# Contemporary fire regimes and elephant impacts in Baikiaea-dominated woodlands of the Chobe region, northern Botswana


## Abstract

We assess the status of fire regimes in Botswana's premium wildlife eco-tourism Chobe region and ask whether market-based fire management could be applied to support broader ecological fire management and employment outcomes. We: (1) reconstruct fire regimes from the early 1990s coinciding with the cessation of commercial timber exploitation; (2) combine automated MODIS 250m and manually derived Landsat 30m burn scar products to generate a 33year Fire Frequency Index (FFI); (3) classify regional vegetation structural types derived from a 5-year (2021-2024) median early dry season Landsat image; (4) assess dry season elephant population density distributions in relation to fire occurrence. Overall, we report frequent (on average once every 2.5 years) predominantly relatively severe late dry season fires, characteristically in more open-canopied legume-dominated savannas and grasslands in the eastern sector of the region. Dry season elephant distributions were independent of fire occurrence. Wildfires plausibly cause relatively greater impacts to Baikiaea-dominated vegetation macro-structure than elephants. Multiple factors, including national fire exclusion policy, contribute to contemporary fire patterning in the Chobe regional landscape. We suggest that carbon market-based approaches have potential for contributing to ecologically sustainable fire management and local employment opportunities.