 20,10,BE,C0,06,A7,22
160 DATA 86,02,A7,A4,6F,21,6F
170 DATA 23,6C,23,AF,24,10,BE
180 DATA C0,06,A6,23,81,13,27
190 DATA 12,AD,9F,C0,04,4D,27
200 DATA 06,6C,23,6C,24,20,E9
210 DATA 7F,FF,40,35,A0,4F,20
220 DATA F8
```

Type the following instruction at the OK prompt to save the above program.

SAVE""

Type the following to use this program to start the application:

RUN"**

When the prompt appears, insert the **Biosphere** diskette and answer the date and time prompts. When the OS-9 prompt appears, type:

BIOS (ENTER)

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You are Captain and Master Ecologist on Arkworld, the galaxy's most sophisticated eco-starship. Unlike warships that normally ply the star lanes, Arkworld was constructed to **save** — not destroy — alien lifeforms.

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While returning to Earth, you discover a dying planet on which only one small colony of native animals remains. Without your help, these creatures will die.

Biosphere is a complex ecological simulation that lets you use the 200 species of extraterrestrial plants and animals in your spacecraft's cargo holds to create a new environment in which the native animals can survive and flourish.

The user-friendly, icon-driven controls of Arkworld's on-board ecological computer give you quick, easy access to planetary and environmental conditions, plant and animal manifests, a genetic engineering laboratory, simulation archives, and simulation time-control.

Biosphere is more than a game. It is a learning experience that demonstrates the relationships of all living things to each other and their environment. Although the simulation is set up on an imaginary planet, the ecological principles behind the program are real and immediate: they are the principles that govern our own relationship to the planet Earth.

To run Biosphere, you need:

- Tandy® Color Computer with 64K memory
- TV (color recommended)
- One disk drive