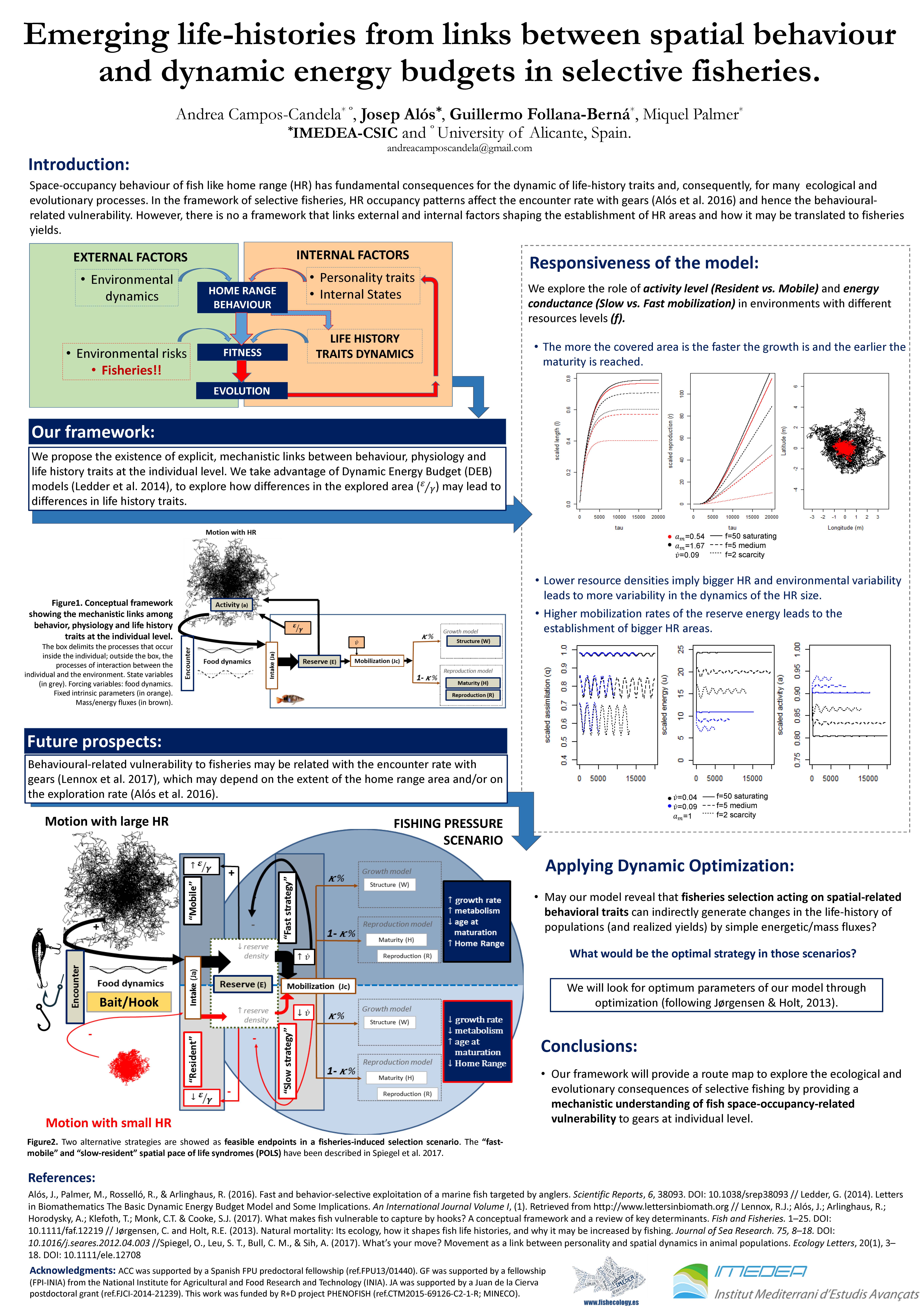
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**Emerging life-histories from mechanistic links between spatial behaviour and dynamic energy budgets in selective fisheries.**

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**Abstract**

Evidences that fishing entails differential selection for a large number of traits including behaviour are widespread. Among other drivers, space-occupancy behaviours of fish like home range (HR) affect the encounter rate with gears and consequently their behavioural-related vulnerability to fisheries. HR behaviour is shaped by internal factors (e.g., personality, life-history and physiological status) and its dynamics may be affected by external cues (e.g., fluctuating food or temperatures). However, there is no a framework that links external and internal factors that shape the establishment of HR areas and how it is translated to fisheries yields. Here, we propose a mechanistic link between space-occupancy patterns with life-history and physiological traits by using a Dynamic Energy Budget (DEB) model. DEB theory aims to describe the mass/energy processes (e.g., food assimilation and reproductive investment) that ultimately shape life-history traits (e.g., growth rate and age at maturity). We demonstrate that the interactions between external drivers (e.g., food availability), behaviour (e.g., activity level or HR area) and physiological parameters (e.g., energy mobilization rate) can mechanistically explain most of the actually observed individual-level life-history strategies in the wild. Our behavioural-mediated DEB is limited to the individual, but it can be expandable at the ecological and evolutionary levels. Particularly, we outline how fishing selection may operate on the behaviour-physiology links proposed here for resulting into the “fast-mobile” vs. “slow-resident” strategies in the views of pace-of-life theory with implications for fisheries yields.

**Keywords:**

Home Range, spatial behavioural types, life-history traits, DEB model, pace-of-life theory, behaviour-related vulnerability

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