INTISARI

Rusa bawean *Axis kuhlii* (Temminck, 1836) merupakan satwa endemik Pulau Bawean berstatus kritis dengan populasi sekitar 120–277 individu. Alih fungsi hutan menjadi lahan pertanian menyebabkan fragmentasi dan isolasi kantong habitat, mempersempit jarak antara lingkungan antropogenik dan habitat rusa, serta berpotensi meningkatkan konflik manusia-satwa yang memperparah kerentanan populasi rusa. Penelitian ini bertujuan merancang koridor habitat rusa bawean melalui identifikasi karakteristik habitat, pemetaan sebaran spasial habitat potensial, serta perancangan koridor kantong habitat pada lanskap Pulau Bawean.

Karakteristik habitat diidentifikasi melalui survei lapangan dan wawancara menghasilkan 105 titik perjumpaan yang tersebar di SM Blok Kumalasa, SM dan CA Blok Gunung Besar, serta SM Blok Payung-Payung. Kesesuaian habitat dimodelkan menggunakan algoritma *Maximum Entropy* (MaxEnt) dengan delapan variabel lingkungan yang telah lolos uji multikolinearitas (VIF 1,10–3,39), yaitu elevasi, kelerengan, *Normalized Difference Vegetation Index* (NDVI), tutupan lahan, dan variabel jarak terhadap badan air, lahan pertanian, jalan, serta lahan terbangun. Rancangan koridor disusun menggunakan analisis *Least Cost Path* lalu dievaluasi terhadap kondisi eksisting dan Rencana Tata Ruang Wilayah Kabupaten Gresik.

Model MaxEnt menunjukkan performa baik dengan AUC uji 0,872±0,064 dan TSS 0,607, dengan tutupan lahan (37,0%) dan NDVI (26,2%) sebagai kontributor tertinggi. Habitat berkesesuaian tinggi hanya mencakup 4,55% (892,48 ha) dari total luas area kajian, sedangkan 50,41% area tergolong tidak sesuai. Analisis LCP menghasilkan lima kantong habitat yang dihubungkan oleh empat segmen koridor utama (A, C, D, dan E). Segmen A paling sesuai dengan 98,1% tutupan hutan dan 76,1% area berada dalam kawasan lindung, sementara Segmen E paling rentan akibat proporsi lahan terbangun tertinggi (5,2%), konflik lahan pertanian, dan kesenjangan persepsi ancaman anjing liar antara masyarakat dan pihak berwenang. Penelitian ini merekomendasikan strategi berupa perlindungan kondisi eksisting pada segmen bertutupan hutan dominan, serta mitigasi aktif berbasis *wildlife friendly agroforestry* dan pendekatan kolaboratif *multi stakeholder* pada segmen dengan tekanan antropogenik tinggi.

Kata kunci: *Maximum Entropy*, *Least Cost Path*, konektivitas habitat, isolasi habitat.

ABSTRACT

Bawean deer *Axis kuhlii* (Temminck, 1836) are endemic to Bawean Island and classified as Critically Endangered species, with an estimated population ranging from 120 to 277 individuals. The conversion of forests into agricultural land has caused fragmented and isolated habitat patches and reduced the distance between anthropogenic environments and deer habitats, potentially increasing human-wildlife conflicts that exacerbate the vulnerability of the deer population. This study aims to design habitat corridors for the bawean deer by identifying habitat characteristics, mapping the spatial distribution of potential habitats, and designing corridors connecting habitat patches on the Bawean Island landscape.

Habitat characteristics were identified through field surveys and interviews, resulting in 105 encounter points distributed across the Blok Kumalasa Wildlife Reserve, Blok Gunung Besar Wildlife Reserve and Nature Reserve, and the Blok Payung-Payung Wildlife Reserve. Habitat suitability was modeled using the Maximum Entropy (MaxEnt) algorithm with eight environmental variables that passed the multicollinearity test (VIF 1.10–3.39), namely elevation, slope, Normalized Difference Vegetation Index (NDVI), land cover, and the distance to water bodies, agricultural land, roads, and built-up areas. Corridor designs were developed using Least Cost Path analysis based on the resistance surface obtained from habitat suitability index transformation and then were evaluated according to existing conditions and the Gresik Regency Spatial Plan.

The MaxEnt model performed well, with AUC from test data of 0.872±0.064 and TSS of 0.607, while land cover (37.0%) and NDVI (26.2%) were identified as the top contributors. High-suitability habitats covered only 4.55% (892.48 ha) of the total study area, while 50.41% of the area was classified as unsuitable. The LCP analysis identified five habitat patches connected by four main corridor segments (A, C, D, and E). Segment A is the most suitable, with 98.1% forest cover and 76.1% of the area located within protected areas, while Segment E is the most vulnerable due to the highest proportion of built-up area (5.2%), agricultural land conflicts, and a perception gap regarding the threat posed by feral dogs between the community and authorities. This study recommends strategies to protect existing conditions in forest-dominated segments, along with active mitigation through wildlife friendly agroforestry and a collaborative, multi stakeholder approach in segments under high anthropogenic pressure.

Keywords: Maximum Entropy, Least Cost Path, habitat connectivity, habitat isolation.