

## ABSTRAK

# STRATIGRAFI DAN REKONSTRUKSI PALEOIKLIM EOSEN-OLIGOSEN PADA FORMASI LAHAT, DAERAH MUARADUA, SUMATRA SELATAN

Oleh

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Formasi Lahat dengan umur Eosen-Oligosen tersingkap pada lintasan Bumi Agung dan Batu Belang di daerah Muaradua, Sumatra Selatan. Interval Eosen–Oligosen merupakan periode penting yang ditandai oleh Transisi Eosen–Oligosen (*Eocene–Oligocene Transition*), yaitu peristiwa pendinginan global yang berpotensi memengaruhi kondisi iklim, vegetasi, dan sistem pengendapan. Pengendapan formasi ini memungkinkan terakumulasinya material organik berupa sisa tumbuhan dalam bentuk polen dan spora. Penelitian ini bertujuan untuk menentukan lingkungan pengendapan, merekonstruksi kondisi paleoiklim, dan mengkaji keterkaitannya dalam potensi pembentukan hidrokarbon.

Penelitian dilakukan dengan pendekatan kuantitatif, terutama melalui analisis palinologi dan sedimenetologi yang diperoleh dari kedua lintasan stratigrafi terukur. Penentuan umur relatif dilakukan berdasarkan taksa penunjuk umur, sedangkan rekonstruksi paleovegetasi menggunakan analisis afinitas ekologi palinomorf berdasarkan klasifikasi Haseldonckx (1974) dan Morley (1977). Rekonstruksi paleoiklim dilakukan berdasarkan taksa indikator iklim, rasio *arboreal pollen* (AP) dan *non-arboreal pollen* (NAP), serta didukung oleh indeks keberagaman dan kesamaan spesies.

Hasil penelitian menunjukkan bahwa Formasi Lahat di daerah penelitian berumur Eosen Tengah–Oligosen berdasarkan keterdapatan *Proxapertites operculatus* dan *Meyeripollis naharkotensis*. Lingkungan pengendapan berkembang dari sistem medial hingga distal *alluvial fan* dengan afinitas ekologi yang didominasi elemen *fresh water* serta peningkatan elemen *brackish water* pada interval paling muda. Analisis palinologi menunjukkan dominasi vegetasi *peat swamp* dan *freshwater swamp*, dengan nilai AP 71–100% dan kelimpahan spora 28–89%, yang mengindikasikan iklim yang dominan hangat dan lembap. Kondisi tersebut mendukung produksi dan akumulasi material organik sehingga berpotensi menjadi indikasi awal pembentukan batuan induk hidrokarbon.

Kata kunci: Eosen-Oligosen, Formasi Lahat, Paleoiklim, Polen, Spora

## **ABSTRACT**

### **STRATIGRAPHY AND PALEOCLIMATE RECONSTRUCTION OF EOCENE-OLIGOCENE IN LAHAT FORMATION, MUARADUA AREA, SOUTH SUMATERA**

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*The Eocene–Oligocene Lahat Formation is exposed in the measured stratigraphic sections of Bumi Agung and Batu Belang in the Muaradua area, South Sumatra. The Eocene–Oligocene interval represents a significant period marked by the Eocene–Oligocene Transition (EOT), a global cooling event that potentially influenced climate, vegetation, and depositional systems. The depositional setting of this formation is able to accumulate the organic material that derived from plant remains in the form of pollen and spores. This study aims to determine the depositional environment, reconstruct paleoclimatic conditions, and evaluate their relationship to the potential for hydrocarbon generation.*

*The research was conducted with quantitative approaches, primarily through sedimentological and palynological analyses obtained from the two measured stratigraphic sections. Relative age determination was based on the occurrence of age-diagnostic palynomorph taxa, while paleovegetation was reconstructed using the ecological affinity classification of palynomorphs proposed by Haseldonckx (1974) and Morley (1977). Paleoclimate reconstruction was based on climate-indicator palynomorph taxa, the ratio of arboreal pollen (AP) to non-arboreal pollen (NAP), and supported by species diversity and similarity indices.*

*The results indicate that the Lahat Formation in the study area is of Middle Eocene–Oligocene age, as indicated by the occurrence of *Proxapertites operculatus* and *Meyeripollis naharkotensis*. The depositional environment evolved from a medial to distal alluvial fan system, while the ecological affinity of the palynomorph assemblages is dominated by freshwater elements with an increasing contribution of brackish elements in the youngest interval. Palynological analysis reveals the dominance of peat swamp and freshwater swamp vegetation, with AP values ranging from 71–100% and spore abundances of 28–89%, indicating a predominantly warm and humid tropical climate. These conditions favored high vegetation productivity and organic matter accumulation, suggesting an initial potential for hydrocarbon source rock development.*

**Keywords:** *Eocene-Oligocene, Lahat Formation, Paleoclimate, Pollen, Spore*