

ARTICLE

HISTORIC AND CURRENT DISTRIBUTIONS OF RIVER OTTERS (*Lontra canadensis*) AND (*Lontra longicaudis*) IN THE RÍO GRANDE OR RÍO BRAVO DEL NORTE DRAINAGE OF COLORADO AND NEW MEXICO, USA AND OF CHIHUAHUA, MEXICO AND ADJACENT AREAS

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ABSTRACT: The Río Grande drainage is an important and imperiled wetland of the US/Mexican border arid lands. There is a desire to restore otter populations in this river by interested parties. In order to follow IUCN guidelines for restoration, biologists need learn more fully the situation prior to implementation of restoration management. A prerequisite for proper restoration conservation is to know the organism's taxonomy (i.e., what taxa or species and subspecies one is dealing with), distribution, and relative abundance. The historic and current distribution of the Nearctic otter (*Lontra canadensis*) and Neotropical otter (*L. longicaudis*) in the borderlands of US and Mexico are reviewed in this paper. The evidence indicates that otters were native to the Río Grande valley and has been recorded in the languages and customs of Native Americans such as the Pueblo people prior to European settlement of the area. The first Spanish documents we were able to find whereby otters were recorded, date to the middle 16th century. Otters during historical times were probably more numerous than previously thought and one of the first wildlife laws in the borderlands revolved around a moratorium on trapping the otter and beaver. Presently, populations of otters occur in 1) the Río San Pedro of Chihuahua, a tributary of the Río Conchos entering the Río Grande from the southeast, 2) the upper Río Grande near the Colorado/New Mexico border, and 3) the middle Pecos River in southeastern New Mexico entering the Río Grande from the west. These observations are corroborated by multiple observations by competent observers and in the case of the first population, otter photos and sign. These populations are centered on areas with macrohabitats characterized by a river flowing through 1) deep canyons, or 2) ancillary wetlands. Considerable more detailed survey work is needed to determine the full extent of the distribution of otters in the Río Grande drainage. A genetic study is critically needed to determine the true taxonomic affiliation of these recently discovered populations. A moratorium on translocations should be put in place for the Río Grande to conserve the native populations already existing.

Keywords: Nearctic, Neotropical, river otter, Río Grande, Río Bravo del Norte, Pecos River, Río Conchos, distribution, historic, current, USA, Mexico, Colorado, New Mexico, Texas, Chihuahua, Coahuila, Nuevo Leon, Tamaulipas, Spanish, Native American, Pueblo, habitat, beaver, translocation, stocking, IUCN, moratorium, genetics.

INTRODUCTION

In his later years when asked by a reporter about rumors of his death, Samuel Clemens or Mark Twain was quoted as saying (Paine 1912): “Just say the report of my death has been grossly exaggerated.” The same could be said about the river otter of the Río Grande or Río Bravo del Norte except for one important distinction; Mark Twain was a well-known author of the literary world, whereas the river otter of the Río Grande is a veritably unknown animal in the scientific world.

Various authors reviewing the mammalian species of a given geopolitical area (i.e. country or state) have often neglected the otter. Granted, writing the “mammals of” type book requires much diligence to include detailed information such as the distribution for a specific geopolitical area. This is especially true of areas like the borderlands of the US and Mexico where there are extremes in altitude and climate that produce a high floral and faunal diversity. The initial thought of an otter, a semi-aquatic mammal, totally reliant on the close proximity to open water, in the midst of a desert seems to be an enigma. Wildlife biologists in the arid southwestern US and northern Mexico usually study the desert, grassland, or alpine fauna. Be that as it may, ignoring a semi-aquatic member of the native fauna of the priceless wetlands of a sun-parched region is totally irresponsible. Add to the difficulty of developing an accurate faunal list with the many languages and cultures (e.g., English, Spanish, Diné, Pueblo, etc.) in the region, plus the fact that a boundary bordering two countries (USA and Mexico) and six states (New Mexico, Texas, Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas) is a river with tributaries on both sides and this is a challenging situation prone to developing errors of omission.

Mark Twain is also credited for saying “Whiskey is for drinkin’; water is for fightin’.” It surely applies to the endangered waters of the American West. The Río Grande headwaters in southern Colorado and then flows through the San Luis Valley, the Taos Plateau of New Mexico, the middle Río Grande valley of New Mexico, the Mesilla Valley, and the lower Río Grande and along the Texas/Mexican border then out to the Gulf of Mexico between the neighboring cities of Brownsville, Texas and Matamoros, Tamaulipas.

The Río Grande ranks as the longest river in Mexico, the eighth longest in the US (US Geological Survey web site), ninth longest in North America (with 52.1% in the USA and 47.9% in Mexico), and the 26th longest in the world (http://en.wikipedia.org/wiki/List_of_rivers_by_length visited on 3 December 2007) with 3,057 km of waterways. The Río Grande with all its drainages (e.g., Pecos River) ranks as the third largest river system in the US and measures an estimated 4,386-4,547 km long.

