

Paleoamericans in Northeast Argentina

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Abstract

In this paper, we present a brief synthesis of the record of Fell or Fishtail points found in northeast Argentina, including the first two records for Misiones province. To date, 11 pieces have been identified in the region, which demonstrate techno-morphological similarities with specimens recovered in different areas of South America, which are linked to Paleoamerican groups of the Pleistocene-Holocene boundary. Although these points are still scarce in this area, this is probably due to the lack of research and issues related to archaeological visibility. These new records increase the density of findings of these early hunter-gatherers on the South American Atlantic slope.

Keywords

Fishtail Projectile Points, Paleoindian, South America, Northeast Argentina

1. Introduction

Northeast Argentina (NEA from now on) occupies a part of the south-eastern quadrant of South America (**Figure 1**). Its known archaeological record is focused on the late Holocene. At present, the absence of stratified sites corresponding to the initial stages of settlement is absolute. However, there is surficial evidence for this period. Indeed, Fell or Fishtail projectile points (FTPPs from herein) have been recovered in this wide region. These projectiles are a specific feature associated with early hunter-gatherers from the Pleistocene-Holocene boundary, which are disseminated from the south of North America to the South American subcontinent (Bird, 1938) (Bell, 1965) (Mayer-Oakes, 1963, 1986) (Bird & Cooke, 1978) (Dillehay, 2000) (Acosta Ochoa, 2011) (Nami, 2007, 2016a). This widespread distribution includes, of course, a significant morphometric variability, much of which was recently synthesized by (Nami, 2014a). Classic FTTPs are recognized by a lanceolate or convex blade, and biconcave stem sides,

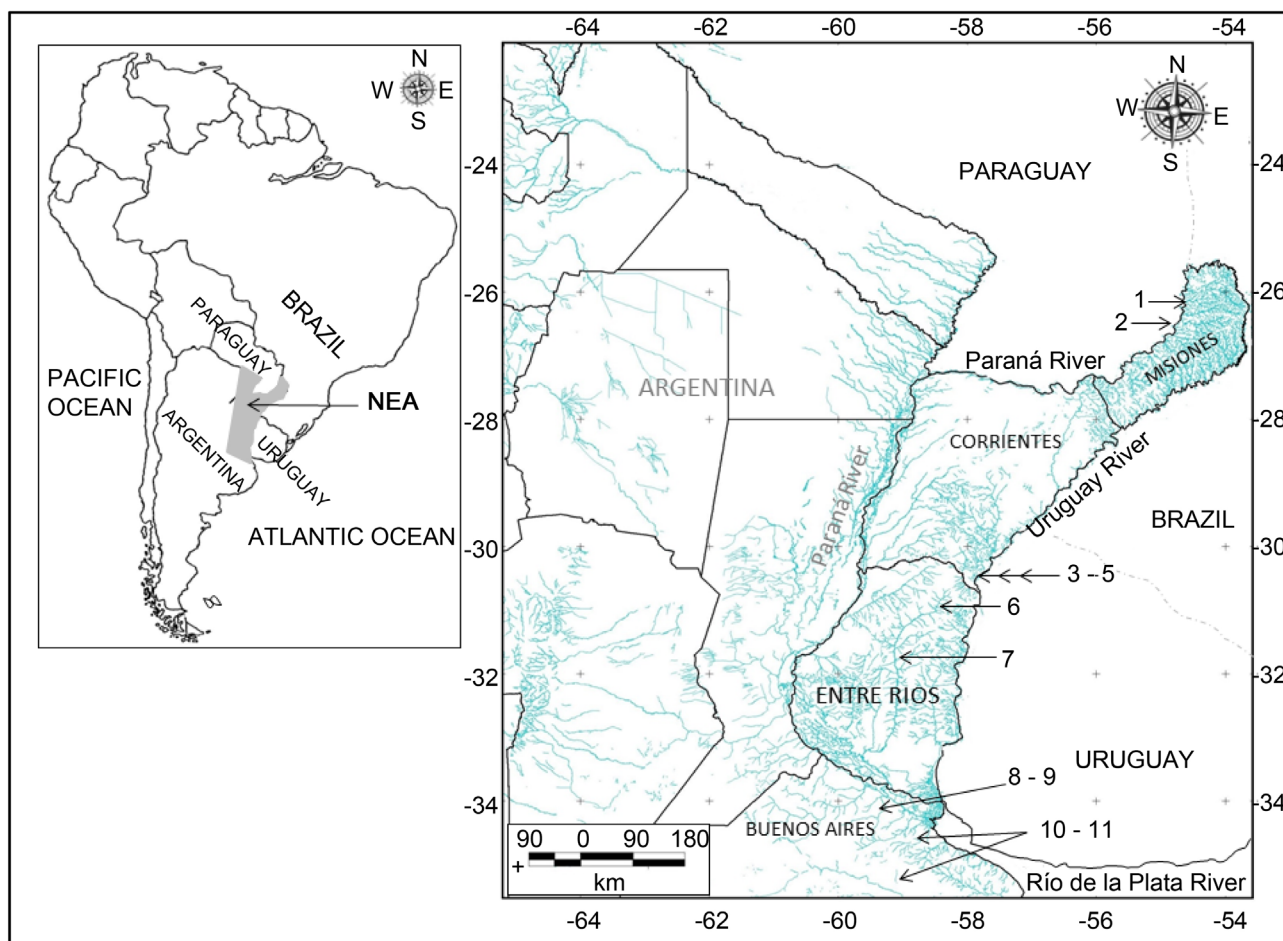


Figure 1. Distribution of FТПPs in northeast Argentina. 1: Puerto Esperanza (Misiones province); 2: Eldorado (Misiones province); 3 - 5: Monte Caseros (Corrientes province); 6: Santa Eloisa (Entre Ríos province); 7: Paso Blanco 4 site (Entre Ríos province); 8: Marcos Díaz (Buenos Aires province); 9: Gimenez stream (Buenos Aires province; see note 1); 10: Don Torcuato, Tigre County (Buenos Aires province); 11: Lobos County (Buenos Aires province). See the references in the text.

often with divergent ears or auricles (in the sense of [Cambron & Hulse, 2012](#)), which generate a small concavity between both. These projectiles were produced by bifacial thinning, leaving well-developed flake-scars across the blade. Two main techniques have been identified for their preparation. The first involves bifacial thinning of thick blanks for the bigger pieces, while the second uses thin flakes with a greater or lesser degree of bifacial thinning. In the latter, the flakes' sides in the center of the blades often show no modifications. The final stage was done by short retouches to achieve its specific design. An abrasion action was often performed on the sides of the stem, and in some a fluted channel was made, generally limited to the stem, but which could also extend beyond the union stem/blade ([Bird, 1938](#)) ([Bell, 1965](#)) ([Nami, 2003, 2014a, 2014b, 2015](#)).

