

# Distribution and Diversity of Benthic Marine Macroalgae in Islands Around Qatar

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## Introduction

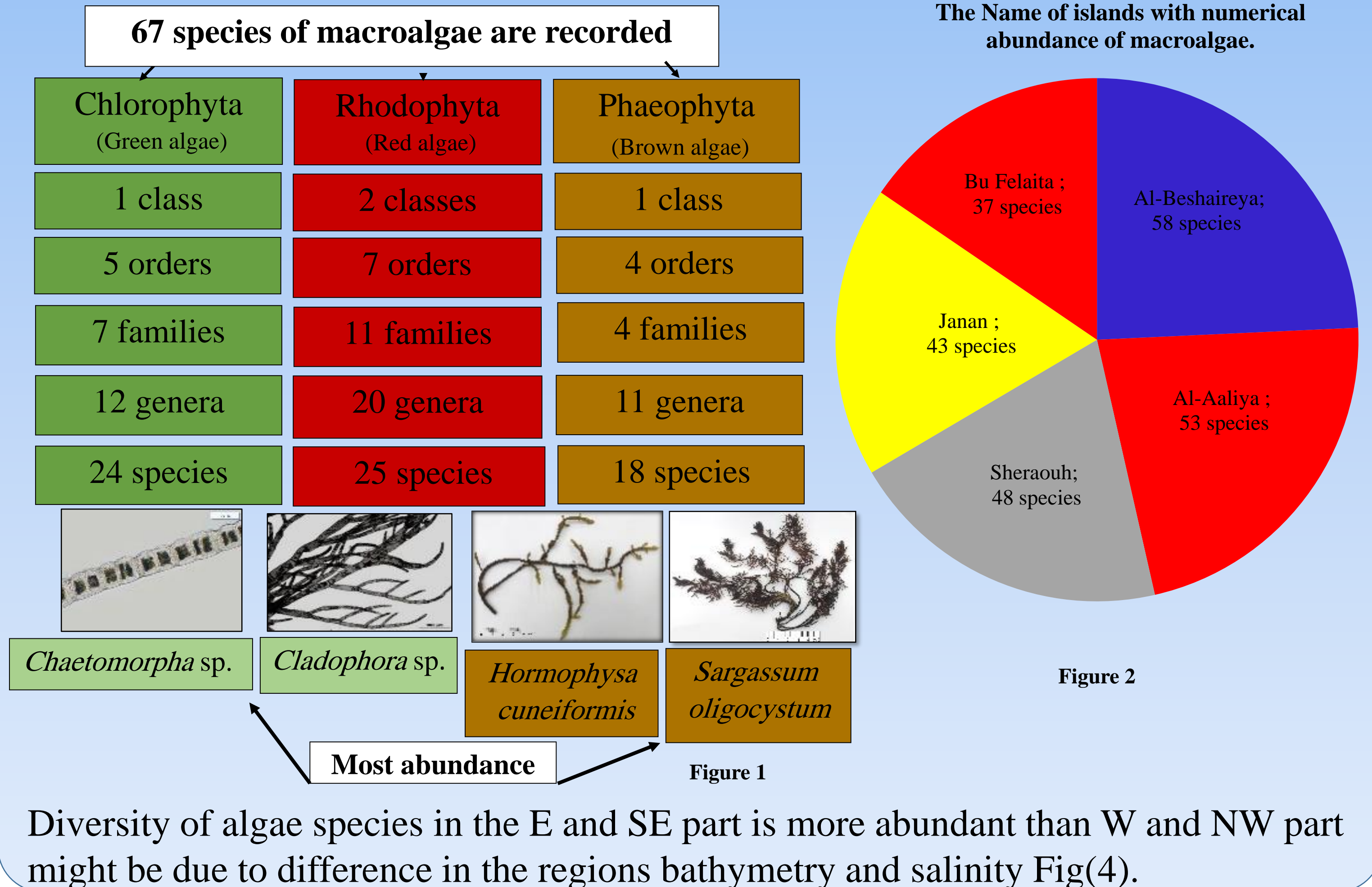
Algae are photosynthetic organisms and are primary producers of energy and rich compounds. They provide food to other non-photosynthetic organisms and are the basis of the food cycle of marine life. In the marine ecosystem, the larger algae provide shelter and habitat for herbivorous fish and other invertebrate animals. The outstanding role played by Green algae in reducing CO<sub>2</sub> from the atmosphere is of recent awareness of the importance of the long-neglected seaweed and seagrass ecosystems. Algae are photosynthetic and the byproduct of photosynthesis is O<sub>2</sub>. Algae through photosynthesis carry out at least a half of the total CO<sub>2</sub> fixation on earth. Thus, algae increase the level of dissolved oxygen in their immediate environment (Stanley, 2000). Seaweeds has proven to be very important in GHG emissions as they capture and store carbon nutrients and are hotspots for carbon accumulation in the biosphere with stores comparable to temperate and tropical forests (Fourqurean et al., 2012; Campbell et al., 2015). Studies of macroalgae in Qatar are few and non covered macroalgae around Qatar's Islands. The State of Qatar has 17 well- recognized islands mostly distributed by the eastern coastline such as Purple Island (Bin Ghannam), Umm Al-Far, Al-Safliya, Al-Aaliya, Al Besheireya, and SHERAOUH. Few islands lays on the western coast such as Al-ka'ud and Janan (the smallest island on the western waters of Qatar). This study provides the first survey of distribution and diversity of benthic marine macroalgae in islands around Qatar.