In 1997 the US Environmental Protection Agency declared the Río Grande to be an American Heritage River to further “natural resource and environmental protection” (Clinton. 1997). Sections of the river (and the tributaries including the Red River, Río Chama, East Fork of the Jemez River, and Pecos River) in northern New Mexico and west Texas have been classified as “Wild and Scenic Rivers” by the federal government. American Rivers, a non-profit river advocacy organization, ironically has declared the Río Grande and its tributaries the Río Chama and the Santa Fe River, one of the most threatened or endangered rivers in the US, eight times from the period 1986-2007 (American Rivers, 2007). Furthermore in 1993, the Río Grande topped the charts and in 2007 the Santa Fe River was listed as the most endangered. The Santa Fe River is now a dry ditch but once was a natural flowing stream in 1881. The Río Costilla, a tributary on the east bank on the Colorado/New Mexico border, is also dry

most of the year (Polechla, 2000). The Río Grande is truly endangered too since it only occasionally (e.g., 2000, 2001, and 2006) reaches the Gulf of Mexico like it formerly did. Reasons cited for its poor condition include intensive agriculture, overgrazing, plus improper disposal of toxins, industrial pollution, domestic sewage, and mine wastes. The Environmental Protection Agency (2000) had proposed a molybdenum mine on the Red River near Questa, NM as a “Superfund Site” for cleanup of mine tailings. By far, the largest threat to the Río Grande remains dewaterization.

New Mexico is the last state in the US to restore river otter populations (Anonymous 2006). Since river otters in the Río Grande are regarded as rare and their riverine habitat is also very endangered, this publication summarizing the current situation with the river otter in the Río Grande is very timely. This article is an attempt to correct this lack of attention devoted to the river otter in this drainage. We will take a historical as well as a contemporary examination of the evidence.

MATERIALS AND METHODS

We searched for records in English and Spanish at: 1) the special collections at Center for Southwestern Research (CSWR) at the Zimmerman Library at the University of New Mexico, Albuquerque, NM, 2) City of Chihuahua Archives, CHIHUAHUA, México, and 3) antique maps at the Map and Geographic Information Center (MAGIC) at the Centennial Science and Engineering Library (CSEL), University of New Mexico for place names with otters, and 4) books written on regional fauna of the borderlands. Wherever possible, we read original primary sources. We also surveyed sections of the Río Grande and its tributaries ourselves (Figure 1). While conducting reconnaissance trips we interviewed local people along the river and its tributaries about otters.

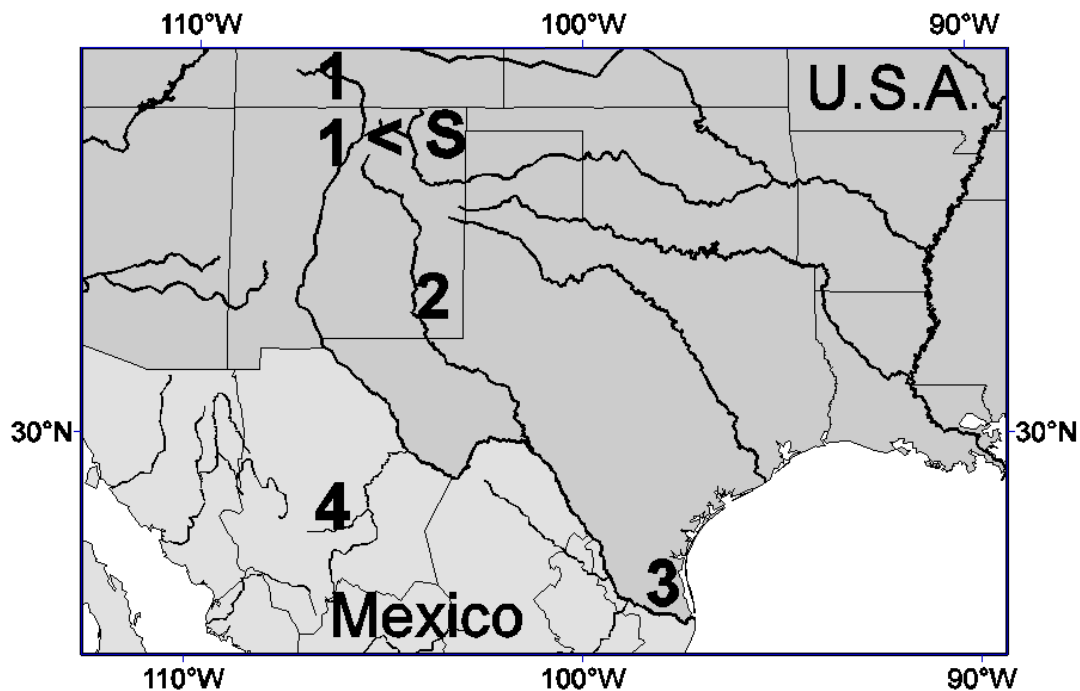


Figure 1. Spatial distribution of recent records of native river otters (possibly *Lontra canadensis lataxina*) in the Rio Grande watershed (upper Rio Grande =1; middle Pecos river =2; lower Rio Grande Valley =3; upper Rio Conchos =4) and stocked populations of the exotic *L. c. pacifica* subspecies in the Rio Pueblo de Taos at > (S).