In southeastern South America, FТПPs are widely distributed in southern Brazil ([Loponte et al., 2015, 2016](#)), Uruguay ([Baeza and Femenías, 1999](#)) ([Baeza et al., 2001](#)) ([Nami, 2007, 2013](#)) ([Gascue et al., 2013](#)) and in the southernmost part of the Pampa region (south Buenos Aires province) ([Flegenheimer et al., 2013](#)) ([Flegenheimer and Weitzel, 2017](#)). Although these points are common in

these peripheral regions of NEA, in the latter area they are scarce, which is why any new finding is extremely important for understanding the peopling of this area. From a subcontinental perspective, they help to better understand the variability of their distribution. As part of the initial results from the research project “South American Atlantic Forest Archaeology” (Loponte & Carbonera, 2013), we present a brief overview of this record in this region, including the first two findings of FTFPs from Misiones province (Figure 1). We have included key measurements for each FFTP, the raw materials used and some other technological properties, but only in cases where the original information was available.

2. The Archaeological Record of Fishtail Projectile Points in Northeast Argentina

2.1. The Region

The NEA region, which extends from Misiones to the northeast of Buenos Aires province, has a dominant fluvial axis in a north-south direction that is linked to the Paraná and Uruguay rivers. The headwaters of both waterways are located in the tropical and subtropical regions of Brazil (15° and 27° SL, respectively), and their mouths are at 34° SL. The South Atlantic Forest dominates most of Misiones province. It is a subtropical forest comprising high biodiversity (Rodríguez et al., 2005). In Corrientes, Entre Ríos and Buenos Aires provinces, the open environments associated with grasslands predominate, with a subtropical - temperate gradient from north to south. However, during the Pleistocene - Holocene boundary, NEA consisted of semi-desert, except along the Paraná and Uruguay Rivers, and in Misiones province, where the landscape was dominated by grasslands and temperate forests (Adams, 1996) (Pessenda et al., 2009) (Figure 2). In the center of Misiones the *Sierra Central* develops in a northeast-south direction, dividing the province into two slopes. To the west is the slope of the Paraná River, and to the east the slope of the Uruguay River. The maximum height of the *Sierra Central* is approximately 850 meters above sea level, located in the northeast of Misiones. This altitude decreases progressively towards the south-southwest. In the south of this province, the sierras disappear, making way for undulating high pastures. These open environments dominate the landscapes of Corrientes, Entre Ríos and Buenos Aires provinces, which gradually decrease in altitude from the north to the south until the lowest one is reached in northeast Buenos Aires province, at the Río de la Plata estuary (Figure 3).

2.2. Misiones Province

Until now unpublished records of FTFPs have been available from this jurisdiction, although the two FTFPs presented here have been included in public and private collections for sometime. One was found in the countryside surrounding the city of Eldorado (26°24'30.48"SL, 54°38'10.13"WL) on the plain on the left bank of the Upper Paraná River. It is currently curated at the Municipal Museum of Prehistory in Eldorado city. The raw material used is a veined greenish-brown vitreous rock with crystal inclusions, which are common in the local

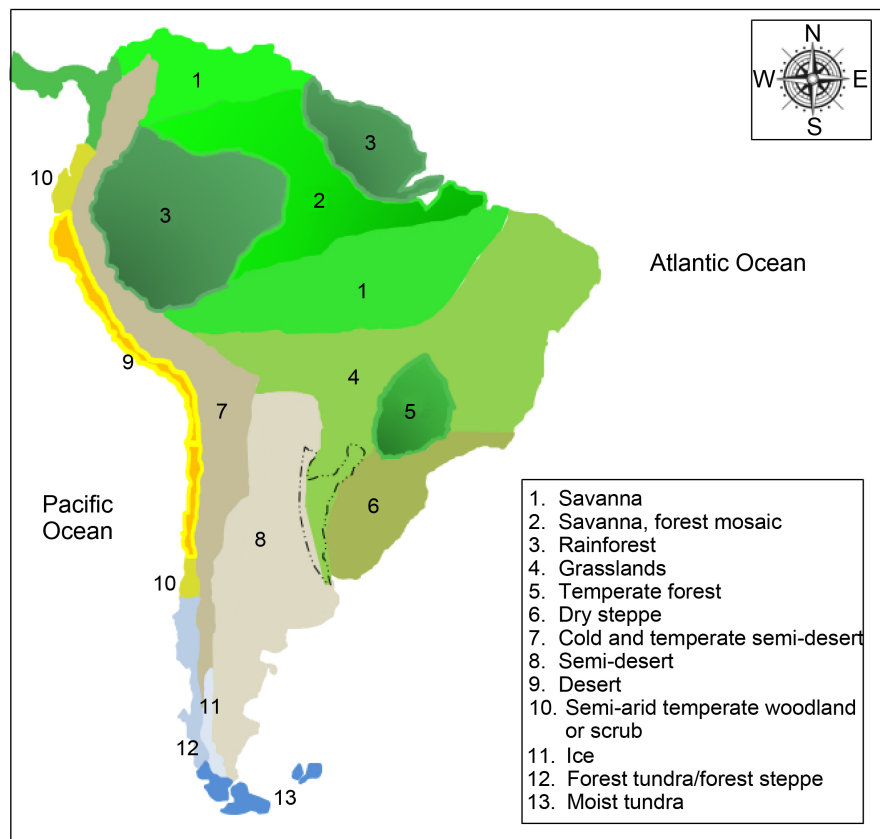


Figure 2. South American ecoregions at the Pleistocene-Holocene boundary (NEA in dotted line). Map based on (Adams, 1996); see also (Adams and Faure, 1997) for description of each ecoregion.

