

Replacing America's Parrot?:

Thoughts on the ecological dilemmas presented by *Conuropsis carolinensis* and *Myiopsitta monachus*.

By Daniel Sigmon and Heidi Good, Ph.D.

"If hope lives not only as a feeling but as a dedication to vision, then hope flames soon enough, some brush of petal color, fruit color, feather color against the dull milky haze of a sky in which we've punched holes. These days hope asks much from us.

Until recently, I never thought much of Osage orange trees, those squat medusas of thorny branches with neither the majesty of a cottonwood nor the quaintness of a redbud. But, once, groves of Osage oranges harbored Carolina Parakeets. I hold those trees dearer now."

—Christopher Cokinos

Introduction

Such is our lot today. There once was a time when the Carolina Conure (*Conuropsis carolinensis*) was the jewel of the American sky; the playful nymph that greeted and delighted first, those Native Americans who lived among them, and then, the European settlers that gazed upon them with wonder as they arrived in North America. This is sadly no more. Their memory fades quickly into the shadows of history. We have yet to reach the one hundred year anniversary of their official extinction and perhaps, even less, than that from the time that the last lonely Carolina Conure breathed its final breath somewhere deep in a marshlands of the Florida countryside; and yet the emerald of the American skies is but a whisper in the winds drowned out by the clamoring hustle of progress and the relentless thud of the marching steps of time. But if one listens; stops and listens to the trees and the sky around us, there is the faint whisper that the Carolina Conure was once here in the vegetation and the land in which they once thrived. There are those hopeful dreamers that pray that they are still there somewhere hidden away in an isolated swamp or that the miracles of science will one day give back to us our beautiful little parrot, but these are the whimsies of fantasy. *Conuropsis carolinensis* belongs to the ages now.

"The disappearance of a species indicates a change in the whole ecosystem; the extinction of the Carolina Parakeet gives but one grave example of the enormous changes we have brought about in our environment during the last centuries" (Saikku 1990). The disappearance of *Conuropsis* was the disappearance of one possible America, a change in the life and the landscape of this nation.

How then do we deal with situations like these? How then do we respond to these changes? What is our responsibility in this matter? As we will see later in this

document, the collapse of *Conuropsis* followed quickly in the wake of the onslaught of western settlement. Do we bear total responsibility for *Conuropsis*'s downfall? Do we owe something to the world for having extirpated a parrot from our native skies? Some say, "yes." They maintain it is our duty to pay in some measure reparations for the destruction of a species.

The concept of ecological reparations has its merit. Mitigation and remediation are important to environmental protection. Nursing the land back to health is the legal responsibility of strip-mining operations in certain states; the government is obligated to clean up certain toxic waste sites. When Peregrine Falcons perished because of DDT in their diet, millions of dollars were allocated for a breeding program to help bring them back. California Condors are being bred in captivity. (Garber 1993)

How might we go about repairing what was destroyed? Captive breeding is not an option in this case because *Conuropsis* is no more. If we are then forced to seek a substitute of some kind to put a parrot back in the American skies, the Quaker Parrot/Monk Parakeet (*Myiopsitta monachus*) fits the bill very well.

Myiopsitta first established breeding colonies in the United States sometime in the mid 1960's. The exact time is not known, but the first sighting was in 1967 in New York City and breeding followed shortly thereafter. Since that time, it has expanded its range into large parts of the East Coast from Florida to as far north as New York, and as far west as Texas. In addition to these larger populations, there are pockets in South Carolina, Louisiana, Arkansas, Illinois, Colorado, Oregon, and Washington State. The disconnectedness of these different populations seems to indicate that they are generated from either intentional releases and/or accidental escapes from captive situations. In either case once the breeding populations are established their continued expansion seems not to depend on further release or escape but is instead largely the result of stable breeding populations (Van Bael 1996).

If ever there was a potential substitute for *Conuropsis carolinensis*, *Myiopsitta monachus* fits the bill better than most. Unlike many of its fellow psittacines, *Myiopsitta* has demonstrated a much greater tolerance of temperate climates and indeed seems ideally suited to colonize North America. This is, however, a very controversial topic. Ever since its introduction many in environmentalist circles have called for the wholesale eradication of this bird as an alien invader species. They base their protests on loads of fear and very little real scientific data. They bemoan the tales of the reticulating python in Florida or the European starling, both of which have proven to be very serious threats to the local flora and fauna. There are also nightmare cases like the Asian Carp, which has decimated indigenous fish species and turned waterways across the United States into obstacle courses of jumping, panicking fish.

There are others that rationalize that if an organism is brought to a new area by way of man that it is unnatural and can only harm the natural course of nature. History is

full of transplantations and introduction of new creatures to new landscapes through continental drift and natural phenomena. Is not humanity just the latest device of introduction. Aren't we part of the natural equation? Many of the loud opponents of Myiopsitta separate humanity from the natural equation and thus may be jumping to mistaken conclusions. In addition, if we return to the idea of ecological reparations, isn't it our duty to try and restore what we have torn asunder? Might the Monk Parakeet be a component in the process of making these reparations? Might the Monk Parakeet actually fit right in? A few voices have begun to ask these questions over the last twenty years and a more detailed examination of the facts available in the current literature is definitely in order. Large numbers of Quaker Parrots have been massacred in attempts to rid them from the continent, just in case, and yet they still persist. Indeed they have even won the hearts of many people in the neighborhoods in which they live. Perhaps this is the time to give the Monk Parakeet a second look, and in doing so honor our lost emerald, the Carolina Conure.

The Carolina Conure

Description

Conuropsis carolinensis is the only psittacine remaining in the *Conuropsis* genus. It shares nearly all of its features in common with the *aratinga* conures, with the exception that it is feathered all the way to the beak covering the nares. It is speculated that it retains *Conuropsis* designation because it was isolated from all other parrots. It was a predominantly green bird with yellow red and orange on its head, looking much like a mitered or cherry headed conure with more coloration around the head than simply patterns of red. (Marshall 1998)

There were two subspecies of *Conuropsis*: *C. c. carolinensis*, which ranged predominately on the eastern side of the Appalachians along the East Coast and down into Florida; and *C. c. ludovicianus* (sometimes called the Louisiana Parakeet) which ranged west of the Appalachians predominantly in the forests and bottom lands of the Gulf Coast and Louisiana. It also existed in smaller numbers as far north as New York, Michigan, and Iowa. *C. c. ludovicianus* was very much like *C. c. carolinensis* except that it was slightly smaller and the green coloration had a bluer quality than the nominate species. (Marshall 1998)

From this point forward, the naturalists of the past begin to fail us. The scientific study of flora and fauna was simply not as systematic as it is today and so many observations that we would desperately like to have are lost to time. What we know is taken from anecdotal accounts in travelers journals and the writings of early naturalists like Audubon and Wilson.

Flocking/Roosting Behaviors

Conuropsis was a very gregarious bird that was prone to flocking in large vocal numbers. It was reported to be very swift of wing and a very skilled flier. It was known to be very vocal while in flight and was able to fly in tight formations even through dense vegetation. Alexander Wilson provides a beautiful description of their flocking and vigilance behaviors.

On reaching a spot which affords a supply of food, instead of alighting at once, as many other birds do, the Parakeets take a good survey of the neighborhood, passing over it in circles of great extent, first above the trees, and then gradually lowering until they almost touch the ground, when suddenly re-ascending, they settle on the tree that bears the fruit of which they are in quest...They usually alight extremely close together. I have seen branches of trees as completely covered by them as they could possibly be. (Snyder 2004)

They had several different calls include a blood-curdling alarm call that would set the birds aflight and draw them together. They were also known to rally around the birds that were presenting these alarm calls while in some form of physical distress. This no doubt would have served to bewilder most would-be predators and probably saved more than a few parakeets from becoming lunch. This unfortunately the species Achilles' heel when it came to its relationship with 18th and 19th century man. This behavior extended to rallying around birds that were dying after having been shot and provided farmers and collectors the opportunity to massacre the birds by hundreds at a time, one gunman easily destroying an entire flock with a single weapon. (Snyder 2004)

Earlier descriptions of the birds roosting habits have them roosting in large flocks on and in the hollow trunks of trees. During cold snaps, they were seen to have been clinging with their beaks and feet like little tripods inside hollow trees. Later in the historical accounts, towards the end of their existence, the parakeets are reported to have roosted in man-made structures in Florida such as barns and sheds. There were reports of beams and rafters with beak marks where the birds would hang by beak and feet at night as late as the 1950's. (Snyder 2004)