RESULTS AND DISCUSSION

USA

COLORADO

American Period

Otters are known historically from the so-called San Luis Valley or the upper Río Grande on the present-day New Mexico/Colorado border (Coues, 1898). American explorers, such as the phonetic speller Major Jacob Fowler trapped “bever” [sic = beaver (*Castor canadensis*)] and “aughter” [sic = otter] in 1822 in the upper Río Grande drainage of present day Colorado. He was an unusual trapper since he was educated enough to record his daily catch in a journal and use a sextant and compass to pinpoint his location all while enduring the rigors of outdoor life.

Twenty-first Century

At the southern part of Alamosa National Wildlife Refuge (ANWR), two wildlife biologists, Kelli Stone and Kristina Crowder, made an interesting observation while driving to check their mist nets. Kelli had been apart of the Green River, Utah otter translocation program (she had seen adults and young at Ouray National Wildlife Refuge, near Green River, Utah, and in a northern Rocky Mountain stream as well). On 12 September 2001 at about 0630 Mountain Standard Time (MST), both Kelli and Kristina saw an otter running across a sand bar close to the far bank of the Río Grande (river width = 18.3 m) above La Jara Creek, Alamosa County, Colorado. (mentioned briefly in Polechla 2002b, and recorded fully in the field notes of Paul Polechla, 28 February 2002). It appeared “long, thin, and dark” with its head and body about 76.2 – 91.4 cm long. They saw the animal at a distance of 27.4 m for about 3-5 s duration. It had “an S-shaped crimp” in its back displaying an up and down motion. After there initial observations, it bounded onto the willow bank. It did not resemble a mink (*Neovison vison*), weasel (*Mustela frenata*), muskrat (*Ondatra zibethicus*), or beaver in size, shape, and movement. One of Kelli and Kristina’s colleagues also saw one otter at 1900 MST at the same site. We regard their sightings as highly credible ones due to the precision and accuracy of their descriptions of the morphology and behavior of animal they saw and the match with those of the river otter.

To date, no translocations of otters have been conducted into the Río Grande (Polechla, 2002a). However, translocations of exotic otter subspecies were placed in the Piedra River, Dolores River, Gunnison River at Black Canyon, and headwaters of the Colorado River in Rocky Mountain National Park; all are apart of the Colorado River drainage. Otters were also translocated to Cheesman Reservoir along the South Platte (Polechla, 2002a,b; DePue and Schnurr, 2004) part of the Missouri/Mississippi River drainage.

Beaver and muskrat both occur at ANWR (Polechla, unpublished data) and south into New Mexico (Polechla, 2000). Besides the river the area has a myriad of abundant wetlands including: wet meadows, marshes, oxbows, sloughs, canals, and small reservoirs.

NEW MEXICO

Native American Period-Pre/Early European Contact

A photo in Dozier (1983) documents Santa Clara Pueblo men wearing otter fur in braids in their hair. Hill (1982) tells of people from Santa Clara Pueblo wearing otter fur headbands and collars. Bailey (1931) described the Native American knowledge about the otter along the Río Grande. “The Taos Indians are familiar with them, and

bits of fur were seen on their clothing and ornaments as well...” He added that the Taos Pueblo people not only utilized their skins but also had a unique name in their Tewa language for the otter. An otter effigy pot was excavated from Pecos Pueblo on Arroyo del Pueblo, a tributary of Glorieta Creek, a tributary of the upper Pecos River located about 4 km South and 0.8 km East of the village of Pecos, New Mexico (Polechla 2000, Kidder 1932). This site was estimated to be between 1200 and 1838 AD.

Spanish Colonial Period

In 1541, Hernando de Alvarado commented that the “Río Pecos” or Pecos River “contains very good trout and otters” (Hodge, 1946). Nicolas de Lafora (Weber, 1971) wrote about the Río Grande in 1767 commenting that New Mexicans “pay no attention to otter, beaver, ermines, and martin [sic marten] skins, which they have in abundance, because they do not know their value.” Fray Morfi (1782 fide Rea 1947) records beaver and otter on the Río Grande in 1782.

The place called “Las Nutrias” along the “Camino Real” was named in Spanish after ‘the otters’ and dates back to 1682 (Rivera and Humboldt, 1807; Julyan, 1998, Polechla, 2000; LoPopolo, 2006; Carlos LoPopolo, personal communication). This village is located at 34.477 degrees N.106.770 degrees West Longitude on the east bank of the Río Grande in present-day Socorro County, NM.

There are a number of other place names with nutrias or otters for localities in New Mexico (Pearce, 1965; Julyan, 1998; Topozone.com) and Colorado (Polechla, 2002a). Often times place names with otter or nutria refer to an abundance of otters in this region historically (Polechla, 2002c).