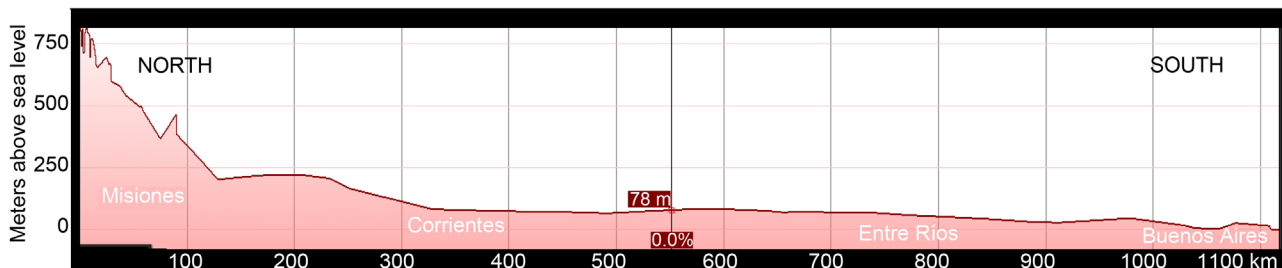


Figure 3. Profile from Bernardo de Irigoyen, north of Misiones province (left), to the Paraná Delta, north of Buenos Aires province (right).

basaltic columns of the Serra Geral Formation (Freschi, 2012) (Reis et al., 2014). This FTPP (Figure 4(a) & Figure 4(b)) was made from a thin flake through extended bifacial thinning. On one of the faces of the blade, the original surface of the blank can be seen. The edges were made by short retouches varying between 4.4 and 5.4 mm long and wide. One of the stem's faces is fluted. This channel is 20.71 mm long and 8.75 mm wide. The total length of this piece is 63.92 mm (blade length: 41.23 mm, stem length: 22.69 mm), with a maximum width of 21.38 mm in the middle sector of the blade. The maximum thickness of the projectile is 8.71 mm, which can be seen in the stem immediately above the fluting. The maximum width of the stem (the distance between the auricles or ears) is

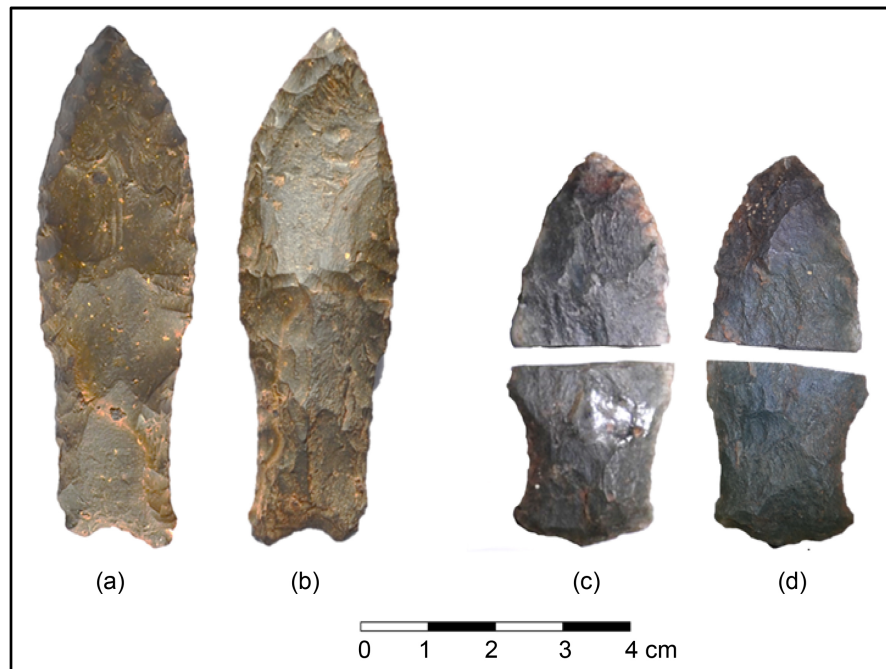


Figure 4. Fishtail projectile points recovered at Eldorado (a) and (b) and Puerto Esperanza County (c) and (d) in Misiones province.

15.83 mm. This dimension represents a minimum value, as one of the auricles is fragmented. Its minimum width, where the stem's sides reach their maximum concavity, is 14.70 mm. The basal concavity between the divergent auricles, a typical feature of FTPPs, is 1.8 mm in depth. This area of the stem, as is usual in FTPPs, was carefully thinned by short pressure retouching. The apex is somewhat offset from the axis of symmetry and the shoulders also show a small imbalance.

The second FTPP from Misiones was recovered on the surface in the countryside surrounding the city of Puerto Esperanza ($26^{\circ}1'4.73''\text{SL}$, $54^{\circ}36'56.12''\text{WL}$) by José Gherardi, a local collector. It was made from a thin flake of gray silicified sandstone (*intertraps*), which is fairly usual in the basaltic beds of the local Serra Geral Formation (Reis et al., 2014). The point is fragmented, and unfortunately the middle section has been lost; thus the real position between both fragments is uncertain (Figures 4(c)-(d)). The recovered fragments suggest a lanceolate blade with one rounded shoulder and another with a well-marked angle. Both sides of the projectile show moderate bifacial thinning. On one face of the blade the flake-blank that was used is still visible. The rare design of the base of the stem, and the absence of careful retouches on this section could be related to an unfinished work, and thus the projectile could have been broken during the final stage of production. The edges of the blade and the side of the stem with the greater concavity were done by short and narrow retouches (4 - 6 mm width and depth). The stem's measurements are 22.88 mm in length and 22.91 mm maximum width at the base. The minimum width, at the concavity of the stem, is 19.50 mm. The maximum thickness of this piece is on the stem (6.25 mm).

2.3. Corrientes Province

Three FPHPs were recovered on the surface in southeast Corrientes province, near Monte Caseros city (Mujica, 1995). They were scattered findings along the Uruguay River coast. There is no available photo for the first (Figure 5(a)), which is made of gray chalcedony. Its dimensions are 40.0 mm (total length), 26.0 mm (maximum width) and 4.0 mm (maximum thickness; (measurements taken from Mujica, 1995)). It is a highly resharpened FPHP; nevertheless, it preserves one concave side of the stem and the typical concavity of the base.

The second FPHP is made of agate. It is also highly resharpened. The blade is completely rounded, but the stem preserves the usual FPHP design (Figure 5(b)). Its dimensions are 41.0 mm in length, maximum width 27.0 mm, and maximum thickness 6.0 mm. The stem's length and width are 15.0 mm and 17.0 mm, respectively (measurements taken from Mujica, 1995).

The third FPHP is made of quartz. The blade is rounded and unbalanced, corresponding again to a highly resharpened projectile (Figure 5(c)). Its dimensions are 43.0 mm in length, maximum width 27.0 mm, and maximum thickness 5.0 mm. The stem's length and width are 14.0 mm and 18.0 mm, respectively (taken from Mujica, 1995). No further information is available about these three projectiles. In the original paper (Mujica, 1995) there is no discussion about whether the raw materials are local or allochthonous, although quartz, agate and chalcedony are available among the fluvial pebbles of the Uruguay River (Gentili & Ramos, 1979).

