

FROM ORIGIN — TO — EXTINCTION



*A Compilation of Articles by
Dr. Robert Stauffer*

FROM ORIGIN TO EXTINCTION

This book is for all creatures great and small. It deals with the origin of the Chihuahua Breed Dog, the serious decrease in numbers of some creatures of the sea, air and land, and sadly, extinctions from the ice age to present day. This publication contains what I consider the highlights of many years of research and my published papers. It is focused on all readers, from teachers and students, to those home schooled, and to the casual reader. It is meant to inspire a greater unity between mankind and the animals under our stewardship.

Dedicated to my parents, my wife Helen, and my children.

This publication is printed by Dr. Robert Stauffer, and for the reading enjoyment of friends, family, and students.

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Preface

I was one of the lucky few chosen to write for an animal advocacy magazine. My topic area was to be a series of articles not regarding our present love and admiration for our companion animals, but a series as to how we humans, Neanderthal to present, reached this point of love of our family animals.

We dress our family animals in “human attire.” They see their veterinarians more regularly than we see our family doctors, and most certainly they eat as well or better than we do.

There are, of course, the exceptions; the countless animals who are neglected, abused, and who survive in spite of we humans.

I knew I was an animal person, and our family is as well. I knew I was always interested in early species animals and in the genesis of their family trees, just as we humans have a genesis.

What I have uncovered and learned in my years of writing is that no amount of research or papers will satiate my desire to learn more of all these topics.

I have included in this magazine, then, some of my favorite articles. None actually have an ending or beginning, They are simply excerpts on which I hope to spend my life elaborating.

I hope you enjoy these treatises.

Happy Holidays and New Year, 2022, everyone!

Robert
December, 2021



Dr. Robert Stauffer

THE POLAR BEAR

Nicholas Stauffer, Dr Robert H. Stauffer

The Polar Bear (*Ursus maritimus*) is the largest predator found on dry land, yet it is technically classified as a marine mammal. It spends its life on ice sheets that stretch out over the Arctic Ocean. By Arctic, that is to say north. (Our friend the Penguin lives in the Antarctic.) Polar bears and Penguins are at opposite ends of the earth.

Biologically, the Polar Bear is fascinating for many reasons. It is closely related to species of the brown bear. The Polar Bear and the brown bear can mate and produce fertile offspring. Many biologists argue the Polar Bear is not truly a distinct species. (Stirling, Ian; Guravich, Dan., 1998). It is theorized that near 150,000 years ago a group of brown bear were cut off by advancing glaciers. They were left to develop in the extreme arctic cold.



These bears developed the characteristics they needed to survive. Their coat became colorless and very thick and warm. And over years, their skin became black: black objects hold heat better than white objects. They even developed pads of fur on their feet to make it easier to stand on ice. They developed thick body fat to protect them from cold and to allow calories to be stored. An interesting fact: The Polar Bear does not hibernate, and is in constant hunt for food.

The chief food source of the Polar Bear are seal. Sitting on ice sheets stretching out to the sea, the Polar Bear waits for the Arctic Seal. These bear have the ability to run fast! They also swim fast as many human Olympic swimmers. For this reason they are very skilled at catching seals.



A fact to note:

The diet of seal is composed mostly of Arctic fish. These fish contain large amounts of oil, rich in vitamin A. The seal stores large amounts of vitamin A in its fat and liver.

As the Polar Bear feeds on seal, they store huge amounts of vitamin A in their bodies. The liver of a Polar Bear contains so much vitamin A that it is toxic to humans. (Wikipedia)

These 10 foot tall, fast running, super swimming marvels of nature have an impressive array of skills and live in regions with no natural enemies. It would seem that this giants place in the arctic ecosystem is as safe from extension as any organism on earth.

But...things aren't always what they seem.

Matthews, Downs (1993). Polar Bear. San Francisco, CA: Chronicle Books. ISBN 978-0-8118-0204



Bears in danger

It is not certain how many Polar Bear are in the wild. The remote polar ice where they live makes scientific study difficult and expensive. The International Union for Conservation of Nature estimates there are about 26,000 Polar Bears in the arctic regions of Canada, Russia, Norway, Greenland and the United States. The size and stability of the population is a subject of not only biological debate, but political debate as well.

It is reasonably accepted that the earth is somewhat warmer than it once was. Increasing temperatures cause ice to melt. Some of the first ice to begin melting is at the southern edge of the Arctic Circle. This ice that extends from the land out over the ocean is the platform from which the Polar Bear hunts for food. As that ice melts, the habitat of the Polar Bear begins to disappear, and the existing population has more difficulty feeding itself and finding shelter for pregnant females. Currently the polar bear population is classified as vulnerable. (Wikipedia)

Those who believe that climate change is man-made could advance their politics by showing Polar Bears on the verge of extinction. Others feel that Polar Bear populations are stable: that we should continue to allow hunting both by indigenous people and commercial hunting guides. Look up Polar Bear hunting trips on the internet. You will see hunting trips selling for 10's of thousands of dollars, and ending with killing a Polar Bear.

Another challenge facing the Polar Bear is some of its' habitat may be on top of rich oil reserves. This will bring a great deal of commercial activity to the Polar Bear's habitat. A commercial oil spill could be devastating to all arctic marine life.

The Polar Bear hunts most of their waking hours. When food is in short supply they have been known to swim 100 miles, even 200 miles in search of food. This increases the possibility they will end up on land and encounter humans. Many animals will attack a human if it enters their territory or appears to threaten the animal or its young. However, the Polar Bear is the only predator that will stalk, hunt and eat humans. It is extremely unlikely that humans and Polar Bears can co-exist, and it is fair to assume that means the Polar Bears must go.

Shrinking ice shelves and increasing human activity spell a great challenge for the Polar Bear. We must be very cautious of changes in its population. When it comes to breeding, the Polar Bear is one of the least prolific of all mammals. For example, the Humane Society says a single pair of cats can grow to a population of 420,000 in 7 years. Cats could bounce back from near extinction. However, a Polar Bear may only have two cubs in a lifetime. If the Polar Bear population drops severely, it may never recover.

A combination of Global Warming and human predators is a serious threat to the magnificent Polar Bear.

Read in the spring issue of TCAM about Wolves, a second of many endangered species.



