

## ABSTRAK

### **APLIKASI ANALISIS MOLEKULER DNA MITOKONDRIA *CYTHOCROME OXYDASE SUB-UNIT 1 (COI)* UNTUK KONFIRMASI KERAGAMAN GENETIK GAJAH SUMATERA (*Elephas maximus sumatranus*) BERBASIS KOTORAN DI SUGIHAN SIMPANG HERAN**

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Gajah sumatera merupakan mamalia besar dengan status kritis. Populasi gajah sumatera berada dalam 36 kantong habitat, salah satunya Sumatera Selatan (Sumsel) yang mengalami tekanan seperti kerusakan dan fragmentasi habitat, perburuan liar dan konflik dengan masyarakat. Perubahan habitat mengakibatkan masuknya gajah sumatera ke perkebunan kelapa sawit. Upaya konservasi yang dapat dilakukan adalah pengumpulan informasi keragaman genetik secara non invasif sampling, melalui kotoran dengan analisis molekuler gen penanda cytochrome oxidase subunit I (COI). Penelitian ini dilaksanakan pada Desember 2022-Februari 2023 di bawah program kegiatan Tropical Forest Conservation Action for Sumatera yang dilakukan oleh Pusat Kajian Sains Terapan Universitas Sriwijaya. Tahapan penelitian yaitu pengambilan sampel, ekstraksi DNA, amplifikasi, elektroforesis, sekuensing dan analisis data. Sampel kotoran gajah sumatera sebanyak 25 sampel ditemukan pada enam blok area perkebunan sawit plasma nutfah inti PT. Bumi Khatulistiwa Mandiri (BKM). Analisis pohon filogenetik dari 18 sampel membentuk satu sluster yang sama mengindikasikan memiliki kekerabatan yang dekat (homologi 83%-98%). Sub populasi gajah sumatera di PT. BKM, memiliki keragaman genetik cukup baik dengan nilai variasi genetik berdasarkan keragaman nukleotida dalam kategori sedang (Pi:0,67 dan Hd:0,9485). Upaya konservasi yang dapat dilakukan yaitu pembuatan koridor, kajian genetik lanjut serta pemetaan jalur aktif gajah sumatera.

Kata Kunci: analisis molekuler DNA, filogenetik, gajah sumatera, non invasif, perubahan habitat

**ABSTRACT****APPLICATION IN MOLECULAR ANALYSIS OF MITOCHONDRIAL  
DNA CYTOCHROME OXYDASE SUB-UNIT 1 (COI) FOR  
CONFIRMATION OF GENETIC DIVERSITY OF THE SUMATRAN  
ELEPHANT (*Elephas maximus sumatranus*) BASED ON FECAL SAMPLE  
AT SUGIHAN SIMPANG HERAN****By****DIAN NELI PRATIWI**

The Sumatran elephant is a large mammal with critical status. The Sumatran elephant population resides in 36 habitat pockets, one of which is South Sumatra, which is experiencing pressures such as habitat destruction and fragmentation, poaching and conflict with the community. Habitat changes resulted in the entry of Sumatran elephants into oil palm plantations. Conservation efforts that can be done is to collect information on genetic diversity by non-invasive sampling, through feces with molecular analysis of cytochrome oxidase subunit I (COI) marker genes. This research was carried out in December 2022-February 2023 under the Tropical Forest Conservation Action for Sumatra activity program conducted by the Center for Applied Science Studies, Sriwijaya University. The stages of the research were sampling, DNA extraction, amplification, electrophoresis, sequencing and data analysis. Samples of 25 Sumatran elephant dung samples were found in six blocks of the nucleus germ plasma oil palm plantation area of PT. Independent Equatorial Earth (BKM). Phylogenetic tree analysis of the 18 samples forming the same cluster indicates that they are closely related (homology 83%-98%). Sumatran elephant sub-population at PT. BKM, has a fairly good genetic diversity with a value of genetic variation based on nucleotide diversity in the moderate category (Pi: 0.67 and Hd: 0.9485). Conservation efforts that can be carried out include building corridors, further genetic studies and mapping the active paths of the sumatran elephant.

Keywords: DNA molecular analysis, habitat change, phylogenetic, sumatran elephant, non-invasive,