# Interspecies comparisons of Mg/Ca ratios in limpet shells

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**Abstract**

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*Keywords:* Sclerochronology, Limpets, Elemental Ratio, Mg/Ca

## 1. Introduction

This study provides a short reassessment of the use of Magnesium to Calcium (Mg/Ca) ratios in Atlantic limpet shells to determine past sea surface temperatures. While recent studies of particularly *Patella* sp. in the Mediterranean and Southwest Europe have provided promising results (Hausmann et al., 2019; García-Escárzaga et al., 2015, 2018).

In previous studies, various limpet specimens (Patella vulgata, Nacella magellanica and Nacella odifosdio) have been studied using Mg/Ca with mixed results. While Patella vulgata along the Spanish shoreline has since then repeatedly produced reliable correlations between sst and Mg/Ca ratios, this is not the case for other species.

In this study, we present elemental maps of various such species together with stable oxygen isotope values for some of the specimens. Some of these…

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## 2. Methods

## 3. Results

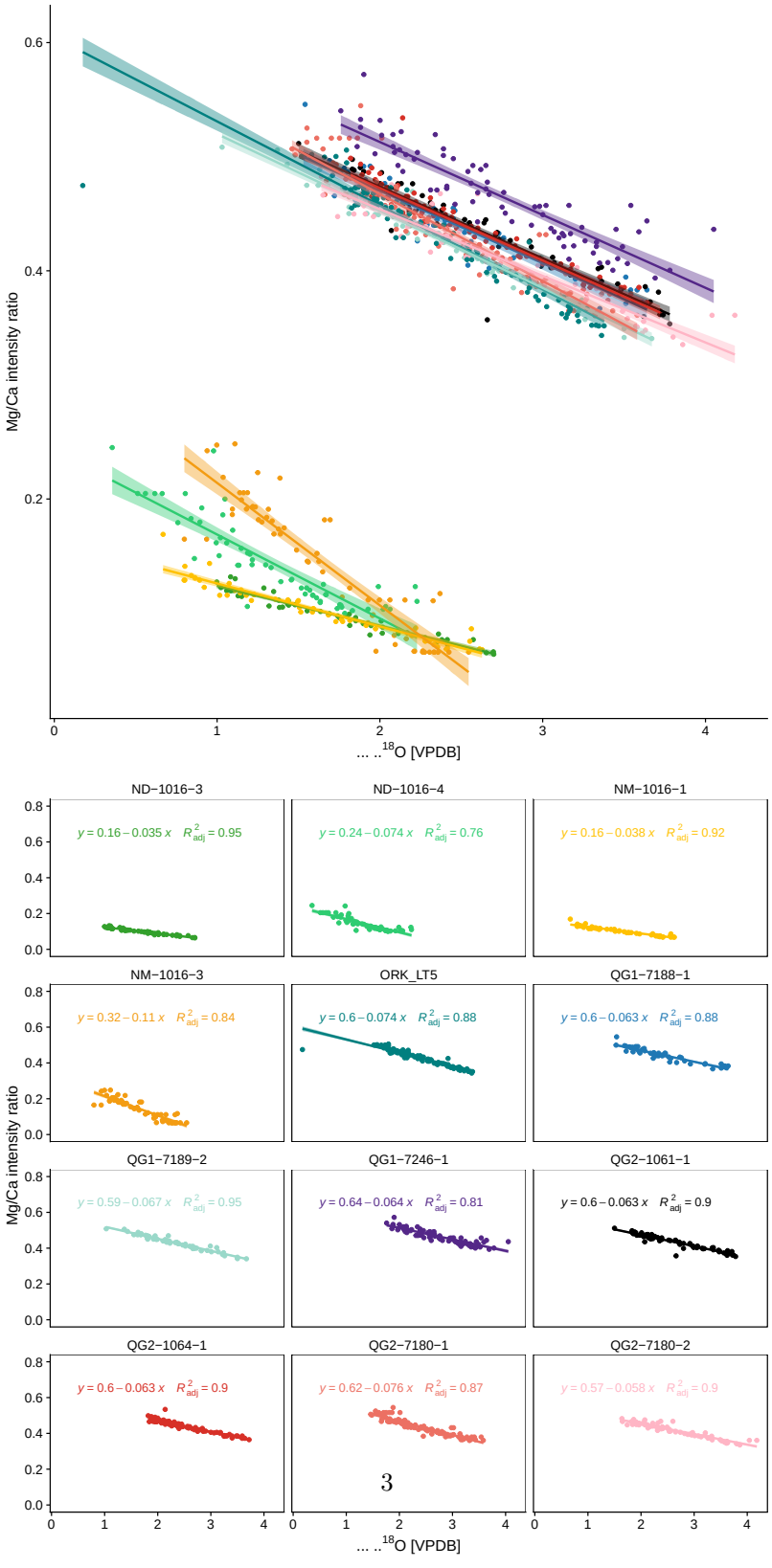



Figure 1: Correlation graphs for all specimens

## 4. Discussion

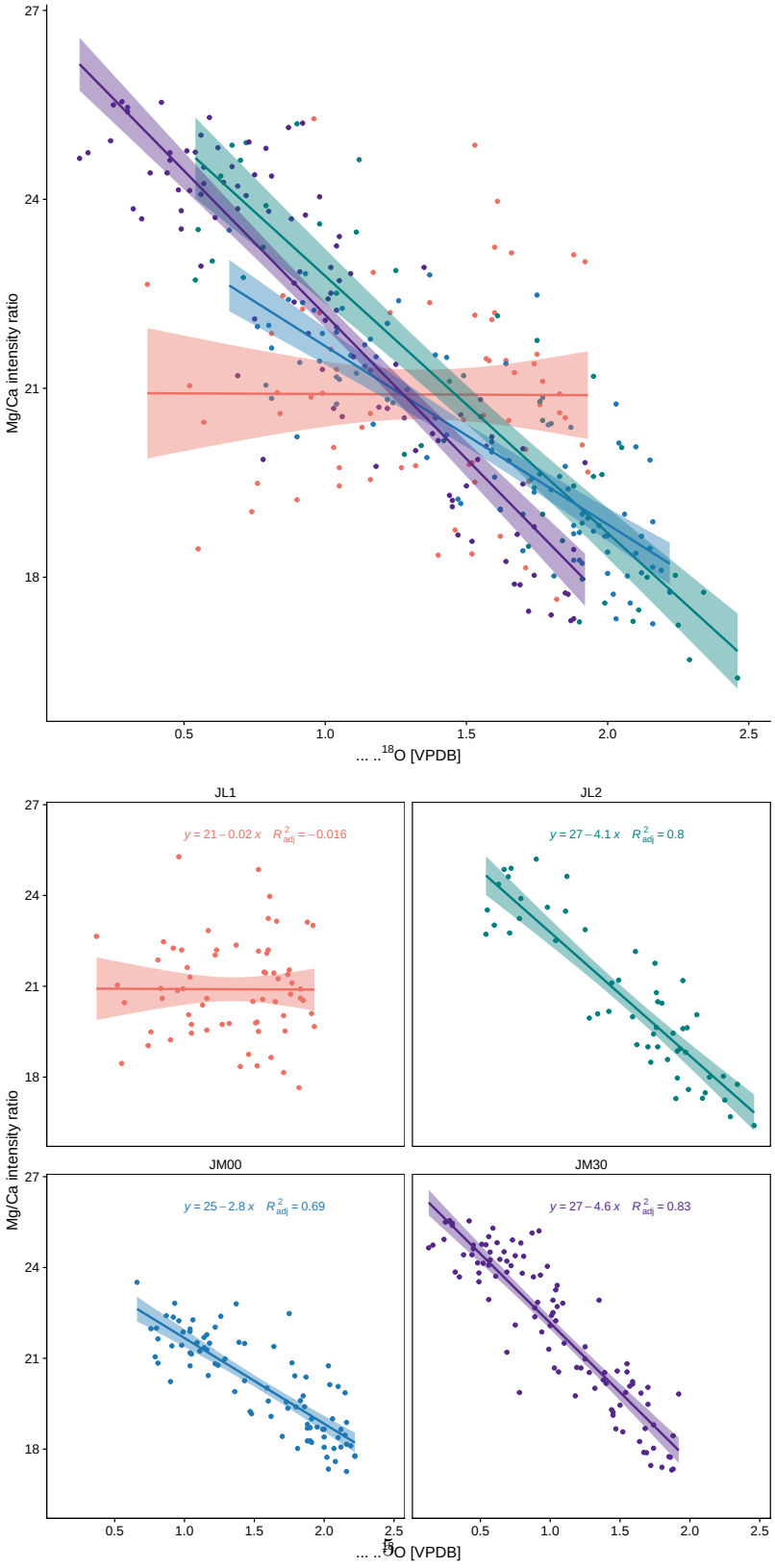


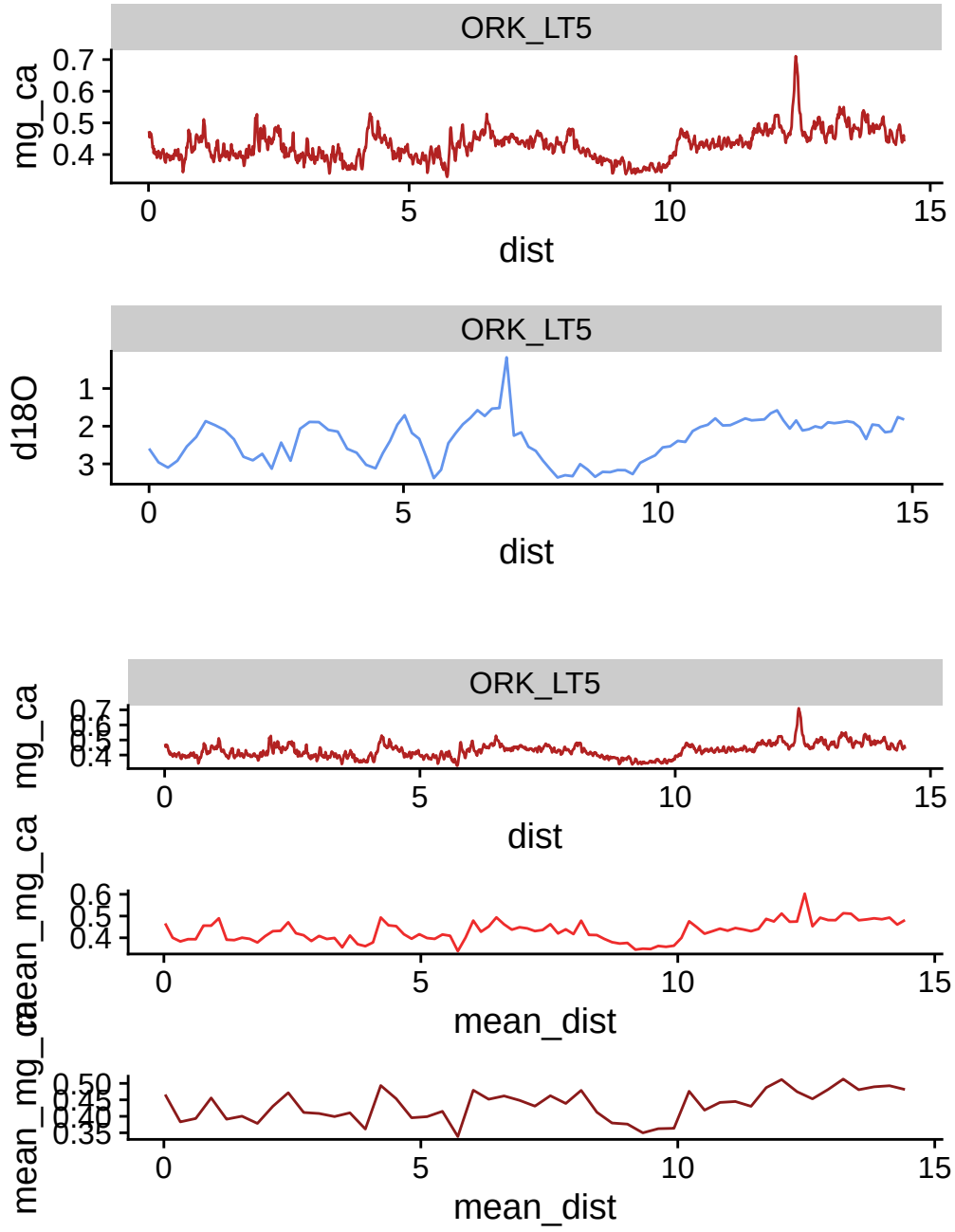

Figure 2: Correlation graphs for Ferguson et al. specimens

Table 1: Overview of comparative correlations {#tab:correlations}

| Species | Locality | Specimen | Correlation $R^2$ | Study |
|---|---|---|---|---|
| *Patella depressa* | Northern Spain | LAN541 | 0.87 | **10.3390/app11072959** |
| | | LAN545 | 0.86 | |
| | | LAN554 | 0.78 | |
| | | LAN559 | 0.82 | |
| *Patella caerulea* | Croatia | ISTPC1 | 0.9 | 10.1038/s41598-019-39959-9 |
| | | ISTPC2 | 0.84 | |
| | Crete | AF1911A | 0.91[1] | |
