

# The prehistoric chert dagger from Piran, Slovenia: an underwater find from the northern Adriatic

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## Izvleček

Mednarodna skupina arheologov je poleti leta 2005 opravila podvodno rekognosciranje slovenskega dela Jadranskega morja. V sklopu raziskav je bila v bližini piranske punte odkrita redka prazgodovinska najdba iz roženca, ki je opredeljena kot majhno obojestransko retuširano bodalo oz. nož s popravljenim rezilom. Najdba ima v bližini proksimalnega roba izjedi, ki sta predvidoma olajšali nasaditev na ročaj, opazne pa so tudi sledi ponovnega ostrenja. Tipološko je najdba povezana s primerki, datiranimi v bakreno dobo severne Italije in na konec neolitika na Bavarskem. Verjetno je bila uvožena s severnoitalijanskega predalpskega območja.

**Gljučne besede:** bodalo, roženec, neolitik, bakrena doba, Piran, Slovenija, Jadran, vodna najdba

## INTRODUCTION

In June and July of 2005, an underwater archaeological survey of the Slovenian Adriatic was conducted and involved archaeologists, students, military and recreational divers<sup>1</sup> (Benjamin, Bonsall 2009). During the survey, a single prehistoric stone artefact was recovered approximately 200 metres north of Punta Piran<sup>2</sup> at a depth of 26 metres. The discovery was made by an off-duty Slovenian military diver<sup>3</sup> assisting the project, who spotted

<sup>1</sup> The survey was organised by the University of Edinburgh, UK, and involved divers from the UK, USA, Ireland and Slovenia, and was a component of the principal author's doctoral research.

<sup>2</sup> GPS WGP 84: N 45 31.926 E 13 33.883

<sup>3</sup> Sgt Jernej Celestina.

## Abstract

In the summer of 2005, an underwater survey of the Slovenian Adriatic was conducted by a group of international archaeologists. A rare prehistoric chert artefact classified as a small bifacial dagger or "fixed blade" knife was recovered near Punta Piran. The artefact has bilateral notches near the proximal end, presumably to facilitate hafting, and shows evidence of resharpening. Typologically, this find is most closely related to Northern Italian Chalcolithic and Bavarian Final Neolithic examples, and is likely an import from the northeast Italian Pre-Alpine region.

**Keywords:** Dagger, chert, Neolithic, Chalcolithic, Piran, Slovenia, Adriatic, underwater

the artefact on the seabed composed of sandy silt. The artefact was surfaced, recorded and reported to the Institute for the Protection of Cultural Heritage (Zavod za varstvo kulturne dediščine Slovenije, Območna enota Piran) and is now housed in the Pomorski muzej Sergej Mašera, Piran.

The artefact exhibits bifacial retouch and opposed, bilateral notches at the proximal/basal end; this could also be described as a "notched tang". The notches exhibit wear polish that may result from movement in a wooden haft. The piece is 4 cm long and 2 cm wide. The material is light to medium brown in colour. Some darker reddish-brown markings are visible near the notched end on one side, which may be staining by iron oxide. The very tip of the piece appears to have been broken off. Although the artefact was found

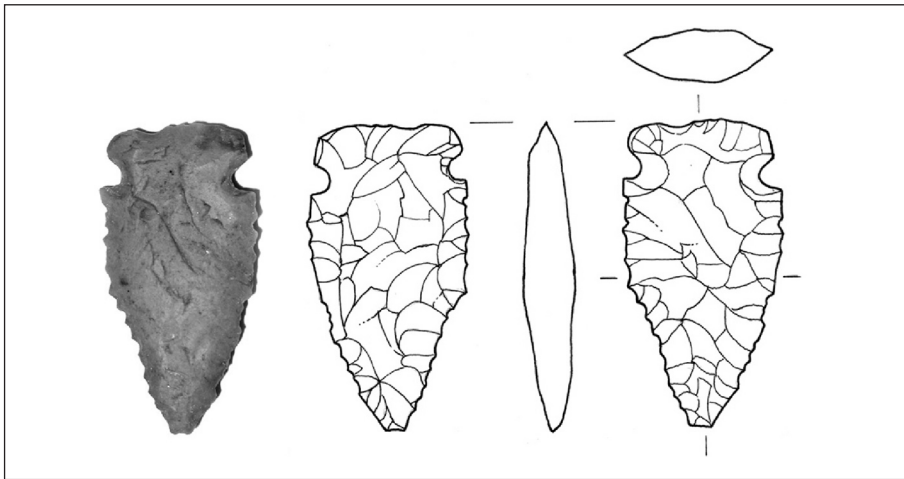


Fig. 1: Piran. Photograph and sketch of the chert point (photo by J. Benjamin; drawing by I. Murgelj, courtesy of the Pomorski muzej Sergej Mašera). Scale = 1:1.