Photos from multimedia

Matthews, Downs (1993). Polar Bear. San Francisco, CA: Chronicle Books. ISBN 978-0-8118-0204-8.

Voorhees, Hannah, Rhonda Sparks, Henry P. Huntington, & Karyn D. Rode. "Traditional Knowledge about Polar Bears (*Ursus maritimus*) in Northwestern Alaska." ARCTIC [Online], 67.4 (2014): 523–536. Web. 22 Jan. 2018

Stirling, Ian; Guravich, Dan (1998). Polar Bears. University of Michigan Press. p. 191. ISBN 978-0-472-0810

Dr. Robert Stauffer

Nicholas Stauffer

We humans have for many centuries had a fascination with giraffes; Julius Caesar brought giraffes to Rome and exhibited them to the public in 46 BC. And today, all Toys-R-Us kids know the giraffe.

The giraffe is one of the most unusual species of large African mammals.

The giraffe, deemed the tallest land mammal, can reach a height of 19+ feet. As do humans and almost every mammal, the Giraffe has 7 cervical vertebra in its neck. The length of vertebra in a giraffes neck can vary; some as long as 10 inches.

It is not fully understood why the giraffe has such a long neck. One theory is that the long neck gave the giraffe an advantage over other animals in finding food. Another theory has to do with "necking." Male giraffes fight each other using their necks. The male with the largest and most powerful neck will win access to the females and pass his neck genes along to future generations. Neither of these theories, however, is a complete explanation.

The giraffe does not resemble other African mammals and it is not obvious what animals would be its closest relatives. To answer this question Dr. Stauffer studied a protein sequence from a giraffe and used the supercomputer at the National Institute of Health to compare it to all other organisms in the Swiss Protein Database.

The results were in order as follows:

- Pronghorn Antelope (*Antilocapra Americana*)
- Waterbuck (*Kobus Ellisprymnus defassa*)
- Bovine - the common cow (*Bos Taurus*)
- Eland Antelope (*Tragelaphus oryx*)
- Banteng – cattle found in Southeast Asia – (*Bos javanicus*)

So it seems the giraffe is cousins with antelope and cattle. How an animal from this family tree ended up being 19 feet tall is a mystery of evolution and genetics. Indeed it would be a horrible tragedy if this gentle giant slipped away into extinction before these questions could be answered.



The giraffe population is under 100,000 and has dropped by 40% in the last 30 years. Big game hunters are a major threat to these exotic, fantastic, unassuming beasts.

So, you are probably saying, "What can one person do to help giraffes and other endangered species?" The answer is, a lot!

To fully understand what you can do, we need to understand a little about how our government works.

You might remember a video about how a bill becomes a law. Congress is the branch of the government that makes laws, and they pass many laws every year. Once a bill becomes a law, federal agencies make regulations that help enact the policies set forth in the law.

One important law that Congress passed was the *Endangered Species Act of 1973*. (16 U.S.C. ch 35 section 1531 et seq.) Then, the United States Fish and Wildlife Service was given the task of developing the regulations that would protect endangered species. It would then be unlawful for an American to kill this animal and it would also be a crime to import products made from this animal. (The USFWS can declare a species endangered even if it does not live in the United States!)

On April 27, 2019, the New York Times reported that the United States Fish and Wildlife Service is considering placing the giraffe on the endangered species list. The USFWS is quoted as saying there was “substantial information” that classifying the giraffe as endangered may be warranted.

Where does the USFWS get this information? Much of it comes from regular citizens like you and me. The process of placing an animal (one who lives out of the US) on the endangered species list could begin with a single letter from a concerned citizen. This letter would be sent to:

Janine Van Norman
Chief, Branch of Foreign Species Endangered Species Program
United States Fish and Wildlife Service
4401 N. Fairfax Drive Room 420
Arlington, Virginia

***** (Please note that Ms. Van Norman is in charge of proposing regulations for plants and animals located OUTSIDE the United States.) *****

The office will evaluate the letters they receive. If they think it merits public discussion, the proposed regulation will be posted with all the other proposed federal regulations at www.regulations.gov.

From here the public can offer comments on all proposed new Federal Regulations.

*Please be cognizant of issues regarding not only the decline in numbers of a particular species, but also of any issue, particularly neglect and abuse, of any of our worlds animals!

Thank-you,

Dr. Robert Stauffer

“The future depends on what you do today.”
Mahatma Gandhi



Image taken from multimedia

Large birds of the air!

vultures, buzzards, condors

Dr. Robert Stauffer,

Nicholas Stauffer

Registered lobbyists

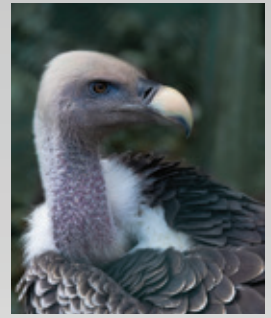


Photo by Yanite Koppens

Most of the large birds of the air are vultures. There are 23 species, sixteen in the Old World and seven in the New World. Of the seven new world vultures, two are commonly referred to as condors. Vultures generally feed on carrion, which is the remains of dead animals. They serve a very important role in the environment because they clean up before dead carrion can spread disease.

Some vultures are incorrectly referred to as buzzards. There are 26 birds called buzzards. Buzzards are hunting birds and usually eat live prey. They are a danger to small pets. Some species of hawks are referred to as buzzards. The turkey buzzard is actually a vulture.

Years ago, I visited India. At that time, there were many large vultures in the sky. The vulture population in India was estimated at 80,000,000. Then, something absolutely horrible happened.

Farmers used a drug called diclofenac on their sick cattle. Diclofenac is a drug similar to ibuprofen. Veterinarians prescribe it for fevers and infections. Sometimes the sick cattle died and were eaten by vultures. It was found that diclofenac caused kidney failure in birds. Before the drug was finally removed from the market in India, the population of vultures decreased from 80 million to only a few thousand in India, Pakistan and Nepal.

The Journal of the American Veterinary Medical Association reports that three species of Indian vultures, the oriental white-backed vulture, the slender-billed vulture, and the long-billed vulture are considered to be critically endangered. Science News reports that vultures in Africa are being poisoned by chemicals set out to kill jackals and hyenas. Vultures are also slaughtered by animal poachers because the presence of vultures can alert law enforcement that there was illegal poaching. Vultures are now being captured and bred in captivity to prevent the unthinkable threat of extinction. World- wide there are a total of 9 species of vultures considered to be endangered.