There are several accounts in the literature of the "unusual way" that Conuropsis would roost by using its beak. The neck was reportedly very strong as a result of this kind of behavior. David Thomas writes:

These birds build their nests in hollow trees. The strength of their necks is remarkable; and we are assured that when both wings and feet are tied they can climb trees by striking their bills into the bark...The habits of these birds in some respects, are singular. They are always seen in flocks, which retire at night into hollow trees, where they suspend themselves by their bills. (Wright 1912)

Their roosting strategy may have contributed to their famous tolerance for cold weather. William Barton writes:

I was assured in Carolina, that these birds, for a month or two in the coldest winter weather, house themselves in hollow Cypress trees, clinging fast to each other like bees in a hive, where they continue in a torpid state until the warmth of the returning spring reanimates them, when they issue forth from their late dark, cold winter cloisters...I do not doubt but there have been instances of belated flocks thus forced into such shelter, and the extraordinary severity and perseverance of the season might have benumbed them into a torpid sleepy state; but that all willingly should yield to so disagreeable and hazardous a situation, does not seem reasonable or natural, when we consider that they are a bird of the swiftest flight and impatient of severe cold. (Wright 1912)

The previous account also sheds light on the other intriguing relationship of *Conuropsis* with temperate climates in that it seemed not to have been migratory, preferring instead to winter in place and tough out the cold weather.

Diet/Foraging

The difficulty in producing truly comprehensive and reliable data on the foraging behaviors and diet of *C. carolinensis* is made difficult by: biased feeding records, that is, feeding on agricultural products may have been over reported simply because there was more human interest in what was being eaten; and that much of the data reported is an amalgam of first and second hand accounts with no real reliable citations, thus over reporting some observations. (Snyder 2004). What follows is a list of foraged items from most reported to least reported as compiled by Snyder:

Table 1

<u>FOOD</u>	<u>RECORDS</u>	<u>FOOD</u>	<u>RECORDS</u>	<u>FOOD</u>	<u>RECORDS</u>
Cocklebur	17	Hackberries	2	Osage orange buds and fruit	1
Apple fruits	14	Wheat	2	Honey locust	1
Cypress balls	9	Cherries	2	Strawberries	1
Sandspurs	8	Beech nuts	2	Birch buds	1
Corn	8	Thistle seeds	2	Figs	1
Mulberries	6	Insects	2	Mastic berries	1
Pine-cone seeds	5	Blackberries	1	Rubber tree berries	1
Oranges	4	Bananas	1	Elm seeds	1
Cabbage palm berries	3	Apple buds, flowers	1	Dogwood seeds	1
Wild grapes	3	Persimmons	1	Peaches	1
Sycamore balls	3	Black gum fruits	1	Hemp seed	1
Acorns	3	Haw fruits	1	Prickly ash berries	1
Pecans	2	Paw paw	1		
Maple seeds	2	Maple buds, flowers	1		

Foods of Carolina Parakeets, as Gleaned from the Literature and Interviews (*Snyder 2004*)

The herbivorous nature of *Conuropsis* is clearly apparent in the table above, but it is the observation of insect consumption that is particularly noteworthy. In 1939 Cottam and Knappen studied the stomach contents of a Carolina Parakeet that was collected in 1885. Among the contents were 32 Loblolly Pine seeds, two rabbit hairs, two bits of the bird's own feathers and two insect fragments. (*Snyder 2004*) One could speculate that the rabbit hairs are evidence of ground foraging. The insect pieces seem to corroborate the observation of feeding on insects. David Thomas reports *Conuropsis* feeding on insects in the bark of a Cottonwood tree: "To procure this food [insect larvae], the parroquets have been busily employed, at times, through the day..." (*Snyder 2004*)

Given the number of low-lying foods in table one and some accounts in the literature *Conuropsis* was prone to feed both in the trees and on the ground. It was a foot

eaters plucking food from its source and transferring it most often to its left foot, while balancing on its right. (Snyder 2004) It tended to forage en masse and followed a schedule seen in other psittacines today. Edward McIlhenny recounts the following:

"In the morning, from sunrise to about 7 o'clock, and in the evening, from 5 o'clock to sunset, at which hours they feed, they were to be found in the mulberry groves. They spent the rest of the day and roosted at night in the live-oak timber. In the morning, just before sunrise, they mounted the tallest trees, congregating in small bands, all the while talking at a great rate. As the sun rises, they take flight for the nearest mulberry grove, where they partake of their morning meal amidst a great amount of noise. After they have eaten their fill, they generally go to the nearest stream, where they drink and bathe; they then go to some dense oak timber, where they pass the heat of the day. After they get in the oaks, they rarely utter a sound. In the afternoon they go through the same performance, with the exception of going to the water." (Snyder 2004)

Nesting

The nesting behavior of *C. carolinensis* is particularly difficult to discern. The reports from the wild that are available are very incomplete and few and far between. In addition there are conflicting and contradictory accounts given by various observers at different points in the birds history. Snyder reports that *Conuropsis* was almost completely silent when nesting, which he speculates may be part of the reason that there is so little nesting data. We can extrapolate some things from the captive breeding accounts that are available to us and make some guesses as to what clutch sizes were and how long incubation took place. From the information that we have been able to sift through, we know virtually nothing about fledging time, feeding behaviors, or parental preference in food choices. Audubon provides an example of the kind of information that is available on the whole:

Their roosting place is in hollow trees, and the holes excavated by the larger species of woodpeckers, as far as these can be filled by them. At dusk, a flock of parakeets may be seen alighting against the trunk of a large Sycamore or any other tree, when a considerable excavation exists within it. Immediately below the entrance, the birds all cling to the bark, and crawl into the hole to pass the night. When such a hole does not prove sufficient to hold the whole flock, those around the entrance hook themselves on by their claws, and the tip of the upper mandible, and look as if hanging by the bill. I have frequently seen them in such positions by means of a glass, and am satisfied that the bill is not the only support used in such cases...

Their nest, or the place in which they deposit their eggs, is simply the bottom of such cavities in trees as those to which they usually retire at night. Many females deposit their eggs together. I am of the opinion that the number of eggs, which each individual lays is two, although, I have not been able absolutely to assure myself of this. They are nearly round, and of a light greenish white.

The young are at first covered with soft down, such as is seen on young Owls. (Snyder 2004)

In accounts like these we see that *Conuropsis* appears to have been a colony breeder sharing the hollows of trees. Today this is the majority opinion on the subject. There is, however, another account that paints a different picture of the birds nesting habits. A Mr. Wm. Brewster writes:

While in Florida during February and March, 1889, I questioned everybody whom I met regarding the nesting of the Parrakeet. Only three persons professed any knowledge on this subject. The first two were both uneducated men—professional hunters of alligators and plume birds. Each of them claimed to have seen Parrakeets' nests, which they described as flimsy structures built of twigs and placed on the branches of cypress trees. One of them said he had found a nest only the previous summer (1888), while fishing. By means of his pole he tipped the nest over and secured two young birds, which it contained. This account was so widely at variance with what has been previously recorded regarding the nesting of this species that I considered it, at the time, as a mere fabrication, but afterwards it was unexpectedly and most strongly corroborated by Judge R. L. Long of Tallahassee. The latter gentleman....assured me that he had examined many nest of the Parrakeet built precisely as above described. Formerly, when the birds were abundant in the surrounding region, he used to find them breeding in large colonies in the cypress swamps. Several of these colonies contained at least a thousand birds each. They nested invariably in small cypress trees, the favorite position being on a fork near the end of a slender horizontal branch. Every such fork would be occupied, and he has seen as many as forty or fifty nest in one small tree. Their nests closely resembled those of the Carolina Dove, being similarly composed of cypress twigs put together so loosely that the eggs were often visible from the ground beneath. The twigs of the cypress seemed to be preferred to those of any other kind of tree. The height at which the nests were placed varied from five or six feet to twenty or thirty feet. Mr. Long described the eggs as being of a greenish white color, unspotted. He did not remember the maximum number, which he had found in one set, but thought it was at least four or five. He had often taken young birds from the nest to rear or to give to his friends. (Hasbrouck 1891)

There are several very intriguing statements in the previous account that we believe have been often ignored by the science community simply because of the number of accounts that describe hollow tree nesting activities and the weight of the authors who penned them. It is dangerous to discount this information on that account because even though the heavy weights such as Audubon and Wilson recorded hollow cavity nesting, the completeness of their data in this regard is no stronger than those of the previous account. Noel Snyder, perhaps the living expert on the

Carolina Conure believes, himself, that the idea of nest building by *Conuropsis* is an open question. (Snyder, Personal Communication 2010)

In the Brewster account, he came closer reaching a real clutch number in the wild than anyone else. Reports on clutch sizes in captivity from other sources puts the number between two and seven at the extreme and three to five being more common. (McKinley 1978) This fits with what we know of other psittacines of this size. The other very intriguing aspects of this description is that the gentlemen who makes it, Mr. R. L. Long, not only reports the eggs to be the correct color, but also claims to have taken birds from nests and given them to friends to raise. Doubtless he worked very closely with these birds leaving one hard pressed to believe that he would have mistakenly identified the birds. There was nothing like the Carolina Conure in its historical range and if he was raising them, he certainly would have known if he had instead raised a pigeon.

