



of farm families and rural communities facing change. Visitors to the exhibition's farmhouse, fields, barn, and local gathering spots will explore how political, economic, and cultural roots influence families today, both on and off the farm.

Instead of focusing on the technology of farm life, this exhibition features farming's social and cultural context. The universal themes of family and community link farming and non-farming viewers, providing hosting venues with an opportunity to examine agricultural change within their own communities and enhance the exhibition with local resources.

To date, *Farm Life* has been shown at the following:

Dakota Prairie Museum,  
Aberdeen, SD

New Mexico Farm and Ranch Heritage  
Museum, Las Cruces, NM

Red River Historical Museum,  
Sherman, TX

Steele County Historical Society,  
Owatonna, MN

Fort Morgan Museum,  
Fort Morgan, CO

## WHY IS THERE NO EVOLUTION IN NATURE FILMS?

Nancy Falxa-Raymond

Despite the current political debates over intelligent design and evolution, Darwin's ideas are accepted throughout the world of science and academia. Even in the cross-section of science and popular culture, evolution is widely accepted. The American Museum of Natural History recently developed an exhibit on Darwin that is booked for at least the next ten years in museums around the world. Just prior to the opening of the exhibition in 2005, the *New York Times* ran a series of articles on the same topic. However, there is one scientific and cultural medium where the story of evolution has remained conspicuously absent throughout the second half of the twentieth century.

Although nature films claim to present scientific material suitable for educational purposes, these so-called documentaries are actually filled with social messages and are not entirely scientific in their approach. American nature films from

Disney's 1950s True-Life Adventures to the 2005 award-winning *March of the Penguins* do not address Darwin's ideas, but instead present a version of Nature where an animal's character instead of the survival of the species dictates its actions. It is also clear that in these films humans lie distinctly outside of Nature, an idea that does not stand up well to the claims of the theory of evolution.

There are many reasons why nature films replace evolution with theories of intelligent design by "Nature" and eternal cycles that remain relatively unchanged. Confronting evolution has unsettling implications for the validity of the religious and anthropocentric worldview shared by many Americans throughout the twentieth century and to this day.

### "Nature" and Intelligent Design

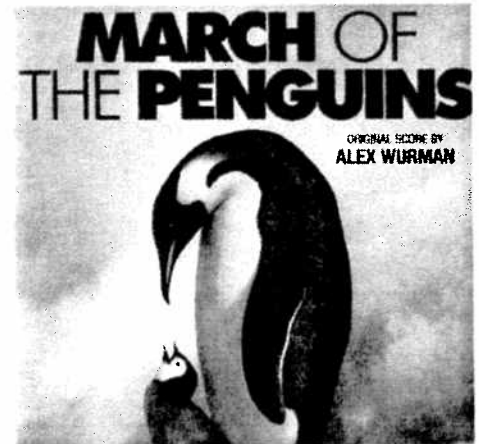
Nature films often replace evolution with some form of intelligent design. A recurring theme is the use of "Nature" as a godlike force, usually a benevolent one. Nature (who is female) is said to consider all living things equal and labels no animal good or bad. She gives them all a chance to survive. Nature "allows" for certain things to happen and "gives" animals their adaptations for defense and survival.

For example, in Disney's 1954 True-Life Adventure, *The Vanishing Prairie*, the ability to swim is not a trait the animals have acquired through evolution, but a skill given to them by Nature. When commenting on the plight of lemmings who appear to have committed suicide by jumping into the water, the narrator adds: "Nature, in her infinite wisdom, saves a few." The film also claims that "catastrophe and disaster has its place" in "Nature's mysterious plan." This is essentially implicating Nature as the designer of the Earth and all living things.

In the 1989 National Geographic film *Africa's Stolen River* and in *March of the Penguins*, the forces of "Africa" and "Winter" perform the same function as "Nature." These forces are more malevolent, but still omnipresent and imbued with character. For example, the brutal winter does "everything in its power" to destroy the penguins' eggs. Although these forces are different from Disney's Nature because they are not always acting in the best inter-

est of living things, they are nonetheless similar forces that are given agency and that replace more scientific terms like tectonic movement or evolution.

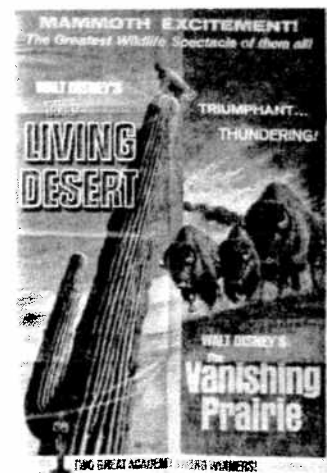
Although Darwinian evolution and its results are often hinted at or illustrated in nature films, the concept itself is never mentioned. The ancestors of the animals in nature films are not discussed and the processes of speciation and extinction are ignored even in places where an explanation would be appropriate.



