South Georgia Association Newsletter

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The Spring Meeting & AGM will be on April 29, 2016

The royal visit to King Edward Point.

Princess Anne returns to South Georgia

HRH The Princess Royal has paid her second visit to South Georgia, as a guest of the government of South Georgia and the South Sandwich Islands. She arrived, accompanied by her husband Admiral Sir Timothy Laurence, aboard *Pharos SG* on January 16 in 'some reasonably iconic South Georgia wind and snow'. Their party included notables from GSGSSI, FCO, BAS, SGHT, UKAHT and NZAHT.

During the course of the day the royal party were given a tour of the station at King Edward Point and had 'smoko' with the BAS employees before walking round to Grytviken to be shown around the whaling station and heritage buildings by the Government Officers.

Chatting to Museum staff.

They then toured the South Georgia Museum where they had lunch (including reindeer paté) and afterwards the Princess opened the newly-refurbished 'Slappen' or Slop Chest, the store where the whalers could buy clothing, tobacco and other personal items. It has been transformed into a new post office for visitors and an exhibition space which currently houses a display of images and original lantern slides taken by Shackleton's expedition photographer Frank Hurley. The materials are on loan from the Royal Geographical Society whose *Enduring Eye* exhibition was sponsored by GSGSSI.

Opening the Slop Chest and new post office.

In the afternoon the royal party enjoyed a private walk before joining the local community for a photograph on the beach followed by drinks on the station verandah. The

day concluded with a dinner at Carse House featuring a local menu of potted krill and roast reindeer. They re-boarded *Pharos SG* that evening and set sail to visit other parts of the island.

The excursion continued to King Haakon Bay on the exposed southern side of the island but there was no possibility of landing at Cave Cove where the *James Caird* had sought shelter 100 years earlier. Possession Bay was also visited on the anniversary of Captain Cook's first recorded landing in 1775.

Natural history replaced history with visits to two of the island's greatest wildlife spectacles. In the west, Bird Island with everything from wandering albatrosses to pipits and, in the east, Gold Harbour with 25,000 pairs of king penguins, elephant seals and fur seals.

With the wanderers on Bird Island.

Mingling with less than enthusiastic crowds at Gold Harbour.

Two visits to this jewel of an island is surely a royal seal of approval!

More Polar Medals for South Georgia stalwarts

Kim following a killer whale.

Kim Crosbie's polar career began in 1991 when she joined the Scott Polar Research Institute. She gained a PhD for research on monitoring and management of visitor sites in the Antarctic. This required three summer seasons camping on Cuverville Island off the Antarctic Peninsula where she led a small team studying the effect of visitors on nesting penguins.

Following completion of her PhD, Kim turned from the academic study of visitors to their practical management. She became an Expedition Leader on board cruise ships, a role that requires good organising ability, a calm demeanour in stressful situations and an ability to relate to all types of people. In 2005, she joined IAATO as Environmental Manager and subsequently Operations Director before being appointed Executive Director in 2013. Her years of experience in the field of Antarctic tourism have proved invaluable for improving management techniques for safe and environmentally friendly visits.

Jérôme Poncet first visited Antarctica aboard the yacht *Damien* in 1971. With his companion Gérard Janichon, he was making a five year round-the-world trip. *Damien* was the first small yacht to reach Spitzbergen and sail below the Antarctic Circle. They had arrived at KEP after capsizing three times and being dismasted 50 miles to the south and had barely made it to safety. They had believed the island was deserted and were delighted to be welcomed by the men at KEP who repaired and serviced *Damien*.

Jérôme has been returning to South Georgia and Antarctica ever since. In 1978 and 1979 he and Sally wintered in Marguerite Bay, Antarctic Peninsula, on board *Damien II*. This continued to be their home in the Southern Ocean for several years as their family grew with the arrival of three sons (Dion was born at South Georgia). The family settled on Beaver Island, Falkland Islands, and continued to cruise to high latitudes conducting private botanical and seabird surveys. They were soon asked to conduct scientific surveys and then transport expeditions including the film teams for the

BBC's *Life in the Freezer*, *Planet Earth* and *Frozen Planet* as well as others for survey, adventure and photography.

Jérôme's unrivalled knowledge of relatively unexplored coastlines and the extreme Antarctic environment has enabled advances in both scientific and popular understanding of the Southern Ocean environment.

HM The Queen awards the Polar Medal to those who have made conspicuous contributions to the knowledge of the Polar Regions and/or have provided outstanding service in support of gaining such knowledge and we congratulate Kim and Jérôme.