Other difficulties some have with reconciling the two differing accounts of nesting habits stems from the fact that we currently know of only two other psittacine groups that build nests, the Monk Parakeet, from temperate South America, and the Love Birds of Africa. The other idea that is difficult to swallow is that of dual nesting habits. Owls of North America are reported to choose a nesting style, whether cavity dwelling or nest building depending on present environmental factors (Hasbrouck 1891). Here again we are able to turn to *Myiopsitta* for tantalizing clues as to the validity of these contrary accounts. There are 4 subspecies of *Myiopsitta*, three including the nominate species are nest builders; the last one, *M. m. luchi*, does not in fact build nests. Rather, it nests in the hollows of cliffs and is sometimes referred to as the "Cliff Parakeet." (Monk Parakeet 2010)

This clearly gives us an example of another psittacine with a propensity to build different kinds of nesting structures. The twig nesting accounts of *Conuropsis* also occur later in the record, seeming to suggest that this was perhaps a new behavior, a fleeting attempt of a dying species trying to adapt to new circumstances. Perhaps the behavior was always present but only visible under certain environmental conditions. From the sound of it they weren't very tidy nest builders so it might be reasonable to assume that twig nesting was a secondary or novel behavior. This is merely conjecture of course, but unfortunately, that is all we can do in regard to *Conuropsis*.

Captivity and Human Interaction

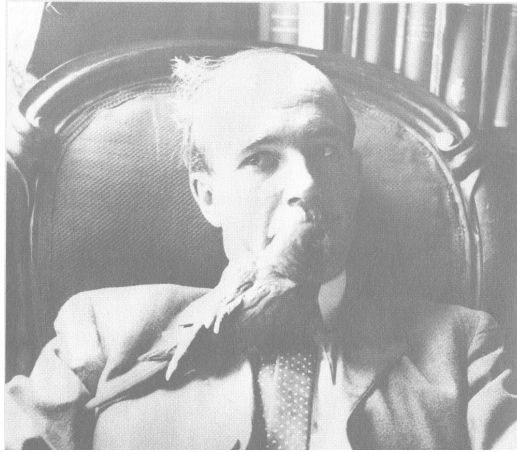
Figure 1



Live Carolina Parakeet perched in cocklebur, in 1900.

Captive *Conuropsis*, 1900
(Cokinos 2000)

Figure 2



Doodles and Mr. Bryan
(Cokinos 2000)

For the modern aviculturist, there is perhaps no other subject that is more heartbreaking to ponder than that of *Conuropsis* and its interactions with people. *Conuropsis* was a kind of two-headed monster in regard to its complicated relationship with humanity. On one side, there is *Conuropsis carolinensis*, scourge of the farmer and arborist. On the other, there is the Carolina Parakeet, charming and fiercely loyal to its human flock members.

As an agricultural pest, the Carolina Conure is well documented. Farmers were constantly at odds with the creature and found no solace in its beauty or charm as it sometimes made life more difficult for them. Perhaps one of the most colorful accounts comes from William Byrd in 1729:

The truth is, there is one inconvenience that easily discourages lazy people from making this improvement: very often, in Autumn, when the apples begin to ripen, they are visited with numerous flight of paraqueets, that bite all the fruit to pieces in a moment for the sake of the kernels. The Havock they make is sometimes so great, that whole orchards are laid waste in spite of all the Noises that can be made, or Mawkins that can be dressed up, to fright'em away. (Wright 1912)

Reports like the one above are repeated many times in the available literature, but as discussed in reference to their diet, these reports may be overstating the severity of

the damage that Conuropsis wrought on the landscape. Nonetheless, we have already documented the records of its foraging preferences and its favorite subjects of pillage can be seen in Table 1.

Conuropsis was also famed and reviled by many for its loud and prominent voice. Perhaps one of the most amusing accounts is from David Thomas:

...but though they excel all the birds of this country in beauty of plumage,-Their scream is so discordant, and their fierceness of disposition so apparent as to preclude every sensation of attachment. (Wright 1912)

It seems this bird is a conure. Anyone who has had close work with Patagonian Conures or any of the Sun complex of conures can sympathize and relate to this individual. The loud parrot cries would most definitely seem alien to western Europeans who were visiting the Western Hemisphere for the first time if their frame of reference was only quaint European song birds. There is, however, no reason to speculate that it was any louder than our other volume prone parrots.

In spite of accounts like those above, the Carolina conure was often kept as a pet. There are many accounts of its good nature in this regard. Thomas Nuttall reported:

The Carolina Parrot is readily tamed, and early shows an attachment to those around who bestow any attention on its wants; it soon learns to recollect its name, and to answer and come when called on...As a domestic, [it] is very peaceable and rather taciturn. (Cokinos 2000)

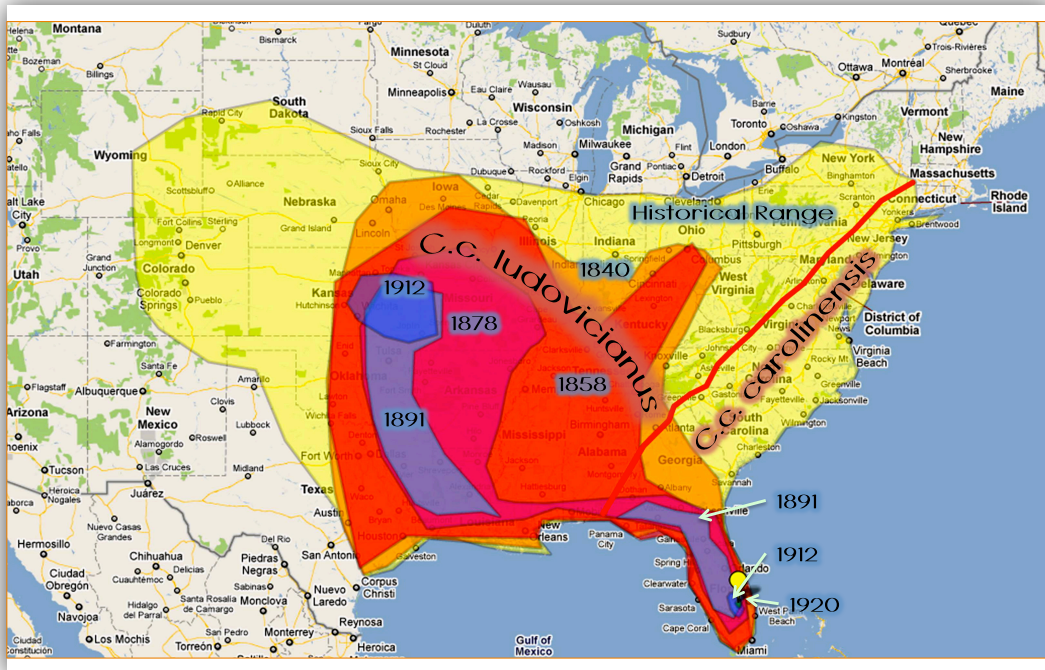
Perhaps the most famous Carolina Conure other than Incas and Lady Jane of the Cincinnati Zoo is Doodles. It is for certain that he is the most famous pet Conuropsis. Robert Ridgeway, who kept and bred Carolinas, gave him to Paul Bartsch. Bartsch recounts such delightful tales such as Doodles flying outside chasing pigeons; crawling beneath blankets and cuddling, sleeping with him; sleeping and snuggling with a pet squirrel; stealing baubles from a dresser top. (Cokinos 2000) These accounts are remarkable in what they tell us of Conuropsis's congenial nature, so tame and driven to bond with its "human" flock that it could fly freely outside and chase pigeons and be recalled with ease. For certain, those of us in the world of aviculture would have been blessed to work with such a remarkable creature.

