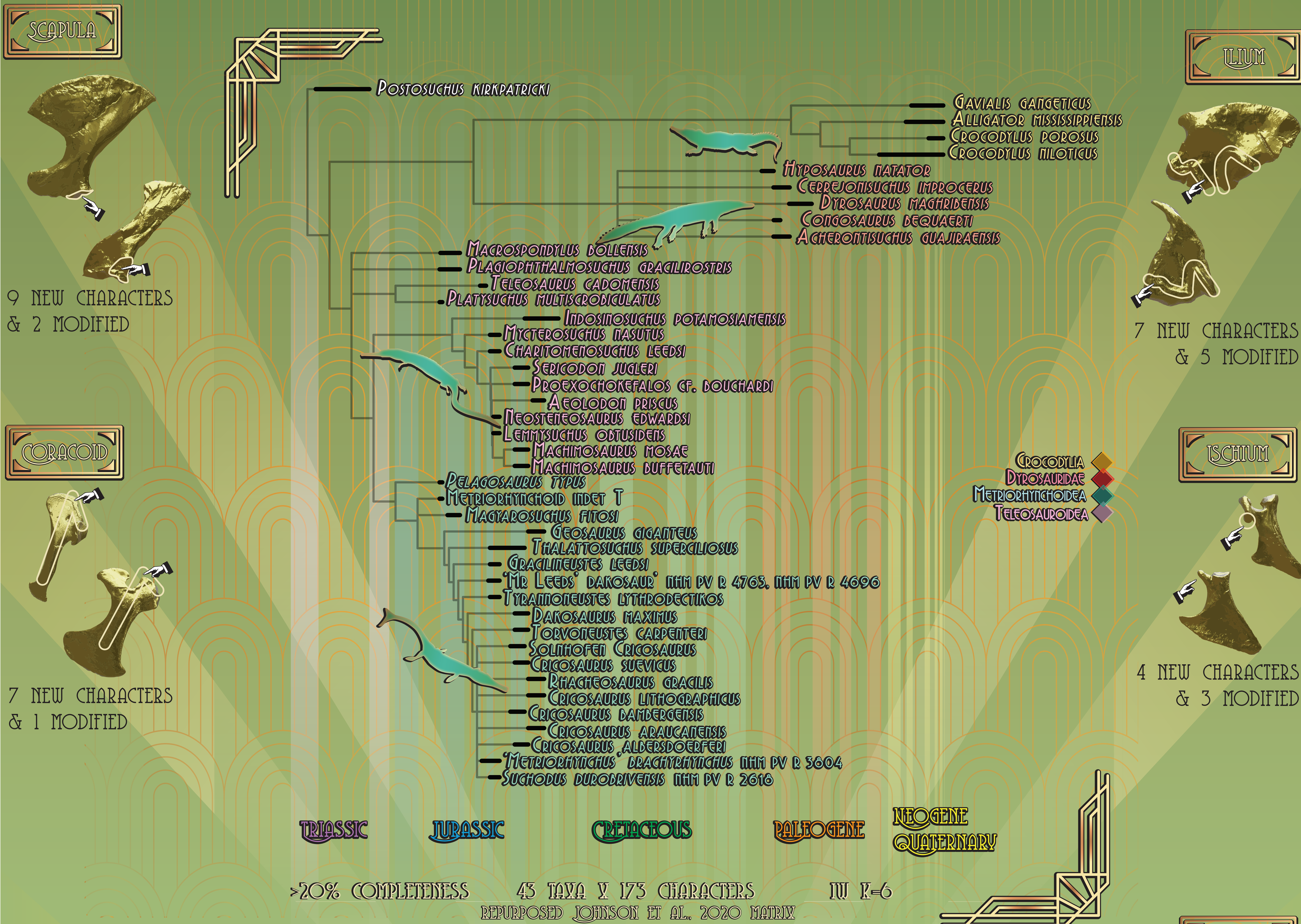


# THE CRITICAL INCLUSION OF POSTCRANIAL ANATOMY IN AQUATIC CROCODYLIFORM PHYLOGENETICS

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THE POSTCRANIAL ANATOMY OF EXTINCT CROCODYLIFORMS REMAINS GLOBALLY UNDERVALUED AND OFTEN OVERLOOKED IN ANATOMICAL DESCRIPTIONS, DIAGNOSES, AND PHYLOGENETIC ANALYSES. INDEED, EVER EXPANDING DATASETS FOR PHYLOGENETIC ANALYSES ON THIS GROUP HAVE LONG BEEN MORE FOCUSED ON SKULL SHAPE VARIATION AND INCLUDE A PLETHORA OF CRANIODENTAL CHARACTERS. HOWEVER, CRANIODENTAL MORPHOLOGY OFTEN PRESENTS MALLEABILITY AND CONVERGENCE, WHICH HAVE PREVIOUSLY OBSCURED THE GLOBAL POSITIONING AND INTERRELATIONS OF EXTINCT CROCODYLIFORM CLADES. A POSSIBLE SOLUTION RESIDES IN THE DISREGARDED—YET RICH—POSTCRANIAL ANATOMY OF EXTINCT CROCODYLIFORMS, WHICH HAS GENERALLY BEEN TREATED AS CONSERVATIVE BETWEEN MANY CROCODYLIFORM CLADES. RECENT STUDIES ON THE MORPHOLOGICAL VARIATION OF AQUATIC CROCODYLIFORM CLADES NAMELY THALATTOSUCHIA AND DYROSAUROIDEA SUGGEST THE EXISTENCE OF A STRONG PHYLOGENETIC SIGNAL IN THE POSTCRANIUM. HENCE, WE AIM TO TEST THE PHYLOGENETIC INFORMATIVE STRENGTH OF POSTCRANIAL ANATOMY. WE