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### **Unraveling Marine Predator Diets: Challenges and Recent Innovations in Fatty Acid Signature Analysis**

Over the past two decades, quantitative fatty acid signature analysis (QFASA), a non-invasive diet estimation technique, has played an important role in understanding predator-prey relationships. QFASA utilizes the association between fatty acids in the predator and their prey, and produces, via statistical methods, an estimate of the proportion of each prey species in the predator's diet. QFASA has been successfully applied to various seabird species, marine mammals and fish.

Although QFASA is now a well-established method of estimating the long-term diet of marine predators, it presents several known biological and statistical challenges, and there are opportunities for refinements and extensions to improve its accuracy. In recent years, in collaboration with biologists at various institutions across Canada, new methodology has been developed to address the difficulties inherent in estimating diets by way of fatty acid data. Much of this research has been consolidated into the QFASA R package, allowing biologists to access the latest statistical QFASA tools. In this talk, I will highlight some recent advances and ongoing collaborative efforts aimed at improving diet estimation of marine predators using fatty acid signatures.