Sl. 1: Piran, podvodna najdba. Fotografija in risba konice iz roženca (foto: J. Benjamin; risba: I. Murgelj, z dovoljenjem Pomorskega muzeja Sergej Mešera). M. = 1:1.

underwater, it shows no signs of water rolling or abrasion; the edges and ridges between flake scars are sharp (fig. 1).

The Piran find has no clear typological parallels in the Adriatic region, or further afield in Europe, before the Late Neolithic. Bifacially flaked daggers and projectile points with notched tangs have been

recorded from a number of sites in northern Italy and the Alpine region (fig. 2). Examples are known from Chalcolithic contexts at Monte Aiona, Prato Mollo and Val Frascaresse in Liguria (Maggi 1984; 1987) and other sites in the Ligurian-Piedmontese Apennines (Arnaboldi 1998, fig. 2) as well as from a few Chalcolithic (burial) caves in northwestern

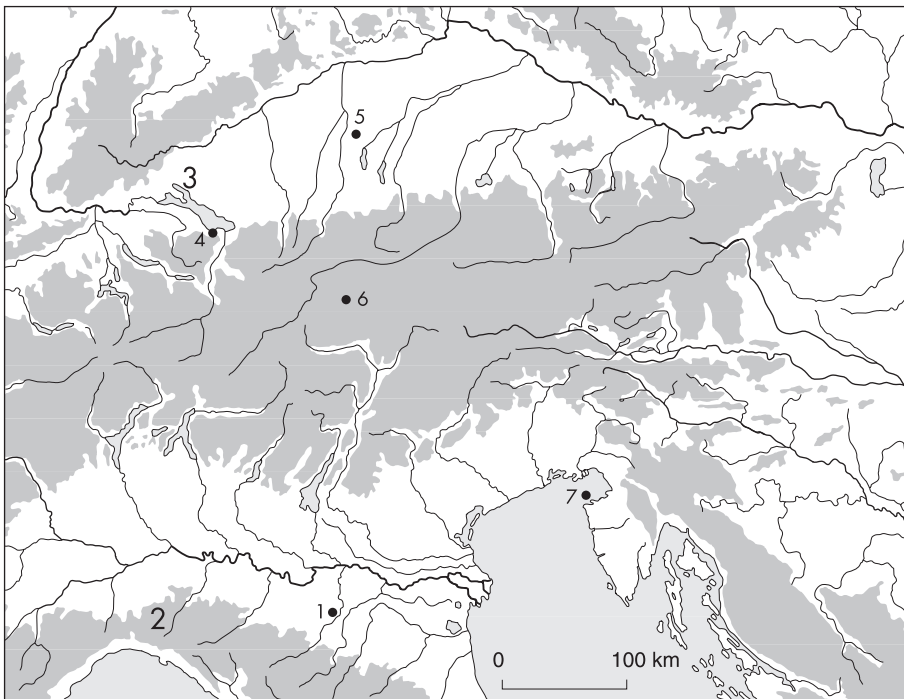


Fig. 2: Sites mentioned in text: 1 Spilamberto; 2 Ligurian sites; 3 Allensbach and Unteruhldingen; 4 Arbon Bleiche; 5 Pestenacker; 6 Similaun (Ötzi findspot); 7 Piran.

Sl. 2: Najdišča, omenjena v besedilu: 1 Spilamberto; 2 ligurska najdišča; 3 Allensbach in Unteruhldingen; 4 Arbon Bleiche; 5 Pestenacker; 6 Similaun (najdišče Ötzi); 7 Piran.

Tuscany (Cremonesi 1985, 185 – Tana delle Fate; Cocchi Genick, Grifoni Cremonesi 1989, fig. 13: 7). However, the points from these sites differ in shape from the Piran find.

