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New evidence for early Indian Ocean trade routes into the South African interior

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The rise and spread of ancient Indian Ocean Rim (IOR) trade networks profoundly impacted southern Africa. Control over this trade played a critical role in the rise and maintenance of complex societies of the second millennium CE such as Mapungubwe and Great Zimbabwe. While the African origins of this trade lie in the first millennium CE, understanding its earliest phases and subsequent development in the far south has been hampered by a general paucity of research. The recovery of Persian Gulf ceramic sherds and Asian glass beads from the Letaba region of northeastern South Africa demonstrates that communities up to 400 km inland were already part of IOR trade by the 10th century. Although glass beads have been found at several late first millennium CE sites throughout the region, glazed wares are much rarer by comparison. In southern Africa, archaeological sites with Persian Gulf ceramics largely date to between the 9th and 10th centuries with a distribution limited to the Limpopo River's main tributaries. This distribution poses new questions about early IOR trade routes into the southern African interior and suggests Xai-Xai in southern Mozambique as a possible entry point for early IOR trade.

Southern Africa | Indian Ocean Rim | early iron age | complex society development | trade

Between the 6th and early 10th century, the range, scale, and complexity of exchange mechanisms in the western Indian Ocean increased markedly (1). Along the African coast, this is attested to archaeologically in the emergence of coastal entrepots that developed from earlier farming and fishing villages (2, 3). These entrepots linked the larger IOR with the southern African interior, and by the 11th century IOR trade was an integral dynamic in the development of early southern African polities such as Mapungubwe and Great Zimbabwe (4, 5) (Fig. 1).

While the origins of this trade lie in the mid-to-late first millennium CE, archaeological evidence for these earliest connections is extremely scarce, making it difficult to investigate the development and impact of IOR trade within Africa diachronically. Evidence for IOR trade in the far south of the subcontinent during the first millennium has, until now, been limited to isolated Asian imports recovered from coastal or near-coastal settlements in South Africa and southern Mozambique (9, 10). The discovery of Persian Gulf ceramic sherds and Asian glass beads in the Letaba region of northeastern South Africa (Fig. 1), shows that inland communities in the far south were already part of early IOR trade networks by the 10th century.

Early Iron Age Evidence for Inland Trade Up the Limpopo River and Its Tributaries

In 1977, a series of archaeological sites were recorded during a survey of the Letaba River where it flows through Kruger National Park, one of Africa's largest nature conservation areas. Remains of a large first millennium settlement—recorded as Le6—was excavated between 1977 and 1981, with early research aimed mostly at establishing its age of occupation (11). A new survey of Le6 was conducted in 2021 during which three sherds of Persian Gulf ceramics were discovered on its surface. Subsequent excavation of the site from 2021–2024 has increased the total number of imported sherds to 14 (Fig. 2).

All 14 glazed sherds are consistent with Turquoise Alkaline-Glazed Ware (TURQ.T) of the Indian Ocean Pottery Classification System (1). These were made in the Persian Gulf region, likely at al-Basra in southern Iraq (1, 12), between the 3rd and 10th centuries CE. TURQ.T wares have a wide circulation in Western Asia and around the IOR (1) and may have been used to transport date syrup (3). In East Africa, they are found in the earliest levels of late first millennium coastal trading ports such as Kilwa, Shanga, and Chibuene (3, 9). As such, they are clear markers of the expansion and development of the earliest phases of IOR trade in the far south of Africa. The closest of these entrepots to Letaba is Chibuene on the southern Mozambican coast, roughly 450 km to the northeast.