The officials in City of Chihuahua, fearing over-trapping of beaver and otter in the Río Grande, closed the river to trapping these two species (Weber, 1971) publishing the declaration in the official newspaper “El Noticioso de Chihuahua” in 1838 (Polechla et al., in prep). This indicates a greater original abundance than was previously thought by authors such as Bailey (1931) and Findley et al. (1975).

Early American Period

The military expedition known as the “Army of the West” led by Lieutenant Colonel W. H. Emory guarded the Mormon Battalion from Fort Leavenworth, Kansas to San Diego in present day California (Emory, 1848). They came via the Santa Fe Trail’s Mountain Route, passed from later-day Raton to Santa Fe, NM then to the Río Grande (on a main trail called the Camino Real) as far south as the Fra Cristobal Mountains and then exited the Río Grande valley west across the mountain gap now known as Emory Pass (Julyan, 1998), present-day NM. On 11 October 1846, Captain A. R. Johnston of the expedition wrote the following about the east bank of Río Del Norte at the base of Fra Cristobal Mountains (Emory, 1848). “In passing the river, I saw the tracks of the otter, the catamount, the wildcat, the bear, the raccoon, the crane, the duck, the plover, the deer, and the California [sic probably Gambel’s] quail.” Emory, the namesake of the Emory oak (*Quercus emoryi*), summarized the observations of others in the Mormon Battalion expedition by writing “...for here we saw for the first time in New Mexico, any considerable “ signs” of game in the tracks of the bear, the deer, and the beaver. We flushed several beavies of the blue quail, saw a flock of wild geese, summer ducks, the avocet, and crows.” It must be noted that the area north of this region along the “Camino Real” contained numerous human settlements, which had over harvested the wildlife along the Río Grande. Just north of Tome, Johnston wrote about the otter’s commensal partner, the beaver. “Above this camp, there is on

the river a considerable growth of cotton-wood, among which are found some ‘signs’ of beaver.”

Other observations are known from the upper Río Grande. A “Mr. Dowell” said that otter were found near the junction of the El Rito de los Frijoles and the Río Grande between 1910-1911 (Henderson and Harrington, 1914). The junction of these two waters lies within present-day Bandelier National Monument, Sandoval County, NM. Bailey (1931) cited otter records from the upper Río Grande on the following localities: “near Espanola, Rinconada, and Cienequilla.” “Cienequilla” or “Cieneguilla”, meaning small marsh in Spanish, is now known as Pilar, Taos County, NM (Julyan, 1998).

Bailey (1931) readily admits the conundrum of not having specimens to properly decide which taxa he is dealing. Writing about trappers’ records of the 1820’s for the Gila River of southwestern New Mexico in the Colorado River basin he says. “These records undoubtedly refer to the typical Arizona form [*L. c. sonora*], but no more records are available in New Mexico except for the upper Río Grande and Canadian Rivers in the northeastern part of the state, where the species is probably different. There is, however, not a specimen from the State available for study and comparison, and until specimens are obtained, no definite decision can be arrived at in regard to the subspecies.” Findley et al. (1975) merely cites Bailey (1931) and the record of McClellan (1954) in the Gila River (1 mile [1.6 km] S Cliff, Grant County) and adds “the species may well be extinct in the state.” Findley et al. (1975) do not indicate if any effort was made to survey for otters. They do not hazard a guess as to what subspecies might be in the Río Grande or Colorado, or Canadian River drainages of the state.

Modern Period

San Luis Valley

In the 1970’s, Dean Swift saw three to four otters at Eastdale Reservoir (part of the Río Costilla drainage which winds its way across the Colorado/New Mexico border and flows into the Río Grande’s east bank (Polechla, 2000)). At the mouth of the Río Costilla, Jim and Peggy Swayback of MacKintosh, NM saw an otter (Polechla, 2000).

Taos Gorge

Dan Wood and Richard Spiegel of Bureau of Land Management (BLM) were rafting the Río Grande when they saw an otter about 11.7 km S of the Colorado/New Mexico state line (Stahlecker 1986). Doug Scott Murphy, a pioneer river outfitter on the upper Río Grande and artist, claims to have seen a river otter at “Razorblades” about 3.2 km upstream of Sheep’s Crossing in 1997 (Polechla, 2000). Todd Bates who lives on the Río Fernando de Taos (a tributary on the Río Grande’s east bank) claims to have seen an otter at the Sunshine Valley section of the Río Grande (Polechla, 2000).

Red River

Red River is a tributary on the east bank of the upper Río Grande in New Mexico. A New Mexico Environmental Improvement Division employee on the Red River at Columbine Canyon believed they saw an otter in 1999 (Polechla, 2000).

Pecos River

Bitter Lake National Wildlife Refuge (BLNWR), Chaves County, New Mexico lies on the Pecos River and has been a locality for several otter observations (Polechla, in prep. and 2002b, not cited by Anonymous, 2006). The refuge is characterized by a

myriad of different wetlands next to the river including: springs seeps, oxbow lakes, marshes, saline lakes, karst sinkholes, shallow reservoirs, and canals.