## Materials & Methods

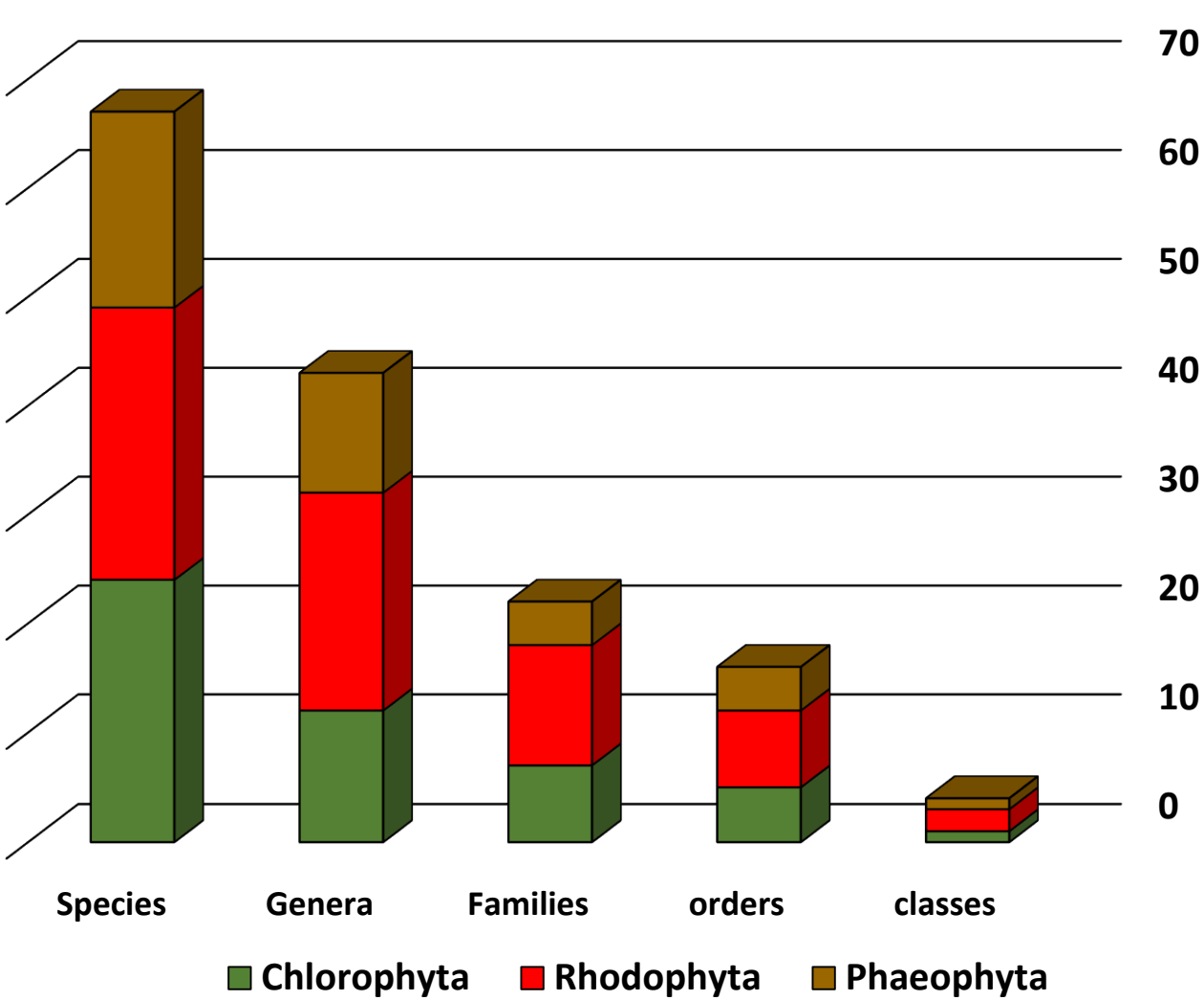
This study is part of Qatar's Islands project which started 2018 and ongoing. The study contains previous material collected over years from marine surveys, handpicked material collected from sea detritus along coastline of Qatar, fouling material on oyster shells, algae retrieved from of marine sediments, undersea photography and video films of QMZ. All samples are labeled in the field then received in the lab where the biology team isolate the macroalgae to be identified and examined under the stereomicroscope on basis of morphological characters using standard references. For further confirmation and major diagnostic features, microscopic examination is carried out and the sample is documented by photography. All the samples are preserved in 70% alcohol (wet preservation) and larger samples are kept as herbarium sheets (dry preservation). If the sample is a mixed collection, individuals of the same seaweed species are separated in labeled containers with serial numbers. Diagnostic characters of species are documented by photography at the Multi-media Unit. Preserved material is registered with their given codes in the Logbook. Voucher specimens are preserved in 70% ethanol.



