



## RESEARCH BRIEF

The Environment for Development initiative is a capacity building program in environmental economics focused on international research collaboration, policy advice, and academic training. It consists of centers in Central America, Chile, China, Ethiopia, Kenya, South Africa, Sweden (Environmental Economics Unit, University of Gothenburg), Tanzania, and the US (Resources for the Future). Financial support is provided by the Swedish International Development Cooperation Agency (Sida). [www.efdinitiative.org](http://www.efdinitiative.org).

# Why Anglers Fish Where They Do

## Knowing South Africa's Preferred Fishing Spots Can Help Manage Fish Stocks

BY JANE K. TURPIE, JEREMY GOSS, AND KATHERINE FORSYTHE, EFD SOUTH AFRICA, DRB 15-31, DECEMBER 2015

Recreational angling in South Africa is not well monitored, even though recreational fishing contributes to over-exploitation of line fish stocks. This is because authorities don't have the resources or political will to patrol the entire coastline. This study shows that anglers tend to seek out fishing spots where they are likely to catch the most fish. If enforcement officials target these 'hotspots', they can monitor whether anglers are adhering to their permit conditions, which limit the number and size of fish that they are allowed to catch.

Management of fish catches by recreational in-shore anglers along South Africa's coastline has not been well-implemented or well-monitored, in spite of recreational fishing's recognised contribution to the severe depletion of these fish stocks. Management of the catch until now has been done with the traditional permit restrictions on the size and number of fish that anglers are allowed to catch.

The lack of implementation of the catch restrictions may be part of the reason that many of these slow-growing in-shore fish species are not recovering. Species such as the galjoen, white steenbras, bronze bream and white mussel cracker are caught almost exclusively by shoreline anglers.

Managing recreational angling needs to be as urgent a priority as commercial fishing, because of its potential to over-extract stocks. But South Africa has a coastline of around 3100km, and anglers have fairly open access to much of that. Relatively little research has been carried out on angler habits and preferences.

It's clear from earlier research that anglers stick to permit restrictions on the size and number of fish they are allowed to catch when they are monitored by officials. But enforcement authorities don't have the resources to patrol the entire coastline, and they lack the political will to enforce the

### Key Points

- Managing South Africa's depleted line-fishing stocks amongst recreational anglers is done using a policy which limits the size and number of fish that they may catch.
- But compliance is extremely low, because this policy is only effective when enforcement officers are able to inspect anglers' catches, and limited resources and lack of political will hamper patrolling of the entire coastline.
- A pilot study along a 456km stretch of coastline shows that anglers prefer to fish where they expect to catch the most fish.
- Knowing this, enforcement officers can target the preferred fishing 'hotspots' in order to be more effective in inspecting catches to monitor whether anglers are adhering to bag-and-size regulations. This approach can counter overfishing.

## Why anglers fish where they do

regulations on angling, meaning that inspection rates of anglers' catches are very low. In one study in the Western and Eastern Cape provinces, only 2% of anglers had had their catch inspected.

This study, which piloted an analysis of angler habits and preferences along a 456km stretch of coastline between Cape Town and East London, shows that, if fishing managers know what motivates anglers in terms of their choice of fishing areas, they will identify fishing 'hotspots' where they can target their inspection activities more strategically.

This study shows that anglers choose their fishing spots based on the likelihood that they will catch more fish, rather than the convenience of proximity of a fishing spot, weather conditions, or other considerations.

The study was conducted from 28 January 2010 to 30 August 2011 at six sites along the targeted coastline, using the 'roving creel' survey method. This involves combing the beach and approaching anglers while they're fishing. The researchers record the number, size and species of fish that each angler has caught, and how long they have been fishing during that session.

Researchers were assigned stretches of beach using a randomising programme to assign time slots in which to walk that 'beat', which they did regardless of weather conditions or day of the week.

They interviewed the anglers, gathering information on both their catch and level of satisfaction from the experience of fishing. They also recorded information about the environment, such as weather conditions and wind speed. And they categorised the shoreline into five distinct types: boulder shoreline, estuary, mixed shoreline, rocky shoreline or sandy beach. The researchers also logged each angler's coordinates.

