

Trophic ecology and persistence of invasive silver carp *Hypophthalmichthys molitrix* in an oligotrophic South African impoundment

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ABSTRACT:

The alien invasive silver carp *Hypophthalmichthys molitrix* established a self-sustaining feral population in an oligotrophic impoundment, Flag Boshielo Dam, in South Africa. The ability of this population to persist in a dam with low algal biomass (median annual suspended chlorophyll *a* = 0.08 µg l⁻¹), and limited access to rivers considered large enough for successful spawning, has implications for their invasive potential in other systems. Stomach content and stable isotope analysis were used to assess the trophic ecology of *H. molitrix*, which was then compared with indigenous Mozambique tilapia *Oreochromis mossambicus*, on a seasonal basis during 2011. *Hypophthalmichthys molitrix* are generalist filter feeders, with a diet consisting primarily of sediment, vegetative detritus, dinoflagellates and diatoms. The dominance of sediments in their stomachs suggests occasional benthic scavenging. However, *H. molitrix* occupied a higher trophic level (TL = 2.8) than expected, suggesting that this population subsidised their diet with an unidentified dietary constituent, characterised by enriched nitrogen values. Although the stomach contents indicated dietary overlap between *H. molitrix* and *O. mossambicus*, stable isotopes revealed fine-scale resource partitioning, despite both species occupying the same trophic level. Nonetheless, the persistence of this feral *H. molitrix* population in an oligotrophic impoundment highlights their phenotypic plasticity.