

# **Maybe, Almost, and Temporary Extinction**

**Stan Kaufman**

**Cleveland Philosophical Club**

**April 12, 2005**

## Summary

Throughout geological history evidence confirms the extinction of countless plants and animals. In our own time we see a growing awareness of animals that are thought to be extinct though “evidence” emerges that they may not be. A growing body of literature, scientific papers, and web sites are devoted to the goal of finding survivors. Still other species are clearly endangered and almost extinct. Captive breeding programs and preservation of habitat has demonstrated success in restoring some species to stable numbers. For the really and truly extinct, can science “recreate” these animals with new advances in DNA knowledge and cloning science? Do we even want to? Who cares??!!

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It was a dark and stormy night. Rain came down heavily often seeming to be blown horizontally by buffeting winds. A ranger, employed by the Tasmanian National Parks and Wildlife Service, dozed in his truck until 2:00 AM when he awoke to conduct his customary survey of nocturnal animals attracted to a bait site in the park. Waiting until he was fully awake and fortifying himself with coffee from his thermos, he then poised ready to see and record his observations of the suddenly illuminated, baited area. Turning on his headlamps and spotlight, he scanned the area prepared to record the usual prey in the usual places. What he saw, however, set the “science” of the Park on its ear. In his own words he reported, “...I swept the light beam around, it came to rest on a large thylacine standing side on some six to seven meters distant. It was an adult male in excellent condition with 12 black stripes on a sandy coat. Eye reflection was a pale yellow. It moved only once, opening its jaws and showing its teeth. After several minutes...it moved away into the undergrowth. Leaving the vehicle and moving to where the animal disappeared, I noted a strong scent. Despite an intensive search no further trace of the animal could be found.”

Hans Naarding was a professional. Those who knew and worked with him consider him a highly credible witness. Hard headed scientists who dealt for years with the “sightings” of thylacines agreed. Here was an eye witness account that could be trusted.

So what's a thylacine? Perhaps you've heard of it as a Tasmanian tiger, striped wolf, Tasmanian wolf, marsupial wolf, opossum hyena, or, if you're up on the tongue of Tasmanian aborigines, ka-nunnah, lagunta, or corinna. For our purposes in this paper, it is a thylacine.

*Thylacinus cynocephalus* is a unique animal and not a variant of something else. It looks like a dog but is more closely related to cats. A fearsome looking, flesh eating animal, it is a marsupial and in that sense related to kangaroos and opossums. A photo is available for your consideration.

So what is so astonishing about Ranger Naardings sighting in 1982? The last known living thylacine had died in a Tasmanian zoo on September 7, 1936. The government of Tasmania was so convinced of the thylacine's extinction that it refused and still refuses to fund or permit exploration of scores of reported sightings of thylacines in or about National Park territory. Why should the government be so sure? Well, it promoted through aggressive bounty programs, the extirpation of the thylacine as a predator of sheep. Despite collected data from sheep ranchers themselves showing the thylacine to be 4<sup>th</sup> or 5<sup>th</sup> in the causes of sheep loss, behind domestic dogs, disease and other carnivorous predators, the thylacine was singled out for bounty hunters who sought both income and something to kill.

Is the thylacine extinct or might it exist in the vastness of square miles of its known and preferred habitat in the primeval upland forests of Tasmania. Most consider it gone with the dodo. But not all! Several notable and solidly credentialed scientists believe that the thylacine still holds out in the wilder reaches of the island. It is generally conceded that they were totally extirpated in Australia in the late 18<sup>th</sup> century. Willing to risk the reputation as "crackpot" scientists, several notable zoologists continue in their search (lifelong in some instances) for the thylacine.

My favorite among those who consider the survival idea viable is a nature writer, very knowledgeable and experienced but not a “certifiable scientist.” Scott Weidensaul is the author of many very readable books on natural phenomena. He spoke recently at the Cleveland Museum of Natural History to a large audience held rapt by his accounts of wildlife encounters. Weidensaul spent weeks searching for sight of sign of the thylacine. He failed to find either but never doubted the possibility of its existence.