Decline and Extinction

The decline and extinction of Conuropsis carolinensis occurred with great swiftness with the advent of European settlement into its historical range. Its fondness of alluvial bottom-lands and forests on the banks of rivers, made it particularly vulnerable as early agricultural practices put plantations and farms on the banks of rivers to facilitate the needs of commerce. Much of Conuropsis' habitat was dispatched this way. Its decline followed the general settlement of the continent

from east to west. Figure 3 shows the decline of the parakeet over its historical range.

Figure 3



(Sigmon, Native Range and Decline of the Carolina Conure 2010)

Figure 3 is only a rough approximation based on the scattered reports that we have in the “official” record. It is difficult to be precise because *Conuropsis*’ habitation of its native range was scattered at best. (Snyder 2004) Nonetheless one can see in the map that by 1891 *Conuropsis* was severely diminished and by 1912 completely extirpated in the west with the exception of a couple of accounts given Kansas and Missouri. Its last strong hold was in Florida and the last wild sighting there was in 1920 on Lake Okeechobee.

The reports of *Conuropsis* in its last days in Florida say little of a rivalry with man. In fact, those who speak of the parrot at this time speak well of it and found them generally beneficial as they were ravenous consumers of the annoying cocklebur. It was known to live in barns and in close proximity to humans in its last days and it may be speculated that this was its final downfall as it may have contracted poultry disease from such habitations, thus giving it the final death blow. (Snyder 2004)

Conuropsis may well have hung on a little while longer as it is difficult to know exactly when a species ceases to be. There are some controversial sightings of the parrot in Gum Slough, the Okefenokee Swamp of southern Georgia, and along the Santee River in South Carolina that date to as late as the early 1940’s. There is even

a sighting in Hartsville, South Carolina of 12 pairs that dates from 1950. (Snyder 2004) Some still have hope that somewhere in the remote swamps of Florida and Georgia that there might be a viable population out there. For a bird as boisterous and conspicuous as Conuropsis, it is doubtful that it would have gone unnoticed since the 1950's despite the hopes and dreams of many a birder. Thus it is safe to assume at this point that the emerald of the North American sky is no longer.

One of the most tragic realities of the end of Conuropsis is that, despite its agreeability to captivity, little effort was made to coordinate a captive breeding program. Edward Maruska, believes that not only could they have been preserved through captive breeding, but that reintroductions may have been possible. Daniel McKinley writes angrily of conservationist's failures in this area:

They had their chance...Their records show a series of disappointments and a heartbreaking waste of eggs and of young birds and of old, the loss made even more serious by a failure to keep adequate records of just what did go on. (Cokinos 2000)

It is difficult to pinpoint one cause for the disappearance of Conuropsis. Certainly habitat competition from humans was a source of great trauma to the species, but this should not have been an issue in early 20th century Florida. Indiscriminate hunting certainly lead to the destruction of whole concentrations of the bird, but near the end of its existence, there was little animosity between it and humans. Undoubtedly some of the heaviest pressures in the last day came from collectors who seemed only to increase their efforts as the bird became more and more rare. Still this alone was not enough. It seems rather that Conuropsis was the victim of a perfect storm of pressures that lead to its eventual downfall.(Snyder 2004)

The Monk Parakeet

Description and Information on Indigenous Behaviors

The Monk Parakeet or Quaker Parrot (*Myiopsitta monachus*) is to date the only member of the genus *Myiopsitta*. It is an average of 29 cm long with a 48 cm wingspan, weighing 100 g. Females may tend to be as much as 20% smaller than males but this is not an entirely reliable method of sexing. The forehead and breast are pale grey with darker scalloping and the rest of the underparts are a very light green to yellow. The remiges are dark blue, and the tail is long and tapering. The bill is between orange and horn colored. The call is a loud and throaty “chape(-yee) or quak quaki quak-wi quarr. And screeches skveet. In captivity several color mutations have been developed including white, blue, and yellow. In the wild there exist four subspecies of *Myiopsitta*: *M.m. monachus*, which is described above and is the largest of the group; *M.m. calita*, which is smaller and has more prominently blue wings and a darker grey head; *M.m. cotorra*, which is essentially the same as *M.m. calita* with the exception of having less yellow hues and being brighter in color overall; and finally *M. m. luchsi*, which is small with clearer plumage patterns, no scalloping on the breast, brighter yellow underparts, and a penchant for nesting in cliff hollows. (Wikipedia.org 2010)

Myiopsitta monachus ranges widely in the temperate regions of southern South America. Their native range includes:

M. m. monachus: Argentina from Southeast Santiago del Estero Province throughout Rio Salado and lower Paraná basins to Buenos Aires Province and Uruguay.

M. m. calita: Andean foothills up to 1,000 m above sea level, from Southeast Bolivia (Santa Cruz and Tarija departments) to Paraguay and Northwest Argentina, then west of the range of *monachus*, extending into the lowlands again in Rio Negro and possibly Chubut provinces.

M. m. cotorra: Southwest Brazil (Mato Grosso, Mato Grosso do Sul, possibly Rio Grande do Sul) throughout the Rio Paraguay and middle Paraná basins as well as the Gran Chaco.

M. m. luchsi: Andean valleys of central Bolivia between 1000 m/1,300 m, and 3,000 m above sea level, roughly from Southeast La Paz to N Chuquisaca departments. (Wikipedia.org 2010)

Figure 4 is a map showing the ranges of the four subspecies.

Figure 4



(Sigmon, Map of Native Range of Myiopsitta Monachus 2010)

Within their ranges each of the subspecies is considered very common and can be seen in large numbers. With the exception of *M.m. luchsii*, which nests in cliffs, *Myiopsitta* is the only known extant psittacine that builds a stick nest. Their nests range in size depending on the size of the flock, but they can be as large as a compact car and contain many individual “apartments.” While they do not share the same nest chamber, they are communal nesters, as many individuals in the flock will assist in the feeding of the offspring. *Myiopsitta*, in its indigenous range, prefers to nest in tall trees on the order of 13 meters high. (Gochfeld 2006)

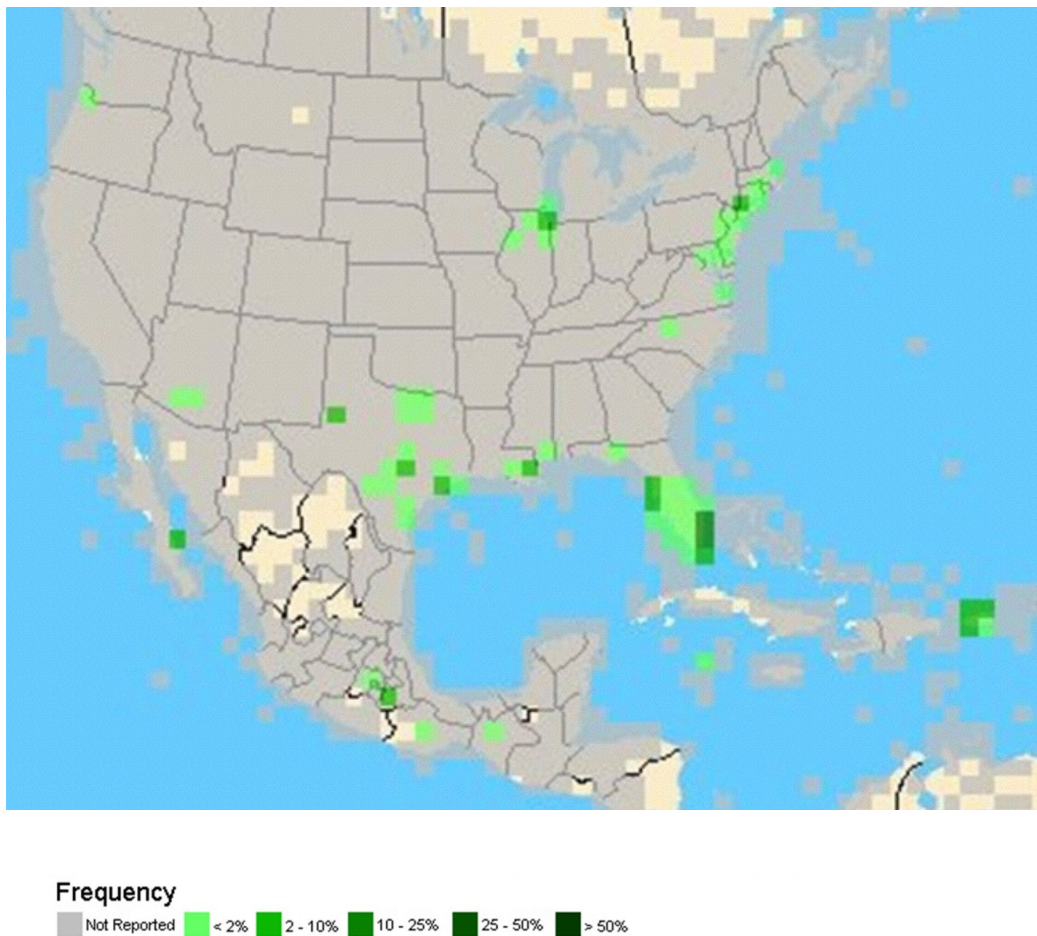
Popular wisdom states that, in its native range, *Myiopsitta* is considered a substantial agricultural pest. They are said to descend in large numbers on maize and other grain and fruit crops (Wikipedia.org 2010). As in the case of *Conuropsis* this is perhaps blown out of proportion. In a letter to the Agricultural and Natural Resources Committee of the New Jersey Legislature, Dr. Michael Gochfeld states that in his studies of *Monachus* in Argentina he found little evidence that it posed a significant agricultural pest problem and that his previous statements to the contrary were misguided. People in fact often invited the birds with grain and they were prone to cling to urban areas. (Gochfeld 2006) Even in their native range the Monk Parakeet proves to be a resourceful and adaptable creature, able to find amity among the populace, a quality that serves it well as an introduced species.

