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Stable isotopes on jumbo squid *(Dosidicus gigas)* beaks to esitmate its trophic positon: comparison between stomach contents and stable isotopes

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Stomach contents and carbon (C) and nitrogen (N) stable isotope analysis were used to evaluate trophic relationships of jumbo squid, *Dosidicus gigas*. Buccal masses, beaks and stomach contents of large and medium maturing-sized jumbo squid and muscle from its main prey, the myctophid *Benthosema panamense*, were collected in the Gulf of California, Mexico during 1996, 1997 and 1999. Both the quantified C and N-isotope ratios in muscle, and stomach content analysis revealed that larger-sized maturing squid showed a higher trophic position than medium-sized individuals. However, a discrepancy between stomach contents versus stable isotope analyses was found in evaluating trophic relationships. Simple dilution models as a function of growth were used to estimate the C and N renewal dietary shift for jumbo squid. Estimates of the initial C and N pools in *D. gigas* with an initial age of 70 days and 210 days indicated isotopic shifts of 32% after a threefold biomass increase and 25% after a fourfold biomass increase, respectively. Additionally, beak samples of jumbo squid were evaluated as an alternative tissue to estimate squid trophic position using stable isotopes. The results showed a significant correlation between stable isotope ratios from muscle and beak samples. Muscle isotope values were higher than beak by 1% and 4% for

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