### TYPOLOGICAL COMPARISONS

Morphologically, the closest parallels for the Piran find are not among projectile points, but among Late Neolithic and Chalcolithic knives and daggers, such as the one found in the Spilamberto Cemetery (fig. 3: 1) (Bagolini 1984) and finds from several sites in the Alpine region (fig. 4) (Tillmann 2002; Schlichtherle 2003, 2005). Whilst similar in form, the Chalcolithic dagger from Spilamberto is much larger (fig. 3). Late Neolithic daggers from southern Germany/northern Switzerland are smaller, and closer in size to the chert point from Piran. From the wetland site of Pestenacker in Bavaria there is a very similar specimen with notched tangs, made from north Italian chert, which is dated indirectly by dendrochronology to c. 3500 BC (fig. 4: 5) (Tillmann 2002). A bifacial, notched dagger blade made from north Italian chert was also recovered from the lakeside settlement of Arbon Bleiche 3 on the Swiss shore of Lake Constance, which has been dated dendrochronologically to 3384–3370 BC (Leuzinger 2002; Schlichtherle 2005). From the German site of Unteruhldingen, Lake Constance, there are two notched daggers made from “Knollenmergel” silex (fig. 4: 4) (Schlichtherle 2005, fig. 11.1, 11.2) which are suggested to be late Neolithic by Schlichtherle. At the nearby site of Allensbach, Germany, there is a fine, hafted specimen (fig. 4: 1) and what have been described as small “fixed-blade daggers” that are between 5 and 7 cm long and made of local chert (fig. 4: 3).

The knives from Allensbach are said to show clear signs of reworking and progressive reduction in size during the lifetime of the object (Schlichtherle 2003). Another well-known example from the region is that found with the famous Neolithic “Ice Man”, known as *Ötzi* (Egg, Spindler 1992); his dagger also shows signs of “resharpening” (fig. 4: 2). Based on this evidence, the practice of reworking knives (with concomitant reduction in size) was commonplace, and it is likely that the knife found near Piran was also reworked; this is suggested by the secondary, semi-abrupt retouch around the edges of the piece (clearly visible on fig. 5: 3). If the Piran knife has been reworked,

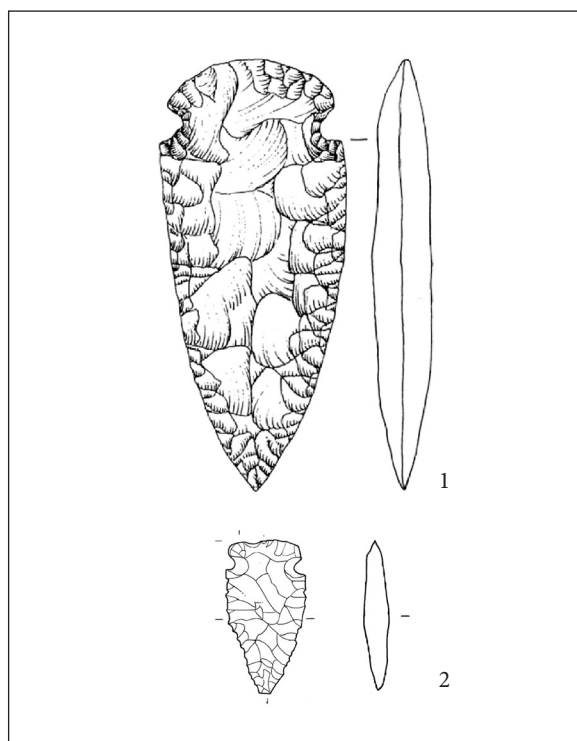


Fig. 3: Chert knife/dagger blade with notched tang from a Chalcolithic grave in the Spilamberto Cemetery (1) (after Bagolini 1984), shown alongside the notched point from Piran (2). Scale = 1:2.

Sl. 3: Pecljati nož/bodalo iz roženca iz bakrenodobnega groba z grobišča Spilamberto (1) (po Bagolini 1984) v primerjavi z izjedeno konico iz Pirana (2). M. = 1:2.

then its original length was probably greater than 5 cm, which would bring it within the size range of the chert “daggers” from the Late Neolithic of the central Alpine region (Schlichtherle 2003).

