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Letter to the Editor

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Well-known mesophotic kelp populations in the iSimangaliso Wetland Park marine-protected area, east coast, South Africa

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In a recent short communication titled 'First mesophotic *Ecklonia radiata* (Laminariales) records within the iSimangaliso Wetland Park marine-protected area, east coast, South Africa' by Qwabe *et al.* (2023), the assertion of discovering a mesophotic population of kelp in the iSimangaliso Wetland Park is made by the authors. However, contrary to this claim, published literature has long recognized the presence of a mesophotic population of *Ecklonia radiata* in the extreme northeast of South Africa, where the iSimangaliso Wetland Park is situated.

Ecklonia radiata has been confirmed to have a widespread distribution throughout the Indo-West Pacific, as reported by Coleman *et al.* (2022). Its populations typically occur in deeper water environments, with the exception of South Africa. There, coastal populations have been documented from De Hoop to Port Edward, alongside deeper water populations. Qwabe *et al.* (2023) make a sweeping claim that the species is recorded for the first time north of its recognized range, erroneously citing Port Edward as the eastern distribution limit for the species in southern Africa. Bolton and Anderson (1987) posit that pinpointing the eastward range limit of *E. radiata* in South Africa is challenging, based on observations in deeper waters off Natal (now Kwa-Zulu Natal). Additional details regarding these little-known deep-water populations, including their occurrence at 40 m, a depth considered mesophotic, were subsequently published in Bolton and Anderson (1994). Stegenga *et al.* (1997) note the occurrence of the species at depths of 30–40 m in Zululand, the municipal district within which the iSimangaliso Wetland Park falls. Further references to these mesophotic populations of *E. radiata* are available in De Clerck *et al.* (2005), who mention occurrences up to 60 m at Sodwana Bay (within the extent of the iSimangaliso Wetland Park). This information is also reiterated in Anderson *et al.* (2016), a user-friendly, publicly available online resource for local seaweeds. It is worth noting that Qwabe *et al.* (2023) cite a chapter from De Clerck *et al.* (2005), but appear not to have consulted it thoroughly, as the pertinent information is clearly present in the cited literature.

Beyond two published field guides (Stegenga *et al.*, 1997; De Clerck *et al.*, 2005), an online resource (Anderson *et al.*, 2016), a book chapter (Bolton and Anderson, 1994), and a published article (Bolton and Anderson, 1987), more substantial support for the existence of this population is also available. This evidence encompasses a herbarium record (NU0094006), published photographs (PSSA, 2019), and a DNA barcode (OM650132). Notably, a herbarium specimen deposited at the Bews Herbarium (NU) of *E. radiata* (as *Ecklonia biruncinata*) from St Lucia, part of the iSimangaliso Wetland Park, dates back to 1967. In 2018, the identity of the mesophotic kelp in the iSimangaliso Wetland Park was confirmed for the first time using DNA and published in a review by Wernberg *et al.* (2019). Details of the DNA barcodes, based on specimens collected from Cape Vidal within the iSimangaliso Wetland Park, were formally published in Coleman *et al.* (2022) under the accession number: OM650132. Qwabe *et al.* (2023) proceed to formulate hypotheses regarding the dispersal history and origin of the supposedly newly discovered population, relying on mtDNA barcodes as published in Coleman *et al.* (2022). While mtDNA is valuable for evolutionary hypotheses, it is typically employed in conjunction with other genes to reinforce such hypotheses. A notable drawback of relying solely on mtDNA for evolutionary hypotheses is its limited capacity to detect hybridization, a phenomenon well-documented in kelps, and indeed observed under laboratory conditions for *E. radiata* and *Ecklonia maxima* (Bolton and Anderson, 1987). Coleman *et al.* (2022) exercise caution when discussing hypotheses on the dispersal and origin of *E. radiata* in their work for these reasons.

Additionally, the study by Qwabe *et al.* (2023) is marked by numerous inaccuracies, with many instances where source information is incorrectly cited. Facts are often misattributed, and sources are either incorrectly cited or do not cite the primary literature. For instance, Graham *et al.* (2007) serve as a reference for the species composition of a typical coastal kelp forest in South Africa. Although the focal point of Graham *et al.* (2007) is in fact mesophotic kelp, their predictive models are limited to a region between 20′N and 20′S, excluding South Africa altogether. Another concern surfaces with the incomplete distribution map (Figure 1; Qwabe *et al.*, 2023) which omits *Ecklonia muratii*, a species considered part of *E. radiata* complex and for which herbarium records exist. Finally, it is worth questioning the contention that *E. radiata* is the most extensively distributed kelp in the Southern Hemisphere. This claim is debatable, especially when considering the broad distribution of

Macrocystis pyrifera (Macaya and Zuccarello, 2010). Confirmed records indicate that *E. radiata* occurs in the Indo-Pacific (Coleman *et al*., 2022), whereas *M. pyrifera* is present along all major continental coastlines in the Southern Hemisphere, encompassing numerous islands in the region (Macaya and Zuccarello, 2010). These seemingly semantic discrepancies could have been easily avoided through consultation with active researchers in the field.

While it might appear that the foundation of the article rests on potentially overlooked information, this is not the case. Prior to submission of the article, the corresponding author and I engaged in discussions regarding the mesophotic kelp population in the iSimangaliso Wetland Park. He was therefore aware that the population was not new as the article claims and that a DNA barcode from Cape Vidal (iSimangaliso Wetland Park) by Coleman *et al.* (2022), which confirmed the species' identity had been published. What becomes strikingly evident from this article is the need for more systematic evaluation of deep-water kelp populations in southern Africa. Qwabe *et al.* (2023) through their innovative use of remotely operated vehicles contribute to this by assessing the extent of underwater kelp forests in South Africa. This is particularly valuable, especially when considering the role of kelps as a potential source of blue carbon. However, such studies should be conducted in a way that ensures the dissemination of accurate information.

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