



## **Strandloper Project Annual Report 2021**

### **The Deep End of 2021**

Locally and internationally, 2021 has provided numerous challenges across the board, impacting on lifestyles, travel and occupations. But from adversity, innovation and opportunities are spawned and the world has seen some cutting edge advances in science and technology accompanied by a shift in mindsets that elevate the value of our connection with nature and the environment.

The Strandloper Project has also seen its challenges in 2021. Local and regional lockdowns limited beach access and restricted our reef surveys in the first quarter of the year. Algal blooms and poor visibility in the Garden Route hampered dive surveys for the rest of the year. The impact of COVID on business compromised funding and sponsorships.

In the field of environmental research, 2021 did provide some unique opportunities to continue habitat studies without the pre COVID pressures of human activities and with some astounding observations documented across the globe.

Reviewing our activities for the year, despite the lockdowns and other pressures, the Strandloper Project has, in terms of our objective of highlighting the impact of recreational fishing and plastic pollution on ocean health and marine biodiversity, managed to make 2021 another successful year.

### **Reef Surveys**

Our focus for reef surveys was on two of our established reef survey transects; namely the Gericke's Point and Paquita Wreck sites. Water conditions in the first quarter were ideal for survey dives with warm sea temperatures and moderate to good water visibility. Unfortunately, lockdown restrictions and beach closures prevented us from capitalizing on the favorable conditions.

With the controversial 'fishing permit' beach access regulation exploited for beach access during lockdown and beach closure regulations, being able to conduct our surveys in January and February should have been a perfect opportunity to measure the impact of the increased fishing effort, particularly at Gericke's Point, but sadly, due to poor sea conditions we were unable to capitalize on this opportunity.

### **Gericke's Point**

We usually attempt to conduct a pre-season reef survey and clean up in the first week of December with a follow up in the second half of January so that we have an indication of the impact and snag rate of recreational fishing tackle at Gericke's Point. Unfortunately, the lockdowns for the period of December 2020 and January 2021 prohibited any reef survey and clean ups.

Reviewing our reef clean up data from 14<sup>th</sup> November 2020 and 14<sup>th</sup> March 2021, the two dives before and after the modified vacation influx, we had a marginal increase in the snag rate of regular fishing tackle, represented by lead sinkers, and a considerable increase in 'budget' sinkers substituted by spark plugs, cut off steel rods and other metal items.

The increase of snagged monofilament over this period was also considerable, indicative of less experienced fishermen fishing at unviable locations during high tide cycles and casting from locations that would result in a high rate of snagging as well as the loss of a longer length of monofilament in the event of snagging.

Hampered by the onset of prolonged poor visibility and rough sea conditions from the second quarter, we were only able to conduct one more full reef survey and clean up dive on the 10<sup>th</sup> June (52 lead sinkers) and a partial cleanup dive on the 10<sup>th</sup> April (19 lead sinkers). During the 10<sup>th</sup> June dive, we were informed by some of the volunteers present that there is at least one group of divers that are diving to recover lead sinkers for the purpose of selling the lead. This added clean up effort has had an influence on our recovered fishing tackle data and we have requested that they record and report what they recover so that we can add it to our database.

Despite only being able to conduct 2 full transect dives, we did manage a total of 13 dives at Gericke's Point to monitor the reef condition, of which four were to capture the reef condition at our primary fixed point photography survey site.

Our fixed-point photography site is located on the western side of the Gericke's Point peninsula in a tidal pool that is continuously open to the open sea via a channel.

The significance of this site in particular is based on the comparison with archival images from December 2014. Comparing the archival images with images taken in September 2019, we have overwhelming evidence of reef regeneration. Our initial view was that the dramatic regeneration of sessile fauna and floral marine life on the rocky substrate was primarily due to increased sea temperatures. Sea fans and coralline algae are the primary indicators of regeneration at the site.

Successive monitoring suggests that climate change is the driving process of the reef regeneration, however, through indirect mechanisms.