As the vultures disappeared from the Indian ecosystem, they were no longer available to eat the carrion. This left a supply of food for other species. The rat population increased dramatically and packs of feral dogs also fed on the carcasses. This led to a disturbing increase in the number of rabies deaths.

It was George Santayana who said, "Those who cannot remember the past are condemned to repeat it." It sounds impossible, but Spain and Italy have recently approved diclofenac for veterinary use. Unbelievable, since 90% of Europe's vultures live in Spain. (By the way, diclofenac also threatens eagles, and Spain's national symbol, the Imperial Eagle, could be the next large bird to start disappearing from the sky.)

This is the height of stupidity, since there are other drugs available which are the same price and are equally effective, but do not threaten the large birds. Never underestimate the power of a drug lobby.

If this bothers you as much as it bothered us, then you must take some sort of action. Do a Google search for the **Vulture Conservation Foundation** in Zurich, Switzerland. The VCF webpage has sample letters and email addresses that you can use to make your voice heard in Europe.

"The future depends on what you do today."

Mahatma Gandhi



Photo from multimedia

Fun Facts and Afterthoughts...The Beautiful, Intelligent, Amazing Vulture

If you drive from Salt Lake City, Utah, to Las Vegas, it is possible you may see vultures in the air. The only vulture that resides in our area is the Turkey Vulture (*Cathartes aura*). This magnificent raptor has a wingspan of up to six feet with its wings extended. These wings are too big to flap, so the Vulture sails through the sky riding on thermals. (Thermals are currents of rising hot air that move in circles like mini tornados.) And, by the way, Vultures do not circle dead animals, that is a myth.

From the sky, vultures use their excellent vision and their keen sense of smell to find dead animals. Vultures are one of the only birds with an excellent sense of smell. The vulture has so much talent that police in Berlin, Germany actually attempting to train vultures to help law enforcement agencies find dead bodies.

The vulture lives on dead animals. By feeding on these remains, the vulture removes dangerous bacteria from our ecosystem. But why doesn't the bacteria hurt the vulture? Nature has provided a marvelous adaptation. A vulture's stomach acid is 100 times stronger than human stomach acid, and this kills bacteria. Vultures eliminate waste on their feet. The waste is so acidic that it kills the germs and parasites they were exposed to while walking on the dead animals and keeps them from spreading this bacteria. Vulture stomach acid is more acidic than battery acid, so you would not want vulture waste on your new car.

long-billed vulture



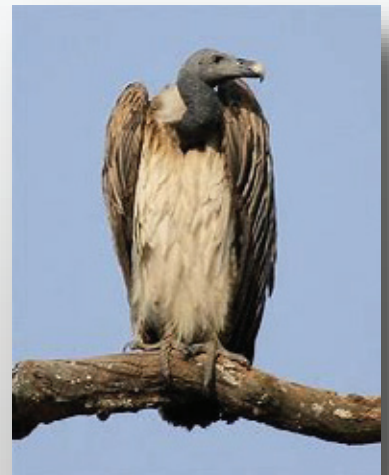
turkey vulture



oriental white-backed vulture



slender-billed vulture



Photos from multimedia

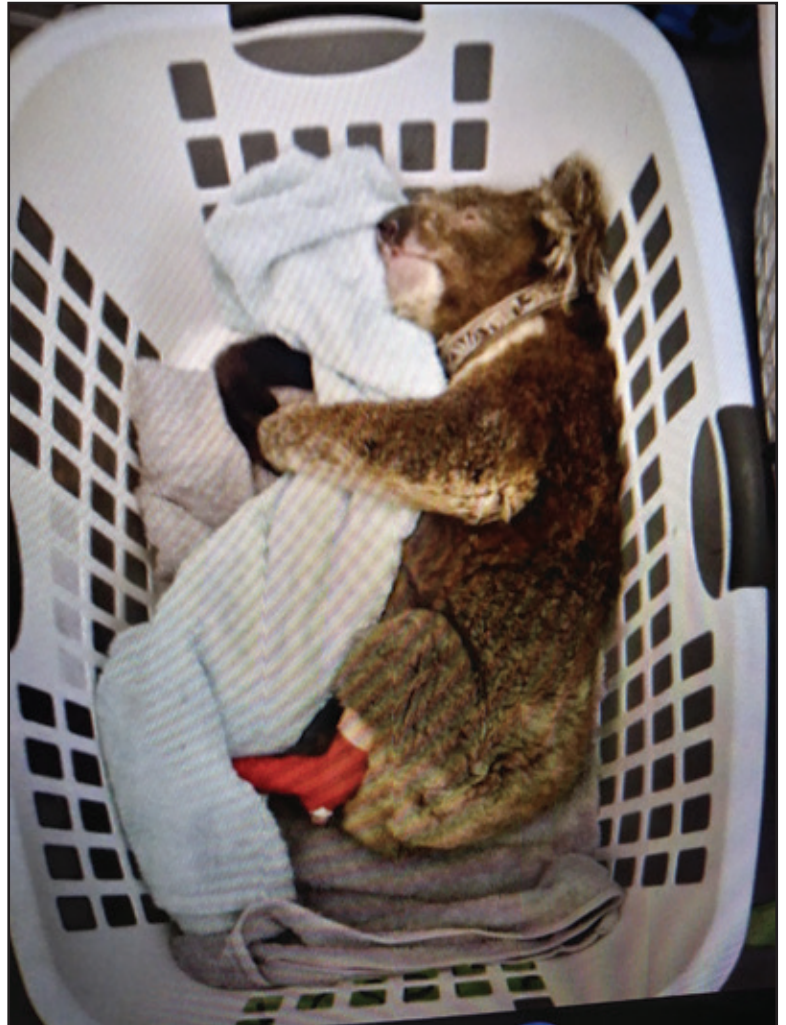
Island Of The Dead

Dr. Robert H. Stauffer Jr.