### Adaptations

The desert ecosystem is perhaps an ideal example of the ways in which organisms adapt and evolve to specific conditions and to exploit niches. Yet throughout Disney's 1953 True-Life Adventure film, *The Living Desert*, the animals are said to have been "given" their adaptations by Nature rather than acquiring them over many generations. The narrator explains, "to meet the harsh challenges of the desert, Nature must fashion odd patterns of life." This is essentially a statement of intelligent design.

Nature is an intelligent being who "delights in the unexpected" by providing a spring from underground.



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Nature is also described as "impartial" and "plans for the survival of all." She does this by giving animals and plants adaptations that allow them to survive in the hot, dry desert. Tortoises and cacti can store water for long periods of time and kangaroo rats hide food in holes in the ground for later consumption. Nature also "arms" some animals and plants with defense mechanisms. Cacti are protected by their needles and so are the birds who nest in them. Geckos have detachable tails. Millipedes have poison to ward off predators.

The story of the female wasp laying eggs inside a tarantula shows awe-inspiring co-evolution but the film does not mention it as such. *The Living Desert* ends with another incredible outcome of evolution: seeds that remain dormant for long periods of time and begin to germinate only after a heavy rain. However, the narrator speaks as if this is a work of art created by Nature when he tells us that "the miracle of the flowers is one of Nature's greatest triumphs."

There is one moment where *The Living Desert* seems to offer some real insight into how species operate. When a hawk takes down a bat, the narrator explains that to Nature, this loss is insignificant. It is implied that the survival of the species is more important than one individual, but even that is not said explicitly. The film moves on with no further explanation. Also, this idea is contradicted later when the mother kangaroo rat carefully saves both of her offspring despite grave danger from a snake. In reality, the safety of one offspring would probably be enough for the mother. If the danger was great enough the female might not have gone back for her young at all to ensure that she remained alive to reproduce in the future. The supposed actions of the mother kangaroo rat contradict the statement that "on the living desert, Nature's theme is always the preservation of the species."

A major obstacle to the illustration of evolution in *The Vanishing Prairie* is presented by the fact that the prairie shown in the film does not really exist. The flood scene was shot in Missouri but the prairie dog scenes must not be because there are no prairie dogs in Missouri. They are found

in a different type of prairie. Also, the only buffalo left to film were in Yellowstone, far from the location of the other scenes. It would be difficult to talk about the evolution of an ecosystem that doesn't really exist.

Another recurring theme that contradicts evolution is the anthropomorphized roles of the animals in nature films. Disney's 1955 film, *The African Lion*, constructs a story around the character of the lion as the "king of beasts" who "plays out his role unchallenged." By explaining that the other animals "pay homage" to the lion, there is no room left to describe how the lion evolved to occupy the highest trophic level at the top of the food chain. Instead it seems that there is an unchanging ranked hierarchy of animals. The fact is that animals evolve to fill certain niches; they are not assigned roles that correspond to those in our society.

*White Wilderness* makes an unusual claim that we know about many extinct animals only from cave art. The fossil record and the field of paleontology are completely ignored. However, it would be difficult to mention these fields without confronting evolution.



Another film that omits a scientific viewpoint is *Africa's Stolen River*.

Although we have not yet figured out why the river dried up when it

did in the 1980s, the narrator tells us that "the theories are irrelevant" about why the water flow changes. All that matters is what happens to the life there. The film seems to be arguing that not only are we unable to explain the changes in the river's flow, but we never will be able to. It seems like one big mystery and suggests some sort of divine influence. However, there is a geological explanation for the change in river flow and we may well discover it in the future.

The changes that result from fire, predation, and the river flow ensure that the life in the Savuti Valley does not "stagnate and die." Although this is a departure from the eternal systems in other films, it still does little to accurately describe ecosystem dynamics. There are some species and ecosystems that change relatively little over long periods of time and some that change rapidly. Some of this variation we are not able to explain, but much of it we can. The idea of constant change is also contradicted within the film by the assertion that when the river disappears, the "established order" changes. This gives the false impression that there is "order" in Nature to begin with.

2005's extremely popular *March of the Penguins* is no exception to the rule that nature films avoid evolution. However, in his *Science* magazine film review, Donald Kennedy argues the opposite. He claims that the film's story presents a clear argument against intelligent design. Kennedy explains that as Antarctica has changed over millions of years (both in location and climate) the penguins "have had to modify their behavior to keep pace with changing topography" to ensure that they are always mating at the correct distance from the edge of the continent. He continues: "What the film can only hint at is that the penguins' march is improbable and strange precisely because it bears the imprint of its own evolutionary responses to changing conditions." This is all fascinating, but unfortunately it comes from Kennedy's own knowledge, not from *March of the Penguins*.

What the film actually does is give individualism and agency to the penguins from the start. When the temperature in Antarctica dropped the penguins remained there. The narrator suggests, "perhaps they thought the change in temperature was temporary. Or maybe they were just stubborn." This seems to have been a group decision made by the penguins.