The Swartvlei Estuary opening to the ocean in Sedgefield is a blind estuary mouth, exhibiting open and closed phases. Prior to the regional drought period of 2016 to 2018, the mouth was, on average, open for a period ranging between 18 and 20 months and closed for a period of 3 to 5 weeks. Since 2017 the open / closed cycle has reversed to a period of closure for 6 to 12 months and an open phase of between 3 to 6 weeks. This flip in open / closed phases is most likely a result of both climate change and increased water abstraction for agricultural purposes in the catchment area of Swartvlei. The resultant reduced flow of fresh water, with agrochemical pollution runoff, from the catchment area is a possible contributing factor of reef regeneration. Images captured from four surveys in 2021 demonstrate a continued growth of the sea fans and coralline algae at the site.

### **Paquita Wreck**

Monitoring of this site through 2021 has been difficult due to sea conditions and COVID restrictions. Four dives were conducted and our findings remain consistent in terms of the method of snagging of fishing tackle at this site. The majority of fishing tackle snagging method is by the hook embedding in reef organisms, primarily red bait (*Pyura stolonifera*). The majority of snagged tackle observed are comprised of simple budget setups, indicative of a lower socio-economic group of fishers. One change in the type of tackle recorded on the 2021 dives was an increase of lures and spoons which were primarily found in deeper water (3m – 12m), most of which were on the wreck site. This tackle was also snagged with the hooks embedded in Red Bait and other sessile reef organisms.

### **Beach Clean Ups**

Strandloper Project hosted two beach clean ups in conjunction with reef clean up dives on the 14<sup>th</sup> March and 18<sup>th</sup> September respectively, the latter of which was conducted on the International Beach Cleanup Day.

On both occasions Dirty Dozen transects were conducted to document the density and distribution of washed up microplastics and nurdles along the high water mark between the Swartvlei Beach Parking area and Gericke's Point.

The two events were well attended with 20 volunteers attending on both occasions. On the 18<sup>th</sup> September a total of two and a half bags of plastic were collected. While this may not seem to be a large amount of plastic for a 1.6km section of beach, one and a half bags were actually microplastic, fine particles of broken plastic with most items smaller than 5cm.

Hopefully as COVID restrictions on group meetings ease in 2022, Strandloper Project plans to conduct monthly beach clean ups to gather information of the composition of the washed up plastic and the density of nurdles to determine wash up cycles on an annual basis and to correlate the incidence of plastic deposits with the status of blind estuaries, heavy rainfall and strong wind events.

### **Marine Life.**

The underlying ethos of the Strandloper Project is to document the impact of shore based recreational fishing on marine biodiversity and reef health. In the process of conducting our reef and beach surveys, we encounter stranded and washed up marine fauna, particularly marine mammals and birds.

The past year has seen a record number of seals washed up along the coastline between Brenton on Sea and Kaaimans River Mouth. The beaching of weak and undernourished seals and wash ups of dead seals, specifically Cape Fur Seals (*Arctocephalus pusillus pusillus*), along this section has been consistent with similar occurrences throughout the Western Cape and is a major concern for a number of marine research institutions.

In June the Strandloper Project began assisting with data collection of reported seal carcasses for Dr Greg Hofmeyer from Bayworld, the marine research department for the Port Elizabeth Museum.

The number of beached undernourished yearling Cape Fur Seals increased and reached a crescendo in September and October with almost daily reports of yearling seals between Buffalo Bay and Kleinkrans.

This high rate of beaching and washups resulted in the formation of a local stranding group in conjunction with locally based Ph.D. candidate Minke Witteveen, who is affiliated with the PE Museum, to better coordinate rescues, assessments and dissections of sighting reports. Documented occurrences were sent to Dr Hofmeyer.

While no specific cause of the spike in yearling deaths and beachings has been determined, ongoing research and tests are being conducted along the entire coastline of the Western Cape. Normally, the yearlings are weaned between September and November as their mothers prepare to give birth to their next pup and to moult. Left to fend for themselves, they have to learn to hunt on their own. The undernourished condition suggests either poor hunting abilities or a lack of prey species, or both.

On our 2021 Strandloper coastal research expedition between Struisbaai and Hermanus in October, we documented 142 seals, of which 115 were dead, including 3 suckling pups.

