

Commentary on the Plight of the Beaver Run Reservoir Alligator And the Larger Implications of the Event

A Dying Alligator near Pittsburgh
and its Origins in a Scandalous, Unregulated U.S. Marketplace.

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A lost young crocodylian residing in a reservoir near Pittsburgh, and efforts of citizens to have it recovered and the response of authorities, have drawn the attention of local residents and of the public at large. As temperatures drop, the cold-blooded reptile faces impending death by freezing. The present incident is but a passing moment in a long-term problem in the United States. This commentary, written partly from a personal perspective, attempts to briefly and expertly assess the situation of the Pennsylvania alligator and the dimensions of its much broader context – some seemingly unknown to the general public - from a social, commercial and biological perspective.



The only known image of the Beaver Run Reservoir Alligator.

CONTENTS

- THE BIG PICTURE
- CALL THE LOCAL ZOO?
- HOW THE BEAVER RUN 'GATOR RUN' BEGAN
- RESCUE EFFORTS
- MEET "BEAVER"
- HOW TO FIND "BEAVER"
- HOW TO KEEP "BEAVER" ALIVE AFTER HE'S FOUND
- HOW TO PREVENT THIS FROM OCCURRING AGAIN
- THE BIGGEST PICTURE

Forty miles' drive east from Pittsburgh sits a large, crevasse shaped human-engineered lake named the Beaver Run Reservoir, where the eyes of the locals are focused on a single, oddly placed animal residing there. This animal did not choose to be there, more than 350m/563km from the northern edge of its natural range, and at the time of this writing it is either dead or nearly so.

The animal, based on eyewitness descriptions shared with local news media and a single photograph, reproduced above, almost certainly appears to be an [American Alligator](#) (*Alligator mississippiensis*), likely a juvenile, 20-30 in/51-76cm in length, and probably not more than 3 years old. The reptile is obviously an escaped or discarded animal, having been acquired as a pet by a local resident, as there is no other known possibility for its present location other than its having escaped from or been discarded by a local animal establishment (i.e. pet store, wildlife facility).

The disposition of this reptile should come as no surprise to residents of the local counties there in Pennsylvania, as alligators are easily acquired in that state, either at pet stores or via the Internet, where a hatchling or juvenile alligator retails from \$50 to \$150 and may be acquired at a local pet store or shipped overnight from Florida-based merchants. Furthermore, the state of Pennsylvania imposes no law or regulation governing the possession of such an animal among the citizenry.

THE BIG PICTURE

The [Croc Rescue Network](#) (CRN), a quasi-formal, volunteer operation I and a colleague launched in 2007, receives approximately 50 calls per year from residents of North America, either pet owners, concerned citizens, animal shelters, police departments, or zoos and wildlife parks; a few calls have even come from Canada, Europe and South America. Chris and I have never analyzed our records academically, but we can easily reach into our memories for estimates and anecdotes that draw a clear picture of the state of at-risk crocodylians, 95% of which are alligators, in the United States. For a wider perspective, U. S. Herpetological groups and animal shelters we've learned of also take in burdens of unwanted alligators; certain collections, like those in Phoenix and Chicago, are staggering in number.

The average 'at-risk' alligator is approximately 35in/89cm in length and about 2.5 years old. Approximately 95% of pet-owning respondents to our inquiries on why they wish to place the animal elsewhere state that the reptile has grown too large for their comfort. Some wish to be rid of it specifically because they've been bitten (once or too many times), or are expecting a newborn child in the home. Many of those who cared to answer our question on why they decided to purchase an animal known to grow large is that the animal merchant told them that they could follow certain methods to keep the animal permanently small (any attempts of which are detrimental to the animal's health). Some sellers on the Internet have asserted that certain lines of alligators and caimans (alligator cousins from South America) are 'bred to be dwarfs' or "bred to be pets", though such claims are yet to be substantiated and my requests to [one of those merchants](#) for substantiation have gone unanswered.