SGA's bottle of champagne claimed

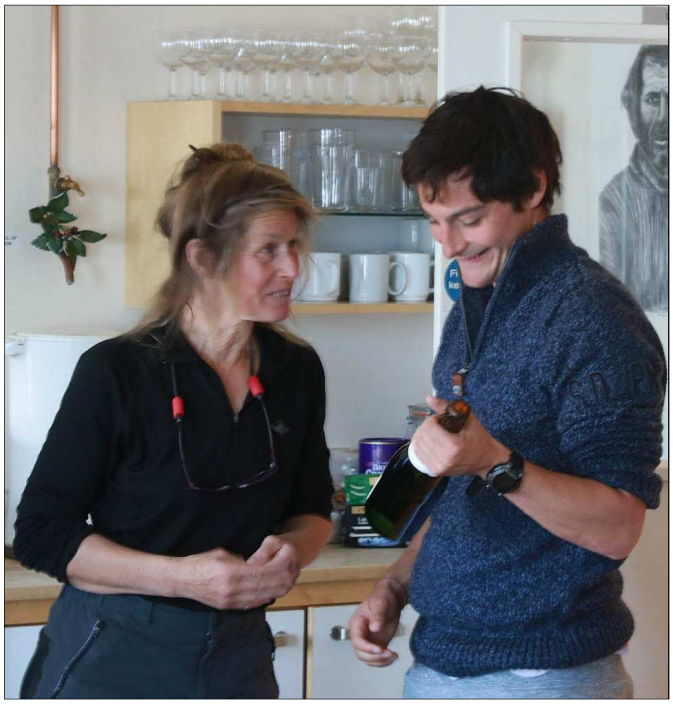
The champagne-winning pipit nest. *Jamie Coleman*

At last, there is a winner of the bottle of champagne offered by the SGA for the first record of a pipit nest on the Thatcher Peninsula (the land around Grytviken). It has been on offer since 2011 when the South Georgia Heritage Trust started their £7.5 million rat eradication project. The return of the pipit has been a good indicator that areas are clear of rats and, considering the rapid rate at which pipits have been recolonising other areas, it is surprising that the bottle has not been claimed before.

The nest was found at Burnet Cove, Maiviken, by biologist Jamie Coleman. This is the tussac-covered study site (*see* page 11) that he visits. Jamie reports that he had been hearing pipits singing there for several weeks. The songsters could have been birds passing through but they were always in the same places. Then he saw a pipit carrying food, which is a sure sign that it has chicks to feed. Eventually, he heard the characteristic rasping calls of chicks begging for food. To the surprise and amusement of his companions who had no idea of the significance, he ran towards the noise and soon saw a pipit fly in with food, so nailing the site of the nest. A quick photo provided proof and the nest was left alone.

Six nests have now been located at Maiviken and more have been found elsewhere on the Thatcher Peninsula and on the Barff Peninsula.

At a ceremony at KEP, Sarah Lurcock, as representative of the SGA, invited Sally Poncet, who had discovered the first mainland nest at Schlieper Bay in 2013, to present Jamie with the bottle. A fitting celebration for very good news and we hope the contents were enjoyed.

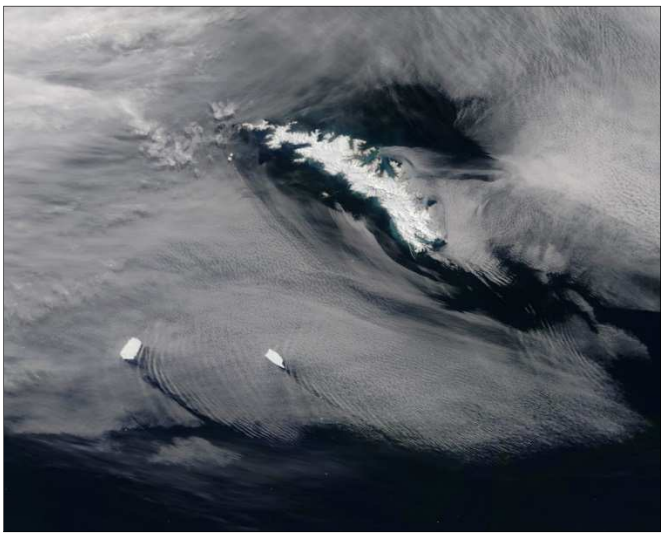


Sally presents the champagne to Jamie. *Matthew Phillips*

Carrying food to the chicks.

These stunning photos show the wings' alternate flapping and folding that give small birds their characteristic 'bouncing' flight. *Jamie Coleman*

Icebergs make waves



Jeff Schmaltz, NASA

These images, dated November 27, 2015, were taken by the Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Terra satellite. They show two tabular icebergs floating south of South Georgia making waves—in the atmosphere.

They are producing a 'cloud wake' in low-level clouds in the same way as a ship leaves a V-shaped wake in the water.

Wave clouds occur when an air mass is forced up and over an obstacle, usually an island, which is large enough to prevent the air from simply going round it.