The US Department of Interior, Fish and Wildlife Service reported some sightings at BLNWR (Polechla 2002b). One of their reports (USDI F&WS 1994) states the following. “A river otter (*Lutra* [=*Lontra*] *canadensis*) was reported by a visitor on Unit 6 reservoir in early May [1994]. An otter has never been documented on the refuge, and seems highly unlikely. However, William R. Radke (refuge manager) found mammal prints along the Pecos River in October 1993, which he believed to possibly belong to a river otter. In addition, a fire crew dispatched from Washington State to aid the refuge during the summer fire season reported seeing a river otter at Unit 15 reservoir. None of these sightings were ever confirmed.” On 25 April 1999, Judy Dane, a volunteer coordinator with the New Mexico Museum of Natural History saw what she believes to have been an otter on the N end of Unit 6 impoundment of BLNWR (Radke, 1999, Judy Dane personal communication to Paul Polechla, 22 June 2004). This location is on the west side of the refuge and is close to the Pecos River. Judy is a long time birder and has seen lots of different species of wildlife on ecotours. She was standing on the road bird watching in the late afternoon when at a distance of 91.4 – 183 m, with the aid of her binoculars; she caught a quick glimpse of an otter. By the “dark color, long dark tail, size, and way it ran...humping its back and not waddling” she assured me it was a river otter and contends it was not a muskrat or a beaver. It was “bounding the weeds at the edge of the water”. Furthermore she says, “I’ve seen sea and river otters in Alaska... and beaver and muskrat in New Mexico and the Eastern US” Her description/observation is consistent with otter appearance and behavior and seems very credible. Shy of an actual photo or track cast, etc. this observation demonstrates the occurrence of river otter here.

Texas

Since the early province of Chihuahua included some of present day west Texas along the Río Grande, the above-mentioned decree in the 1838 “El Noticioso de Chihuahua” also places otter in this part of the state (Polechla et al., in prep). In their “Mammals of North America”, Hall and Kelson (1959) do not have a Texas Río Grande location but do provide a central Texas distribution record on the Colorado River near Austin, citing Bailey, 1905. In the next addition of “Mammals of North America”, Hall (1981) shows the Brownsville, Cameron County, Texas location. This is based on an actual otter specimen that Van Zyll de Jong (1972) listed and measured and statically compared to other *Lontra* specimens including *L. canadensis* and *L. longicaudis*. Van Zyll de Jong identified the specimen as *L. canadensis lataxina*. Brownsville lies at the mouth of the Río Grande across the river from Matamoros, Tamaulipas, Mexico. Davis and Schmidly (1994) also showed the Río Grande locality but provided no further information. Earlier versions of this work (Davis 1966, 1974) do not show this locality. Polechla (1988, 1990) cites Hall (1981) and Polechla (1990) adds the rest of the Río Grande based on Weber (1971). Polechla (2000, 2002b) and Gallo (1986, 1989) cite this distribution locality in Cameron County, along the Río Grande (plus one at the mouth of Colorado River).

Mexico

Harris (1968, p. 212) lists the type locality of the Neotropical otter of México (*Lontra longicaudis annectens*) Major, 1897 as Terro Tepic, Río de Tepic, Nayarit, Mexico and shows the trans-Madreal distribution making a slight “U” shape along the Pacific coast from the Sierra Madre del Sur to a point about even on the Mexican mainland

with the tip of Baja California and on the Atlantic side of the Gulf of Mexico to Tamaulipas, Mexico (including an unnamed coastal river). Harris (1968) does not mention the Río Grande nor is it mapped for distribution for the Nearctic otter of the Southeastern US (*L. c. texensis* (now a synonym for *L. c. lataxina*)). New Mexico is listed as part of range of *L. c. sonora* and the upper part of Río Grande, Pecos, and Arkansas Rivers (in state of Colorado) shown on the distribution map. No individual records are shown on any of Harris's maps however.

Chihuahua

The aforementioned decree in the 1838 "El Noticioso" for Chihuahua closing the Río Grande to trapping beaver and otter constitutes one of the first wildlife laws in the state of Chihuahua (Polechla et al., in prep). Now otter populations are known from other parts of the Río Grande drainage and western Chihuahua near the border with Sonora and Sinaloa.

"West"-Central Chihuahua- Río San Pedro, Río Conchos-Río Bravo Del Norte/Río Grande Drainage.

This region lies on the eastern slope of the Sierra Madre Occidental of Mexico and has only been recently examined for otters. Carrillo-Rubio and Lafón (2004) published on the habitat of the otter in west-central Chihuahua, Mexico. They found otter scats and tracks plus even took a photograph that the second author (ECR) showed in a slide show at the 2004 IUCN Otter Specialist Group Colloquium (Carrillo-Rubio et al., 2004). They emphasized the microhabitat selection characterizing both the occupied and available habitat. Although this is an essential aspect of otter biology and conservation, there was an even greater significance of their work that was not mentioned. They had found otters where no other scientist had reported them before! Gallo (1986, 1989), Lariviere (1999), and even Gallo and Casariego (2005) do not show the west-central Chihuahuan population just the Chihuahuan/Sonoran border population described in detail in the next section. The previous population that other biologists had described was in extreme western Chihuahua near the Sonoran border on the west side of the Continental Divide running down the Sierra Madre Occidental. The population in west-central Chihuahua is totally new to science. Furthermore to date, this "new" population is 1) the only one on the east side of the Sierra Madre Occidental, 2) the eastern most population in Chihuahua, and 3) the northeastern most otter (*Lontra* spp.) population in México.