### MATERIAL AND EXCHANGE NETWORKS

Low power microscopic examination of the Piran find was undertaken<sup>4</sup> and findings were reported as follows, “*The chert has no inner sedimentary textures. At 20X magnification the surface of the material has a visibly granular structure, the individual grains measuring c. 0.05 mm. In spite of its granular character, the material has retained its massive characteristics, has no preferential planes, but contains no shell diffraction. The granularity appears to be diagenetic in formation and no spongi-*

<sup>4</sup> By Tomaž Verbič, Oddelek za geologijo, Naravoslovnotehniška fakulteta Univerze v Ljubljani (at the request of the Museum Sergej Mašera, Piran).

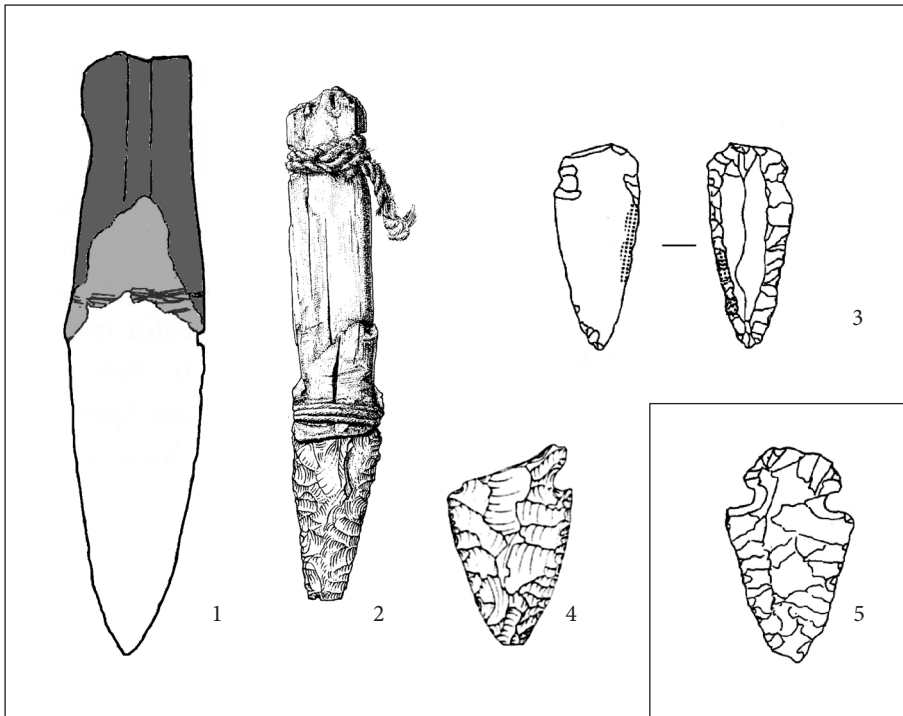


Fig. 4: Late Neolithic knives/daggers from the Alpine region: 1 hafted flint dagger from Allensbach (after Schlichtherle 2003); 2 the dagger found with Ötzi, 13 cm long including wooden handle (after Egg, Spindler 1992; Barfield 1994); 3 the dagger from Allensbach with shallow notches (after Schlichtherle 2003); 4 notched dagger from Unteruhldingen, Lake Constance, Germany, attributed to the late Neolithic by Schlichtherle (2005); 5 notched dagger from Pestenacker with northern Italian origins dated to c. 3500 cal BC (after Tillmann 2002; Schlichtherle 2003). Scale 1–4 = 1:2; 5 = no scale.

Sl. 4: Poznoneolitiski noži/bodala z območja Alp: 1 bodalo z ročajem iz Allensbacha (po Schlichtherle 2003); 2 bodalo, najdeno ob Ötzi (vključno z ročajem dolgo 13 cm) (po Egg, Spindler 1992; Barfield 1994); 3 bodalo s plitkimi izjedami iz Allensbacha (po Schlichtherle 2003); 4 bodalo z izjedami iz Unteruhldingna ob Bodenskem jezeru v Nemčiji, ki ga Schlichtherle (2005) pripisuje poznemu neolitiku; 5 bodalo z izjedami iz Pestenackerja, ki izvira iz Italije in je datirano okoli 3500 cal BC (po Tillmann 2002; Schlichtherle 2003). M. 1–4 = 1:2; 5 = brez merila.

*osum radiolaria or spicula were visible. The brownish freckly pigmentation is probably the result of iron oxides present as impurities in the material*".