Something for the diary

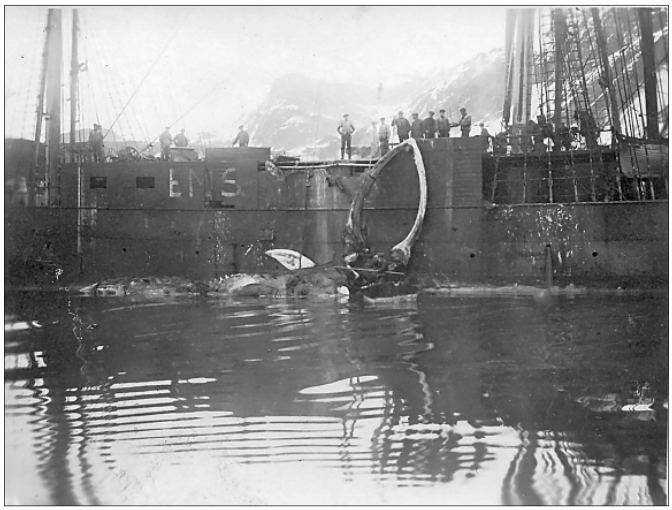
(Note the clever logo!)

Neutrality markings in World War I

Ron Lewis-Smith found this photograph at Husvik many years ago. It was badly damaged by water but the bottom part was unharmed. It shows the cargo ship *Orwell* at Husvik. *Orwell*, commanded by Ingvar Thom, was the ship that conveyed McNish, McCarthy, Vincent and the *James Caird* back to England in 1916. This photograph must date from about that year.

The photo is of particular interest because the hull is painted white and the ship's name, nationality (Norge) and two Norwegian flags are painted on the side. Flying the flag of a neutral state is the recognised assertion of a vessel's neutrality but we can imagine that a flag might not always be visible, especially through a submarine's periscope. It was therefore the practice of Norwegian vessels in World War I to have their nationality clearly marked on the hull to reduce the chances of being torpedoed by submarines of either side.

There are a number of photographs in existence of Norwegian vessels with neutrality markings at South Georgia. The name and flags on the floating factory *Ems* in the photo below have been almost obliterated by blubber and blood as lumps of whale were hauled onto her deck. Presumably she was repainted before her hazardous voyage back up the Atlantic!



The photo was taken at Grytviken from HMS *Kent*, veteran of the Battle of the Falklands, which visited South Georgia on 10 April 1916 while on her way to Simon's Town. The ship had been ordered by the Governor of the Falkland Islands to visit South Georgia and check whether the island was being used as a base by German navy ships. It was not. The whalers told the captain that they regularly

steamed past all the likely anchorages and would have spotted any intruder.

This, incidentally, was the occasion of the first messages sent by wireless telegraphy from South Georgia. *Kent* was also able to report that the dozen German employees at Grytviken did not pose a threat and '…in any case they appeared to be pro-Ally'. Very wise of them in the circumstances!

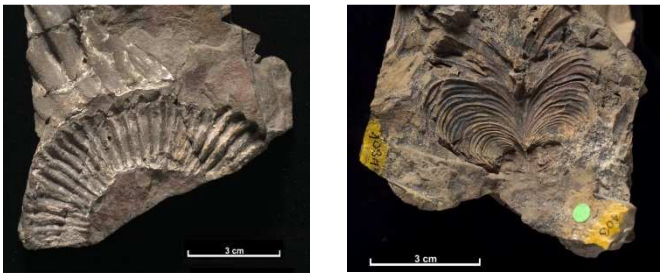
Bob Burton

South Georgia: a history of geological exploration

By way of placing some sentimental reminiscences in their proper context, I have compiled a history of the geological exploration of South Georgia, from the first specimen collection in 1871 to the present-day integrations of the island into the structure of the Scotia Arc. Early reconnaissance by passing expeditions en route to the Antarctic was supplemented by mineral prospecting sponsored by the Salvesen Whaling Company. A modern synthesis began with the work of Duncan Carse's South Georgia Survey expeditions in the 1950s, and was consolidated during wide-ranging research, mostly by the British Antarctic Survey, during the 1970s and 80s. In parallel with the insular studies were international efforts to understand the role of South Georgia in the development of the Scotia Arc. These ranged from the early debates as to the validity of continental drift, through to modern interpretations based on plate tectonics. All of the contributions are discussed in their appropriate historical context within the development of an understanding of South Georgia's geological origins. A comprehensive bibliography of the relevant scientific literature is included.

The geological exploration of the sub-Antarctic island of South Georgia: a review and bibliography, 1871-2015 has been published online by the British Geological Survey as a free download at http://nora.nerc.ac.uk/512249/.

Phil Stone



Some interesting geology: Two fossils of Early Cretaceous age from Annenkov Island collected by Alec Trendall in 1954 during the second of the South Georgia Survey expeditions. They are impressions of a part of an ammonite and a pair of conjoined bivalve shells.

More geology

This lithograph of the Hindle Glacier at the back of Royal Bay was created by SGA member Jean Stenico from a visit in 1995. The glacier was originally named the Bruce Glacier after William Spiers Bruce by George Sutton's British South Georgia Expedition but was renamed the Hindle Glacier after Edward Hindle, secretary of the Royal Geographical Society and supporter of Duncan Carse's South Georgia Surveys.