Not only that but, the species of river otter (*Lontra* sp.) that they are actually dealing with is not well understood. Recall that the arid US/Mexico borderlands are the regions where both the Nearctic otter of the north meets the Neotropical otter of the south. Prior to translocations (of different subspecies from other drainages) by the US states of Colorado, Arizona, and Utah, only the southwestern subspecies of the Nearctic river otter (*L. canadensis sonora*) occurred in the Colorado River (Polechla and Walker 2008). When Bailey (1931) wrote his "Mammals of New Mexico", he summarized a few reports of otters on the Río Grande. It is unknown whether he searched for them himself, but he probably was occupied investigating the diversity of mammals since the state ranks very high in diversity ranking with California and Texas (Caire 1978). The situation is further complicated since he did not have a specimen from the state but knew full well that they have long been a part of the native fauna. Without a specimen and knowing that the next drainage to the arid west was the Colorado River, he assigned the otters in the entire state; including the Gila, San Francisco, and San Juan River drainages, plus the Río Grande drainage, and the

Canadian River drainages, to that of the southwestern subspecies based on geographical proximity.

Carrillo-Rubio and Lafon (2004) and Carrillo-Rubio et al. (2004) working in Mexico where the most-abundant otter is the Neotropical otter, assumed that the otter in Chihuahua must be the Neotropical otter. They were not aware of *L. canadensis lataxina* from the mouth of the Río Grande at Brownsville, Texas that Van Zyll de Jong (1972) examined and identified. Since they worked in the Río San Pedro, which flows into the Río Conchos a tributary of the Río Grande, this might not be the case. Since both Carrillo-Rubio and his associates and Bailey knew of otters in the Río Grande but had no skin/skull specimens to examine for identifying characteristics (Polechla, Gallo, Tovar 1987), the true identity awaits further study to determine if it is the Nearctic, Neotropical, or an undescribed species or subspecies. Much study is needed to learn about this newly discovered population. It should be conserved at all costs.

Chihuahua/Sonora/ Sinaloa Border

This area of Mexico is on the western slope of the Sierra Madre Occidental and drains into the Sea of Cortez (i.e. Gulf of California) and ultimately into the Pacific Ocean. Indigenous people are well aware of the Neotropical otter of this region. The Tarahumara and northern Tepehuan people in the Río Verde and Río Mayo of Chihuahua were familiar with the otter, using their meat for food, fat for folk medicine, and skin for a sleeping mat (Sturtevant, 1983).

In 1904, Carl Lumholtz's (1973) discovered "tracks of many raccoons and otters..." along the Barranca de San Carlos that drains into the Río Fuerte west of Nogal, Sinaloa, Mexico. Since Lumholtz' observations, the distribution of the Neotropical otter known to science has been moving northward along the west side of the Sierra Madre Occidental. This is largely attributed to an increase in mammalogical studies in northern Mexico associated with specimens, photographs, and sightings of otters.

Leopold (1959) provides records on the Río Gavilán. Cockrum (1964) reported on a specimen trapped from the Río Mayo near San Bernardo, in southeastern Sonora in spring of 1963. Anderson (1972) cited two specimens from northwestern Chihuahua from the Río Tutuaca, 20 km S Yaguarachie. In the same general region of the state of Chihuahua, Anderson (1972) also gives records for the Río Papigohi about 40 km down river from Temosahi. Roth and Cockrum (1976) reported on a specimen from the Río Mayo at Alamos from 1965 plus further to the north, another one at Los Pilares, 7 miles E [= 11.3 Km] of Yecora, on the Río Mulatos, a tributary of the Río Yaqui. Caire (1978) cites Roth and Cockrum (1976) and Anderson (1972) and states that native people at Tres Ríos on the Río Negro told him "that otters have occurred there occasionally". Brown et al. (1982) photographed three otters in the Río Yaqui, Sonora about 3 km downstream of the Río Chico confluence. The Río Yaqui flows into the Gulf of California between Guaymas and Ciudad Obregon, Sonora, Mexico.

Along the Río Bavispe east of Tres Ríos Mesa in the Sierra Occidental in Chihuahua, Johnson (2005) cites a Brian [Long] and Alan [last name unknown] searching for otters. Johnson is probably referring to the reconnaissance trip planned by Brian Long (2001, personal communication, 2001) of which no published reports have been produced from this trip. To date, this region may constitute the northern-most distribution of the Neotropical otter but lies on the west side of the Continental Divide and is not in the Río Grande drainage.