2.4. Entre Ríos Province

One almost complete FPHP was recovered on the surface in Colonia Santa Eloisa, which is located in the northeast of this province, and is currently curated at the Camila Quiroga Regional Museum in Chajarí town. The area is about 80 Km from Monte Caseros city, where the three points described above were recovered. This FPHP is made of quartz, with an unbalanced and asymmetrical design, which indicates that it was subjected to rejuvenation (Figure 6). Its maximum

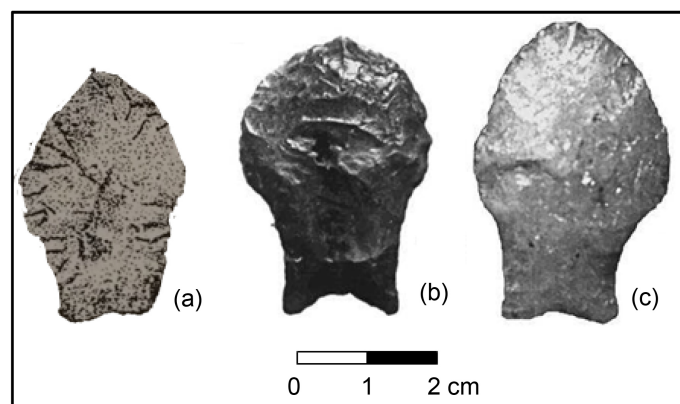


Figure 5. FPHPs from Corrientes province. Piece a: taken and modified from (Mujica, 1995). Pieces b and c taken and modified from (Nami, 2007).

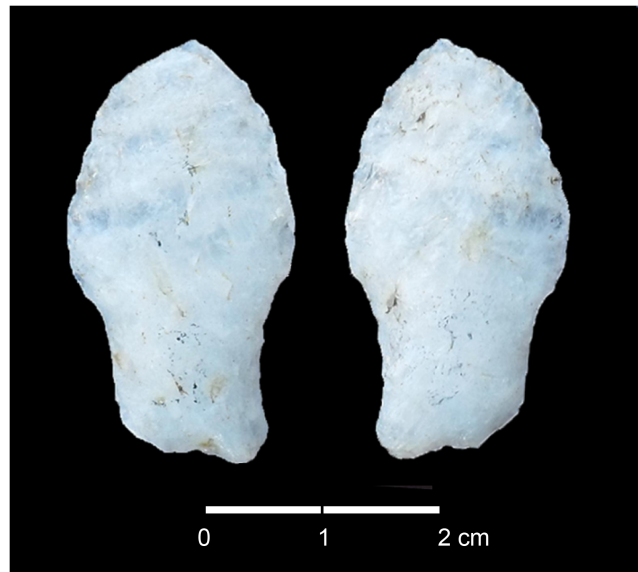


Figure 6. Fishtail projectile point from Colonia Santa Eloísa, Federación Department, Entre Ríos province. Taken and modified from (Capeletti, 2011).

length is 33.7 mm (20.7 mm blade length and 13.0 mm stem length), its maximum width is 17.4 mm and its maximum thickness is 6.9 mm. The stem, which is without fluting, is expanded at the base with auricles, which develop the typical concave space between them. Its maximum width is 10.9 mm (data taken from Capeletti, 2011). This area is adjacent to the pebbles in the Uruguay River, where quartz is available.

The second FTTP is a fragment of an unfluted stem with concave sides, recovered on the surface at the Paso Blanco 4 site (not shown in Figure 6 due we lack good available images). It is made of silicified sandstone, a raw material available 70 km away from the site. The stem's width is 12.7 and its maximum thickness 5.5 mm (Castro & Terranova, 2015).

2.5. Buenos Aires Province

Four FTTPs have been reported in northeast Buenos Aires province, an area linked to the Paraná-Plata basin and closely connected to the archaeology of NEA. One was recovered on the surface at the Giménez stream¹ by (Ameghino, 1880), and was identified as an FTTP by (Nami, 2014a). It is not known where it has ended up, although it is probably lost, like a large part of this researcher's collections. This small projectile, which is 33 mm in length and made of "silex" (Ameghino 1880), has been heavily resharpened, although it still preserves the convex sides of its stem and the basal concavity between the divergent auricles (Figure 7(a)).

The second projectile was recovered from an excavation of a well in the

¹Currently there is a "Jiménez" stream that crosses Quilmes, Berazategui and Florencio Varela counties, in the vicinity of Buenos Aires city; however, the "Giménez" stream referred to by (Ameghino, 1880) may be located in an area nearby the city of Luján. In any case, the projectile was recovered in north Buenos Aires province, near the Río de la Plata River.

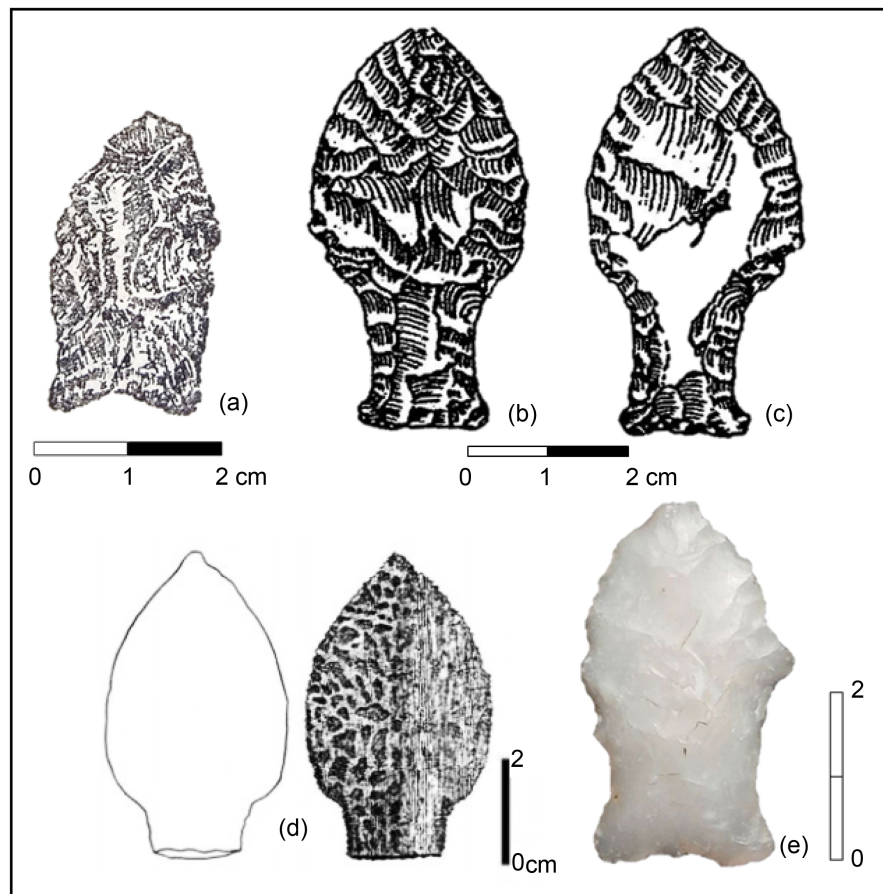


Figure 7. (a): taken and modified from (Ameghino, 1880); (b) and (c) were taken and modified from Eugenio (1983). Piece d was taken and modified from (Nami, 2014a). Piece e was taken and modified from (Nami, 2016b, Figure 13h).