The images below, two views of a display at a popular reptile trade show in Hamburg, Pennsylvania, demonstrate that \$55 will secure the transfer of a hatchling American Alligator. (Images: Jennifer Clark)



CRN has no budget, per se, nor does it generate profit, a nonsensical expectation anyway, because economic reality prohibits it. Consider this: A tiny hatchling alligator, 8-12in/20-30cm long, may cost \$40-\$75 to ship, but once it reaches 30in/51-76cm the shipping cost (i.e. shipment from Pennsylvania to Florida) escalates to about \$200 minimum via air cargo. This sum is more than the market value of the alligator since the reptile's market value seems to plunge once it reaches this size, a result of the conflict of demand for a small gator versus shipping cost. Smaller crocodylians are more in demand by the buyers overall since they are easier to keep in the home and their bites not as serious as those of larger ones. In conditions of such unregulated possession, the marketplace's proverbial unseen hand drops blows like an iron fist on *Alligator mississippiensis*.

At right, this recently rescued gator from an abandoned apartment is severely emaciated from parasitic infestation and suffering from a respiratory infection. (Image: Christopher Law)

Most at-risk alligators we learn of come from (in no particular order) Michigan, Pennsylvania, Oregon, Arizona, Ohio and Rhode Island. Others have been located in Missouri, Massachusetts, Connecticut, Virginia, Indiana, Washington State, Nevada, Colorado, Montana, California, Georgia, Alabama and Florida.

Those considering acquiring a crocodylian for a pet would be wise to research the considerable husbandry requirements – and risks – associated with keeping crocodylians as "companion animals". Such persons will find that keeping these species is



expensive, time-consuming, and potentially very dangerous. Many who keep such reptiles discover the reality of their choice, and wish to be rid of the animal.

CALL THE LOCAL ZOO?

At least one recent media report on the reservoir event admonished readers that alligator pet owners may contact their local zoo for assistance in placing the animal. This may seem like an obvious solution, but it's important to note that the [Association of Zoos & Aquariums](#) (AZA) and the [Zoological Association of America](#) (ZAA) and their institutional membership, generally, have no stated interest in rescuing or placing discarded or unwanted crocodilian pets, as their efforts extend to helping overcome the seemingly endless obstacles of the conservation of endangered wild species in their natural habitats worldwide and in their facilities.

Zoological institutions which are members of these organizations do not in practice set aside a portion of their very limited funds for saving imperiled exotic animals discarded by pet owners. Furthermore, some zoos' insurance policies do not cover offsite animal recovery, making zoo managers reluctant to be involved, even if against their personal compulsions.

With little chance of zoo assistance and limited numbers of qualified rescue organizations, recovery options are insufficient to handle the present case load of unwanted reptiles.

HOW THE BEAVER RUN 'GATOR RUN' BEGAN

Kendra Fouse, a local animal welfare enthusiast, spotted the alligator on October 2 [the day's local temperature: high of 46°F/7.8°C, low of 39°F/3.9°C] in the water near Reservoir Road, which spans the center of the lake latitudinal as a bridge. According to her, she contacted the Municipal Authority of Westmoreland County (MAWC) to petition them to rescue it. At first, she explained, there was a negative response. So she decided to raise awareness of the issue by starting a [Facebook page](#) and reaching out to the local media. At least one animal welfare group, [Voices for Animals](#) has joined the movement and discussions appear on various online animal-subject fora.



This alligator is a former pet from Oregon. "Buster" was fortunate; he was successfully placed and now enjoys life in sunnier Florida. (Image: Tim Criswell)

RESCUE EFFORTS

According to a media [report](#), it was on or around October 6 [Local temperature: high of 73°F/22.8°C, low of 66°F/18.9°C] that the MAWC granted the Pittsburgh Zoo/PPG Aquarium herpetological staff permission to enter the reservoir and make an effort to save the misplaced animal.

The first attempt was by setting a metal trap, designed to hold a 5ft/1.5m -long gator, which featured a trigger to be set off by the disturbance of bait attached to its lead. The bait that was used, according to a media report, was herring, reportedly chosen for its smelly and fat-laden attributes. Herring bait is a questionable ploy, since herring, frozen or not, is dangerous food for an alligator. Herring, unfrozen, contains a high level of the enzyme thiaminase, which when consumed by some animals can deplete the consumer of thiamin (aka Vitamin B1) which may lead to illness and/or death. Fish meat in general also generates thiaminase during the freezing process, making it even more dangerous to the animal. One account shared with me of crocodilians eating frozen fish described them as twitching in convulsions by the next day, followed by death. The only way herring could possibly be safely used for this is by the insertion of an appropriate amount of Vitamin B1 supplement to the fish bait, which may have been done.