In the end, they had 8797 usable angler records, which they then analysed to tease out angler habits and preferences in terms of where they like to fish, and why.

Researchers expected that angler numbers would go up or down depending on time factors (such as different seasons, or weekends and school holidays), weather conditions, the size of nearby 'source populations' of people, and where the fishing sites were located relative to places where vehicles could drive in.

Other studies of angler behaviour, for instance in the United States, have shown that their choice of fishing spot is influenced by many factors, not just the most fish they hope to catch. They are also swayed by how much enjoyment they expect to have, how much leisure time they have available, their disposable income, and how much effort (in time, cost, and effort level) it takes to reach an angling spot. Studies have shown that some anglers are very sensitive to bad weather conditions, while others aren't.

This South Africa study, however, showed that local anglers aim first and foremost for the sites where they are likely to get the highest catches. This, in turn, is reflected in the kind of habitat where they choose to fish. Mixed shores, which are biologically the most productive of the categories of sites in this study, had the highest numbers of anglers, probably suggesting they expected higher catch rates, and as a result, anglers tended to head for these sites. After choosing mixed shores as prime fishing spots, anglers then tended to head for estuaries, sandy beaches and rocky shores, but boulder shores had the fewest anglers casting their lines.

The second most important factor influencing where anglers fished was the cost of getting to the site.

## Why anglers fish where they do

As expected, the study showed that recreational anglers head out to fish more often over weekends and during school holidays, suggesting that inspections should be stepped up during these times.

Interestingly, another South African study has shown that anglers would be happy with stricter line fishing regulations, if it meant they were likely to catch more or bigger fish. Nevertheless, anglers' compliance with current regulations is extremely low.

### Conclusions

If fisheries managers use this kind of method to pinpoint angling 'hot spots' along the South African coastline, then resource-constrained authorities can target those areas for inspections, which is one of the proven methods of keeping anglers adhering to the catch limits written up in regulations.

### ABOUT THIS BRIEF

This brief is based on 'Factors Determining the Spatial Distribution of Shore Anglers in South Africa: Implications for Management', by Jane K. Turpie, Jeremy Goss, J. and Katherine Forsythe, 2015, EfD Discussion Paper 15-31. The DRB series of research briefs is associated with the EfD Discussion Paper series.

### FURTHER READING

Brouwer, S.L., Mann, B.Q., Lamberth, S.J., Sauer, W.H.H., and Erasmus, C. (1997) 'A Survey of the South African Shore-angling Fishery'. *South African Journal of Marine Science* 18: 165-177.

Scrogin, D. et al. (2004) 'Effects of Regulations on Expected Catch, Expected Harvest, and Site Choice of Recreational Anglers'. *American Journal of Agricultural Economics* 86: 963-974.

Turpie, J.K., and Goss, J. (2014) 'Potential Impacts of Alternative Regulatory Interventions on the Recreational Value of Angling on the Breede River Estuary, South Africa'. *African Journal of Marine Science* 36: 399-408.

### CONTACT

Leonie Joubert [leonie.joubert@scorched.co.za](mailto:leonie.joubert@scorched.co.za)

Jane Turpie, University of Cape Town, [jane@anchorenvironmental.co.za](mailto:jane@anchorenvironmental.co.za)



EfD Center in South Africa, [www.efdinitiative.org/centers/south-africa](http://www.efdinitiative.org/centers/south-africa)  
[jane.turpie@uct.ac.za](mailto:jane.turpie@uct.ac.za); Phone +27-21-6503302  
Environmental Policy Research Unit (EPRU), Southern Africa Labour & Development  
Research Unit (SALDRU), School of Economics University of Cape Town (UCT)  
Private Bag, Rondebosch 7701, South Africa



EfD, Environment for Development initiative, [www.environmentfordevelopment.org](http://www.environmentfordevelopment.org)  
EfD Secretariat: [info@efdinitiative.org](mailto:info@efdinitiative.org), Phone: +46-31-786 2595, Fax +46-31-786 10 43,  
[www.efdinitiative.org/efd-initiative/organisation/secretariat](http://www.efdinitiative.org/efd-initiative/organisation/secretariat), Department of Economics,  
University of Gothenburg, PO Box 640, SE 405 30 Gothenburg, Sweden