Notes from Bird Island (from Icesheet, courtesy of BAS)

Wanderer Super-mum

At the end of August last year we found an adult male wanderer 'WV86' had unfortunately crash-landed above one of the black-brow colonies.

Due to injuries sustained, unfortunately the albatross died. It had been a particularly foggy and poor weather spell and it is not uncommon for albatrosses to have poor landings in such conditions. When I researched the bird I was sad to discover he was a current breeder – I felt sure that his chick, who had four months to go until fledging, would not survive with just one parent to feed it. How wrong was I?!

The mum of this chick, whether she knew her partner hadn't returned to the nest or not, continued to make regular foraging trips and managed to get her chick to fledging age completely on her own. The chick successfully fledged on Christmas Day.

The mother's records showed she has been breeding since 1981 and had four different partners. She has been successful in bringing up a chick more times than she has failed and with her record is clearly a strong female.

Let's hope she has passed on her strong work ethic and good breeding genes to her chick, who now faces years of foraging at sea before hopefully returning to Bird Island to continue the bloodline!

Lucy Quinn

Albatross rescue

A new wandering albatross monitoring season is upon us at Bird Island. It was during one of the weekly checks that I noticed a male adult wanderer had a fishing hook protruding from his cheek. I called to Alastair and radioed the station immediately to request that Station Leader Jerry and Tim come up to the ridge to help us. We always keep an entanglement grab kit for just such occasions. The best approach was to cut the hook with bolt cutters from the outside and then feed the rest through the cheek from inside.

I held the bird very still whilst Jerry cut the hook from the outside. I then held the bird's powerful beak open for Jerry to reach in with a pair of pliers. On release it strolled off, probably wondering what had just happened but no doubt feeling relieved! This particular bird was ringed as a chick on BI so we know he is 20 years old and has successfully bred with the same partner every two years since 2008. The hook came from a long-line fishery; the bird caught during the hauling up process, then cut loose with the hook in its face. This season has been particularly 'hooky' with numerous regurgitations. It highlights the continued issue of albatrosses and long-lines.

Lucy Quinn

A 'jolly' to Carlita

When deciding where to spend the few precious nights away 'camping' that can be fitted into a gap in the cruise ship schedule and other works at the KEP Station, Carlita is always a powerful draw. If Pat and I can get 'boat support' for our jolly we can choose anywhere along the west coast of the Barff Peninsula or the south coast of the Busen Peninsula. The next question is do we take a tent or stay in a hut? There are now nine huts we can stay in. Finally, do we go 'light' and plan an energetic trek camping in different spots, or do we take everything we can think of for a comfy, alcoholic and epicurean break? If the latter, we use the place where we land as a base and the boat does all the carrying.

No point going to one of the places you can easily reach on foot because I never feel I have really 'got away' unless we are out of sight of KEP. So that discounts five of the huts, and for Hound Bay or St Andrews we would have hump our stuff 2 to 8 hours' walk over the Barff Peninsula. Being of the epicurean, alcoholic camper bent, that leaves two options – Jason and Carlita.

Now Jason is a wonderful spot, the hut is a historic whalers' hut and hardly anyone ever goes there, but at this time of year the place is going to be very full of fur seals and there are few ways out of the attractive valley to go exploring. Carlita it is then.

This lovely cove deep down Cumberland Bay West can be tricky to reach. Lines of brash ice stream off the rapidly disappearing Neumayer Glacier (retreating at 2m. per day) and, if the wind is in a certain direction, the ice can be packed hard into the cove in front of the smart red hut built in 2006.

Before they dropped us off, the adventurous boatmen pushed on down the fjord through ice that looked impenetrable from further away. Twenty and more snow petrels joshed about the sky over the larger icebergs. As we neared the glacier front we realised no one has ever taken a boat to this spot before. Look on the chart and it tells you your boat is at the 200m high contour of the glacier! Admiralty Peak now marks the split of what has become two separate glaciers, the Neumayer to the south and the König or perhaps an unnamed glacier to the north. Near the junction an underglacier river pours out and creates a strong current and upwelling where petrels, penguins, petrels and shags gather to feed. As we turn I gaze up at the new landscape of bare moraines that has appeared from beneath the glacier that used to pinch off Gulbrandsen Lake – now just another valley leading to the sea (*see* Newsletter No 26).

In the cove by the hut we transfer with our heap of luggage from the jet boat to the accompanying RIB (*Rigid-Inflatable Boat. Ed.)* which nudges between the lumps of ice lining the shore. We quickly offload and wave happily as the boats back gingerly off and head for home. Once they are past the little island that marks the eastern edge of the cove, we turn and ferry the boxes and bags to the hut, introducing ourselves to the fur seal and king penguins on the beach.