Naturalized Populations in the Continental United States

Range

The first confirmed sighting of a naturalized *Myiopsitta monachus* in the United States was made in 1967 in New York City and the species was noted as breeding in the wild a short time after this. By the 1970's *Myiopsitta* had expanded its range to such an extent that the U.S. Fish and Wildlife service became concerned and based solely on its reputation in South America with zero scientific study of local populations, began an eradication program that reduced the numbers of the bird in half by 1975 when the program ended. Since then the population has recovered and continues to expand despite continued sporadic persecutions by power companies and government agencies. Figure 5 illustrates the current distribution of *Myiopsitta monachus* in North America as of April 2010.

Figure 5



Sightings of *Myiopsitta monachus* since 2002 (ebird.org 2010)

Monk Parakeets have colonized Florida and Texas extensively with the largest population concentrations contained in those states. Other major regions include the mid-atlantic coastline and the southern coastline of Lake Michigan around Chicago, Illinois. There are also smaller pockets in North Carolina, Arizona, and southern Washington and northern Oregon. The widely divergent populations logically lead one to the conclusion that each area of concentration began with the intentional or unintentional release of birds. The population growth that followed, however seems not to have been primarily from the release of more birds, but rather from the successful breeding within the released populations. (S. a.-J. Van Bael 1996)

Nesting

In the United States, *Myiopsitta monachus* exhibits several predictable behaviors that mirror their activity in their indigenous range. They are gregarious birds that build communal nests in which many couples and offspring will live. They lay 2-4 eggs per clutch and will assist each other in the rearing of the young. This is perhaps one reason for its ability to quickly exploit a new territory, in that, unlike other parrots that will nest in single nests and make offspring rearing a chore of individual couples, the monks are able to support each other in ensuring that the next generation gets off to a good start. Also, like the birds in South America, they are able to quickly capitalize on novel environments and food sources. One of the biggest liabilities for the species in the continental U.S. is, in fact, that it prefers our large telephone towers as nesting sites to our native trees. In the Houston area, the great majority of colonies are found on the electric towers. (Good 2010)

The authors of this paper are unaware of any documented occurrences of “cavity” dwelling in naturalized populations. However the artificial nesting poles that are constructed for Quaker Parrots in Boston, Massachusetts and other places where there have been consistent persecutions from power companies do contain recesses that are not unlike the cliff hollows that *M. m. luchi* uses in their native range.

Foraging/Diet

Myiopsitta’s resourcefulness is demonstrated in its foraging behaviors in the United States. Documents about the birds in Chicago’s Hyde Park area found Quaker Parrots foraging on plants from 14 genera of plants from 13 families including mulberries, crab apples, hawthorne berries, seeds of ash trees, carpetweed, dandelions, and elm buds as well as several unidentified turf grasses and bird seed. During the winter, nutrition was derived almost entirely by birdseed provided in feeders by the local populace. (South 2000) In Houston, Texas they were observed eating St. Augustine grass seeds, tree buds, and birdseed in feeders. (Trudell 2010)

Captivity and Human Interaction

Myiopsitta monachus is very popular as a pet bird and was imported in large numbers from the 1960’s until 1992 when the U.S. Congress passed the Wild Bird

Conservation Act, which made further importation illegal. (S. a.-J. Van Bael 1996) Its introduction as a naturalized species inside the United States results from accidental or intentional releases related to the pet bird trade. It breeds well in captivity and unlike *Conuropsis* is known to have the capacity to approximate human speech. It has been reported that Quaker Parrots begin using human language with understanding as young as six months old. Their gregariousness in the wild translates to strong bonding with humans in a captive situation. Their popularity also stems from their relatively modest price on the market as compared to the larger psittacines that are common in the pet trade. People may acquire a “talker” for much less money by purchasing one of these birds. (Athan 2010)

Ecological Dilemmas, *Conuropsis*, and *Myiopsitta*

Complexities

Our limited understanding of community ecology is at the core of the debate and discussion of *Myiopsitta monachus* and *Conuropsis carolinensis* over the last fifty years. It has been used to accuse and absolve industry and settlement for the decline of *Conuropsis* and to both condemn and defend *Myiopsitta* as an introduced species in the United States. The wide differences of opinion and widely divergent conclusions stem in part from a misunderstanding of the complexity and subtlety of Ecological Theory.

There is a rich web of philosophy and science that informs the way that people study and implement ecology and ecological management. Too often we are quick to think of ecology in monolithic terms as an absolute but there are several different approaches to the study of natural systems and their conservation. In addition, since the time of the printing press, when information began its transformation from the prevue of monks to the popular obsession of the masses it has become easier for concepts to be integrated into the popular and scientific realms without solid bases. Now that we live in the information age and the time differential from statement to ubiquity is minutes and seconds, the problem is made even worse. This process is called reification and it clouds future research and government policy. (Slobodkin 2001)

Perhaps the most reified notion in recent years is that all invasive species will by definition compete with native species and negatively affect the biodiversity of a given region. This, however, is not widely supported by hard scientific research. (Slobodkin 2001). Not only is it unsupported; there even exist data that

demonstrates that native species can be facilitated by introduced organisms. (Rodriguez 2006) Then there is the term “invasive” itself, which is inherently negatively biased in its connotations. This creates very real difficulties in facilitating objective discussion and research on these issues by subliminally influencing perspective. There are efforts being made to create new more neutral terms for discussion of such matters. (Colautti 2004)

Another popular idea that has very real problems is that if an action or circumstance is due in part to or influenced by humans, it is “not natural.” Such notions deny humanity its place in the ecological web as *Homo sapiens*. Humans are far too quick to remove themselves from the natural world. We develop complex technologies, modify our surroundings, form social groups, and use complex language to communicate with each other, but this does not separate us from the natural equation. Beavers build dams, dolphins exhibit political and learned behaviors, Palm Cockatoos and chimpanzees use and make tools, and termites build giant mounds of earth in which they live. This sounds very much like us. Maybe we are unique because of our facility at all of these behaviors combined, but certainly we are a part of the contemporary biota along with the blue whale and the fire ant. If we then see ourselves as part of nature's equation, would we behave differently in regard to our approach at natural systems management?

Sociological complexities cloud the issue of ecology. In the United States and much of the Western Hemisphere, the concept of “nature” is like a freeze-frame as if one looks out into the countryside and presses a cosmic pause button. Nature is a sacred immutable state. (Rosenzweig 2003) The resulting frame is the definition of wild and it must remain untouched and unchanged. If a species disappears, put it back. If a new species migrates into a new area, kill it; burn it at the stake of ecological stasis. This idea stems from the frontier notion that is still with us even today. There is an ancestral memory of sorts that still sees the Americas as a new and vast wilderness untouched by European settlers. In a colonial sense, “Since there were no ‘people’ here before, there should be no people now.” There are still vast areas in the United States that are very thinly occupied by comparisons with other parts of the world. This sacred notion of a static and pristine nature is, however, patently artificial. Nature is not static, it is constantly on the move. Species have been drifting in and out of ecosystems since the offspring of the first microbe were carried to another “goo-filled” tide pool on the shoreline of some primordial ocean. The “Sacred Nature” is no place in which to live for a new bird like *Myiopsitta*. To the sacred nature it is a cancer that must be excised.