His book, The Ghost with Trembling Wing, recounts repeated attempts to locate birds, mammals or insects thought to be extinct, but...maybe not. His searches and highly entertaining accounts include seeking large cats in central England; birds in the remotest tropics including the ivory billed woodpecker in the bayous of our southern states; the Tasmanian tiger; and he even speculated about the Lock Ness monster. Scott Weidensaul has been preceded and followed by other equally gifted nature writers, notably David Quammen, who, in the book Song of the Dodo, tells of his own searches for the “maybe extinct.” Both writers found in their searches evidence of if not outright refutation, i.e. live sightings, that heretofore assumed extinct species did live after all. We are talking in very small numbers and perhaps nearly extinct, but clearly not yet extinct. There’s still the maybe that some few individuals survive.

What is extinction? When is an animal or plant thought to be extinct? The answer seems rather simple. A species is extinct when the last one dies. There are, however, at least two problems with this definition. The first is that there are, apparently, 20 different definitions of the term “species” in current usage among biologists, zoologists and paleontologists. This makes a declaration that an individual plant or animal is this or that “species” a dicey matter. Secondly, how is it determined that the last member of a species has died? The CITES Treaty (Convention

on International Trades of Endangered Species) uses as its extinction benchmark the lapse of fifty years since the last generally accepted sighting in the wild.

Caution is clearly advised and many premature “extinction certificates” have been issued. The Javan rhino long thought extinct was recently found deep in the forests of Vietnam. Lions recently found in a traveling African circus are in fact a subspecies thought to be extinct since the 20’s. Even more dramatic, the Coelacanth (see la canth), a large prehistoric-looking fish was found in fishermen’s nets off South Africa. It was thought extinct for over 70 million years. While these rediscoveries (hundreds of them are recorded) are heartening, they make more difficult the determination of what is extinct and what is not. Even given this ambiguity, we know that most of the animal and plant life that once flourished on this earth is now extinct. We also know that all currently living species, plant and animal, will one day be extinct.

Why the interest in the maybe or nearly extinct? Perhaps it’s an inbred sympathy for the underdog (perhaps I should say “underspecies”). If an animal or plant reappears after decades or millennia of absence, you know that it has prevailed against incredible odds. Or, as Scott Weidensaul puts it, “Deep down in our overcivilized hearts, we need the world to be bigger, and more mysterious, and more exciting than it appears to be in the cold light of day--especially in this age when the planet shrinks daily and no place seems truly remote or unknown.”

A far more hopeful situation (I hope) is the prospect of species not yet extinct but clearly endangered, the “almost extinct.” One of the most dramatic and exciting recoveries is visible in our own backyard, i.e., the bald eagle. Extirpated from Ohio and endangered throughout the lower 48 states, the bald eagle fell victim to both hunting and poisoning from common pesticides, notably DDT. Under the leadership of our own Cleveland Museum of Natural History, breeding programs have enabled the reintroduction of eagles at various sites throughout

northeast and northwest Ohio. The restoration of safe food resources have enabled breeding and rearing young in the wild so that, if you know where to look, the bald eagle is a fairly common sight. I spotted two in the Painesville area on the recent Christmas Bird Count. Indeed the bald eagle has now been downlisted from endangered to threatened status in the lower 48 states.

An even more dramatic avian recovery, although far from being off the Endangered Species List, is the California condor. There are two kinds of condors extant, the Andean and the Californian. The former has maintained good numbers due to the remoteness of its South American habitat. The California condor, on the other hand, has fared far worse due to its territorial proximity to human activity. In addition to low and slow reproductive cycles, the condor has been hunted, poisoned and has collided with power lines causing the rapid drop in numbers. Protected since 1953 when the estimated number of birds in the wild was less than 60, the population steadily declined to an incredible 27 known individuals in the wild.

Captive breeding programs, release, and rerelease programs for the condor have been one of conservation's great success stories. In 2002 the population had risen to over 200 individual birds with 68 living successfully in the wild.

The American bison and its European cousin, the wisent, are similar success stories. While nearly driven to extinction, captive breeding and release programs combined with controlled hunting and setting aside natural preserves have enabled herd growth to increase to sustainable populations.

Two further comments might be made concerning the almost extinct. The first is the encouraging trend for zoos to move from showcases of captive animals to Wildlife Conservation Societies (e.g. The New York Zoological Society name change to reflect this new mission). Breeding programs to release healthy animals into the wild rather than for sale to other zoos

bodes well for maintaining animals in their natural habitat. We have only to hope that we can protect enough natural habitat into which animals can be released.