Notwithstanding, the trap was unnecessary at present time of year, given the climatic conditions of autumn in Pennsylvania. In the cold weather, even with temps fluctuating, an alligator instinctively has little or no desire to eat, concentrating its efforts on diminishing stressors so that it can survive as temperatures drop. Even if it did choose to eat, and it was unaffected by the potential danger of the fish bait, it could die during the first approaching cold spell since its metabolism would not allow its food to be digested; the food would rot in its stomach, effectively poisoning the reptile if it did not react with regurgitation.

In the region's cold autumn climate, the goal of searchers should be to locate the alligator, not to trap it.

The use of nets, dragged along the water, is not a viable option for securing a crocodilian in a larger, open body of water. Under cold conditions, a smaller alligator, such as a hatchling, juvenile or sub-adult seeks security, which comes in two main forms- warmth and privacy. One of the last places the alligator would be interested in would be the open water, where the nets were dragged. Besides this, with all of the watercraft and personnel on the lake handling the nets, the cautious and aware alligator, if in open water toward the center of a large swath of water (submerged or

not, it would only likely venture there in warmer weather) would certainly respond to such a grand announcement of invading humans and quickly retreat to the edges of the water; it's like sounding a clarion to the hunted. In cold weather, it should be considered nearly impossible to find an alligator out in that area. Furthermore, there is the risk of affecting delicate underwater habitat by the pull of the net.

MEET "BEAVER"

The [Beaver Run Reservoir](#) contains 11 billion gal/41.6 billion L of water, 25 mi/40km of shoreline and is 40 mi/64.3km long from North to South. Impressive as they are, these facts are marginally relevant to the search for the Reservoir's transient saurian.

Given these unusual circumstances, one must understand alligator psychology, which, like our human version, is based much on its physiological needs, such as oxygen, appropriate temperature, nutrition, security of body, etc. Despite the enormous size of this water body, there is enough confirmed information to narrow the search area considerably, making the task much simpler than one might imagine.

How does an alligator like this think? When it makes choices minute by minute, such as where to swim to, what influences it? To determine this, let us creep into the mind, as it were, of this particular one, its pea-sized brain a result of nearly 200 million years of development by biological natural selection. Nowhere near as intelligent as *Homo sapien*, *Alligator mississippiensis* still has specific abilities to survive relatively tremendous odds, and physical capabilities very different from our own.

I shall discuss this animal's psychology very briefly in a fantastical, anthropomorphic perspective, in the first person/first gator, as if he is personified as we are. For storytelling purposes, especially for the benefit of young ones who may read this, we'll consider the Reservoir Gator a male, and call him "Beaver." This little fictional moment could have taken place just 3 weeks or so, ago, just before the cold began to lull him into a frigid stupor.

BEAVER: Brrrr.

This is cold. I don't have much energy left. I must stay in a good hiding place, among the reeds, plants, or tree roots. I could be attacked by raccoons, giant fish, or those two-legged tall animals, like the ones I've seen walking on the outer banks. I've got to stay put and try to blend in.

I feel sleepy. What if I fall asleep completely here? I might sink and drown. I can't hold my breath long enough. I've got to find away to sleep without drowning. I've got to move to a shallower area. What if something sees me and wants to eat me? Oh, it doesn't matter. I've got to be able to breathe when I'm unconscious. I have no choice.

Beaver likely hasn't been in the reservoir for long, given the date of the first sighting, and may not have adapted to the obvious stressors quickly enough to dig a den into the bank. Chilly air and water would diminish his energy and force him to 'make do' as he can.

