

## Identifying behaviors from marine animal tracks

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**Keywords.** *Animal movement; Satellite telemetry data; State-space models; Robustness; Template Model Builder.*

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Animals move in order to maximize their probability of survival and reproduction. The movement of an animal therefore reflects its response to its current physical needs and available environment. In the marine realm, where direct observation of animal movements is often impossible, researchers typically employ satellite telemetry positioning systems to obtain series of estimates of locations of animals in space through time. Each series resembles an animal path or track. Inferring behavioural states from animal tracks is possible by reasonably assuming that different types of movement, and therefore behavioural state, can be reflected by a change in characteristics of an animal path. For example, while foraging can often be characterized by a tortuous track, a more directed path may suggest travelling between foraging patches. Here I discuss robust state-space model formulations for estimating behavioural states from animal tracks and demonstrate their utility with both a simulation study and real application. Information gained from these models can be used for proper management of both species and ecosystems.