This suggests a conundrum. Release of captive bred animals has had major successes but has not been an unalloyed triumph. Condors must be conditioned before release to avoid both power lines and people, its original nemeses. Programs are under constant development to train these magnificent birds to cope with the increasingly unnatural aspects of their “natural habitat.”

Growing bison herds compete with cattle for grazing areas. While no case of verified transmission is yet recorded, it is known that the bison is a carrier of disease to which it seems to be immune but to which cattle are not. Ranchers understandably watch these growing herds with mixed feelings.

In considering the “temporarily extinct,” there are at least three possibilities. The first is illustrated by the Coelacanth, thought to have been extinct for 70 million years. Then it suddenly shows up and since then schools of them have been identified in the waters around Sumatra. Here we have the premature application of the label.

More mind boggling is the exploration of recreating, if you will, a clearly extinct plant or animal by use of DNA and cloning. Attempts to extract DNA from frozen, pickled or otherwise long dead animal tissue have met with very limited degrees of success. As a cell dies the DNA molecule degrades so that extraction of DNA is usually fragmentary at best. The issue is further complicated by the fact that we usually do not know what an extinct animal’s DNA looks like. How do you know when you have it? Finally, the introduction of DNA into a host ovum, a very tricky operation itself, does not guarantee the production of the hoped for species. This has been done with live animals (Dolly, the sheep, and others), but only rarely and with great cost has a full DNA library been extracted from dead tissue and never from tissue more than 50 years dead.

Back to our thylacine. The Australian Museum devoted dollars, time and other resources to the cloning of the thylacine using DNA from a pickled pup, if you will. In their collection, a 136-year-old thylacine “pup” was found preserved in ethanol. It was thought that by extracting DNA from this pup, introducing it into host cells from other living species, voila—a thylacine would be cloned. It didn’t proceed as they had hoped and the fragmentary DNA recovered was of poor quality and insufficient to constitute a full DNA library. The project was ditched six years later as unworkable. Make no mistake, cloning is here and cross-species cloning has been accomplished. A variety of near extinct species have been successfully cloned but never by using DNA from long dead tissue.

A final possibility has emerged with the discovery of long extinct animals found frozen in glacial or arctic ice. The woolly mammoth has received some fame in this regard. Not only is the potential for higher quality DNA greater (although not yet accomplished), a group of Japanese scientists propose using frozen mammoth sperm to impregnate an Indian elephant, the closest living descendant of the mammoth. You would then have one half a mammoth. I’m not sure where the other half comes from.

All of this raises the usual plethora of issues regarding cloning. I raise only three here:

1. So we clone a thylacine or some other long missing species. We will have accomplished the nature part. How do we accomplish the nurture part? Who teaches the thylacine to be a thylacine? We know that many animals are highly social and learn behavior from mothers, fathers and extended families. This won’t happen with a cloned single individual. Similar issues of species socialization have been faced in releasing animals bred in captivity.
2. What do we do with a recreated species once we’ve got it? Many animals were crowded out of existence by loss of habitat. We still don’t have their natural habitat nor can we hope to

create it. Hundreds of thousands of acres remain of the preferred habitat of the thylacine, none for the passenger pigeon, and precious little for the California condor.

3. Finally I suggest, as have many others, that resources diverted to cloning extinct species might be better spent in preventing the extinction of endangered species. It is both cheaper and more cost effective. This would involve the preservation of habitat, breeding and release programs (which may well include cloning), and, frankly, just making the planet more hospitable for those with whom we share it.

I'm a birder. As such I've studied the physical characteristics, the personality, the habits and preferred habitats of many small feathered denizens and then gone searching for them. In the process I've traveled over much of North America, a bit of Central America, a tiny smidge of South America, and bits of Europe. If you're a birder, you know what I'm talking about.

Given that, it is not so surprising that I was doomed when, in a small bookstore in a small town on a small island on the Alaskan Marine Highway, I found Weidensaul's The Ghost with Trembling Wing. The search for the maybe and almost extinct is merely an extension of the birding gene, though for me most of it has been vicarious. It has provided countless hours of reading, travel, attendance at lectures, meeting other searchers, and finally provided a topic for this presentation to the Cleveland Philosophical Club. Why is the search so beguiling? When you have seen, in the wild, an animal that you have never ever seen before, perhaps never even heard of before, you will understand.

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