Pat and Sarah at Carlita. Jamie Grant

We have three precious nights away from the metropolis of KEP. The rest of that first day is spent investigating the wildlife close at hand. A small group of king penguin always seems to gather in the stream behind the tussac line and whitechins thickly inhabit steep tussac slopes on the opposite side of the cove. Ducks scatter from small ponds whilst we are en route, and we politely gave space to territory holding 'big boy' fur seals and their harems. We are rewarded for our vigilance when we stake out a wriggly female who soon gives birth. As soon as the

pup is out, the mother grabs it by the scruff of the neck and hauls it round to a position better suited to a first feed. Back at the hut, chairs in the sun and beer tops flipped off, we notice a quiet light-mantled sooty albatross (yes I know they are now meant to be called light-mantled albatross, but after so many years knowing it by its longer name or just as an LMSA I doubt I will adapt) is also camped on a nesting ledge above us.

Our long walk next day takes us 2½ hours over low passes towards Husvik to see the hilltop colonies of gentoos penguins and the small king penguin colony on the other side. Only, as we are getting to where the gentoos should be, the hilltops remain surprisingly bare. Now gentoos move their colonies about a good deal but this is not adding up and by the time we reach the coast we have only encountered two penguins. Where are they?

Searching the steep hillside to the east of Busen Valley for the usual colonies, we do see a few birds, but one hilltop nearby shows evidence of nesting that has been abandoned. The empty nests contain whole eggs abandoned by the parents but unscavenged by the skuas. It seems there has been a complete nesting failure leaving just too much food for the skuas to cope with. The story further afield is similar. There has been an almost entire collapse of breeding at Bird Island but the gentoos fared better in the study colony at Maiviken. Maybe there was a temporary lack of food close to shore because, later in the season, those that managed to continue nesting were bringing up two chicks per pair.

Still scanning the hillside at Husvik for penguins I spy something I really did not expect to see: a reindeer! The Stromness area has supposedly been reindeer-free for three years or more following the GSGSSI eradication programme. There had been a report from a visiting yacht of fresh looking reindeer poo at Husdahl nearby. So here was the depositor - a fat young male reindeer. Pat stalked it to get good photos and we headed home intrigued and wondering if it would be dealt with in time to feed it to our Royal Visitor. (It wasn't, but proved delicious later anyway!)

The last Monarch of the Island. *Pat Lurcock*

When the boats whooshed in to collect us a day later, I realised I had missed out on my favourite thing to do at Carlita, which is to climb the ridge to the west where, on a clear late afternoon, you can have a drink and watch the sun set over the mountains and glaciers with chunks of ice floating in the bay below you. Oh well, we will have to return soon!

Sarah Lurcock

The G&T view of Carlita. *Sarah Lurcock*

Churchill and seal conservation

Winston Churchill's involvement with Antarctic exploration is mainly remembered for his rather scathing comments on the Imperial Trans-Antarctic Expedition when First Lord of the Admiralty: 'These polar expeditions are becoming an industry' and 'Fancy that ridiculous Shackleton & his South Pole'. Yet he did telegraph 'Proceed' to send *Endurance* on her way after the declaration of war.

Years later Churchill became involved with another Shackleton expedition while wearing the hat of the Under Secretary of State at the Colonial Office.

On the return of *Quest* in 1922, Frank Wild wrote a two-part article in *The Times*. He described the return to Elephant Island where they were unable to land at Point Wild but did get ashore at Cape Lookout with the intention of killing seals. The blubber would be used as fuel to supplement the depleted coal bunkers. This attracted the notice of W.P. Pycraft, a naturalist and author, who wrote an article 'The fate of the sea-elephant' as one of his regular Science Jottings in *The Illustrated London News*. The idea of killing seals for fuel, he wrote, 'gives some of us occasion for a little anxiety' and he considered that 'these animals are seriously menaced'. The extinction of Steller's sea cow in 27 years of exploitation was cited as an example of unregulated exploitation. He stated that elephant seals had been absolutely wiped out in other places – there were sufficient still at South Georgia to sustain an annual

harvest of several thousand. To add to the impact of his story, Pycraft repeated the myth of king penguins at Macquarie Island being made to 'walk the plank' into boiling cauldrons to save the trouble of killing them first.

Such is the power of the Press that the Trustees of the British Museum (Natural History) – now the Natural History Museum passed a resolution: 'The Trustees heard the news with regret; and fearing that the slaughter of Elephant Seals on a wholesale scale for fuel would seriously endanger the survival of this remarkable species, they expressed the hope that this procedure will be avoided in future expeditions over which they may be able to exert any influence'. This was forwarded to Winston Churchill who, in turn, passed the correspondence, together with a similar letter from the Royal Geographical Society, to Sir John Middleton, Governor of the Falkland Islands and Dependencies. He expressed the request that 'in the event of any future expeditions calling at Port Stanley attention may be drawn to the provisions of the local Ordinances and Regulations relating to seals'.

Landing from Quest *at Cape Lookout.*

Frank Wild and the men on *Quest* were indeed guilty. Under the Sealing Ordinances of 1881 and later, seals could not be killed without a licence and, furthermore, their landing at Cape Lookout on March 26 was just inside the close season.