second half of the XIXth century, from the countryside surrounding Lobos city. It is currently curated at the Museo Etnográfico, Facultad de Filosofía y Letras, Universidad de Buenos Aires. The raw material has been described as “red silex” (Eugenio, 1983); probably a silcrete (Nami, 2016b). This point has a classical FTTP design, with rounded shoulders, a concave stem and base, and divergent auricles. It also has a balanced silhouette with geometrical symmetry (Figures 7(b)-(c)). The sharp sides of the stem have been abraded, which is another common feature of these points (Nami, 2007). One of the sides of the blade has no retouches (Figure 7(c)), due to the use of a thin flake (Eugenio, 1983). Its maximum length is 51.5 mm (34.5 mm blade length and 17.0 mm stem length), its maximum width is 28.0 mm and its maximum thickness is 5.0 mm. The maximum stem width (at the base) is 16.5 mm, and its minimum (in the center) is 13.0 mm (measurements taken from Eugenio, 1983). According to the author, the stem does not have true fluting.

The third FTTP was described by (Zeballos & Reid, 1876). It was recovered from Marcos Díaz stream, on the pampean steppe north of Buenos Aires, near Luján city. In the original report it is associated with the bones of a “fossil lion” (cf. *Smilodon* sp.), a species that became extinct during the Pleistocene/Holo-

cene boundary. It is not known where this projectile is being stored, but a schematic drawing is available. This projectile has a rounded blade and shoulders with a straight stem (**Figure 7(d)**), with no further detail. The fourth FFTP was recovered inland by Don Torcuato in Tigre County ([Nami, 2007, 2016b](#)). It is a highly resharpened specimen made from grayish silicified limestone (silcrete) (**Figure 7(e)**). Its maximum length is 43.0 mm (21.0 mm blade length and 21.9 mm stem length), maximum width 25.7 mm and 7.7 mm maximum thickness (measurements taken from [Nami 2016b](#)). The stem is not fluted.

According to ([Nami, 2014b](#)), FFTP assemblages include projectiles with different morphologies. Accordingly, the author has assigned to these Paleoamerican groups another point recovered during the nineteenth century in the Jáuregui area, north of Buenos Aires (near Luján city) ([Nami, 2014b, Figure 14a](#)), which was associated with the bones of *Megatherium* sp., a species that became extinct during the Pleistocene-Holocene boundary.

3. Final Remarks

The FFTP records in NEA are still scarce, a scenario which contrasts with the adjacent regions of southern Brazil, Uruguay and the southern Pampas. Although we have analyzed numerous collections of projectiles in Misiones province, we have only recognized the two FTPPs presented here; on the contrary, the most abundant are those of the so-called “Umbú Tradition” (work in progress), which corresponds to a later human settlement in the area. This rarity of FFTP findings in Misiones could be related, in part, to the low archaeological visibility of the current landscape, which is dominated by dense subtropical forest that was probably established during the mid-Holocene ([Hadler et al., 2013](#)). Thus, the ecological structure hampers the identification of surface materials, older ones in particular. In this sense, the surficial findings of FTPPs dominate the FFTP collections in the peripheral regions of northeast Argentina (South Brazil, Uruguay and Buenos Aires province), where the landscapes are dominated by the current plains with better visibility, which is increased by erosive processes and/or by a high level of deforestation, agricultural works, and the occasional absence of pedogenesis in some specific areas (i.e. in the lower reaches of hills in the southern Pampa). It should also be noted that in the south of the Pampa region, a certain number of FTPPs have been recovered from caves, which are certainly “windows of visibility” (see [Wandsnider & Camilli, 1992](#)). In Misiones, which is the only landscape in NEA with caves; so far only one has been excavated, but unfortunately the oldest level reaches the mid-Holocene ([Loponte & Carbonera, 2016](#)). The scanty records of the Corrientes and Entre Ríos provinces, as in the north of Buenos Aires, may be related in part to the absence of research focusing on the early periods of settlement.

Most of the FTPPs recovered in NEA were made of local or semi-local raw materials, similar to those in southern Brazil. In the latter country, for instance, silicified limestone (silcretes) has not been detected ([Loponte et al., 2015, 2016](#)), although it is common in the FTPPs recovered on the adjacent Uruguayan plain,

where there are numerous outcrops (Nami, 2007, 2016b). In southern Buenos Aires province, quartzite from local outcrops predominates as a raw material in the FTPPs² (Flegenheimer & Weitzel, 2017). This situation indicates the regionalization of the sourcing in these four areas (NEA, Brazil, Uruguay and Buenos Aires). The only exception is northern Buenos Aires, which lacks outcrops. Here several Uruguayan rocks used by local human groups were noted early on by archeologists (Ameghino, 1880). The FFTP record here is still too scarce to show any tendencies. Notwithstanding the foregoing, it should be noted that the projectiles that we know for certain the raw material used (two out of four FTPPs), are made of silcretes (the Lobos and Don Torcuato points). Moreover, it is highly suggestive that the raw material used to produce another one, the piece recovered at the Giménez stream, was described by (Ameghino, 1880) as “silex”. This term was used by the author to describe mainly chalcedony, but probably also silcretes. The use of this raw material should not draw attention here, as the Argentinean and Uruguayan silicified limestones are closer than the quartzite outcrops from the south of the Pampas region. By the end of the Pleistocene the Río de la Plata was a few kilometers wide (Cavallotto et al., 2002), similar to or slightly more in some areas than the current lower course of the Uruguay River (up to 12 km, Figure 8). Therefore, it was relatively easy to cross near its mouth and/or using simple navigation devices, as many authors have suggested (Cavallotto et al., 2002) (Flegenheimer et al., 2003). The limestone outcrops are within 100 - 150 km from Luján and Tigre Counties (Martínez et al., 2015), areas where FTPPs were recovered in north Buenos Aires. In addition, the rivers and streams that flow from the Uruguayan plain to the coast of the Río de la Plata would have dragged silicified limestone and other rocks onto its banks, as still happens today (Zito & Duarte de Armas, 2013). These Pleistocene catchment areas of secondary sources were closer to north Buenos Aires, approaching the availability of raw materials for groups located on the southern margin. In fact, these areas of provisioning were part of the same pampean steppe, crossed by the Pleistocene channel. Other sourcing routes, even simpler and less resistive, should have been the crossing for what today is part of the Paraná Delta. Nowadays it is a continental wetland, with several rivers, streams and marshes, but during the Pleistocene-Holocene boundary this landscape was an herbaceous prairie (Adams, 1996), crossed by the courses of the Uruguay and Paraná rivers, which were even narrower than today (Figure 9). At a greater distance, about 280 km in a straight line, there are the siliceous limestone outcrops of the Colón area, on the right bank of the Uruguay River, on the Argentinian side. To reach them only the Paraná River must be crossed. Thus, the regular use of silcretes in the north of Buenos Aires province during the Pleistocene and