In all, several hundred examples of bifacial stone dagger blades are known from northern Italy and surrounding regions, dating from the Final Neolithic to the Early Bronze Age (Mottes 2001, fig. 5), although most are attributed to the Chalcolithic, c. 3500–2100 cal BC. It has been suggested that bifacial daggers were produced as finished products or preforms at workshops near raw material sources, and distributed through exchange networks (e.g. Barfield 1999; Mottes 2001). In the case of the Piran find, the precise origin of the material could not be determined on the basis of the microscopic examination but the material used is not from the Trieste Karst, Friuli, nor the Lessini Hills (Biagi, pers. comm.; Dal Santo

2003; Barfield 2004). Limestone formations with this type of chert are not found in Slovenia, or anywhere in Istria to the south. The most likely source is the Adige, in the Italian Pre-Alps. Chert bands in the Val di Non (Della Casa 2005, fig. 2b) appear similar in colour to the Piran find and are a possible source. Furthermore, other artefacts made from Adige chert have been recorded from prehistoric contexts in the Caput Adriae region suggesting cultural links between the two regions during the Middle and Late Neolithic (Boschian, Montagnari-Kokelj 2000, fig. 1). The Piran find suggests these links continued into the Chalcolithic; Della Casa (2005, fig. 5) has observed that bifacial daggers and arrowheads appeared abruptly in the Adige region/southeastern Pre-Alps at the beginning of the Chalcolithic c. 3400 cal BC, which is broadly contemporaneous with their appearance in the North Alpine Foreland.

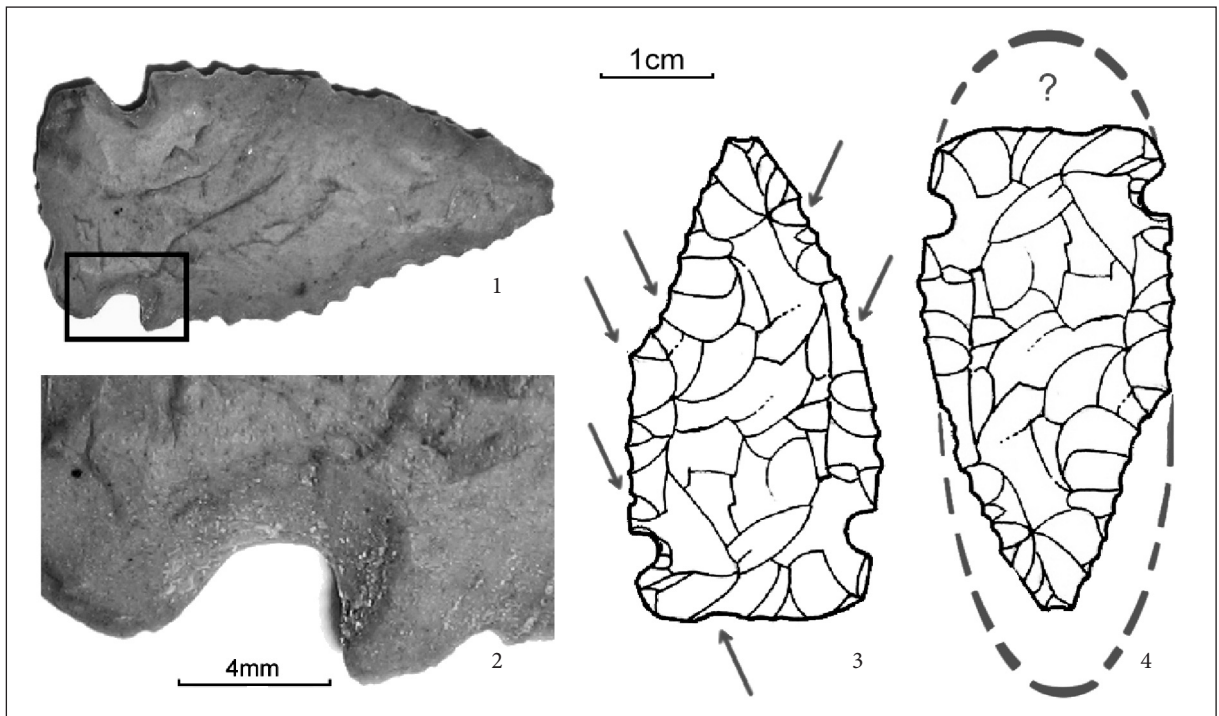


Fig. 5: The chert point from Piran (1). A photograph of the notched tang shows a polished surface where white inclusions are visible (2). The polish is probably the result of wear from hafting. Arrows point to areas of re-working (3). The evidence of re-working indicates that originally the tool would have been larger (4): the dotted line represents the hypothesized original dimensions of the piece.