The “Sacred Nature” is not a part of other societies. In Europe, thoughts on nature are much less fixed in the idea of pristine ecologies. (Rosenzweig 2003) There is rather an approach that is more management oriented; a philosophy in which people are part of the equation. People have been plowing fields and building castles in Europe for millennia. The Europe we see today evolved with and is the direct result of human intervention. There, people have always had their fingers in the pie. The idea that large chunks of land should remain unsullied by humans and

wild is not possible and furthermore the idea of a frontier has been absent from Europe since the days of the Romans. These differences create very different moral perspectives and conclusions. The monolith is torn down piece by piece.

When one combines all of these factors it becomes clear just how messy and divergent is the question of ecology. The fact is, the field is full of different philosophies and approaches each with its own pros and cons. One approach may be better in one instance than another. Conversely some approaches may even harm the very species and systems that they are designed to protect. (Rosenzweig 2003)

The 3 R's

When the public considers the question of ecology and ecological management today, they are probably going to approach the issue from the standpoint of either "reservation" or "restoration" ecology. These are the two most common methods of ecological management presented to the populace, that is, we must protect and preserve nature in its pristine state (reservation ecology) or restore it to a condition that reflects its composition before humans arrived (restoration ecology). These two approaches have their merits and are quite useful in many instances, but they make the critical error of assuming that humans outside of the natural equation or that despite the fact that the population of humans on the earth continues its exponential rise, people will be simply content to stay away and forget about a chunk of arable land. There is another philosophy of ecological management, however. One that places humans and human activity as a necessary component of the natural equation. This is "reconciliation" ecology. (Rosenzweig 2003) Let us consider each of these philosophies.

The ecological management strategy that has the largest footprint in the United States today is reservation ecology. It is a part of the fabric of the nation since Teddy Roosevelt created Yellowstone National Park. There are national parks, forests and nature preserves all over the country, carved out of the landscape and "reserved" for nature or the enjoyment of nature, creating the illusion that the human footprint is small or nonexistent. These areas are protected and managed in a way that preserves them in an evolutionary formaldehyde, keeping them just as they are with as little change as possible. The assumption is that humans cause ecological damage, so by keeping them out, everything will be fine.

The "kissing-cousin" of reservation ecology is restoration ecology. The Society for Ecological Restoration defines ecological restoration as an "intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability" (Society for Restoration Ecology 2004). The practice of ecological restoration includes: erosion control, reforestation, removal of non-native species and weeds, revegetation of disturbed areas, reintroduction of native species, as well as habitat and range improvement for targeted species. The term "ecological restoration" refers to the practice of the discipline of "restoration ecology". (Wikipedia.org n.d.) In some cases, full restoration is not possible, because species

that once existed are gone. Such is the case for the ecosystem in question in this paper as the Carolina Conure cannot be restored. At best a substitute for that species would have to be released into its habitat. Furthermore, most of the alluvial forest bottoms that the birds inhabited are now crowded with people, as they were among the first areas settled as populations drifted westward. Extensive reforestation and defragmentation of the ecosystem would have to be undertaken displacing millions of people. Once restored the landscape would then be reserved for nature. Convincing whole cities to move could prove problematic in the most optimistic of scenarios.

The problem with both of the previous philosophies is that they are both dependant on large swaths of land of which there is a precious shortage. Restoring the pre-colonial alluvial forest en mass is not practical. Further, even with the reservations of land that would result, fragmentation of the ecosystems into contained reserves with limited space would almost certainly only slow the decline of the species that are being preserved as there just isn't enough land to go around as human populations continue to grow. (Rosenzweig 2003)

Rosenzweig cites the case of the Longleaf Pine Tree in his book, *Win-Win Ecology: How the Earth's Species can Survive in the Midst of Human Enterprise*. He first states how our reservation/preservation philosophies have ill served the endangered longleaf pine. Fire is a great destructor and for many years conservation policy was to stamp out any fire in the forest lest we lose one acre of pristine land. The Longleaf Pine, however, like many species of plants, is completely dependant on fire to help propagate the species. Thus, when the fires were being extinguished pressures were being placed on the longleaf population that forced its continued decline. When controlled burning was instituted, the longleaf pine population actually began to rise for the first time in a century. (Rosenzweig 2003) Here is an example of nature changing; depending on change as a component of its health. By being overly protective of the forest, we were in effect smothering it.

So, how does one respond to the difficulties faced in the matter of reservation and restoration ecology? An excellent solution is reconciliation ecology. Reconciliation ecology is the science of accommodating wild species within human-modified or occupied landscapes. It holds that protecting wilderness, though necessary, is not enough to preserve biodiversity given the large area required for a diverse range of species to survive in the long term. (Wikipedia.org n.d.) Rosenzweig states on his website:

RECONCILIATION ECOLOGY says we still have time to save most of the world's species. But to do it, we must stop trying to put an end to civilization and human enterprise. Instead, we need to work on the overwhelming bulk of the land — the places we humans use. We need to make them over so that they can support both us and other species. It won't be simple and it won't happen overnight. But it is practical, it is positive and it is backed by science. (Rosenzweig 2010)

A particular species of pocket mice, an American rodent that lives in arid habitats prefers a landscape that includes desert bushes. In an experiment, little by little these bushes were cleared from an area until the mice no longer occupied the patch of ground in question. They did not leave however until a certain distance between each bush was reached, thus demonstrating that substantial alteration of a landscape is possible if the scope of that alteration takes into consideration the needs of the species at hand. (Rosenzweig 2003). In a very real sense, everyone is able to “have their cake and eat it too”. If settlement of the west had been carried out with this in mind, might we have lost our beautiful Carolina Conure? No one can say, but it might have made a difference, if enough of the natural landscape had been incorporated into the settlements as they grew. Conuropsis would have been able to reside in our midst even today. Reconciliation ecology gives us the means to alter our surroundings and incorporate the surrounding biota.

Take me to your leader

One of the most popular notions of science fiction during the early part of the 20th century was that of the evil invading alien that was coming to destroy the earth. Such is the perception of many regarding naturalized species, species that evolved in one ecosystem and now persist in another. This is almost always used to describe animals that arrived in a new ecosystem by way of human assistance of some kind. Sometimes they are introduced on purpose for recreation or agriculture, and other times they are accidentally introduced by way of the pet trade or research, or even agriculture as in the case of the wild American Mustang whose ancestors are those domesticated horses that the Spanish brought from Europe. Introduced species are all around and we often fail to see them, particularly the plants. All sorts of grasses, crops, house plants, garden plants, and landscaping plants are anything but native. The European Honey Bee is in fact European. The africanized bees of South America are hybrids created in the lab but are just as artificial in the Americas as are the European ones. European bees are helpful, essential, nice, and normal. Whereas Africanized bees are evil, invasive, temperamental, and exotic. Both are introduced species but one serves our purposes better than the other. This is our double standard with regard to exotic plants and animals. Behave in a way in which society approves, and it is exotic. Behave in a way in which society disapproves, and it is invasive. The point here is that so much of our response to invasive species is emotional rather than scientific and we should be careful not to accept cultural norms as scientific justification.

While it is true that some species of exotic plants and animals are problematic and should be dealt with, many more of them are all around us and are contributing positively or at least neutrally to the surrounding biome. Mark Sagoff states in response to the issuance of an Executive Order by then President Bill Clinton to “wage war” on all invasive species:

There are good reasons to try to keep out of the United States pathogens and other organisms that are known to be dangerous. On the whole, however, exotic species – which include nearly all crops – confer benefits that far outweigh their costs. An “all-out battle” against exotic species in general cannot be justified. Those eager to wage an expensive war against exotic species argue that we should treat any alien organism as guilty until proved innocent. They justify their position by citing invaders like the zebra mussel, which clogs intake pipes, and kudzu, which can grow over and smother native vegetation. But examples are not arguments... In any large group of species – native or exotic – selected at random, some will cause damage. However, no one has shown that exotics are more likely than natives to be harmful. Although alien organisms alter ecosystems – for example by increasing the variety of species in them – we have no evidence that the changes are generally for the worse. (Sagoff 2000)

In the case of the much maligned zebra mussel the question is much more complex. It can be a pest because the human infrastructure in North America was not constructed with it in mind and it does compete with native mussels, but there are definitely positive aspects to its presence in the United States. It is a filter feeder and is credited with clearing the water column of excess nutrients and associated algae resulting from agricultural run-off and municipal waste, while also creating increased habitat for insect larvae, snails, and other invertebrates, which the native fish eat, thus increasing their food supply and helping them thrive. (Sagoff, What's Wrong with Exotic Species? n.d.) Not only have the snails cleaned the lakes of pollution, they have facilitated the rehabilitation of other native species. This is a much more complicated set of interactions than simply native good, exotic bad.