With Alexander Benson and Karl Kamb III

Kangaroo Island lies off the coast of southern Australia. It is about 90 miles long and about 1700 square miles. There is a large amount of agriculture on the island. Phys.org reports there is so much biological diversity on the Island it has been called the Galapagos of Australia. About one third of the island was dedicated to wildlife parks where many threatened and endangered species were protected from the effects of mankind. From December 2019 to January 2020 wildfires swept through the island and left an unimaginable trail of destruction. There were only 2 human deaths, but the loss of animal life may run over one billion animals killed. It is somewhat prophetic that Kangaroo Island is also known locally as "Karta Pintingga" which translates to "island of the dead".

One of the most seriously affected animals in the wildfires was the koala. In the early 1900's koalas were pushed to the brink of extinction. Over one million koalas were killed to support the fur trade. Of the survivors, many were wiped out by a pandemic of Chlamydia (a strain that did not affect humans). A group of koalas were rescued and taken to Kangaroo island. Koalas were not native to the island when European settlers arrived about 200 years ago. The rescued koalas were screened for chlamydia. The island had a large number of eucalyptus trees for the koala to feed upon and the population of koalas gradually but steadily increased to about 50,000. The fires left large numbers of dead and injured koalas and the population will probably be less than 25,000. Eucalyptus trees have a large amount of oils and a very pleasant smell like Vicks-vapo-rub. When exposed to fire, the trees literally explode into flame. It is unclear if there are enough remaining to support the koalas.



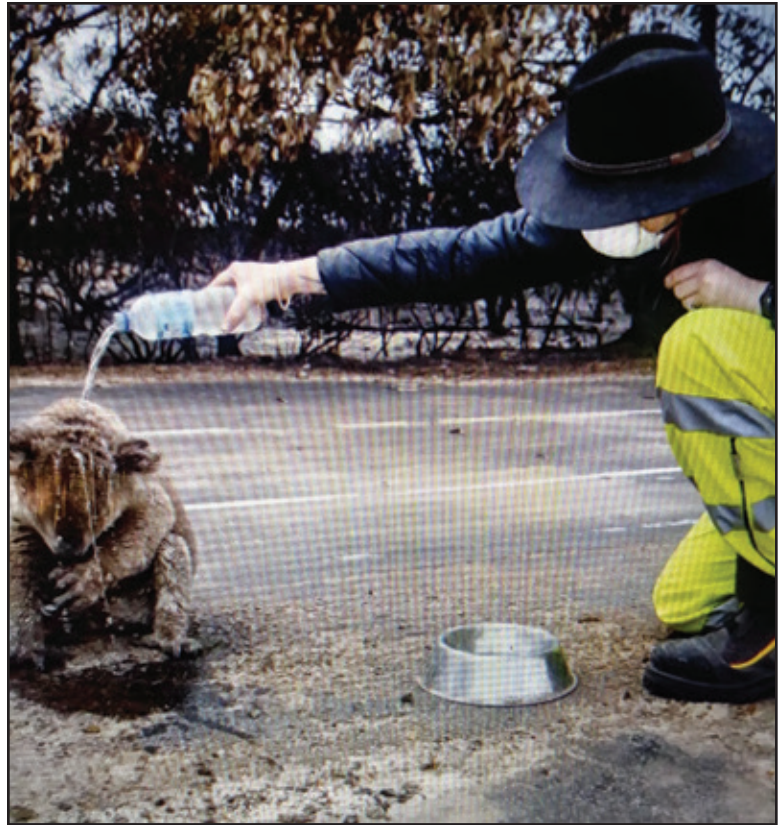
A rescued Koala baby rests in his makeshift crib.

The fire also had a tragic effect on the birds of kangaroo Island. One such bird was the glossy black cockatoo. The bird was near extinction and scientists were striving to increase their population. The fire wiped out at least one fourth of the population, but it is not clear what will be the long-term effects from the fire. There

is concern that the fire will drive this beautiful bird to become extinct.

Kangaroo Island was the home to a unique species of bee called the green carpenter bee. I mentioned in a previous article how plants are dependent on bees to pollinate and allow reproduction of new plants. The bees made their nests in the bushes which were completely destroyed in the wildfire. It is not clear if any of the bees have survived.

The Washington Post reported on one of the rarest mammals in the world, the Kangaroo Island Dunnart. It was thought to perhaps be extinct, but its image was seen on cameras placed by scientists studying the biology of the island. The entire range of the dunnart was destroyed. It is not known if any dunnarts survived the fire. If there were survivors, it is not clear how long they can stay alive.



A Koala enjoys and is cooled with drinking water.

The animals that did survive may face a very bleak future. The forests filled with trees and bushes are now simply scorched earth. Species like the koala and glossy black cockatoo have now lost their food source. In addition, the trees were the home for many species, especially birds. The trees also provided hiding places and protection from predators. Now red foxes and feral cats are sweeping through the charred forest and attacking what survivors may be left. Even if a limited number of animals do survive, it is not clear if they will be able to breed and raise young. Why did all this happen? Is it just a coincidence that Australia is being scorched by wildfire at the same time wildfires are causing havoc in California? I cannot offer definitive evidence the fires were the result of greenhouse gases and climate change. However, I cannot offer definitive evidence that they were not the result of greenhouses gases and climate change. Perhaps one of my son's favorite bands said it best:



*History shows again and again
How nature points out the folly of men*

– From Godzilla by Blue Oyster Cult.



Extinct Forever?

A Research Submission

*Dr. Robert H. Stauffer Jr. with
Jordyn Foster, Maddox Gutierrez, Jackson Moll
6th. Grade Students
Nasri Academy For Gifted Children*

When we Las Vegas residents talk about the 'ice age,' we are not referring to when Vegas first had its pro-hockey team. We are talking about a period of geologic time that ended about 11,700 years ago and was called the Pleistocene epoch.

During this time, the Las Vegas valley was a lush green meadow. In fact, the name Las Vegas means "the meadows". This grassland was the home of some interesting grass-eating herbivores. The Pleistocene epoch was a time when herds of camels, bison, horses, sloths, and Columbian Mammoths walked over the ground that is now the Las Vegas strip. Their bones have been found in the La Brea tar pits and many other areas in southern California, Nevada, and Utah. Indeed, their remains are found in almost all North America south of the Canadian border. These large Pleistocene mammals became the prey of some interesting ice age predators.

