



Although my time on board was busy, there was also time for quiet contemplation, here I am viewing a beautiful sunset over cold pancake ice floes in Antarctic waters (top).

Carrying Go Flo bottles for CTD (Conductivity, Temperature, and Depth) deployment (below).



### Trip of a lifetime cont.

medication and after two days I finally got my sea legs. I felt so much better, and finally, I could move around, go outside, and get some fresh air.

Dedicated scientists gave evening talks on polar science research, including oceanography, climate change, trace metals, phytoplankton, and top predators. We also had frequent briefing sessions with the chief scientist and other leading scientists, where they took us through their plans for the sampling stations.

Additionally, SAPRI trainees had training and observation sessions with different research teams. Life on board research vessels like SA Agulhas II is fast-paced and requires conducting the most amount of work possible during favourable weather conditions. Plans can quickly change depending on the weather. Some of the operations done at the research stations included measuring CTD (Conductivity, Temperature, and Depth), deploying a Marine Snow Catcher to quantify dissolved organic carbon, sea ice coring, and top predator observations (e.g., seabirds, seals, and whales), which took place regularly throughout the trip. The crew and scientists did an incredible job of orchestrating backup plans to ensure that research was done as planned.

It took us about six suspenseful days to reach Antarctic sea ice - getting to sea ice was the big highlight and excitement of this trip for me. Most days were windy, with temperatures below freezing point. I could feel my hands developing frostbite and getting numb. I did not know that one should not put very cold hands in hot water until I submerged mine and instantly regretted doing that because of the severity of the sting and burn.

A variety of facilities on board ensured our well-being such as the library, gym, and sauna. I used a sauna for the first time and enjoyed it so much. We also had plenty of card and board games to play and socialise with other passengers.

I feel very privileged to have had an opportunity to experience the southernmost region of the Southern Ocean, dedicated to science and conservation. I am grateful to South African National Parks for allowing me to take part in this valuable expedition.

## An alien invasive species dominates catches in an estuarine fishery

Text and photo by Kyle Smith

### IN CONTRAST TO OTHER ESTUARINE SYSTEMS, THE TOUWS ESTUARY FISHERY IS DOMINATED BY MOZAMBIQUE TILAPIA, A FRESHWATER SPECIES

Estuaries, often places of great scenic beauty, are highly productive ecosystems and provide a range of goods and services. Unfortunately, this makes them focal points for development and use, with associated deterioration of habitats and processes. Thus, managing the multiple demands placed on estuaries is essential to ensure that they continue to provide benefits.

Many estuarine-dependent fish populations have declined due to overfishing and environmental degradation, which places the sustainability of estuarine line fisheries in question. Pressures include high targeting rates of vulnerable species, high retention rates and the large proportion of undersized fish being retained. However, few formal fishery assessments have been undertaken.

The Wilderness Lakes and Touws Estuary is an example of a system where estuarine fish populations are declining. Park zonation permits line fishing and bait harvesting within the interconnected Eilandvlei, Serpentine and Touws Estuary. To assess where and how much fish and bait harvesting occur in the system, monthly surveys and interviews were undertaken in 2022 and 2023.

Over a year, 36 surveys were completed during which 204 anglers were encountered. Fishing effort was higher over weekends but, interestingly, interviews indicated that some anglers avoided Eilandvlei over weekends due to entrance fees. Fishing effort decreased over winter, with the highest fishing effort recorded in the autumn months (March to May). Surprisingly, 42% of anglers targeted Mozambique tilapia, an extralimital freshwater species listed as one of the world's hundred worst invaders. Nevertheless, this active targeting of a freshwater invasive species reduced fishing pressure on endemic



Mozambique tilapia caught at Island Lake; this invasive species is targeted by anglers resulting in reduced pressure on indigenous estuarine-dependent fish species.

estuarine-dependent fish species, such as white steenbras, Cape stumpnose and spotted grunter.

In general, 74% of fish caught were retained, but retention rates varied among species. For example, all leer-vis were released, but 88% of white steenbras, a species listed as endangered on the IUCN Red List and whose adult population is estimated at being 96% depleted, were retained and all were undersized. Furthermore, almost all Cape stumpnose and 40% of spotted grunter retained were undersized, placing the future of these populations in jeopardy. Mozambique tilapia have no minimum size limit and 82% were retained.

The Touws Estuary line fishery is the first estuarine fishery to be assessed where the target species and dominant catch comprises a freshwater species.