²In this area silicified limestone was rarely used to produce FTPPs (i.e. one case in over 97, see table 3 in Flegenheimer & Weitzel, 2017). Also, 1% of the flakes of the assemblages from Cerro La China (1, 2 and 3) and Cerro El Sombrero (Abrigo 1) were made of silcrete, most of them related to bifacial thinning (Flegenheimer et al., 2003). It has been suggested that this raw material would have reached the southern Pampasthrough social interaction networks (see the discussion in Flegenheimer et al., 2003). A summary of the silcrete findings in this area was written recently by (Nami, 2016b).



Figure 8. FFTP findings in north Buenos Aires: 1: Don Torcuato; 2: Luján area; 3: Lobos. The dotted lines show the southern front of the silcrete outcrops in Uruguay; 4: Paysandú-Colón; 5: Soriano; 6: Flores; 7: Canelones (after [Martínez et al., 2015](#) and [Loponte et al., 2011](#)). In the middle of the Río de la Plata, between the arrows, is the Pleistocene channel. Image taken and modified from Earth Sciences and Image Analysis Laboratory, NASA Johnson Space Center.

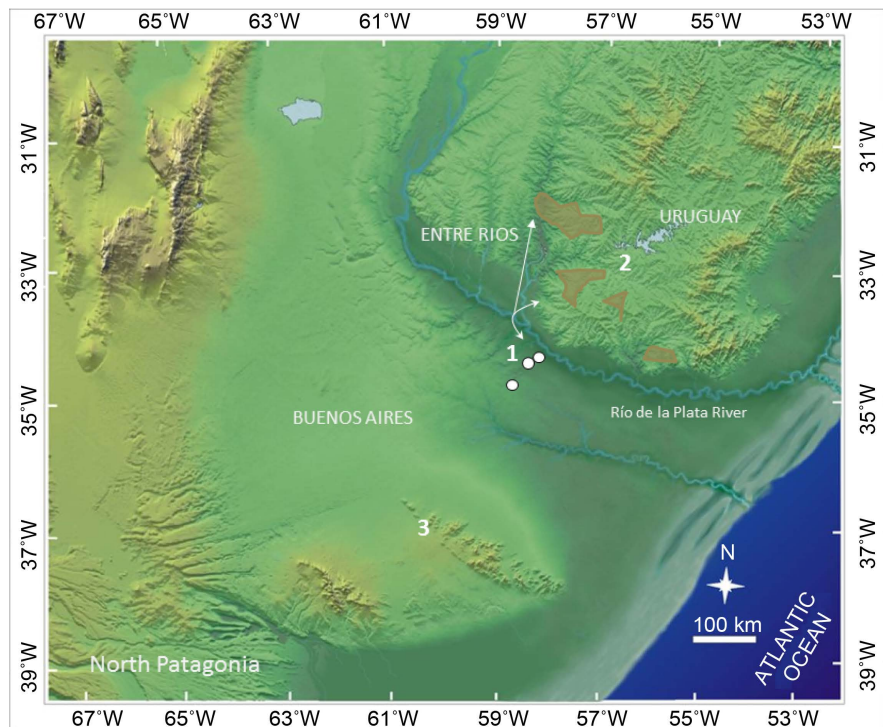


Figure 9. Reconstruction of the landscape during the Pleistocene-Holocene boundary (after [Loponte et al., 2017](#)). 1: FFTP findings in north Buenos Aires. 2: The nearest silcrete outcrops in Uruguay and Argentina. 3: The nearest quartzite outcrops in south Pampa.

early Holocene is expected, with a decreasing gradient to the south of the Pampa region. Subsequent to the Pleistocene-Holocene boundary, when the estuary began to widen due to the transgressive event of the mid-Holocene, the outcrops from Uruguay were unavailable. The processes of divergent evolution were incentivized among humans, as they were separated by environments with greater resistivity to mobility (see the discussion in [Loponte, 2008](#)). Indeed, the only archaeological record of this period (the mid-Holocene) in north Buenos Aires corresponds to the Arroyo Las Hermanas site, which lacks silcretes ([Loponte et al. 2017](#)). In contrast, when the bridge between the two margins was reestablished due to the emergence of the Paraná Delta during the late Holocene, the silcretes are again present in the north Buenos Aires record ([Loponte, 2008](#)).

According to the options available for producing these projectiles ([Nami, 2003, 2011, 2015](#)), south Brazilian FTPPs greater than 80 mm always have bi-convex longitudinal cross-sections, which are probably related to the use of thinned bifaces. On the other hand, plane-convex cross-sections can be seen in smaller pieces, which are related to the thin flakes used as blanks ([Loponte et al., 2016](#)). The latter is the case in both the FTPPs identified in Misiones. This was also noted in the Lobos projectile ([Nami, 2016b](#)). These three pieces appear to originally have been small to medium-sized projectiles. No clear information about this is available for the rest of the samples analyzed here. Another issue related to the designs is the ratio between the stem's length and width, close to 1 ([Baeza & Femenías, 2005](#)) ([Loponte et al., 2016](#)). This situation has not been verified in the elongated stem in piece from Eldorado (4a-b), but it certainly has in pieces 4(c-d), 5a, 5b, 5c, and 6, and in all the specimens collected in north Buenos Aires ([Figure 7](#)). This relationship is the result of a sturdy stem design. Another common feature, apart from the general *bauplan*, is the abrasion of the stem sides. According to what happens in other regions, the fluting is occasional.