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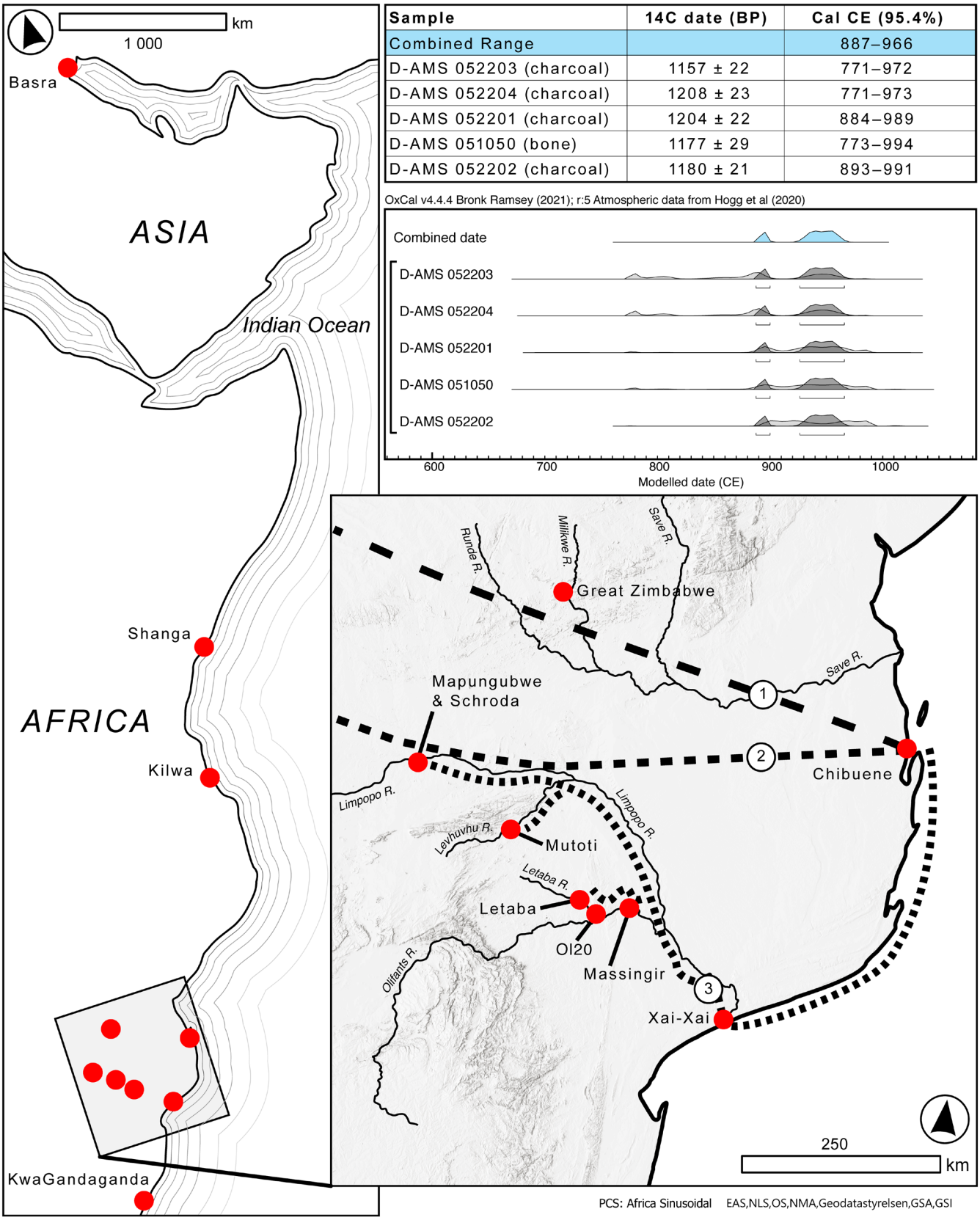

Sample	14C date (BP)	Cal CE (95.4%)
Combined Range		887–966
D-AMS 052203 (charcoal)	1157 ± 22	771–972
D-AMS 052204 (charcoal)	1208 ± 23	771–973
D-AMS 052201 (charcoal)	1204 ± 22	884–989
D-AMS 051050 (bone)	1177 ± 29	773–994
D-AMS 052202 (charcoal)	1180 ± 21	893–991

OxCal v4.4.4 Bronk Ramsey (2021); r:5 Atmospheric data from Hogg et al (2020)

Fig. 1. Sites and trade routes mentioned in text, and radiocarbon assays from Letaba (Le6). Overland Routes 1 and 2 suggested by Denbow et al. (6); Route 3 up the Limpopo River and its major tributaries proposed by present authors. Radiocarbon samples collected from deposits directly associated with glazed ceramics. Calibration done in OxCal 4.4 using the southern hemisphere calibration curve (7, 8).