Notable is the Woolly Mammoth, basically a cold-weather version of the Asian elephant. The DNA of these two relatives is about 99.9% similar, the two major differences being the long thick brown hair and thick fat layer on the mammoth, both, cold-weather adaptations. Mammoth tusks are longer than this elephant, and as much as 15 feet long. Tusks were used to dig for food, to fight, and even functioned to attract mates. Woolly Mammoth skeletons are plentiful in Tule Springs, an area just north of Las Vegas. At one time during the Pleistocene epoch, this area had such a large mammoth population it is now referred to as "mammoth central".

Sabertooth cats were a variety of cat-like animals in the Pleistocene epoch. They were characterized by large canine teeth that reached lengths of 8 inches. The best known of these was the Smilodon or Saber Tooth tiger. The Smilodon was a fierce hunter that preyed on the large herbivores found during the ice age. It became extinct around the same time as the large herbivores began to disappear, about 10,000 years ago. A major saber-tooth discovery was made in 2012 in an area just north of Las Vegas, the Las Vegas Wash. Kathleen Springer, a paleontologist from the San Bernardino County Museum, identified fossils dug there in June 2012 as the front leg bones of a saber-tooth cat. This was the first saber-tooth cat found in the Las Vegas Wash area.

Aside from the Smilodon, another Pliocene predator was the Dire Wolf. This large canid was not a wolf at all and DNA evidence suggests it is not even of the genus Canis. A common ancestor gave rise to 3 branches: Wolves, Jackals, and Dire Wolves. Our domestic dogs came from the wolf branch. Jackals are still living in Africa. However, the dire wolf line is completely extinct and there is no close descendant living today. The Dire Wolf was a pack hunter and was similar in size to today's Grey Wolf. Like the sabertooth, it hunted the bison, camels, horses, and other large herbivores of the Pliocene epoch. A Ph.D. student at UNLV, Josh Bonde, discovered an ice age fossil of a type of canine in the Las Vegas Wash. It was found to be bones from the foot of a Dire Wolf. The origin of the find was confirmed by Xiaoming Wang of the Los Angeles County Museum of Natural History, an expert on the extinct Canis genus.

The Western United States has many fascinating sites where large numbers of Pleistocene megafauna (big ice age animals) have been found. The most notable area is the La Brea tar pits in Los Angeles. Approximately 3.5

million fossil specimens have been found on digs in and around this area. Only one pre-historic human skeleton was ever found there. It was a 20-year-old female from about 9000 years ago. The fact that only one was ever discovered is quite unusual, and some anthropologists speculate this might have been the first homicide in Los Angeles.

Utah also has a rich history of Pleistocene megafauna. The first ice age mammal discovered in Utah was found in 1871 by workmen digging near a part of Salt Lake City that is referred to as Temple Square. It was an ancient Musk Ox. There have been many discoveries since then. One interesting discovery was made by a bulldozer operator who dug up a 90% complete skeleton of a mammoth. It was found while working on the Huntington Reservoir dam in central Utah. It was especially interesting because the skeleton was found at an elevation of 9,000 feet. This discovery has forced scientists to rethink their ideas about how the mammoth lived. Another mammoth was found at 10,000 feet in Colorado near the Snowmass ski area. (Speaking of Snowmass, there is a large collection of mammoth and camel fossils there, as well as almost every other type of megafauna.)

What became of these massive herds? There are two major theories. The first is climate change. If a change in temperature and a significant decrease in rainfall occurred, there would not be nearly as much vegetation. This would cause a loss of plant-eaters and of predators which would ultimately lead to extinction. The other theory was an increase in the number of predators and over-hunting that ultimately lead to extinction. You see, just about 11,000 years ago another predator began competing for the herbivores as their food source. That predator was the early man.

It is interesting to note that 11,000 years ago a single hunter could not kill a mammoth by himself. Hunting may have been the very first activity when the early man worked in groups. As early man competed with the dire wolves and saber-tooth cats for the few remaining herbivores, they were all driven to extinction. This is exactly the time that all species of an early man except Homo- Sapiens disappeared. (This is the most widely accepted theory.) Indeed, there is a whole list of species today that are near extinction because of man's over-hunting.

Our article could have ended here. However, as I looked at a recent newspaper, our research took on a new dimension. The newspaper had an interesting story about a ferret called Emily Ann. Emily Ann is a black-footed ferret, once thought to be extinct. A small group of 7 of the black-footed ferrets was found and a battle began to save them from extinction. An incredibly cute 3 month old ferret, Miss Emily Ann, represents an earth-shaking advance in genetic science. Emily came into the world in an unusual way. Emily did not have conventional parents, because this ferret is a clone. But more interesting is the fact that the DNA that Emily Ann was cloned from came from a ferret that died and was frozen over 30 years ago.

It is now possible to extract DNA from a long-dead and frozen mammal and grow a healthy clone. Many scientists like George Church of Harvard University are experimenting with DNA extracted from the teeth of the Woolly Mammoth. Some newspaper accounts have maintained that we may see woolly mammoths in zoos by the end of the decade and many herbivores and predators as well. The process to bring a ferret cell to life is roughly the same as a mammoth cell. The egg cell from an elephant would be harvested and the nucleus replaced with the nucleus of a mammoth cell. The ovum would be placed back in the surrogate mother elephant for a long pregnancy and birth. And the result? A baby mammoth!

Similar to Jurassic Park, Pleistocene Park may soon become a reality. The San Diego Zoo currently has a "frozen zoo" with tissue samples, egg cells and sperm cells from over 1100 species, many of which are threatened, endangered, or even extinct.

Who said extinct is forever?



Catch Of The Day

Dr. Robert H. Stauffer Jr.

with Aneta Yang and

Nilan Nasri

Nasri Academy for Gifted Children

The documentary *Seaspiracy** chronicles how the commercial fishing industry has the potential to destroy the earth as we know it. Marine life exists in a delicate natural balance of predators and prey. Left undisturbed, this circle of life should renew itself indefinitely. However, when we add man into the equation, the balance becomes unbalanced.

Whales are a main group of sea creatures affected by fishing practices. The International Whaling Commission banned commercial whaling in 1986. Unfortunately, there was a loophole in their regulations that allowed whales to be taken for scientific research. Since that time, various reports note Japan has killed thousands of Antarctic whales. It also is reported the meat from the whales killed for “research” sold for as much as \$200 a pound in elegant Japanese restaurants.