What was the extent of the slaughter? Wild later wrote that they killed 'in all nine sea-elephants and about the same number of (Weddell) seals'. A storm in a teacup? The elephant seal population had survived the onslaught of the 19th century sealers which far surpassed any crop that might be taken by rare Antarctic expeditions. Frank Wild, quite reasonably, pointed out that Pycraft could have ascertained the true facts from him before rushing into print. Yet it is good to know that the great men at the centre of the Empire were concerned about wildlife conservation in its remotest corner.

Bob Burton

Captain Ross reports from the Falkland Islands

On 23 September 1842, the Morning Post published a letter from Captain James Clark Ross to 'a gentleman of Guernsey'. Ross was returning from his foray into Antarctica in which he discovered what is now called the Ross Ice Shelf and was staying in the Falkland Islands to repair the damage to HMS *Erebus* and *Terror* caused by a collision while avoiding an iceberg.

Of interest to readers of this newsletter is Ross' description of tussock grass, which was being studied by the botanist Joseph Hooker, and his hopes for fur seals.

'The splendid tussack grass is the gold and glory of these islands. It will, I hope, yet make the fortune of Orkney and Irish landowners of peat bogs. Every animal feeds upon it with avidity, and fattens in a short time. It may be planted and cut like the guinea grass of the West Indies. The blades are about six feet long, and from 200 to 300 shoots spring from one plant. I have proved, by several experiments, that one man can cut 100 bundles a day; and that a horse will greedily devour five of these in the same time. Indeed, so fond of it are both horses and cows, that they will eat the dry tussack thatch from the roofs of the houses in preference to good grass. About four inches of the root eats like the mountain cabbage. It loves a rank wet peat bog, with sea spray over it. Indeed, when the sea beats with the greatest violence, and the sea spray is carried furthest, then the tussack grass thrives the best on the soil it loves.'

The tussac-clad slopes of Burton Cove, Bird Island. Claudia Mischler

Hooker collected seeds of tussock grass and deposited them at Kew Gardens, from whence they were distributed around the Empire, without noticeably enriching Orkney or Irish landlords.

Later in the letter, Captain Ross described his tame guanaco that laid its head on his knee and his monkey from the Cape Verde Islands which was 'quite lively'. He then wrote 'I hope soon to give a favourable account of my adding to our domestic breed of animals the valuable fur seal.'

Valuable certainly, but fit for domestication? Bob Burton

Readers familiar with fur seals may consider this statement to be hopelessly optimistic with regard to an animal whose pups are born with an aptitude for pugnacity.

Reclaiming South Georgia
The defeat of furry invaders on a sub-Antarctic island
Tony Martin and Team Rat
South Georgia Heritage Trust (no date)
ISBN 978-0-9564546-3-8

This is an amazing story about an amazing project undertaken by an amazing team - Team Rat. To attempt to lay killer bait for rats and mice on more than 1,000 sq km (c. 400 sq miles) of extremely rugged terrain on a large, isolated island in the South Atlantic, at times in very difficult weather conditions, is truly the stuff of enlightened conservation. The project was part of the ongoing South Georgia Habitat Restoration Project under the auspices of the South Georgia Heritage Trust with additional sponsorship from the Friends of South Georgia Island (which has as its motto 'making the possible seemingly possible') and over 5,000 other donors and supporters. This book tells the story of this enormous task.

Brown rats (*Rattus norvegicus*) and house mice, introduced from ships visiting South Georgia, had spread out from the whaling station areas and colonised vast tracts of the coastal lowlands. Through predation over time, they had severely impacted many ground-nesting birds (prions, storm and diving petrels, the South Georgia pintail and speckled teal as well as the South Georgia pipit).

The fieldwork for the eradication was undertaken in three phases in 2011, 2013 and 2015 and required 302 tonnes of bait (contained in 12,500 bags) dispensed from hoppers with spinners slung under three helicopters flying a total of 1,050 hours over a distance equivalent to three times around the world! Team Rat comprised some 39 individuals with widely ranging skills from engineers, pilots, chefs, GIS to logistic specialists and many others, directed by Professor Tony Martin and supported by a Steering Committee in the UK. The bait had to reach all the possible ice-free areas into which rats and mice could have spread; so delivering it from the air was the only solution – expensive though it was – and enabled the fieldwork to be completed in a few years.

The bait had to be attractive to the target species and contain a highly effective rodenticide. In this case it was a second generation anticoagulant, Brodifacoum (4-hydroxy coumarin vitamin K antagonist) with a half-life of 20-130 days. It is highly toxic to rodents. This 'superwarfarin' was contained in large hard pellets comprised of a cereal base and resistant to moisture (essential on South Georgia).