Coahuila/Nuevo Leon/Tamaulipas Border

Río Salado

These river headwaters on the eastern side of the Sierra Madre Oriental flow into the Río Grande on the Mexican side. The Río Salado, a Río Grande tributary in eastern Coahuila, northern Nuevo Leon, and northern Tamaulipas remains unsurveyed for otter, although Villa (1954) surveyed the river for beaver only. Bernal (1978) later surveyed beaver in this drainage in the state of Nuevo Leon.

Tamaulipas

The rivers in this region south of the mouth of the Río Grande, headwaters on the eastern side of the Sierra Madre Oriental and flow (albeit now irregularly) directly into the Gulf of Mexico and finally into the Atlantic Ocean. Gallo-Reynoso (1997) gave the following record in his review of Neotropical otter in Mexico. "Río El Salado, afluente del Río Conchos, 2 km O de Paso Hondo (Mpio. De San Fernando, 50 m). Se revisó la piel de un individuo macho. Este registro constituye el más norteño de la nutria neotropical en la vertiente del Golfo de México (N)." This is translated as follows. "The river 'El Salado', a tributary of the 'Río Conchos, 2 km west of Paso Hondo (Municipality of San Fernando, 50 m)'. I examined the pelt of an individual male. This constitutes the most northern record of the Neotropical otter on the coast of the Gulf of Mexico." This location is about 425 km south of the mouth of the Río Grande.

CONCLUSION

In 1541, Spanish explorer Hernando de Alvarado is credited as the first person to observe otters in the Río Grande drainage and to write about his observation. Native American tribal knowledge of otters probably predates the Spanish record. Analysis of the early historical documents indicates that otters have been recorded in the Río Grande from the 16th through the 21st centuries. One archaeological record for an otter effigy pot was found in deposits dated from the 13th to the 19th centuries. Like the Arkansas (Polechla, 1987) and the Colorado (Polechla, 2002b) Rivers, the historical distribution of otters was from the headwaters to the mouth.

Unregulated fur trapping on Río Grande beavers and otters began in earnest in the Mexican Period and continued through the American Period. Undeniably there are at least three localities in the Río Grande where otters are currently known to occur (Figure 1): 1) the Río San Pedro in Chihuahua 2) in the upper Río Grande around ANWR near the New Mexican border, and 3) the Pecos River at BLNWR. Reports have come from competent biologists and naturalists with previous experience with otters. At this time, the most extensive population seems to be located in the Río San Pedro in Chihuahua that is about 106.9 km from the closest population near the Chihuahuan/Sonoran border on the other side of the Continental Divide. The habitat of the first locality is where a river passes through a deep canyon and the second and third localities are situations in which rivers flow by small reservoirs, ponds, oxbow lakes, and springs. The deep canyons might restrict some human visitation and development. Having a number of wetlands juxtapositioned near each other is ideal for otter foraging and traveling behavior. Very little of the Río Grande drainage has been sufficiently examined however, with only 292.8 km to date (Polechla, 2000; Carrillo-Rubio and Lafón, 2004; Polechla, unpubl. data), representing only 6.4-6.6 % of the total km of river ways in the Río Grande drainage. The newest discovery of otters in the Río Conchos necessitates that examination of the other tributaries as well

as the Río Grande per se, must be surveyed. The specific designation of these otter populations, let alone the subspecific designation, are unclear and await further study.

Management Implications and Recommendations

Mark Twain's famous pun is applicable (Gore, 2006). "Denial ain't just a river in Egypt." Contrary to the prevailing opinion, native populations of river otters are present in the Río Grande drainage. Governmental agencies denial of this fact and refusal to protect them needs to be corrected. Currently, five river otters (*L. c. pacifica*) from the state of Washington were unscientifically stocked (Seattle Post-Intelligencer, 2008) into a river drainage that undeniably already has a native otter. The "New Mexico Friends of the River Otters", the group responsible for the action, has plans to stock more foreign Washington (Seattle Post-Intelligencer, 2008) and Oregon (Associated Press, 2007) otters into New Mexico. This threatens an existing native population of river otters, currently imperiled. The five stocked otters need to be live-captured and returned to Washington. A genetic study is needed to elucidate the taxonomic relationship of the otters of the US/Mexico border. Experienced otter trackers need to conduct additional surveys to determine the distribution of otters of the Rio Grande and borderland region in general (e.g. Colorado River drainage to the west and the Canadian River drainage to the east).