## Southern Seals

In addition to assisting with assessment, rescue and dissection of Cape Fur Seals, the Strandloper Project has assisted with the management and rescue of three vagrant species that have visited the region.

On the 1<sup>st</sup> February we assisted Keith Spencer from Cape Nature to monitor a young bull Elephant Seal (*Mirounga leonina*) at Ballot's Bay. Anticipating that it would establish itself on the beach for the duration of its moult, a protective area was marked off with educational signage erected to advise members of the public to leave the seal undisturbed. Ironically, as we prepared to depart after 4 hours of monitoring, the seal hauled back into the ocean and disappeared, not to be seen again.

Found by a member of the Strandloper Project research team whilst on a beach walk at Brenton on Sea, on the 25<sup>th</sup> July, we coordinated the rescue and transfer of a Sub Antarctic Fur Seal (*Arctocephalus tropicalis*) to the Teniqua Wildlife Rehabilitation Center. The intention was that the seal would overnight at the rehabilitation center and then transfer to Bayworld for the rest of its anticipated recovery. Sadly, it died overnight.

It was severely undernourished and its attempted rescue bode as a warning of what was to happen a few months later with Cape Fur Seals (*Arctocephalus pusillus pusillus*). Found on Sub Antarctic islands, approximately 10 vagrants of this species are recorded on South African beaches each year.

A few weeks later, on the 10<sup>th</sup> August the Strandloper Project responded to a report of a weak seal on Cola Beach. It was another southern vagrant, an Antarctic Fur Seal (*Arctocephalus gazella*). A rare visitor to South African, it was only the eighth record of this species found along South African shores. Little did we know that within the next 2 weeks two more of this species would be rescued between Mosselbay and Witsand. [View Here](#)

The rescue of the Antarctic Fur Seal was successful and it recovered well at Bayworld before being released 40km offshore. The rehabilitation of rescued seals focuses on fattening them up to a length determined target weight before release. Past releases of Antarctic and Sub-Antarctic fur seals with GPS monitors have shown that they can swim up to 200km per day on their return journey south, in part assisted by the fast flowing southerly ocean currents.

## Unusual Sightings

Ocean currents along the Southern Cape coastline exert a massive influence on the presence of some species, particularly warm water species. Driven by seasonal prevailing winds and undulating currents, unusual species will move into the region in changing currents for a brief time.

A special sighting near Robberg Peninsula was of a juvenile Bluebottle Fish (*Nomeus gronovii*) trapped in a rock pool on the 7<sup>th</sup> January. The species derives its name from the fact that the juvenile shelters beneath rafts of blue bottles and its bold silver and indigo blue banding most likely provide ideal camouflage while there. [View Here](#)

Another unusual sighting was of Moorish Idols (*Zanclus cornutus*) at Gericke's Point, a fish species usually associated with tropical coral reefs. We observed them in March when the sea temperature was warmer than usual. [View Here](#)

## Coastal Research Expedition

To compliment our focused reef research, in 2019 the Strandloper Project implemented a series of coastal research expedition hikes to survey the coastline for plastic pollution, washed up fishing debris, marine fauna and any additional unusual sightings.

The 2021 expedition headed westwards from Struisbaai to Hermanus, approximately 195km over 10 days. Combined with our two previous expeditions, the 2021 expedition increased our total distance of coastline surveyed to 610km, a significant 20% of the South African Coastline.

Along the expedition, we carried out a combination of six survey methods and recorded all the data digitally on our smartphones in our CyberTracker app. The six survey methods used were :

1. Dirty Dozen Transect – A series of three 10m x 2m transects conducted every 5km to record all items of plastic in 17 defined groupings and one general 'Other' grouping.
2. Incidental Sightings – Recording items of interest and marine fauna between the 5km intervals of the Dirty Dozen surveys.
3. Plastic Bottle Surveys – A random count of plastic bottles along a 100m transect.
4. Micro surveys – Short 10m transects to document the density of a specific plastic item
5. Nurdle survey – A density count of nurdles on a 1m transect.
6. Spilltech Middens – A method of recording the density and distribution of microplastics discarded by SpillTech crews collecting nurdles.