Beaver slowly swims to the bank and rests his body on the mud, keeping his nostrils, ever so small on the tip of his snout, just above the water. He knows that the mud below him will help hold him so that he doesn't sink and if he can muster the strength to hold his position; his body will harden enough to keep its proper orientation to keep the nasal openings above water. In freezing conditions in a region like the Carolinas, ice will simply freeze around the gator and hold it as it slips into aestivation, its small nostrils just above the surface. This position is referred to as the "icing response."

Could he have dug out a den in the bank, as gators are wont to do? This is very unlikely. The substrate in this region tends to be very hard and the low temperatures harden it even more. And a smaller gator like this one doesn't have the power to dig through it, especially not while succumbing to the pressure of the cold.

Other factors affecting his chances: He was a captive animal, being kept in a warmer climate and not accustomed to such cold temperatures as a wild one in its natural range would be. And how well fed and healthfully kept was he? This will determine to some degree how well his body will respond to the chill. Other than that, he will have no choice but to hold on for as long as it can.

If the weather takes a turn and warms somewhat the next day, it may be enough to awaken Beaver, but he will not have much energy to be active. If boats on the reservoir were to make sizeable waves rather than ripples, the waves might be strong enough to overcome him in his very vulnerable state, as he may not be able to muster the strength to keep his nostrils above the water line. (I have seen small alligators and small turtles dead on the shorelines of a lake in Florida immediately after a hurricane event; my hypothesis is that they succumbed to the waves, unable to stay afloat and breathe.)

If Beaver is still alive, given the challenges he has faced, he's in one of the worst possible predicaments an alligator can be in, and he has only weeks, if not days, to live. He has, however, a few things in his favor, which will only aid him until the temperatures drop too low: He has millions of years of survival instinct and mechanism, fashioned by the hand of natural selection, to inform his active thought, and his involuntary bodily functions. How low of a temperature can he tolerate? This is impossible to know, but it's not unreasonable to make an assumption based on the lower recorded temperatures of its northernmost range and allow for a few extra degrees since this alligator has not lived a natural life in the wild, where it probably would have acclimated to the extreme climatic conditions of its natural range.

The historical *extreme* lowest air [temperatures](#) of NE North Carolina in November are about 20° F/-6.7°C. This might lead to the conclusion that sustained temperatures below about 23° F/-5°C will spell doom for Beaver, if even he can survive that low a temperature; but that approach is just guess work, since all of the necessary data for an accurate number is elusive. Observe the forecasted November temperatures for Westmoreland County, Pennsylvania, [here](#). Even the constant trauma of sustained *average* low temps in the 30s° F/10s°C, especially toward November's end, may be too much for him to handle.

HOW TO FIND BEAVER

As of this publication, my telephone calls on October 28 and November 1 to Jerome Defabo, Sr., Chairman of MAWC, who is the one I understand would be authorized to grant me permission to enter MAWC property to search for the Beaver, have not been returned. Hence, since time is of the essence and I may not have the opportunity to contribute to the effort as I have offered, I offer the following advice to whomever Mr. Defabo should designate to continue the search, if he does decide this.

There can be no guarantee that Beaver will be found if another recovery effort is made, but the chance of success is excellent, as is the chance that he is still alive. However, these chances wither as each day passes and the reservoir grows colder.

Nighttime is a good time for a crocodilian search, as lower temps help insure that he's more likely to remain in one place. If he's awake, he may be spotted using a strong light to temporarily wash out his vision while he is plucked from place. It's very unlikely, though, that his eyes will even be open, so the searcher must look for him carefully. It may take only a trained eye to distinguish his excellently camouflaged form among the reeds and roots.



The forecasted temperatures for the reservoir show nights in the 30s°F/-10s°C, so *there is no better time than now for another sortie into the water, before the mercury dips too low.*

A wild Florida juvenile alligator in stealthy water line pose.
(Image: Norman Brewer)

The individual or group which attempts to find Beaver should be kept small, perhaps to four to six persons and no more than three small paddle boats (no motors!). The smallness of the fleet keeps activity, noise and wave movement to a minimum. It was reported by the media that the recovery crew found what appeared to be tail slides on the bank (slides, or tail slides, refer to the marks made by alligators as they move about the substrate). This was an excellent discovery. The searchers should follow closely the bank line 100 feet in each direction from the point of the tail slide sighting. It is unlikely that this small reptile of such depleted energy would have any reason to travel further than this, especially in the last several days as temps have dropped further.