HAVE CRITICALLY REASSESSED ONE OF THE MOST COMPLETE AND RECENT PHYLOGENETIC CROCODYLIFORMES DATASET TO ADDRESS OUR PHYLOGENETIC QUESTION AND AVOID FALLING INTO A 'REPURPOSED MATRIX' DEAD-END. WE PRESENT OUR PRELIMINARY RESULTS ON THE PHYLOGENY OF CROCODYLIFORMES AND OFFER A SERIES OF NEW POSTCRANIAL CHARACTERS BASED ON THE PELVIC AND THORACIC GIRDLES OF EXTINCT CROCODYLIFORMS, SUCH AS THE POSITION OF THE GLENOID FACET OF THE SCAPULA, THE EXTENSION OF THE PUBIC DIAPHYSIS, AND THE INCLINATION OF THE CORACOID SHAFT. WE ALSO ASSESS THE DIFFERENCES OF TOPOLOGIES BETWEEN OUR RESULTS AND PUBLISHED WORKS PHYLOGENIES. WE STRESS THAT POSTCRANIAL ANATOMY CONSTITUTES AN IMPORTANT SUPPLY TO BETTER UNDERSTAND THE RELATIONS OF EXTINCT CROCODYLIFORMS, BUT ALSO OFFERS INSIGHTS ON THEIR DEVELOPMENT, ECOLOGY, AND BIOMECHANICS.



- ◆ THREE DISTINCT CLADES RECOVERED ALONG WITH MOST 'SKULL DEFINED' AFFINITIES
- ◆ TELEOSAUROIDEA FAMILIES 'T' AND 'H' SPLIT
- ◆ METRIORHYNCHOIDEA GEOSAURINE FAMILY SPLIT
- ◆ DYROSAURIDAE UNRESOLVED AT THIS STAGE WITH FRAGMENTARY TAXA

ADDITIONAL POSTCRANIAL CHARACTERS CENTERED ON LIMBS REQUIRED

GRADUAL INCLUSION OF ADDITIONAL CLADES E.G. PHOLIDOSAURIDAE