The results for our 2021 expedition were phenomenal with in excess of 6500 data captures, a feat attributed to the hard work by our committed research team and the shoreline. On the 2018 and 2019 expeditions, there were long stretches of rocky shoreline which prevented easy and continued access to the highwater line. By comparison, this year, except for a short section of rocky shoreline, we were able to follow the highwater line almost seamlessly.

The full details of our findings will be published in the final 2021 expedition report, but some factors are worth highlighting.

- **Monofilament** – the amount of washed-up monofilament that was collected and documented far exceeded anything experienced on our previous expeditions. One of the major contributing factors to this can be attributed to tackle snagging in the Kelp Forests, information which should motivate local fishers to modify their fishing locations to reduce the loss of fishing tackle.
- **Marine fauna deaths** caused by ghost fishing. Closely linked to the high incidents of washed-up snagged monofilament is the occurrence of ghost fishing. We added 5 additional species of fish, exclusively Chondrichthyes (sharks and rays), to our lists of species killed by ghost fishing caused by lost and discarded recreational fishing tackle. This brings our documented total of fish killed by ghost fishing to 11 species, documented in just under 4 years of research. The impact of ghost fishing caused by recreational fishing is not only measured on the individual fish killed, but also on the future growth of the species and the role that it has on the productivity of the marine ecosystem. Sharks in particular, are vital mechanisms of marine biodiversity and productivity, and considering their low reproductive rates, should be protected at all costs. [View Impact of Ghost Fishing](#)

- **Avian Flu** decimated Cape Cormorant colonies in the Western Cape in October and November of 2021. A state of emergency for avian flu was declared on the 4<sup>th</sup> day of our expedition and we were able to demonstrate the value of dedicated citizen science research by being able to submit daily reports of geo-referenced information of sick and dead Cape Cormorants to the state vet and Cape Nature to assist with containment efforts.
- **Cape Fur Seal fatalities** and beachings. We were able to share our daily geo-referenced records of undernourished and dead Cape Fur Seals with Cape Nature and other marine stranding organizations monitoring and researching the cause of the increased yearling seal fatalities.
- **Plastic Pollution** – the composition of plastic pollution was distinctly different to our previous expeditions, most noticeably of high counts of foreign plastic water bottles, sucker sticks, condoms (an indicator of poaching activities), pawpaw wrappers and bottle tops. There were three sections of coastline that had extraordinarily high densities of plastic pollution, the latter of which required an improvised *in situ* new category of classing plastic pollution density.
- **African Black Oyster Catchers** – we were able to conduct a comprehensive survey of the density and distribution of African Black oystercatchers along the relevant shoreline. We documented the distribution of 669 oyster catchers. Of interest were two distinct gaps in their distribution along the expedition route which will require further analysis and research, but one of the possible contributing factors of the absence of this species from these sections of the shoreline is the incidence of the public driving on beaches.
- **Vehicles on Beaches** – We were surprised to see the frequency with which vehicles travel on beaches along this shoreline, especially in light of the fact that this activity is illegal in South Africa. The total disregard of the banning of driving on beaches truly makes this coastline the Wild West of the Western Cape, and considering our mapped distribution of African Black Oystercatchers referred to above, needs to be reviewed by both authorities and local citizens.
- **Spill Tech Middens** – An extremely disturbing finding along the expedition was what we have come to term 'SpillTech Middens', the discarded mounds of microplastic left behind by the Spill Tech teams employed to collect nurdles. Commissioned to recover as many nurdles as possible from a substantial spill in August 2020 off the Eastern Cape, Spill Tech teams have been literally sifting the shoreline from Storms River to Cape Point for nurdles since November 2020. It can take a half hour to sift a 10m strip of beach which results in a pile of microplastics and nurdles. The team then diligently sorts the nurdles from the microplastics (which can take three to four hours), and when finished, discard all the microplastics, leaving piles of microplastics all along the coastline. There simply has to be a more time efficient and environmentally responsible outcome to replace the current collecting method.

Our coastal research expeditions are wholly reliant on donations and support from local communities that we hike through, and the Strandloper Project extends their sincere gratitude to all sponsors and donors for their support for this valuable research expedition.