One boat of searchers should start at one extreme and travel toward the tail slide area, the other boat doing the same from the other extreme. The third boat, if present, should head very peacefully toward the tail slide area and search within about 50ft/15m, while the other two boats make their ways inward. If there are only two boats, then both should start at the tail slide location point and head outward toward the extreme of the 100ft/30.4m length beyond that point along the perimeter. If only one boat, start at the central point and move north or south.

While paddling very gently along the perimeter, searchers should focus intently on the edge of the bank, especially in areas where reeds, plants, roots and other vegetation or topographical features may provide hiding shelter for the reptile. His body is made for camouflage, so very *careful, patient* inspection is called for. If Beaver is not found, his ability to hide in this way will be the reason why; this is key.

In the daytime, searchers should also be keen to observe the bank in the designated range where sunlight strikes greater. Crocodilians are extremely visually oriented and will sometimes venture into sunlight, even if the water is warmer. I conjecture that this is because the gator's simple reptilian mind assumes that, like in the warm season, the sunlit area will become much warmer than the water very soon. This could be a dangerous option for him in winter. Nevertheless, the daylit bank should be eyed carefully in event that this is the case. Look for areas especially where

tree and brush growth are diminished or absent – but with hiding area not far away, remembering, too that such condition means that without vegetative visual barriers he can also spot you coming more easily, too.

If he is located, the searcher who plucks him from the frigid water should gently lift him to the boat. There is virtually no chance of his attempting to bite in defense while he's so cold, but caution should be exercised anyway. Once he is onboard, his life is still in jeopardy. Care must be taken in warming him.

HOW TO KEEP BEAVER ALIVE AFTER HE'S FOUND

If a local veterinarian, preferably one *experienced in the treatment of ectotherms*, is available, then he or she could be an asset to the effort.

Beaver's heart rate in the cold water has slowed dramatically. This is normal, as it is what his body is designed to do in order to reduce his body's metabolic requirements. To the best of my knowledge, what care should be taken with a juvenile alligator is not well documented and the advice I offer is based on my research and on personal experience with young *alligatorids* that have succumbed to extremely cold temperatures.

Care should be taken not to shock his body. No attempt should be made to warm him quickly. It is preferable to have a veterinarian or experienced non-vet expert who can monitor Beaver's heart rate with a stethoscope. It is not unusual for an alligator's heart rate to drop to an astonishing *one beat per minute* in freezing temperatures. His recovery may be gauged by his heart rate, and not outside temperatures. I think it important that data be collected, as such may make for an important contribution to science. Measure his heart rate, cloacal temperature and external temperature, as well as the temperature of the water directly where he was found and that of the air.

When the warming process begins, I recommend mimicking nature by helping his heart rate come up slowly and gradually. This may mean the caretaker holding him close to his/her body, allowing that warmth to transmit slowly. Perhaps wrapping one's jacket around the alligator at some point in the process will help in warming him, and gradually moving to a warmer spot, such as inside a nearby motor vehicle. The process may take a couple of hours, possibly more. Care should also be taken to minimize external stressors, such as noise, hard vibration, visual disturbance, etc. Beaver will need all the help he can get to come to, safely.

After this, he will need absolute privacy and quiet for a few days under interior climate-controlled room temperature conditions with water on a gradient that allows partial-to-complete submergence and full dry land space. He should not be disturbed in any way, as crocodylians are extremely sensitive to stress. (For example, one account of crocodiles in a zoo subjected to the rumbling of heavy machinery nearby led to their quick demise.)

Once it is determined that he is behaving like a normal juvenile alligator under 'normal' (captive) conditions, he may be handled sparingly and examined further. Depending on his fat load, he may be offered small portions of food after 2 or 3 weeks of normality (alligators can go without food much longer than humans can, due to their 'cold-blooded' metabolism). Keeping stressors to a minimum is important to help him psychosomatically to adapt from the impact of the cold on his ectothermic body.