But where could they have gone? Antarctica is a continent surrounded by water. The lives of the penguins may hint at evolution as Kennedy suggests, but why doesn't the film go any further in exploring this topic?

*March of the Penguins* has been made in a time when the evolution vs. intelligent



design debate rages and science education is a hot topic. Another glaring omission that concerns evolution is global warming. The public has become increasingly aware of this problem and the fact that the Arctic is likely to be drastically affected. However, the film never mentions global warming or asks how these penguins will survive as the ice sheet they depend on shrinks and depleted fisheries can no longer provide them with food. Will they evolve or will there not be enough time for that? Instead of exploring the changes that are happening in the penguins' ecosystem, it is once again emphasized how these animals are performing an "ancient ritual" that has been going on for thousands of years.

Because of the heavy use of words like "eternal" and "unchanging" in these films it seems that Earth (Nature) is in equilibrium, but the scientific view is that Earth's ecosystems are dynamic and always changing. This is due to forces such as tectonic movement, climate change, speciation and extinction, and, recently, anthropogenic change.

Evolution is best observed in nature on a scale of thousands or millions of years and this long history is often ignored in nature films. At the beginning and end of *The Living Desert*, the narrator calls Death Valley "eternal." Strangely, this is contradicted by the statement that "once this valley lay beneath the sea." Obviously, then, this desert is not eternal, but rather dynamic. Although this change probably happened very gradually, it is change nonetheless.

The omission of evolution in nature films leads to the conclusion that humans are not part of Nature. In many films this is achieved by leaving humans out of the film entirely. In both *The African Lion* and *Africa's Stolen River* there is no indication that there are any humans in Africa, while in fact they may have been living quite close to the filming sites. In *The African Lion*, Africa is referred to as a "primitive paradise," presumably as opposed to civilization.

*The Living Desert* ignores any human settlement in the desert and also ignores an important anthropogenic change to the desert landscape. At the beginning of the twentieth century an irrigation system was

built to irrigate the Imperial Valley. Diverting a river this way caused changes to the desert ecosystem. Instead of explaining this situation, the film presents an eternal story that denies human interference.

### Why Ignore Evolution?

Why is it that the makers of nature films feel the need to ignore evolution? One problem, given the patterns explored above, is that evolution clearly defines our position as part of Nature. Although Americans like to consider religion and science compatible, evolution presents a problem for the fundamental reading of certain religions.

Our place on the evolutionary tree as having evolved from other species over time goes against some religious concepts of "man" and "creation." Evolution also eliminates the need for an intelligent designer, which would perhaps upset the American audiences of nature films, many of whom believe in God.

Including evolution would also pose problems for the individualism that nature films strive to portray. Unlike in human society, in Nature individuals are often sacrificed to ensure the survival of the species, even when they are cute animal babies. Although some of these films hint at this truth, the fact remains that death is an essential part of evolution that nature films do not often dwell upon.

There is also the question of why it is so important for nature films to present Nature as eternal and unchanging. One reason may be that events like mass extinctions contradict the idea that everything happens for a reason and no life is wasted. These events present another counter-argument to intelligent design, for what designer would create life just to destroy it completely?

We prefer to think of ourselves as part of a rapidly progressing civilization that is separate from the timeless natural world. However, paleontologists are more likely to see the entire existence of humanity as an insignificant blip in the geological record and part of the continuous process of evolution. Filmmakers may not be willing to bet that their audiences will take such a view.

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## THE INFORMAL SCIENCE EDUCATION PROGRAM OF THE NATIONAL SCIENCE FOUNDATION

[Editor's Note: This is a verbatim account of testimony by the National Science Foundation to the below-mentioned United States Senate subcommittee chaired by Senator Thomas Coburn, M.D. of Oklahoma and co-chaired by Senator Thomas Carper of Delaware. It is available on the NSF web site at [http://www.nsf.gov/about/congress/109/dau\\_museums040506.jsp](http://www.nsf.gov/about/congress/109/dau_museums040506.jsp).]

### Testimony Before the Committee on Homeland Security and Governmental Affairs Subcommittee on Federal Financial Management, Government Information, and International Security United States Senate

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Head, Informal Science Education Division of Elementary, Secondary, and Informal Education Education and Human Resources Directorate National Science Foundation

April 6, 2006

Chairman Coburn, Co-Chairman Carper, and distinguished members of the Subcommittee, thank you for the opportunity to describe the merit review process by which the National Science Foundation (NSF) makes available grant funds for museums. These institutions may compete for funds from programs throughout the agency. The Informal Science Education (ISE) program within NSF's Directorate for Education and Human Resources (EHR), which I represent, is most closely aligned with the educational mission of science museums<sup>1</sup> and will be the focus for this testimony.

### Program Background

Initiated in 1983, ISE invests in projects

See "NSF," continued on following page