Another marine casualty of commercial fishing is the Dolphin. Because dolphins are mammals and thus breathe air, they must return to the surface periodically to breathe. Dolphins eat fish, especially tuna. When commercial tuna fishermen cast nets bigger than a football field, they catch tuna and any other fish in the area. This results in dolphins drowning in the nets. The Animal Welfare Institute reports that 100,000 dolphins, small whales and porpoises are inadvertently killed each year. Referred to as “bycatch”, their bodies are thrown overboard. Many consumers are concerned about dolphins being killed as bycatch. Some cans of tuna are labeled as dolphin friendly. However, as long as dolphins swim beside side tuna, this claim is highly doubtful, especially with no one to enforce it.

A third group of creatures facing extinction from bycatch are Sea Turtles. California became frantic when pictures of turtles with plastic straws in their noses were shown in various printed sources. According to the UN Environmental Program, as many as 1000 sea turtles have been killed by plastic straws each year. California sprung into action and passed Assembly Bill 1884 prohibiting full-service restaurants from giving plastic straws unless the customer requests them. In the 1990’s as many as 70,000 sea turtles were killed as bycatch. Improved fishing methods have reduced this number to closer to 5000. It is debatable as to who is keeping exact records.

With all the problems whales, turtles and dolphins have, these are lesser than those sharks face.

First, sharks are hunted to make shark fin soup. When large sharks are caught, there is not enough room aboard ships to store them. The fisherman cut off the sharks' fins while they are still alive and throw the living creature back overboard. They cannot swim without their fins, so they are either killed by other marine predators or they sink and slowly suffocate. Sharks also follow tuna. It is believed that bluefin tuna fishermen kill more sharks than tuna in the quest for sushi. Since 1970, the shark population has decreased by over 70%. The Hammerhead Shark population has reportedly decreased by 99%. Sharks require years to sexually mature and they have very few young. It is possible that the populations may never recover. Of 31 species of sharks, 24 are endangered. *Carcharhinus Obsolerus*, ironically called the lost shark, has not been seen since the 1930. It is most likely the first shark to become extinct as a direct result of overfishing.

We all saw *Jaws*. Who cares if sharks disappear? We should. The future of mankind depends on them. Imagine a pyramid that represents the food supply of the ocean. On the top are sharks who eat big fish such as tuna. The big fish eat medium size fish, which in turn eat smaller fish. If the sharks were gone, the big fish would immediately have a huge increase in population, because there are no predators to stop them. There would be so many big fish they would eat almost all of the medium size fish, and then, the big fish would starve and disappear. The medium fish would quickly reproduce and begin eating all the little fish. Soon, the oceans would no longer be a food source and then? Humans would be the next group to run out of food.

Bycatch is an unfortunate cause of destruction of marine life. Commercial fishing is the intentional taking of marine life. Many species of fish commonly used for food and being harvested at rates far beyond their ability to reproduce. Seafood is a multi-billion dollar industry and there is an incredible incentive to send out ships and catch as many as possible. The commercial fishing industry, motivated by insatiable greed, is depleting the oceans.

Seaspiracy made a fascinating analogy between seafood and investing money. This is my version of the analogy. Let's say, someone was very lucky and won the lottery. They decided to retire and live from the interest on their winnings. However, what if they are irresponsible in their spending? Suppose they spend all the interest and some of the money they won? If they continue to spend recklessly it is conceivable that they could spend all the money and their bank account would be gone. If they spent 75% of their money or, even 99% of their money and the interest rate was not high enough, their bank account would never be equal to their original winnings.

Parts of the earth have already been overfished and are no longer good sources of income for commercial fishing. To maintain profits, the big fishing ships set sail and began fishing illegally off the coast of many small and poor countries. Commercial fishing severely depleted the fish population in these countries. One area hit exceptionally hard was the east coast of Africa. Fishing was the supply of food and the major industry in East African nations until

fishing ships from western nations removed the jobs and the food. People were so hungry they hunted for any animals they could find to eat. They even ate primates. The result was an epidemic of a virus called Ebola. Desperate men in Somalia tried to fight back. Unemployed and hungry, the Somali pirates began unlawful attacks on fishing vessels. There was too much money involved in commercial fishing and powerful countries brought heavily armed naval ships to protect the corporate fishing vessels. In 2009, three Somali pirates tried to hijack a cargo ship, the Maersk Alabama, and take the captain hostage. They held the ship for 3 days. On the third day the pirates were killed by snipers. The snipers were United States Navy Seals.

By some estimates, one out of every three fish consumed in America was caught illegally.

Many people are still enjoying a serving of endangered species for dinner. According to the Houston press, Orange Roughy, Haddock, Halibut, Atlantic Cod, Atlantic Salmon, Sea Bass, Sturgeon (eggs used for caviar) and Bluefin Tuna could completely disappear unless action is taken. Eating these fish is the moral equivalent of having a Spotted Owl for Thanksgiving.

Perhaps the greatest threat from the loss of ocean life is the loss of phytoplankton. These microscopically small organisms are the bottom of the food chain. They are very tiny plants that take in carbon dioxide and give off oxygen, just like other plants. There is so much plankton in the ocean, it is estimated that it produces 80% of the world's oxygen and absorbs 10 times more greenhouse gases than the Amazon rainforest. Without plankton, there would be no food left in the oceans, far less oxygen in the atmosphere, and nothing there to remove the buildup of carbon dioxide associated with climate change.

As I research, I continue to hear in my head the same sing-song line from the band Blue Oyster Cult: *"History shows again and again how nature points out the folly of men."*

*see <https://www.Nationalgeographic>, November 2, 2006
<https://www.saltwaterfishextinction> by 2048-CBS News

The Demise Of Fresh-Water Dolphins?

Dr. Robert H. Stauffer Jr.

When dolphins are mentioned in text or conversation, we see in our mind's eye a silver-studded grey dolphin, gleefully jumping and playing in a sky-blue crystal clear ocean. Unfortunately, this is not often the case. Unmentioned are the small number of freshwater dolphins living around the world and found most often in Asia and South America.