Until some decades ago, FTPPs had not been taken into account in the cultural development of NEA ([Caggiano, 1984](#)) ([Rodríguez, 2001](#)). Nevertheless, the progress of the investigations allows the consideration that these Paleoamerican groups were present in the region. The new findings from Misiones are not only the first for this jurisdiction, but also for the Upper Paraná valley on the Argentinian side, which is also an area adjacent to the Republic of Paraguay where these projectiles have not yet been recognized. These records, as well as those in northeast South America ([Nami, 2016](#)), are beginning to fill the empty areas that previously lacked FTPPs, thus generating a more complete panorama of the distribution of these Paleoamerican groups in the subcontinent.

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References

- Acosta Ochoa, G. (2011). El poblamiento de las regiones tropicales de México hace 12500 años. *Anales de Antropología*, 45, 227-235.
- Adams, J. M. (1996). *Map of the Vegetation in South America during 10 Ka Years BP*. Unpublished.
- Adams, J. M., & Faure, H. (1997). Preliminary Vegetation Maps of the World since the Last Glacial Maximum: An Aid to Archaeological Understanding. *Journal of Archaeological Science*, 24, 623-647. <https://doi.org/10.1006/jasc.1996.0146>
- Ameghino, F. (1880). *La Antigüedad del Hombre en el Plata*. Buenos Aires: Editorial La Cultura Argentina.
- Baeza, J., & Femenías, J. (1999). *Nuevas observaciones sobre puntas colas de pescado*. Paper Presented at the First Conference on Pampean Archaeology, Rosario.
- Baeza, J., & Femenías, J. (2005). *Nuevos registros de puntas líticas "cola de pescado" de Uruguay* (pp. 5-6). Santa Fé: Primer Encuentro de Discusión Arqueológica del noreste Argentino.
- Baeza, J., Femenías, J., Suárez, R., & Florines, A. (2001). Investigaciones arqueológicas en el río Negro medio (Informe preliminar). In *Arqueología uruguaya hacia el fin del milenio. X Congreso Nacional de Arqueología* (Vol. 1, pp. 285-295). Montevideo: Asociación Uruguaya de Arqueología.
- Bell, R. (1965). *Archaeological Investigations at the Site El Inga, Ecuador*. Quito: Casa de Cultura Ecuatoriana.
- Bird, J. (1938). Antiquity and Migrations of the Early Inhabitants of Patagonia. *Geographical Review*, 28, 250-275. <https://doi.org/10.2307/210474>
- Bird, J., & Cooke, R. (1978). The Occurrence in Panama of Two Types of Paleoindian Projectile Points. In A. L. Bryan (Ed.), *Early Man in America from a Circum Pacific Perspective* (pp. 263-272). Edmonton: Occasional Papers 1, Department of Anthropology, University of Alberta.
- Caggiano, M. A. (1984). *Prehistoria del N.E. argentino y sus vinculaciones con la República Oriental del Uruguay y sur de Brasil* (Vol. 38, 109 p.). Pesquisas: Antropologia, São Leopoldo: Instituto Anchieta de Pesquisas.
- Cambron, J. W., & Hulse, D. C. (2012). *Handbook of Alabama Archaeology: Part I Point Types*. Moundville: The Archaeological Research Association of Alabama Inc., Project Gutenberg. <http://gutenberg.org/ebooks/39974>
- Capeletti, L. (2011). Primer hallazgo de una punta de proyectil "cola de pescado" en la provincia de Entre Ríos. *Revista del Museo de La Plata. Arqueología*, 12, 86.
- Castro, J. C., & Terranova, E. (2015). Indicadores paleoindios en la provincia de Entre Ríos (Argentina). *Comechingonia*, 19, 83-190.
- Cavallotto, J. L., Violante, R. A., & Nami, H. G. (2002). Late-Pleistocene/Holocene Paleogeography and Coastal Evolution at the Mouth of the Río de la Plata: Implications for Dispersal of Paleoindian People in South America. *Current Research in the Pleistocene*, 19, 13-16.
- Dillehay, T. D. (2000). *The Settlement of the Americas: A New Prehistory*. New York, NY: Basic Books.
- Eugenio (1983). Una punta "Cola de Pescado" de Lobos, Provincia de Buenos Aires.

ADEHA, 2, 20-31.

- Flegenheimer, N., Bayón, C., Valente, M., Baeza, J., & Femenías, J. (2003). Long Distance Tool Stone Transport in Argentine Pampas. *Quaternary International*, 109-110, 49-64.
- Flegenheimer, N., Miotti, L., & Mazzia, N. (2013). Rethinking Early Objects and Landscape in the Southern Cone: Fishtail Point Concentrations in the Pampas and Northern Patagonia. In K. Graf, C. Ketron, & M. Waters (Eds.), *Paleoamerican Odyssey Conference Companion Book* (pp. 359-376). College Station, TX: Texas A & M University Press.
- Flegenheimer, N., & Weitzel, C. (2017). Fishtail Points from the Pampas of South America: Their Variability and Life Histories. *Journal of Anthropological Archaeology*, 45, 142-156.
- Freschi, C. R. (2012). *Caracterização litogeoquímica dos basaltos do Município de Monções—SP*. Unpublished Thesis, São Paulo: Universidade Estadual Paulista, Instituto de Geociências e Ciências Exatas.
- Gascue, A., Baeza, J., & Bortolotto, N. (2013). Ocupaciones tempranas en el río Negro medio (Uruguay): Conjuntos artefactuales asociados a cola de pescado en el sitio navarro. Cuadernos del Instituto Nacional de Antropología y Pensamiento Latinoamericano. *Series Especiales*, 1, 236-248.
- Gentili, C. A., & Ramos, H. V. (1979). *Mesopotamia. Geología Regional Argentina* (Vol. 1). Córdoba.
- Hadler, P., Dias, A. S., & Bauermann, S. (2013). Multidisciplinary Studies of Southern Brazil Holocene: Archaeological, Palynological and Paleontological Data. *Quaternary International*, 305, 119-126.
- Loponte, D. (2008). *Arqueología del Humedal del Paraná Inferior: Bajíos Ribereños Meridionales*. Buenos Aires: Instituto Nacional de Antropología y Pensamiento Latinoamericano.
- Loponte, D., Tchilinguirián, P., & Sacur Silvestre, R. (2011). Caracterización de afloramientos de calizas silicificadas de la provincia de Entre Ríos (Argentina) y su vinculación con los circuitos de abastecimiento prehispánico. In M. R. Feuillet, M. Terzaghi, B. Colasurdo, J. I. Sartori, & S. Escudero (Eds.), *Avances y perspectivas en la arqueología del Nordeste* (pp. 125-139). Buenos Aires: ST Productos Gráficos.
- Loponte, D., & Carbonera, M. (2013). Arqueologia sem Fronteiras: Projeto de cooperação binacional para o estudo arqueológico da província de Misiones (Argentina) e oeste de Santa Catarina (Brasil). *Revista Memore*, 1, 43-50.
- Loponte, D., Carbonera, M., & Silvestre, R. (2015). Fishtail Projectile Points from South America: The Brazilian Record. *Archaeological Discovery*, 3, 85-103. <https://doi.org/10.4236/ad.2015.33009>
- Loponte, D., Okumura, M., & Carbonera, M. (2016). New Records of Fishtail Projectile Points from Brazil and Its Implications for Its Peopling. *Journal of Lithic Studies*, 3, 63-85. <https://doi.org/10.2218/jls.v3i1.1312>
- Loponte, D., & Carbonera, M. (2016). *Archaeology of the Rainforest: The Cave 3 de Mayo in the Regional Context of Southeast of South America*.
- Loponte, D., Voglino, D., Liotta, J., Acosta, A., & Silvestre, R. A. (2017). *A Whale Processing Site in the Southeast of South America*.
- Martínez, S., Veroslavsky, G., & Cabrera, F. (2015). Calizas del Queguay: Un enfoque hacia la arqueología. *Revista de Antropología del Museo de Entre Ríos*, 1, 1-10.
- Mayer-Oakes, W. (1963). Early Man in the Andes. *Scientific American*, 208, 117-128. <https://doi.org/10.1038/scientificamerican0563-116>