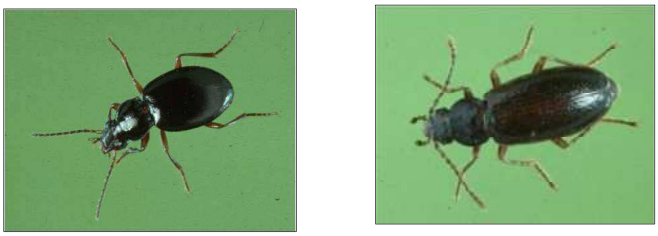
A tonne of bait could be spread per hour per helicopter on discrete baiting zones: 19 rat zones and two mouse zones ranging in area from 4 to 233 sq km. An earlier preliminary experiment with this bait distributed by hand on Grass Island in Stromness Bay had proved successful. Careful planning enabled the bait to be delivered accurately by helicopters using predetermined GPS flight lines. Weather conditions, in typical South Georgia fashion, dictated that flying was only possible on 1/7 of the time that the team was ready to spread bait – the weather was always in charge! There are graphic descriptions of the ups and downs of fieldwork which Team Rat experienced on South Georgia.

Inevitably, there was some incidental bird mortality, especially of skuas feeding on dead rats, but as far as possible this was reduced by baiting in the autumn and early winter periods when most of the migratory birds had departed.

However, applying such a powerful anticoagulant does lead me to wonder about its effects on the terrestrial ecosystem in general and in particular on the invertebrate communities, especially the indigenous species. Invertebrates appear not to be generally affected by Brodifacoum, but some trials are being undertaken with *Placostylus* snails on Lord Howe Island in the Tasman Sea to determine their susceptibility to it. Cockroaches fed on a diet containing the anticoagulant were unaffected as insect blood, with haemocyanin as the oxygen carrier, does not coagulate in the same way as vertebrate blood

with haemoglobin. There is no evidence that Brodifacoum is taken up by plants.

Turning to the tussock grass community of South Georgia, presumably where much of the rat bait was distributed, the dominant insect there is a herbivorous beetle (*Hydromedion sparsutum*) which is preyed upon by a carabid beetle (*Trechisibus antarcticus*), which itself is an alien species introduced during whaling activities (*see* Newsletter No. 28).



Alien and native beetles. (*British Antarctic Survey*)

Field experiments conducted on South Georgia during 1988-96, in which supplementary feeding of the herbivore with rabbit food, demonstrated significant population increases and changes in its biology. The main constituent of the rabbit food used in these experiments was cereals, which resulted in increased body mass of the prey species and the production of larger eggs resulting in larger larvae, which could not be predated by the adult carabid. Brodifacoum has a cereal base and I suggest that the rodent bait, if consumed by the herbivore beetle, may cause a similar increased body size resulting in reduced predation by the alien carabid. This may result in a population decline of the introduced predator by allowing its main prey species 'to grow away from it' - just a thought ….....

Skuas eat poisoned rats but their numbers have recovered. E. Edwards

This project clearly marks a significant milestone in the South Georgia Habitat Restoration Project, but complete rat eradication may not have been achieved and continued monitoring for a resurgence of the rodent will be needed for several years to come. Post-baiting detection devices are of critical importance here. Re-baiting may have to be undertaken in certain areas and perhaps the old buildings of the whaling stations should be closely monitored.

It is possible that resistance to Brodifacoum may arise in any survivors as some low grade resistance to the compound has been found in the brown rat on three farms in the UK. It would also be timely to look more closely at the widespread impact of the rodenticide on the terrestrial ecology of the island and its fate in the soils, the vegetation and water courses.

These comments should not detract from what is an excellent account of Team Rat's highly successful fieldwork on South Georgia. The book is engagingly written in an easy style and is lavishly illustrated by many exceptional photographs (who wouldn't take wonderful aerial views of South Georgia from a helicopter?). The book could have been enhanced with the inclusion of an index and some indication of the project costs.

Clearly, the project benefited from experience of previous eradication schemes, especially in New Zealand. Worldwide there have been over 280 island eradication schemes. South Georgia is the largest land area baited to date, more than eight times that of Macquarie Island now the runner-up. It is a shining example of what can be achieved given the funding and resources; a beacon of encouragement in habitat restoration and island conservation.

Pintails are now successfully rearing families. Tony Martin

But it would not have been possible without the determination, team work and sheer guts of Team Rat, who deserve credit for completing an ambitious project on schedule in a challenging environment. It is inspiring to read of how a globally important wildlife haven, badly damaged by human activity, has been set on the road to recovery by people of a later generation.

This book tells an amazing story and all those with an interest in or a love of the island of South Georgia should have a copy on their bookshelves or coffee tables.

William Block

Reclaiming South Georgia can be obtained for £25 from the South Georgia Heritage Trust online shop. http://www.sghtonline.gs/South-Georgia-books/

The Higher Predator Scientist – a dream job

One of South Georgia's richest resources is its fisheries for Patagonian toothfish and mackerel icefish. We have one of the most sustainable, successfully managed fisheries in the world. Part of the reason for its success is that the Government reinvests a large chunk of the revenue from fisheries and tourism into the science that supports the management of the fisheries. As a result, the majority of long-term science carried out at King Edward Point relates to the fisheries. We have a Fisheries Scientist who works with the fishermen and fisheries managers to carry out annual stock assessments. We also have a Higher Predator Scientist who works with the gentoo penguins and Antarctic fur seals to monitor the overall health of the ecosystem. That's me!