One river with a freshwater dolphin population is the Mekong River. This river flows through Laos, Thailand, Vietnam, and Cambodia. This river is home to over 1000 species of fish. The Mekong river provides about 25% of the world's freshwater fishing. It is also one of the most polluted rivers in the world and, obviously, a main reason why dolphins there are endangered.

Dolphins are marine mammals, which means about every two minutes, they must return to the surface to breathe air. Also, a body

of water with a very high amount of boat traffic can be a very dangerous site for dolphins to surface. The fishing industry in the Mekong river supports 60 million people. When dolphins surface and become caught in fishnets, they are unable to breathe air and they drown. The future does not look good for the Mekong river dolphin.

Another fascinating species of freshwater dolphin is found in southern Asia. About 1900 freshwater dolphins live in the Indus River in Pakistan and about 1200 to 1800 live in the Ganges River in India. In the 1980's,

the Ganges boasted near 5000 freshwater dolphins. These Ganges dolphins, particularly interesting because they do not have eyes with a lens, are nearly blind. They only can discern light from dark. Still, they are able to move through their environment, find food and mate by using echolocation, much like a bat.

Boats, pollution and poachers create serious threats for the Ganges dolphin. And now, as countries turn to building dams as an alternative to fossil fuels, a different type of environmental damage is created. The dolphins are separated from



Photo by Linda van Dijka

other dolphins and their territory begins to shrink. As the dams enable more farming, more fertilizer and pesticides are washed into the rivers. Action must be taken to preserve the small numbers of freshwater dolphins in India and Pakistan.

And then, on the other side of the world we find the Amazon River. It is home to a pinkish or gray colored dolphin that reach lengths up to eight feet. These dolphins are amazingly social in their interactions with humans. They have been known to swim up to boats and actually interact with humans. There are probably about 10,000 of these dolphins and a sighting is not that rare. Many locals in the Amazon river area feel

Dolphins now compete with fishermen for fish, and it is feared that fishermen will slaughter the dolphins. That remains to be documented.

very close to the dolphins. There is a local legend that the dolphin can shape-shift. They will take the form of a human male, and travel to land, and father children. The legend explains that many locals are actually related to the dolphin and feel a special bond. Legend or not, it is very easy to feel a bond with these highly intelligent creatures.

There are over 3000 species of fish in the Amazon, the most of any river in the world. The dolphin will eat most of them, even the piranha. In March of 2021, the longstanding ban on catching Amazon catfish was lifted. This created an industry with the potential for great income. The dolphins now compete with fishermen for fish, and it is feared that fishermen will slaughter the dolphins. That remains to be documented.

There is one other river with a population of freshwater dolphins and porpoises. That is the Yangtze river in China. The finless Yangtze porpoise is an amazing creature, supposedly with the intelligence level of a

gorilla. Industry, mining, pollution, boat traffic and dam construction have caused the numbers of the Yangtze porpoise to drop to about 1000. The Yangtze river dolphin has not been sighted since 2006. It is presumed to be the first species of freshwater dolphin driven to extinction in 20,000,000 years. This is an extreme, priceless loss for our world.

Organizations like WWF are attempting to locate areas where freshwater dolphins can survive and to transport dolphins to these areas. Their numbers are exceedingly small, and extinction is a horrible possibility.

Dr. Robert Stauffer

Elephants In Peril

*Dr. Robert H. Stauffer Jr.
Nasri Academy for Gifted Children*

Not long ago a friend forwarded an email to me. It was from a non-profit group that dealt with animal issues. The group was called Animal Recovery Mission. They talked about the tragic plight of elephants in Nepal. Honestly, I consider myself pretty well informed about animal issues. I am a registered lobbyist and I lobby the have lobbied the Nevada legislature on bills related to endangered species. But what I learned about these elephants in Nepal truly shocked me.

The purpose of the elephants was primarily to give elephant rides to tourists. The elephants lived a horrible existence. They worked 16 hours a day with no breaks and limited access to food and even water. They were frequently beaten to make them submissive and they were restrained with heavy chains when they were not working. Their existence was a complete nightmare. As if things couldn't get worse, COVID struck. There was much less international travel and the tourist dollars began to dry

up. The elephants' captors no longer had the money to feed the animals the large amount of food they needed. Because these businesses need to replace lost revenue and could not maintain the elephants they started to sell them on the black market. Large numbers were smuggled to India and perhaps on to other countries. I doubt that anyone who smuggled elephants on the criminal black market provided them with humane care and treatment. I couldn't imagine the horror that the worlds largest land animal was forced to endure.

The tragedy is compounded by the fact that elephants in other parts of the world on being hunted to the brink of extinction. I wrote about this in an earlier article published in an animal advocacy magazine.

In the year 1930, President Herbert Hoover tried to lead the country out of the depression, Babe Ruth and Lou Gehrig were the heroes of the New York Yankees and about 10 million elephants roamed Africa. Today, that number is about 400,000, a 96% decrease. The largest number of elephants, about 140,000, live in Botswana with most of the rest in bordering Tanzania and South Africa.

The elephant is more threatened by poaching than most other species because of the high value of its tusks. It is estimated that one elephant is killed by ivory poachers every 25 minutes. That comes out to about 20,000 per year. This is part of the reason that the elephant could completely disappear from Africa.



Photo by Alexandr Podvalny

I believe that cruelty to any animal is completely inexcusable. However, there is something about the loving, family centered elephants that makes its abuse seem to be a much greater crime.

In the wild, elephants are a fascinating social order. Elephants live in matriarchal family groups. These groups are headed by the oldest and largest female and each group contains all related females and juvenile males. The females typically will remain with their female relatives for life. The males will leave when they become mature at about 12-18 years of age and they will live solitary lives. However, they may return to

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seek out their offspring and their mate. Most elephants do not mate for life, a trait they share with many humans.

The mother elephant forms a deep bond with her calf.

Perhaps this has to do with the fact that a pregnant elephant carries its baby for the 640 days pregnancy (almost two years). If a calf passes away, the mother elephant grieves. Some females have been known to carry the deceased calf around with them. Other elephants will try to comfort an elephant that is sad.

All members of the family have a close relationship. An elephant can be separated from a family member for many years, but when they meet again, they greet each other with trunk holding and excited play. It has been said that an elephant never forgets.