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RESUME

REPARTITION ACTUELLE ET HISTORIQUE DES LOUTRES *Lontra canadensis* ET *Lontra longicaudis* SUR LE RIO GRANDE ET LE RIO BRAVO DU NORD DU COLORADO ET DU NOUVEAU MEXIQUE, USA ET CHIHUAHUA, MEXIQUE ET REGIONS ADJACENTES

Le réseau hydrographique du Rio Grande est une importante zone humide des aires arides proches des Etats-Unis et du Mexique mais elle est à ce jour largement en péril. Il existe actuellement un désir de restauration des populations de loutres sur cette rivière. Afin de suivre les lignes directrices de l'UICN sur la restauration des populations, les biologistes doivent avant tout évaluer la situation avant d'engager une gestion favorisant le retour des loutres. La première nécessité est de connaître les espèces présentes, leur distribution et leur abondance relative. Ainsi, les données historiques et les répartitions actuelles de la Loutre de rivière (*Lontra Canadensis*) et de la Loutre néotropicale (*L. longicaudis*) sur les zones limitrophes des Etats-Unis et du Mexique sont synthétisées dans cet article. Les indices indiquent que les loutres sont originaires de la vallée du Rio Grande et ont même été enregistrées dans les langages et les décorations des indiens d'Amérique tel que le peuple "Pueblo", et ce avant l'installation des européens. En effet, le premier document espagnol que nous ayons pu trouver mentionnant la Loutre date du milieu du 16^{ème} siècle. Par le passé, les loutres étaient sans doute plus nombreuses que ce que nous pensons et l'une des premières lois sur la vie sauvage dans cette région tournait autour d'un moratoire sur le piégeage de la Loutre et du Castor. Aujourd'hui, les loutres sont présentes sur :

- 1) le Rio San Pedro du Chihuahua, un affluent du Rio Conchos qui se jette dans le Rio Grande par le sud-est,
- 2) la partie amont du Rio Grande près de la frontière du Colorado et du Nouveau Mexique,
- 3) la partie centrale de la Rivière "Picos" dans le sud-est du Nouveau Mexique qui se jette dans le Rio Grande par l'ouest.

Ces données résultent de multiples observations par des naturalistes compétents mais aussi par des photos de loutres et des indices de présence. Ces diverses populations fréquentent des aires dont les macro-habitats sont caractérisés par des rivières à courants rapides à travers des canyons profonds ou des zones humides secondaires. A vrai dire, des enquêtes de terrain plus détaillées seraient nécessaires pour affiner la distribution des loutres sur l'ensemble du système hydrographique du Rio Grande. Par ailleurs, une étude génétique est absolument indispensable afin de déterminer les distances génétiques entre ces populations récemment découvertes. Enfin, un moratoire sur les translocations pourrait être instauré sur le Rio Grande afin d'assurer la conservation de ses populations.

RESUMEN

DISTRIBUCION HISTORICA Y ACTUAL DE LOS NUTRIAS DEL RIO (*Lontra canadensis*, *Lontra longicaudis*) EN LA CUENCA DEL RIO GRANDE O RIO BRAVO DEL NORTE EN COLORADO Y NUEVO MEXICO, E.U.A., CHIHUAHUA, MEXICO, Y OTRAS AREAS ADYACENTES

La cuenca del Río Grande (llamado “Río Bravo del Norte” en México) contiene humedales importantes para las áreas desérticas de la frontera entre México y EUA. En la actualidad existen grupos de interés que pretenden restaurar poblaciones de nutria de río en esta cuenca, pero para poder seguir los lineamientos de restauración de especies del IUCN es necesario conocer a detalle la situación de la especie antes de llevar a cabo cualquier esfuerzo de restauración. Uno de los prerrequisitos para la restauración es conocer la taxonomía del organismo (i.e., la taxa o especies y subespecies nativas del área bajo consideración), distribución, y abundancia relativa. La distribución histórica y actual de la nutria de río Neártica (*Lontra canadensis*) y Neotropical (*L. longicaudis*) en la frontera entre México y E.U.A. es examinada en este artículo. La evidencia indica que las nutrias eran nativas al valle del Río Grande y han sido registradas en la lengua y cultura de grupos indígenas previa la llegada de los europeos. Los primeros documentos en español datan del siglo XVI. Las nutrias eran probablemente más numerosas de lo que anteriormente se estimaba, y una de las primeras leyes de conservación de fauna silvestre en la frontera estableció una veda sobre la caza de nutria y castor. En la actualidad existen poblaciones de nutria en 1) la parte alta de la cuenca del río Conchos en Chihuahua, que a su vez alimenta al Río Grande; 2) la cuenca alta del Río Grande cerca de la frontera entre Colorado y Nuevo Mexico en E.U.A.; y 3) la porción central del Río Pecos en el sureste de Nuevo Mexico, que alimenta al Río Grande. Estos registros son corroborados por múltiples observaciones hechas por observadores competentes. Estas poblaciones se centran alrededor de áreas con macro-hábitats caracterizados por corrientes de agua permanentes que atraviesan 1) cañones profundos, o 2) humedales desérticos. Estudios adicionales son necesarios para determinar la distribución actual de las poblaciones de nutria presentes en la cuenca del Río Grande. También se requiere de estudios genéticos para poder determinar la verdadera afiliación genética de estas poblaciones recientemente descubiertas. Además, es necesario posponer cualquier proyecto de translocación de nutrias de otras poblaciones no nativas a la cuenca del Río Grande para poder conservar las poblaciones nativas existentes.