My two main study species have been selected because of their dependence on krill, the key species in the ecosystem, especially during the breeding season. By monitoring changes in gentoo penguin and fur seal biology, we get a good indication of krill biomass around South Georgia and the overall health of the ecosystem. I record three aspects of their biology: population dynamics, diet, and growth and development.

Demonstrating how to hold a gentoo penguin for weighing.
All photos Jamie Coleman

It is always enjoyable to get hands-on experience with wildlife. At South Georgia we try to keep this to a bare minimum to ensure that the studies do not affect the animals. However, the growth and development studies involve weighing the gentoo chicks and Antarctic fur seal pups, so we have to handle them. We also weigh and take measurements of bill and length from giant petrel chicks.

The pup weighing takes place in January, February and March. As you can imagine, this would be a handful for me alone, so I recruit eager volunteers from around KEP for assistance. We take samples of 50 pups from the tussac and 50 from the beaches. For the first two sessions, when pups are small and friendly, volunteers are abundant. By the third session, when the pups have developed canines and quadrupled in weight, everyone is conveniently snowed under with work and will only come along with a bribe of brownies and hot chocolate. This season started with an apparent shortage of krill, which was reflected in scat (diet) analysis and also in the light weights of the pups in January. However by February, scats were again bright red with the remains of krill and pup weights shot up to above average.

Lowering a fur seal pup into the weigh bag.

By March, most of the pups have moved away from the beaches, meaning that in order to get the magic 50, every pup counts. This will often require designated herders whose job is to ensure that none of the pups make it to the water or escape into the tussock. The herders' efforts are extremely entertaining to watch.

With the gentoo penguins, we monitor the colony's success during the breeding season by counting the number of nesting attempts, hatching success and fledging success. In order to get a measure of the health at fledging, and therefore the probable survival rates after fledging, we weigh the chicks. This year's weights were extremely healthy; but only a worryingly small proportion of the colony made it to this stage of development.

We also monitor the chicks of both southern and northern giant petrels in the same way. Although similar in weight to gentoo penguins, their claws, sharp bill and ability to vomit when disturbed makes handling a much less enchanting prospect. The smell from the vomit alone has resulted in my colleagues kicking me out of the communal changing rooms and banishing me to a different building. With the southern species' breeding cycle taking place six weeks after the northern species, there are still 100 lucky chicks looking forward to meet me. My arms and clothes are less enthralled about the get-together.

A giant petrel chick about to be weighed as part of long-term monitoring by the British Antarctic Survey.

Apart from seeing all of the incredible breeding species South Georgia has to offer, I arrived here with huge hopes of seeing leopard seals. Another important part of the work at KEP is taking photos for the leopard seal photo library. Individual seals can be identified by the pattern of spots on the throat. With the first sightings for KEP normally starting in April, I would not have been disappointed at not having seen any leopard seals at this point of the year. However, sightings have already been made by other KEP people and are coming in from cruise ships. I had been beginning to think I may be cursed! Until last week I had drawn a blank, but, while out on a boat trip to the Neumayer Glacier, I came across two of these magnificent killing machines relaxing on lumps of floating ice from the glacier. They measured 2.5m in length and, even from the security of the boat, my heart rate went through the roof. What made the experience even better was that it fell on my birthday!

As well as my routine studies of these five species, working here gives me the opportunity to observe the fascinating behaviour of other animals: for example, the comical aggressiveness of macaroni penguins; the ruthlessness and intelligence of the brown skuas in

Taking pictures of a leopard seal's spots for identification.

picking off gentoo chicks (coupled with the determination the seemingly affable parents display when defending them) and the king penguins carrying their eggs and chicks on their feet. Then there is the dramatic sight of glaciers calving colossal icebergs into the sea and huge graveyards of outsize bones from the shameful days of mass whaling. This is what makes South Georgia the best place in the world to work.

Jamie Coleman

Service of Commemoration, Westminster Abbey

A Service of Thanksgiving for the courage and endurance of Sir Ernest Shackleton CVO and his men will be held at Westminster Abbey on Friday 20th May, 2016 at noon.

The date has been selected to coincide with the centenary of Shackleton reaching Stromness whaling station.

Tickets will be available through the Eventbrite website six weeks before the service. It is open to all.

Forthcoming event at the Natural History Museum

We are exploring a half-day event on 18 November at the Natural History Museum, South Kensington, which will give members and guests a privileged behind-the-scenes access to the Museum's collection. These would include exhibits from South Georgia, the sub-Antarctic islands and Antarctica and take in items from the Scott and Shackleton expeditions. There would be one or two talks by Museum staff and we would wind up with a drinks Reception at the end. We will keep members informed of arrangements.

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Contributions should be submitted, at least one month before publication, to the editor:
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