The elephant family group has a noteworthy amount of cooperation. Elephant families with up to 40 members will work together to forage for food and to defend themselves from predators. Sometimes several families in the same geographic area will band together and form a group called a clan. Elephants place great importance on their social relationships. Elephants also have a concept of self and they seem to enjoy looking at themselves in a mirror.

I can still remember as a small



Photo by Katie Hollamby

child when my parents took me to see elephants in both zoos and circuses. Without commenting on the morality of elephants in captivity, I will say that seeing these gentle giants gave me a connection to animals that I still feel to this day. I cannot imagine a day when the elephant is added to the list of over 900 species that have become extinct in the last few centuries.

“We admire elephants in part because they demonstrate what we consider the finest human traits: empathy, self-awareness, and social intelligence. But the way we treat them puts on display the very worst of human behavior.”

— Graydon Carter

Life Finds a Way...

*Dr. Robert H. Stauffer Jr.
With students of
Nasri Academy for Gifted Children
Julia Cook and Alesya Hathaway*

Introduction

One of my favorite authors earned his M.D. at Harvard Medical School, but he chose not to practice medicine so he could concentrate on his writing. He wrote fiction with a very large amount of science. His 13 novels include *Andromeda Strain* (about pandemics) and *Jurassic Park*. Yes, his name is Michael Crichton.

During a very memorable exchange in Crichton's book and movie *Jurassic Park* (1993), Dr. Ian Malcomb (Jeff Goldblum) argues with Henry Wu. Wu maintains that the dinosaurs on the island cannot reproduce because they have only created females and breeding is impossible without males. To this Goldblum responded with a very famous movie quote, "Life finds a way."

It has long been known that certain families of birds can reproduce without a male. Such families of birds include columbid (pigeons and doves), galliform (chickens and turkeys), and passerine (sparrows and crows).

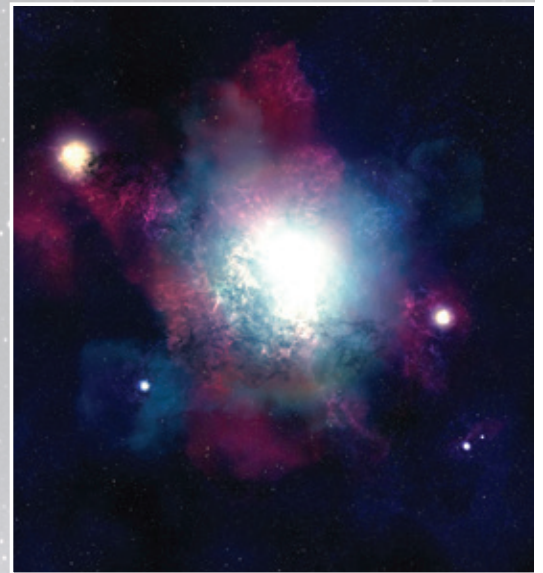
They have been known to reproduce by a rare process called facultative parthenogenesis. This has also been observed in reptiles, fish, and insects.

A just published article in the *Journal of Heredity* (Oct 2021) titled "Facultative Parthenogenesis in California Condors" stated that some of the California condor chicks (*Gymnogyps californianus*) studied in the repopulation project had no male parent. Nature found a way.

This major finding has many implications. Could this rare phenomenon help keep the condor from slipping into extinction? Could this rare phenomenon occur in other species? Perhaps even humans?

What is Facultative Parthenogenesis?

In most cases in nature, the sex of an organism is determined by two chromosomes. An organism with two x chromosomes (xx), is genetically a female. An organism with one x chromosome and one y chromosome is genetically a male (xy). In sexual



reproduction, each parent contributes one chromosome. The female can only contribute an x. The male can contribute an x or a y.

Therefore, it is the male that determines the sex of the offspring.

Scientists have documented more than 80 different species that have reproduced without a male parent. This process is known as facultative parthenogenesis. Facultative parthenogenesis is a rare event where a living organism can be conceived without a male parent. The word of parthenogenesis comes from the Greek words parthenos meaning virgin and genesis meaning creation or birth. So, parthenogenesis is a virgin

Background Photo by Kyoung-Sik Choi

birth. This process allows for reproduction when males are very scarce or unavailable, enabling the animal population to move forward and grow. Parthenogenesis can produce either male or female offspring.

There are disadvantages to facultative parthenogenesis. The organisms are very similar to the genetic makeup of their mother and lack the genetic diversity of an organism that has two parents. This allows unwanted and harmful genes to be transmitted directly from mother to offspring.

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Indeed, nature's plan is sexual reproduction. However, when a male mate is not

available, parthenogenesis can potentially save a species from extinction. Nature finds a way.

Facultative Parthenogenesis in Aphids

One member of the animal kingdom that is well known for non-sexual reproduction is the aphid. (greenfly). They are usually sexually active in the summer, however, on occasions when the weather takes a turn for the worse, this small insect engages in facultative parthenogenesis. This usually occurs in autumn. Aphids, trematodes (a human parasite), and daphnia, undergo a cycle called cyclical parthenogenesis, when the organism experiences many rounds of asexual reproduction, producing exact clones of the one parent.

Conclusion

In summary, facultative parthenogenesis is a female animal reproducing without sex. The female's embryo has not been fertilized by a male sperm and therefore it has to form in a different way. This makes the offspring more like a clone with no genetic diversity. One of the most common insects to undergo parthenogenesis is aphids, which do cyclical parthenogenesis. The insect

experiences cloning multiple times in one life cycle. Dr. Ian Malcomb was right, nature always finds a way...

I shall leave it to the reader to ponder why this article on virgin birth was placed in the Christmas issue.

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About the Author

Dr. Robert H. Stauffer Jr. began his career as a Licensed Funeral Director. He left that career and chose to pursue a career in education. Over his 30 years in education, he has taught a wide range of students from 5th grade to graduate school. His publication “Finding the Speed of Light with Marshmallows” in the April 1997 edition of the *Physics Teacher* has received worldwide recognition. He will also have a major paper in *Harvard’s Journal of Emerging Investigators*, which will be published in early 2022. Dr. Stauffer plays in international chess tournaments. He is a member of Mensa and The Church of Jesus Christ of Latter-day Saints.