Sl. 5: Konica iz roženca iz Pirana (1). Detajl ene od izjed, ki oblikujeta pecelj, kaže zglajeno površje z belimi vključki (2). Zglajena površina je rezultat obrabe, posledica pričvrstitve in premikanja v ročaju. Puščice kažejo mesta ponovne obdelave (3), ki nakazuje, da je bilo orodje prvotno večje (4): prekinjena črta označuje hipotetične originalne dimenzije izdelka.

## CONCLUSION

In conclusion, the knife found near Punta Piran appears to have been made from non-local chert, probably originating in northern Italy. Typological comparisons with securely dated, similar specimens from the North Alpine Foreland, also fashioned from north Italian chert, suggest the Piran specimen dates to the Final Neolithic/Chalcolithic, c. 3500/3400 cal BC. If so, then the Piran find was not *in situ*. The findspot is 26m below present sea level (see Benjamin, Bonsall 2009) and, according to the post-glacial sea-level curve for the Northern Adriatic (Lambeck *et al.* 2004, fig. 4), would have been transgressed before the beginning of the local Neolithic. We can only speculate on how the knife reached the place where it was found. It may have been lost or discarded over the side of a boat. Alternatively, it may originally have been deposited on the shore and carried by wave or current action to where it was found (if the blade had been attached to a wooden handle, then the complete artefact would have been relatively buoyant). Regardless,

from the typology and raw material it is likely the Piran dagger blade was an import, probably from the southeastern Pre-Alps. It represents a significant addition to the small number of finds of bifacial flint daggers from the northeast Adriatic, and (to our knowledge) is the most easterly find of a dagger with two lateral notches (cf. Mottes 2001, 528) yet reported, and the first from Slovenia.

## Acknowledgements

The authors would like to thank Jernej Celestina, who discovered the artefact and Snježana Karinja of Pomorski muzej Sergej Mašera, Piran, who organised the drawing and geological study of the material. We are also grateful to Paolo Biagi and Helmut Schlichtherle for their comments on an earlier draft of the paper and for pointing us toward several important publications on flint daggers from northern Italy and the Alpine region. Our gratitude is extended to Dimitrij Mlekuž and Mihael Budja for their support in Slovenia and to Lara Day and Matthias Merkl for their input and aid with translations. Special thanks are due to Matija Črešnar for his efforts and assistance, both in the field, and beyond.

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## Prazgodovinsko roženčevo bodalo iz Pirana, Slovenija: podvodna najdba iz severnega Jadrana

### Povzetek

Mednarodna skupina arheologov je poleti leta 2005 opravila podvodno rekognosciranje slovenskega dela Jadranskega morja. V sklopu raziskav je bila približno 200 m severno od piranske punte na globini 26 m odkrita prazgodovinska kamnita najdba (sl. 1) – bodalo iz roženca, ki je obojestransko retuširano in ima na obeh robovih proksimalnega dela izjedi, kar lahko opišemo kot "pecelj". Predmet meri 4 cm v dolžino in 2 cm v širino, kamnina pa je svetlo do srednje rjave barve. Ob izjedah so opazne zgladitve, nastale pri premikanju bodala v lesenem ročaju (sl. 5: 2). Ponovna obdelava na več mestih pa nakazuje, da je bil prvotni izdelek večjih dimenzij (sl. 5: 3,4).

Tipološko je najdbo najlaže primerjati z najdbami, datiranimi v bakreno dobo severne Italije in na konec neolitika na Bavarskem (sl. 2–4). Najverjetneje gre za uvožen predmet iz predalpskega sveta severne Italije, kjer pečljata obojestransko obdelana bodala in pušične osti izvirajo z vrste najdišč. Po zanesljivo časovno določenih najdbah iz severnoalpskega predgorja, ki so prav tako narejene iz severnoitalijanskega roženca, lahko piransko najdbo postavimo v čas okoli 3500/3400 cal BC.

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