Radiocarbon dates place the earliest occupation of Chibuene to between 700 to 1000 CE (9). Letaba's imported glazed ceramics date to the 9th to 10th century (Fig. 1; *Materials and Methods* below) and thus overlap in time with one of the earliest East African coastal trading communities. The implication is that almost from its inception, IOR trade in the far south of Africa

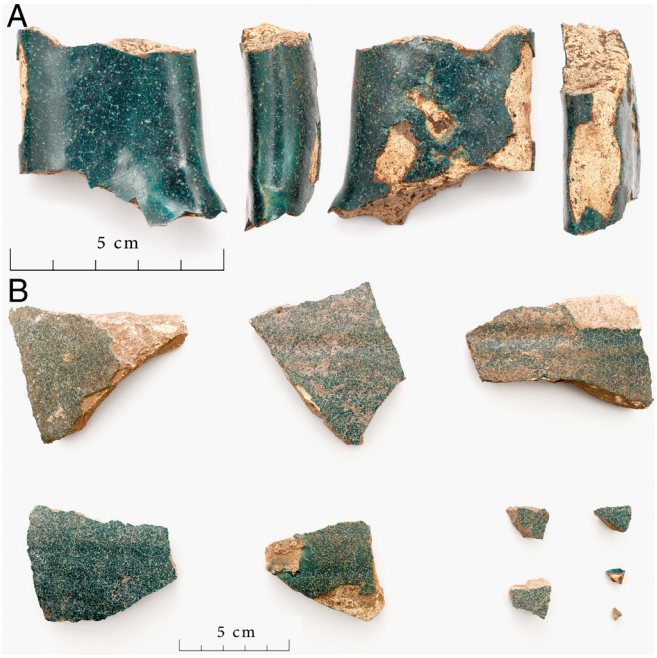

Fig. 2. Blue-green glazed ceramics from Letaba (Le6), (*A*) handle fragment, (*B*) body sherds. *Bottom* row, second from *Left* displays applique scars (Image credit: M. Van Aswegen).

was not just a maritime phenomenon but one that incorporated communities located well inland. While early coastal trade connections have been hinted at by small quantities of imported glass beads and marine shells recovered from other settlements in the African interior (5, 6), Le6 is notable for its numerous and much more rarely seen glazed Persian Gulf ceramics.

The Letaba finds pose new questions about the various routes that early IOR trade in southern Africa may have taken. Coastal entry points south of Chibuene have traditionally been considered unlikely, since east-west blowing winds as well as rougher seas beyond the Mozambique channel create unfavorable sailing conditions (13). Denbow et al. (6) posited two overland routes from Chibuene into the interior: one across the Zimbabwe plateau in a northwesterly direction toward the Makgadikgadi Pans and then onward to the Okavango Delta in Botswana; while a second route crossed inland in a westward direction until it reached the middle Limpopo Valley, where the presence of large numbers of glass trade beads have been said to signal the local inception of IOR trade at sites like Schroda (4, 5, 9). In contrast, Persian Gulf ceramics have only been found farther south: at Letaba, Mutoti, and Kwagandaganda (10, 14). Their distribution, alongside glass beads from contemporaneous sites like Ol20 and Massingir (11, 15) (Fig. 1), suggests an alternative third route that followed the Limpopo River. From its mouth at Xai-Xai in southern Mozambique, trade may have flowed northward along the Limpopo and its larger tributaries—the Olifants-Letaba and Luvhuvhu—eventually reaching communities as far inland as the middle Limpopo Valley where it helped lay the groundwork for later societal developments centered on Mapungubwe.

New evidence from Letaba suggests that the earliest trade links in southern Africa may have been forged through exploration of traversable major river systems easily accessed from their termini along the southern coast. Exploration of the southern coast in search of new trading partners—possibly embarking from the port of Chibuene—would also explain the southernmost occurrence of IOR glazed ware and glass beads at late first millennium CE sites in KwaZulu-Natal (10). Given the established connection between IOR trade and later Iron Age political organization in southern Africa, future research should endeavor to more fully explore the developmental implications of the very beginnings of this trade on even earlier social formations.

Materials and Methods

The excavated sherds were recovered from three middens at Le6, each located in a different area of the site. All have a turquoise or blue-green glaze applied to their interior and exterior surfaces and a fine-grained, pale-yellow fabric with well-sorted inclusions. None could be refitted and thus it is unclear how many vessels are represented. All but one are body sherds, with one displaying applique scars where a possible lug or handle was attached; the remaining sherd is an unrelated handle fragment.

Eight samples of organic material excavated in association with glazed sherds from one midden were submitted for AMS dating: 4 short-lived samples of *Sclerocarya birrea* (marula) nut and 4 mammal bone pieces. Comparable dates were produced from the 4 short-lived carbon samples while one bone sample preserved sufficient datable collagen (Fig. 1). Since all dates pertain to the same stratigraphic context, short-lived samples were merged using the Combine function in OxCal, which produced a date range of 887 to 966 CE.

Data, Materials, and Software Availability. All study data are included in the main text.

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