### **Knysna Seahorse Rescue in Swartvlei Estuary**

The Knysna Seahorse (*Hippocampus capensis*) is a species of seahorse endemic to 55km section of coastline in the Southern Cape and is found in only three estuaries, the Keurbooms,

Knysna and Swartvlei estuaries, with the latter population the only population living in a blind estuary.

Living in a blind estuary, the Swartvlei population is prone to water levels rising during a closed phase, followed by a drastic lowering of the water level when the sandbar breaches after heavy rains. During the closed phase, the high water levels allow aquatic plant growth to establish in the newly inundated areas, providing new habitat for the seahorses and other estuarine fauna. With the rapid drop in water levels following the breaching of the sandbar, most fish species will swim to the deeper channel to avoid being stranded. However, seahorses which are a cryptic species, instead of swimming to the deeper channel, retreat into the new plant growth and get entangled and subsequently stranded.

Following the breaching of the mouth, researchers from the Garden Route National Park coordinate a three day operation to rescue seahorses and related pipefish.

Volunteers from the Strandloper Project assisted with seahorse rescue efforts in May and November of 2021. [Read More](#)

### **Public Awareness**

An objective of our marine research is to study the human impact of recreational fishing and plastic pollution on ocean health and marine biodiversity. Sharing our findings is vital for the conservation of marine fauna and flora. Utilizing a spectrum of platforms, the Strandloper Project, has been able to share our findings with both local and international communities.

In the COVID restricted landscape of 2021, social media platforms became our primary means of communication.

Instagram (>130posts) and Facebook (>125 posts) have been our mainstay communication platforms for 2021, complimented by Twitter (>96 posts), YouTube and a Wordpress Blog.

Face to face interactions included two school outings with learners from the George Sports Academy on the 29<sup>th</sup> March and participants of the President's Challenge on the 21<sup>st</sup> August.

Mark Dixon was invited as keynote speaker for the Sedgefield Lions Club and the Mossel Bay Museum and Chris Leggatt was invited to present to the Mountain Club, Wilderness Photographic Club and the Knysna U3A meetings.

Strandloper Project exhibited on ghost fishing and plastic pollution at the Marine Festival to Celebrate the Start of the Humpback Whale Migration held in Brenton On Sea on the 5<sup>th</sup> June. [View Here](#)

Mark Dixon is a regular guest on the Thursday environmental feature to discuss marine sustainability and was invited onto the High Noon program with Janet Marshall. [Listen Here](#)

### **Diving into the Future**

Our research, while offering some insights to the impact of recreational fishing and plastic pollution in the ocean, has also exposed a number of new issues to be studied and raised the issue of finding alternatives that are more eco friendly and sustainable.

We look forward to a less restrictive future in 2022 so that we can scale up our volunteer program and ocean health monitoring.

To address the issue of the flow of microplastics from municipal infrastructures and rivers into the ocean, Strandloper Project will be launching a competition for a design of a self-

cleaning filter device that can be fitted into a range of municipal infrastructures. We have launched a crowd funding account to raise funds for the winning designs. For more details visit our website from this link : [Plastic Free Innovation](#)

[Support our Crowdfunding Platform](#)

**Follow and Contact Strandloper Project:**

- Website : [www.strandloperproject.org](http://www.strandloperproject.org)
- Facebook : [Strandloper Project](#)
- Instagram : [@strandloperproject](#)
- Twitter : [@StrandloperP](#)
- YouTube : [Strandloper Project Playlist](#)
- Email : [ghostfishing@strandloperproject.org](mailto:ghostfishing@strandloperproject.org)
- Crowdfunding Account : [www.bit.ly/PlasticFreeInnovation](http://www.bit.ly/PlasticFreeInnovation)

As the year draws to a close, I would like to thank everyone who has volunteered their time and skills to contribute to the success of our citizen science research. Without a doubt, support from our sponsors and donors have enabled the Strandloper Project, particularly in 2021 and we look forward to some exciting new activities in 2022 with their continued support.



Mark Dixon

Founder Strandloper Project