In another case that demonstrates the bipolar nature of societies relationship with nature, the “freeze-frame” philosophy is illustrated in a particularly damning way. The previously mentioned American Mustang. It is anything but a native resident to the continental United States. However, when Anglo settlers arrived, unaware that there hadn't been a native horse in the Americas for thousands of years and that the Spanish had imported these animals, they were thought of as natural and normal. That view is held today by many as there are even efforts to “save” the wild American Mustang. The nature being preserved is not the “natural” one, just the one that we found.

Still, others maintain that invasive and exotic species will occupy similar niches of native species, increasing pressure on them and driving them to extinction. In San Francisco Bay, a highly invaded ecosystem, no natives have gone extinct due to invasive species. Of the 84 extinct native animals and plants and the 173 missing ones as listed by the National Heritage Network, few if any of those losses can be attributed to invasive species. Native species compete with endangered ones just as exotic ones do. (Sagoff, Why Exotic Species Are Not as Bad as We Fear 2000)

Where then does *Myiopsitta monachus* fall into this conundrum? The genesis for this paper was infact a conversation that one of the authors had with an avian (psittacine) enthusiast regarding the Carolina Conure and its similarities to the Quaker Parrot. The authors found the possibility of wild parrots thriving in the United States again most appealing. The person at the other end of the conversation quickly stated that, "The problem with the Quakers is that they compete with and cause problems for the native birds." The authors decided that further investigation was really necessary. There are so many opinions on this subject and in most cases they are backed up by precious little data.

How Does the Monk stack up?

In examining the place of *Myiopsitta monachus* in a North American ecological setting, it is first important to compare the bird to the Carolina Conure. Both birds are basically green. Both birds are about the same size and are unique in the psittacine world in that they both have fully feathered ceres. They come from very similar temperate environments and latitudes in the northern and southern hemispheres and are both famously tolerant of cold weather. They share a diet that consists largely of seeds, fruits, and tree and flower buds. They share a gregarious nature cohabitating in large flocks and cooperating to rear the young. They are both overly maligned as agricultural pests. They have both been held in captive situations and thrived forming strong bonds with their human companions. On the surface there are startling similarities.

There are also differences. *Myiopsitta* more often builds nests where as *Conuropsis* was more commonly a cavity nester. *Myiopsitta* demonstrates an ability to thrive over a larger variety of biomes than did *Conuropsis*, which was tied more closely with the forests. *Myiopsitta* seems to thrive in an urban setting, where as *Conuropsis* declined in a way that mirrored the march of civilization westward. *Myiopsitta* is extant while *Conuropsis* is not.

Myiopsitta seems to possess the right combinations of similarities and dissimilarities thrive in post industrial, urban North America, where *Conuropsis* could not. Combine this with the rumors and reifications surrounding it, the eradication measures taken by the United States government seem justified on the surface. Since the "cessation of hostilities" in 1975, *Myiopsitta* has shown its dogged ruggedness and ability to persist and thrive despite the significant stress placed on its population by eradication efforts that continue sporadically to this day most famously by New England utility companies that site the bird's nests as fire hazards and threats to continued electrical service. (Roston 2010) So if there was a real danger of agricultural or ecological risk, this bird would definitely seem to be one on which to keep ones eye.

In order to be an agricultural pest, *Myiopsitta* would need to demonstrate an a propensity to colonize largely rural areas and grow into flock of sufficient size that

its preferred foods would become difficult stretch across its population. *Myiopsitta* has been here for a half century and has yet to prove any problem for agriculture at all. In addition their expansion seems to be tied to human (urban) infrastructure. Heidi Trudell writes:

I hold that a pristine North American chunk of land would not support MOPA [Monk Parakeet] expansion... but at their current distribution in the US they “cannot” develop into a starling or pigeon-scale species UNLESS the human infrastructure expands to meet their requirements AND allows hundreds of years. This is based on new MOPA nests clustering within ¼ mile from the “source” nests. Those ½ mile or more away are “potentially” from those nests, but could also be separate escape/release critters... but its not a consistent occurrence. (Trudell 2010)

The North American countryside seems to present a problem for these birds in that much of the agriculture that takes place occurs in the bread basket where tall trees are not very common. Michael Gochfeld writes:

In 2000, J. Burger and I, had the opportunity to study Monk Parakeet nests in various habitats in Florida (Burger and Gochfeld 2000). The parakeet population has been quite stable in the area from West Palm Beach to Miami over the period from about 1990 to 2002. The birds form a few local colonies, and are not widespread. They nest mainly in trees such as Coconut Palm trees and the invasive *Melaleuca* trees, but also on utility poles. We observed them feeding at bird feeders and on lawns. The average height of the nests was about 13 meters. This was determined mainly by the height of the trees, and the trees they nested in were taller than the average trees in the area. (Gochfeld 2006)

The authors of this paper have made their own observations of *Myiopsitta* in the Houston, Texas metro area and have found that they nest almost exclusively on the power lines. The utility companies in the area seem not to be as worried about them as companies in other parts of the United States. Much of the reported feeding in the area is also from bird feeders. The Hyde Park population was documented to be almost completely dependant on birdfeeders during the harshest of the winter months, which calls into question their ability to survive at all without some help from human intervention. (South 2000) These facts lead one to at least question the notion of giant “killer” Quaker flocks descending upon grain fields en mass as if out of an Alfred Hitchcock movie.

Its reputation as a pest to the electrical delivery industry is very well documented. Responses to their presence range eradication to accommodation. Florida Power and Light routinely removes nests and cites them as a fire hazard and a threat to electrical delivery. Until recently when lawsuits were filed by advocates they also trapped the birds and handed them over to the U.S. government to be humanly euthanized. Currently they are working on what they call “birdie birth control” by feeding the birds seed impregnated with chemical compounds that would keep them

from reproducing. (Roston 2010) This approach is controversial because there is little way of guaranteeing that only the Quaker Parrots are eating the seed. In Texas the response to the birds has reflected a more tolerant approach. TXU, a power company in North Texas, has begun erecting artificial nesting structures for the birds with great success. In Houston, Texas there are nests that have been extant for twenty years or more without causing a problem.

Figure 6



Monk Parakeet nest on an electrical tower in the Houston Metro Area (Photo by Heidi Good)

The other principle concern regarding *Myiopsitta* is their level of competition with native species. As in the case of the “invasives” in San Francisco, it seems to pose little threat for native birds and other species. It tends to haunt urban areas, which are already highly synthesized and anything but natural. Heidi Trudell writes:

I don't see this [competing with native wildlife] happening at all. I'm sure that at some level, it does happen, but for my scale of observation, they do not overlap significantly with any native species. They build their own nests, so they do not displace cavity nesters. They eat grass seeds (the only sample I physically have is St. Augustine grass – a non native grass) and at feeders, and while I'm sure native birds eat fresh buds on trees, Monk Parakeets don't create a significant pressure* (even an area completely saturated with MOPA [Monk Parakeet] is unlikely to push any one native bird out- however, MOPA establishment to an extreme degree is more likely to signal poor environmental health due to habitat fragmentation/human impact...

...I think the most critical elements about MOPAs is that they do not displace native species in their nesting habits and that they prefer man-made structures to nest in/on. (Trudell 2010)

As for those who say, "Give it time. They [Monk Parakeets] will become a problem if given enough time." There is already growing evidence that this is simply not the case. Michael Gochfeld initially raised alarms in Puerto Rico when it was discovered that *Myiopsitta* had begun to colonize the island in 1973. In the intervening years nothing was done to control the parrots and when he revisited the island in the 1990's very little had changed. They were still occurring in small local populations. His experience of the last thirty years has brought him to the conclusion that there is little threat of the species ever becoming a critical problem. (Gochfeld 2006)

While this paper is focused on naturalized populations of *Myiopsitta* in the United States, there has also been considerable work on the bird in Spain, where it is also thriving. Findings indicate that, in its introduced range, it is primarily an urban bird. Antonio-Roman Muñoz and Raimundo Real did work on suitable habitat and potential range of the bird in Spain, concluding:

Taking into account highly favourable squares [analytical modules for evaluating habitat suitability], we conclude that the species is still absent in more than 72% of potential settlement areas, and thus we expect a continuous increase in the distribution of the species. Human activity is the main force moulding the distribution of the species, and lies behind its fast expansion, which is not only active, but is also passive via releases and escapes. (Muñoz 2006)

Studies in Valencia, Spain by Murgui and Valentin tie *Myiopsitta* to residential areas and parks concluding much the same as the studies of Trudell, Gochfeld, and Muñoz. (Murgui 2003) The strength of the argument that *Myiopsitta* is an urban bird with little chance of becoming an agricultural pest seems strong, in deed.