- Mayer-Oakes, W. (1986). El Inga. A Paleo-Indian Site in the Sierra of Northern Ecuador. *Transactions of the American Philosophical Society*, 76, 1-14 + 1-235.
<https://doi.org/10.2307/1006466>
- Mujica, J. (1995). Puntas cola de pescado de la costa occidental del río Uruguay medio, litoral argentino. *Comechingonia, Revista de Arqueología*, 8, 199-207.
- Nami, H. G. (2003). Experimentos para explorar la secuencia de reducción Fell de la Patagonia Austral. *Magallania*, 31, 107-138.
- Nami, H. G. (2007). Research in the Middle Negro River Basin (Uruguay) and the Paleoindian Occupation of the Southern Cone. *Current Anthropology*, 48, 164-176.
<https://doi.org/10.1086/510465>
- Nami, H. G. (2011). Observaciones experimentales sobre las puntas de proyectil Fell de Sudamérica. In A. Morgado, J. Baena Preysler, & D. García González (Eds.), *La Investigación Experimental Aplicada a la Arqueología* (pp. 105-111). Ronda: Universidad de Granada-Universidad Autónoma de Madrid.
- Nami, H. G. (2013). Archaeology, Paleoindian Research and Lithic Technology in the Middle Negro River, Central Uruguay. *Archaeological Discovery*, 1, 1-22.
<https://doi.org/10.4236/ad.2013.11001>
- Nami, H. G. (2014a). Arqueología del último milenio del Pleistoceno en el Cono Sur de Sudamérica, puntas de proyectil y observaciones sobre tecnología Paleoindia en el Nuevo Mundo. In M. Farias, & A. Lourdeau (Eds.), *Peuplement et Modalités d'Occupation de l'Amérique du Sud: l'Apport de la Technologie Lithique* (pp. 279-336). Prigonrieux: @rchéo-éditions.com.
- Nami, H. G. (2014b). Observaciones para conocer secuencias de reducción bifaciales paleoindias y puntas Fell en el valle del Ilalo, Ecuador. In M. Farias, & A. Lourdeau (Eds.), *Peuplement et modalités d'occupation de l'Amérique du sud: l'apport de la technologie lithique* (pp. 179-220). Prigonrieux: @rchéo-éditions.com.
- Nami, H. G. (2015). New Records and Observations on Paleo-American Artifacts from Cerro Largo, Northeastern Uruguay and a Peculiar Case of Reclaimed Fishtail Points. *Archaeological Discovery*, 3, 114-127. <https://doi.org/10.4236/ad.2015.33011>
- Nami, H. G. (2016a). Paleo American Finds from Venezuela: Evidence to Discuss the Spread of Fell Points and the Peopling of Northern South America. *Cadernos do CEOM, Estudos Arqueológicos Regionais*, 45, 212-219.
<https://doi.org/10.22562/2016.45.08>
- Nami, H. G. (2016b). Silcrete as a Valuable Resource for Stone Tool Manufacture and Its Use by Paleo-American Hunter-Gatherers in Southeastern South America. *Journal of Archaeological Science: Reports*. (In Press)
- Pessenda, L. C. R., De Olivera, P. C., Moffato, M., Medeiros, B. V., García, R. J., Aravena, R., Bendassoli, J. A., & Boulet, R. (2009). The Evolution of a Tropical Rainforest/Grassland Mosaic in Southeastern Brazil since 28000 ¹⁴C yr BP Based on Carbon Isotopes and Pollen Records. *Quaternary Research*, 71, 437-452.
- Reis, G., Mizusaki, A., Roisenberg, A., & Rubert, R. (2014). Formação Serra Geral (Cretáceo da Bacia do Paraná): Um análogo para os reservatórios ígneo-básicos da margem continental brasileira. *Pesquisas em Geociências*, 41, 155-168.
- Rodríguez, J. A. (2001). Nordeste prehispánico. In E. Berberian, & A. Nielsen (Eds.), *Historia Argentina Prehispánica, tomo II* (pp. 693-736). Córdoba: Editorial brujas.
- Rodríguez, M. E., Cardozo, A., Ruiz Díaz, M., & Prado, D. E. (2005). Los Bosques Nativos Misioneros: Estado actual de su conocimiento y perspectivas. In M. F. Arturi, J. L. Frangi, & J. L. Goya (Eds.), *Ecología y Manejo de los Bosques de Argentina*. La Plata: cap. 2. EDULP.CDROM.

- Wandsnider, L., & Camilli, E. L. (1992). The Character of the Archaeological Records and Its Influence on Archaeological Survey. *Journal of Field Archaeology*, 19, 169-188.
- Zeballos, E., & Reid, W. (1876). Notas geológicas sobre una excursión a las cercanías de Luján. *Anales de la Sociedad Científica Argentina*, 1, 1313-1319.
- Zito, J. L., & Duarte de Armas, C. (2013). La tuna “hace poco”: Una aproximación al sistema de producción lítica del sitio Puerto La Tuna (Uruguay) hacia ca. 400 años C¹⁴ ap. Cuadernos del Instituto Nacional de Antropología y Pensamiento Latinoamericano. *Series Especiales*, 1, 253-263.



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