HOW TO PREVENT THIS FROM OCCURRING AGAIN

Should the average consumer own an alligator? A discussion of the ethics of exotic animal ownership is too vast for this brief discussion, a subject for an article of its own. I have a few thoughts to apply to help bring the entire issue together in perspective:

I vehemently oppose the blanket *banning* of ownership of exotic animals. But just as strongly, I support *sound, logic-based regulation* everywhere to *hold keepers responsible for both the animals' well-being and humans' safety*.

Balanced legislation, not erratic, knee-jerk decisions made under the pressure of sensationalism and emotionalism, is necessary. Regulation that facilitates ownership is called for in all areas because it will preserve the precious right of a citizen of a Free Republic to acquire and maintain the stewardship of an animal, the precious right of an animal to be cared for properly, humanely, and the precious right of one's neighbors to enjoy the greatest possible measure of safety in their community by controlling elements they may reasonably control.

Florida, my home state, has learned this over the years through trial and error, where the state Fish & Wildlife Conservation Commission faces challenges arguably greater than those of any state in the Union. The Commission has adapted – and is adapting- to a large human population, a high concentration of fauna and flora in our warmer clime, and a number of invasive species. A review of the Commission's captive wildlife possession [regulations](#) on the Internet offers a glimpse of the gargantuan, ever-improving achievement of a body of managers hired by the people to conserve natural resources.

THE BIGGEST PICTURE



It is laudable and even inspiring to me that members of a community would band together to save a single animal under conditions as the one Beaver is under. It costs resources to locate this alligator, and it says something big about a community that tries to save an animal that landed there not naturally, but artificially, likely due to an unscrupulous local. The willingness of the community to make an effort thus far, via its local zoological institutions couldn't be anything other than are commendable. Beaver's plight and that of the other crocs in the American marketplace is a crisis of small proportions when compared to the frightening picture of croc survival around the globe, where *entire species*, not just a relative few individuals, are on the verge of disappearing.

Above, the Chinese alligator (*Alligator sinensis*). (Image: Akira Matsuda/Crocodile Specialist Group)

The modern-day crocodilian outlived the dinosaurs. When T-Rex roamed, crocs had been already been here 135 million years. Today there are roughly [26 known](#) crocodiles, alligators, caimans, Tomistoma and gharials of the world – and they are specialized survivors. But their survival is subject to human influence, and all around Earth where they inhabit tropical biotopes, habitats both human and non-human animals are dependent on, are crumbling because their keystone species, *often the crocodilians*, are imperiled.



**The Indian Gharial (*Gavialis gangeticus*).
(Image: Nick Baker/Crocodile Specialist Group)**

In China, Beaver's closest cousins, the Chinese Alligators number *fewer than 100* in the wild, facing extinction due to the eradication efforts of farmers and residents who consider them vermin - muddy rats – because they disturb their rice fields. There are crocodiles in the Philippines, only a few dozen breeding specimens roaming free, [hated by villagers](#) who fear the misunderstood reptile.

In Malaysia, the [Tomistoma](#) crocodile is a rare find because of the impact of intensive logging operations that support tree oil harvesting for perfumes and cosmetics. In India, the poor [gharial](#) is nearly extirpated by water toxicity and the destructive removal of the croc's precious nesting sand form riverbanks for use in cement products. And there are several more species from Asia and the tropical Americas that alarmed conservationists or struggling to help.

A more detailed [listing](#) of the world's crocodilians and their survival status may be found at the website of the IUCN/World Conservation Union's Crocodile Specialist Group (CSG).

Resolution at the Beaver Run Reservoir would be but a successful skirmish in a vast global campaign: To race against time and circumstance in snatching entire species from oblivion; a campaign to reveal to the public these enduring reptiles as they really are; and a campaign to inspire fellow humans to pause and converse with the better angels of their nature before slaying Earth's dragons, learning to embrace them as figures not nearly as frightful as they may be in the make-believe of our dreams.

Revision dated 28 April 2017: Disclaimer: This article contains commentary regarding the IUCN-SSC Crocodile Specialist Group (CSG); IUCN-SSC-CSG is not a party to this writing or its publication, as this is solely the commentary of the named author.

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