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Biological systems often self-organize into regular spatial patterns, which might have significant ecological consequences that are still not very well understood. Several models, accounting for different mechanisms, have been proposed to explain the emergence of these spatial patterns. One of these pattern-forming mechanisms relies on considering long-range interactions, which leads to models describing population dynamics in terms of partial integrodifferential equations. In this presentation, I will first present in which conditions long-range competition alone can generate regular patterns of population density in systems with one and two species. Then, I will discuss the ecological implications of those patterns both for population persistence and species coexistence. (Received January 25, 2022)