شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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Ain Shams University
Faculty of Science
Department of Geology

Study of some sharks and rays in the Mokattamian (middle and late Eocene) of Egypt

A thesis

Submitted in Partial Fulfillment of The Requirements for The Degree of

Master of Science in Geology

By

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B.Sc. (Hons.) in Geology 2012, Ain Shams University

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Department of Geology
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2020

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Approval Sheet

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Prof. Dr. Amin Marco Strougo Professor Emeritus of Stratigraphy and Macropaleontology Geology Department, Faculty of Science, Ain Shams University.	……
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Chairman of Geology Department

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Note

The present thesis is submitted to the Faculty of Science, Ain Shams University in partial fulfillment for the requirements of the Degree of Master of Science in Geology, Besides the research work materialized in this thesis, the candidate attended eleven post-graduate courses for one academic year in the following topics:

1. Advanced Biostratigraphy
2. Advanced Lithostratigraphy
3. Advanced Structural Geology
4. English Language
5. Field Geology
6. Geostatistics
7. Geotectonics
8. Micropaleontology
9. Paleoecology
10. Sedimentary Petrology
11. Sedimentation

In addition, the author passed the final exams of these courses held in September 2014.

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ABSTRACT

The main target of this thesis is to identify, describe, systematically study, and illustrate the elasmobranchs (sharks and batoids) of the Mokattamian (middle and late Eocene) Stage of Egypt. The source of the studied material is the rich and diverse collection of Professor Amin Strougo, housed in the Geology Department of the University of Ain Shams. Up to this day, the Egyptian elasmobranchs remain very poorly documented throughout the Phanerozoic.

In an attempt to reduce the gap in our knowledge, the following steps have been achieved in the present study:

1) Identification of species based, whenever possible, on a large number of fossil teeth.

2) Updating the specific and generic allocation of the various taxa that have been identified.

3) Construction of a chart showing the stratigraphic distribution of the studied taxa in the various levels of the Mokattamian.

4) Attempt to deduce the past environments of the studied time interval by examining the present distribution and ecological requirements of the extant genera represented in our material.

The main results arrived at in the present study can be summarized in the following points.

1) Thirty-two species belonging to twenty-five genera and fourteen families (twenty species of selachians belong to sixteen genera and twelve species of

batoids belong to nine genera) have been identified, illustrated, and fully discussed.

2) A more "biological" approach of some species has been realized, based on the study of a large number of specimens collected from various stratigraphic levels and different localities, and by taking into consideration difference in tooth morphology that may be due to different positions on the jaws, to sexual dimorphism, etc. The study of the teeth of extant genera and species has been very enlightening in this approach.

3) All the species in the studied collection contain a full set of information concerning the locality from which they came, the formation from which they were collected, and their precise stratigraphic level within the different intervals of the Mokattamian Stage (MK1-MK12) following the latest scheme proposed by Strougo (2008). As a result, several species appear to be characteristic of specific horizons and, hence, could be used in the future in regional biostratigraphic correlation.

4) The average size of *Misrichthys stromeri* Case & Cappetta, 1990 seems to be age dependent, younger populations generally being larger in size. If this trend is confirmed by future studies, it may be used to separate specifically older populations from younger ones.

5) The species *Ginglymostoma angolense* Dartevelle & Casier, 1943 is reported for the first time in the Egyptian Eocene, and from the middle Eocene of Qatar (see below point #6).

6) The species *"Carcharias" koerti* (Stromer, 1910), *Moerigaleus vitreodon* Underwood &Ward, 2011, *Physogaleus aff. tertius* (Winkler, 1874), and *Rhizoprionodon sp.* are reported for the first time from the middle Eocene of Qatar (based on material in Strougo's collection coming from this country).

7) A new species has been identified in the middle Eocene (possibly level MK3) of ElGedida iron mine, in the Bahariya Oasis. It has been recently published (Salame & Asan, 2019) under the name of *Odontorhytis bahariensis* and reincorporated in this study.

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