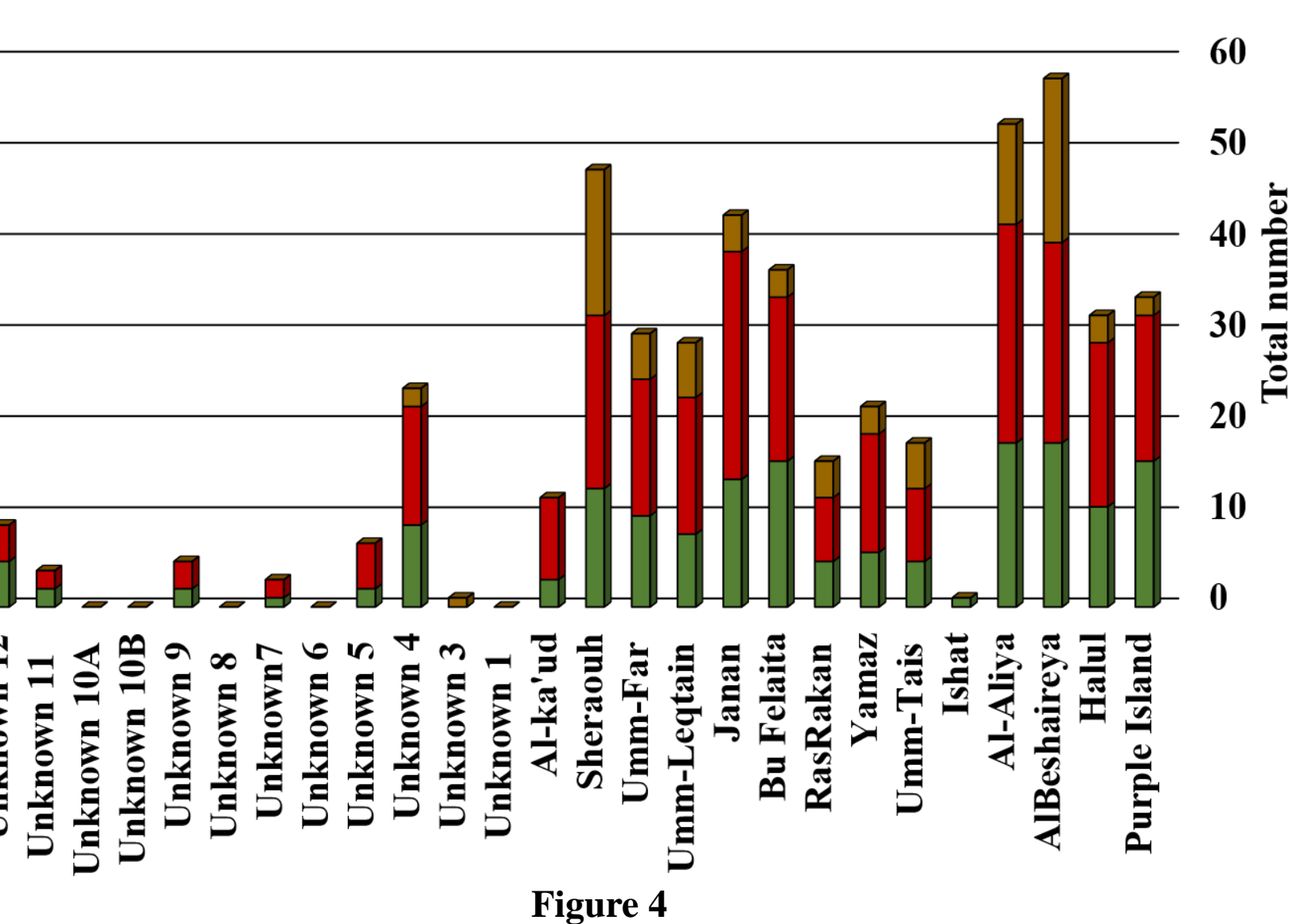
## Results



Records of taxonomic categories of macroalgae around marine zone in Qatar Islands



Distributions of three groups of macroalgae (green, red and brown) in marine zone around Qatar Islands



## Conclusion & Recommendations

Islands located at E and SE coast of Qatar have more diversity of algae species than W and NW part. Based on this work, we recommend to (1) conduct periodic studies to show the seasonal diversity of marine algae around the islands, (2) Preserve the islands as natural reserves, controlled reserves (under category B), or natural parks to protect all aspects of life on and around the islands, (3) cooperate with decision makers and specialists at the MME to distinguish the Unknown islands by labeling them with recognized names.

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