| | | AF3003A | 0.92[2] | |
| | Israel | AKKPC2 | 0.96 | |
| | | AKKPC3 | 0.89 | |
| | | FRMPC1 | 0.84 | |
| | | FRMPC2 | 0.96 | |
| | Libya | MO31A | 0.83 | |
| | | MP64A | 0.33 | |
| | | MP67A | 0.96 | |
| | | MP68A | 0.81 | |
| | Malta | MA10 | 0.82 | |
| | Tunisia | TUNPC1 | 0.81 | |
| | | TUNPC2 | 0.78 | |
| | Turkey | ANTPC1 | 0.95 | |
| | | ANTPC2 | 0.93 | |
| | | KIZPC1 | 0.94 | |
| | | KIZPC2 | 0.86 | |
| Patella rustica | Gibraltar | JL1 | 0.02 | doi.org/10.1016/j.epsl.2011.05.054 |
| | | JL2 | 0.8 (0.79) | |
| Patella caerulea | Gibraltar | JM00 | 0.69 (0.79) | |
| | | JM30 | 0.83 (0.79) | |
| Patella vulgata | Orkney | ORK-LT5 | not reported, here 0.88 | doi.org/10.1016/j.palaeo.2016.10.021 and this study |

[1] SST only, no other geochemical data available
[2] SST only, no geochemical data available

*4.1. Reanalysis of ORK-LT5*




## References

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