

Quantifying the annual fish harvest from South Africa's largest freshwater reservoir

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Abstract

South African inland fisheries are poorly developed and their contribution to near-shore communities is poorly understood. This study is the first comprehensive assessment of recreational and subsistence angling undertaken in an inland fishery in South Africa. The study was conducted on the 360 km² Lake Gariep, South Africa's largest freshwater reservoir. A total of 508 anglers were interviewed between February 2007 and January 2008. Of those interviewed, 67% were subsistence anglers and 33% recreational anglers. Catch per unit effort (CPUE) did not differ significantly between sectors. CPUE fluctuated seasonally, ranging between 0.37 (95% CI= 0.26 to 0.51) kg·angler⁻¹·h⁻¹ in winter and 0.88 (0.67 to 1.17) kg·angler⁻¹·h⁻¹ in summer. The duration of a fishing day ranged from 5.99 (5.24 to 6.74) h in mid-winter to 7.26 (6.88 to 7.63) h in early summer. Expected end-of-day catch (CPUE × fishing-trip duration) ranged from 2.2 to 6.4 kg·angler⁻¹·d⁻¹ depending on the season. The number of anglers ranged from 22 (8 to 53) anglers·d⁻¹ in June/July to 74 (25 to 176) anglers·d⁻¹ in April. Total annual catch from the roving creel survey was estimated at 71.4 (57.4 to 91.4) t·yr⁻¹. Another 7.5 t·yr⁻¹ were landed during recreational angling competitions. The resultant total catch divided by the lakeshore population equated to a per capita fish supply of 11.1 kg·yr⁻¹. More than 70% of the catch was the alien invasive carp *Cyprinus carpio* and there was no evidence of overfishing. The fish resource of Lake Gariep is of significant recreational and subsistence value. As a result of the low fish price (ZAR5.72 ± 2.60·kg⁻¹) subsistence fishing was considered a low-revenue activity that mainly augmented food security in lakeshore communities. The relatively high CPUE indicated that the fishery may be an important safety-net during periods when alternate sources of livelihoods are limited. Consequently, we recommend that the importance of angling to local communities needs to be taken into account when planning fisheries development and developing an inland fisheries policy.

Keywords: CPUE, annual yield, livelihoods, hurdle model, roving creel survey, Gariep Dam, angling