Having given some documentation as to their lack of "badness," are there things that the Monk Parakeet does that is positive for people even if its ecological threat status is neutral. Almost no information is available about *Myiopsitta* facilitating other species. It would be very interesting to know if, were their habitats overlapped, if

Myiopsitta facilitated the propagation of Bald Cypress trees as Conuropsis was speculated to have done, by serving as one of the few species with “chompers” stout enough to break open their seed pods. (Snyder 2004) As for their facilitation of human comfort (like Conuropsis controlling the cockleburs in Florida) there are at least a couple of documented items.

One of the food items consumed by the by Quaker Parrots in some locales is the grass bur, which is itself a nasty import. They foul shoe strings and sting feet making a casual trek a chore, but the birds relish them and keep their numbers reduced in areas where they coexist. (Davis 1974) Another win-win scenario comes from Greenwood Cemetery in New York City, New York. The management struggled with naturalized pigeons for years. Their feces contained chemicals that were decomposing the sculpture and memorials in the park. Since the Quakers have arrived they have displaced the pigeons. Initially the “powers that be” saw it as yet another annoying “pooper” that needed to be discouraged from roosting in the cemetery. They completely reversed this policy when chemical analysis of the Quaker feces showed that it was harmless to the stonework. Confronted with this joyous finding, they now encourage the parrots to stay as they keep the pigeons out and protect the monuments on cemetery grounds. (Wikipedia.org 2010)

Another very important consideration in contemplating the positive aspects our relationship with the Quaker Parrot is the joy that it brings to so many people. It has a stout personality that is inquisitive and clever. Its call is unique and it is a delight to many to behold it swooping down from its nests and foraging on the ground. People enjoy having it as another bird at the bird feeder. Provided they are not harmful to the biome around them, surely this is as much justification to keep the bird around as it is to keep many of the introduced recreational species of all types that surround us. (Roston 2010)

Replacing Conuropsis?

Speculation about the *Myiopsitta* as a replacement for *Conuropsis* is a continually reappearing topic online and in the literature for at least the last 20 years. Steven Garber raised this question almost twenty years ago, writing about our duty to do justice to the lost *C. carolinensis* by introducing *M. monachus* in an effort to restore a lost ecosystem and repair the damage done at the hands of humans. (Garber 1993) The website of the Quaker Parrot society asks:

Several parallels between the Carolina Parakeet and the Quaker Parakeet. Both were successful in adapting to a variety of climates. The Carolina Parakeet was, and the Quaker is, a colorful, small parrot that lived on an diet of seeds, buds, and fruits. The Quaker is kept as a cage bird, as was the Carolina Parakeet. Both have been hunted by farmers who thought their crops were threatened. Today, the naturalized wild Quaker faces very similar challenges that the Carolina Parakeet was unable to survive. With a wider understanding of, and compassion for the Quaker Parakeet, might not the species fill the gap left by the extinction of the Carolina Parakeet? (The Quaker Parakeet Society n.d.)

Replacing the Carolina Conure is perhaps one of the most romantic of notions. It is certainly ones heartfelt desire upon first gazing upon the remains of one of those amazing creatures. The reality is in fact much more complex. One must first define what one means when one says “replace.” The Quaker Parakeet Society uses the phrase “fill the gap.” Earlier the authors of this work spoke of filling a “niche,” another very commonly used word in regard to *Conuropsis* and *Myiopsitta*.

If one means simply having a psittacine thriving outside of cages in North America, then we are done. *Myiopsitta* already does this very well. If one means function in the local ecology by occupying the same niche in the ecosystem, as did *Conuropsis*, then one would be sadly disappointed. The habitat that the Carolina Conure occupied is largely gone. The low-lying bottom forests near rivers have been flooded with people for more than a century. Large swaths of territory have been cleared away leaving farmland and factories drastically changing the systems that existed before European settlement of North America. (Snyder 2004) The “niche” is in fact largely gone save for a few isolated and deeply fragmented remnants here and there. Without extensive efforts of restoration and reservation ecology to recreate the biome in which *Conuropsis* lived, there is little chance for *Myiopsitta* to even experiment with filling that niche. Still others would object even to the notion of a niche as they maintain that niche implies a kind of ecological stasis or equilibrium that simply doesn’t exist. Change is constant and the only constant in the ecology of any give piece of land is change. (Sagoff, What's Wrong with Exotic Species? n.d.) This mindset finds little difficulty with the loss of *Conuropsis* and the introduction of *Myiopsitta*. It is simply the next change.

Conclusion

The loss of the Carolina Conure is a scar on the soul of the United States. Where once there were thousands of birds making a cacophony of delight, there is now only the wind in the trees. The loss of such a charismatic animal, such a beautiful animal doubtlessly stirs the soul. It forces us to reexamine our society and ourselves and ask what went wrong. Since the 1960's a new bird, the Monk Parakeet has graced the skies. Its arrival has generated its own set of ethical and scientific questions, many of which remain very understudied. Further scientific work on these questions is definitely merited. Its presence in the United States stirs impassioned debate and reveals the entire range of ecological theory in governmental, industrial, and environmental responses. The competing notions of Reservation, Restoration, and Reconciliation ecology each provide slightly different courses of action when responding to a recently transplanted species.

The Monk's presence in the U.S. highlights the differing values systems in the New and Old worlds, revealing contrasting philosophies that range from a natural untouched "sacred" nature to a nature in which people are always a part and must be considered as part of the equation. Ecological action to engage the Monk Parakeet has often come from very emotional places and caused government and conservation entities to undertake a "shock and awe" approach to dealing with the animal for fear that it might be a danger, when little study documenting that reality were to be found.

As in the case of *Conuropsis*, *Myiopsitta*'s reputation as an agricultural pest is reified, has probably been overstated and much of the reporting on the matter has been anecdotal with little citation, casting doubt on the scientific necessity of eradication. Even in settings where alarms were raised and no action taken against the Quaker, after thirty years, they still present little threat to agriculture. The Quaker Parrot rather seems to be comfortable as an urban bird that thrives in and amongst human enterprise and seems to prefer and depend on man-made structures for its nest building activities. Its diet is heavily supplemented by exotic plant species, such as the grass bur and other noxious, invasive plant species; and birdseed, dispensed by human beings, limiting its impact on native and neighboring species. Further, since it builds its own nests unlike all other extant psittacines, it does not displace native cavity dwelling species. Rather than displacing native species, *Myiopsitta* displaces other non-native species, especially in urban settings, with surprisingly helpful results from time to time such as the case in Greenwood Cemetery in New York City.

As with many of the non-native species that surround us every day from water fowl, to game fish, to plants in our yards, *Myiopsitta monachus* provides many with pleasure. It has become a welcome visitor to many a backyard. Many people are going out of their way to make it comfortable because they enjoy it.

The combination of all data currently available suggests that mass eradication of *Myiopsitta monachus* is not necessary. While it will not fill an ecological niche that was once filled by *Conuropsis carolinensis*, due to the severe degradation of the alluvial forest biome, it has found its place as an urban bird that is winning the hearts of people wherever it takes up residence. It is a shining example of what can be accomplished when humans and nature are able to find common ground through Reconciliation Ecology. *Myiopsitta* should be left alone to thrive in the United States and where its interests conflict with industry, such as with the electric utility industry, creative solutions should be found via the Reconciliation philosophy to allow it to coexist with minimal impact on human enterprise.

The demise of *Conuropsis carolinensis* and the proliferation of *Myiopsitta monachus*, each in its own way, sheds light on the slippery slope that humanity trods as it continues to dominate the planet. One shows us the consequence of blatantly ignoring the creatures around us and expanding wontonly, at any cost. The other shows us another way, the gentler way, the way that says humanity and nature can be partners in the story of earth. We can do this together. To ask if *Myiopsitta* will fill an ecological niche is the wrong question. Rather, we should gaze upon the cantankerous green birds that grace our urban landscapes and ask if they can show us the way to a better world. Rosenzweig states:

To practice Reconciliation Ecology, we must pay close attention to our treatment of the land. We must back off a bit — not on the amount of land we take for ourselves — but on how we transform it for our use. Right now, our footprint is too big. Going barefoot is not the answer but the time has come to trade in our jackboots for the grace and elegance of ballet slippers.

The careful foot can walk anywhere. (Rosenzweig 2010)

Let us all strive to elegance of living and learn to dance with nature.

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