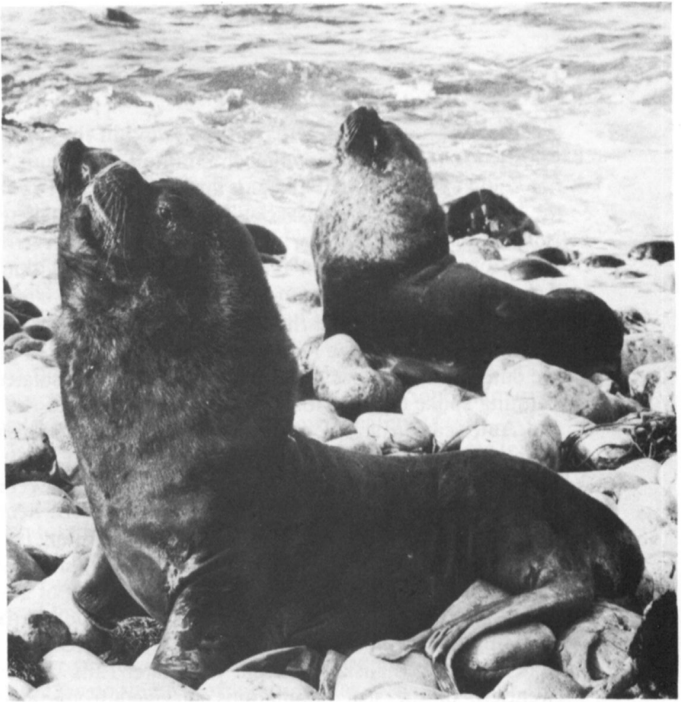


Sealion Survey in the Falklands

Ian Strange



In 1965 the author, a resident of the Falkland Islands, made an aerial survey of seal populations, concentrating mainly on sealions, because numbers appeared to be declining. His results showed a drastic decline in sealion numbers, and he believes that they are still a fair indication of the situation today. In this article he surveys the history of sealing in the islands, describes his census, discusses results and the possible causes for the decline, and urges the need for a full official census.

The earliest account of the Falkland Islands seal herds came from Camargo's expedition which reached the Straits of Magellan in 1540. One of his ships turned back into the Atlantic and reported a group of islands where they saw many fowls both from land and sea, 'so too sea lions with hides 36 feet long' — probably sea elephant *Mirounga leonina*.

The first indication of commercial exploitation came in 1766 when Louis de Bougainville, leader of the French expedition which founded the first settlement on the Falklands, recorded that he took whale oil. However, as Pernety wrote in the same year that between 800 and 900 seals had been killed in one day, it is reasonable to assume that seal oil was being taken also.

In 1767 the British founded Port Egmont, on Saunders Island, on the opposite side of the archipelago from the French settlement, but it was not until 1774, when the British withdrew, that mention was made of both French and American whalers being in the area. It is not certain if these whalers had by then adopted the eventual practice of taking both whales and seals, for in 1778 a French sealer from St Malo made reference to the vast numbers of fur seals at Saunders Island. Probably exploitation started in the Falkland Islands about this time, for only two or three years earlier Captain Cook had published his discovery of the vast fur seal herds on South Georgia. This report is generally

accepted as the main impetus to fur sealing in the south, which in the next fifty years led to the taking of well over a million skins from South Georgia alone. It is not known whether the Falklands suffered the same spoliation as South Georgia, the South Shetlands and the South Orkneys, but their relatively smaller size and isolation saved them from most of the sealers. Nevertheless large cargoes were taken, one of the first on record being of 13,000 skins taken in 1784 by the American sealer *States* from Boston.

One sealer who visited the Falklands several times was Edmund Fanning. On his first visit in 1792 he recorded that seals were up in great numbers on some of the outer islands, especially Beauchene, the most isolated of the Falkland group. Fanning spoke of some forty sealing vessels around the Islands, mainly English and American. Many vessels were 'elephanting' (taking elephant seals) for oil, which reached a peak at this time and was to remain for some years the steadier industry. Sealing was still going on when Fanning returned in 1798, but on a much smaller scale than elsewhere in the southern hemisphere; in that year on Masafuera Island, off Chile, more than a million fur seal skins were taken. Falkland records are incomplete, but elephant sealing appears to have been the main form of exploitation. In 1817, 2500 barrels of seal oil were taken, and in 1820 Daniel Jewet, newly arrived to take possession of the Falklands on behalf of the United Provinces of the River Plate, reported that more than fifty vessels were sealing in the islands. Eight years later Luis Vernet reported that only one-twentieth of the seal populations survived from the time of Jewet's report. Sealions *Otaria byronia* are rarely mentioned and it is quite possible that their exploitation came under the heading of elephanting. Their value was limited compared with the fur and elephant seals, but stocks of the latter were depleted and sealions were almost certainly taken to supplement the elephant oil.

By 1830 the seal herds had dropped so drastically that sealers were hard put to obtain a full cargo. Commander Grey RN, who carried out an extensive journey round the Islands in December 1836 and January 1837, spoke of great quantities of the 'fine seal' about the Islands, and although he visited several well-known sealing areas, he reported very few sealers. He also recorded that only 93 fur seals had been taken from the Volunteer Rocks, one of the larger colonies. As these were taken at the height of the breeding season his report of 'great quantities' is somewhat inconsistent.

In 1840 the first licence to seal was issued; it cost £100 per annum. This was for the Volunteer fur-seal rookery. One condition was that the rookery be rested every alternate year — the first attempt at conserving the islands' seals in seventy-five years. But this was for one rookery close to Port Louis and under the very eye of authority; elsewhere depredations, mainly by American vessels, continued.

In 1854 only two vessels registered in the Falklands as sealers, but between 1855 and 1860 local sealers suddenly became active. They concentrated on sealions, fur seals being now scarce — only five skins were taken on Volunteer Rocks in 1858. No restrictions were imposed and another period of destruction followed. In 1871 seals were officially reported as scarce; elephant seals were thought to be extinct in the Falklands, and sealing around the islands, Cape Horn and off the coast of Patagonia had once again almost stopped.

In 1881 the Falkland Islands Government took the first steps to protect the remaining fur seal stocks by naming a close season with naval vessels patrolling

to enforce the regulations. A licence was required to take seals and a royalty charged on skins and oil. In the early 20th century Canadian sealers came south to engage in pelagic sealing around the islands, and the seals were caught at sea; *the skins were not liable to royalty, nor could sealers be controlled by the Administration*. By 1903, 22,360 fur seal skins were shipped through Port Stanley. It was generally thought that many were taken on the feeding grounds well north of the Falklands, and the following season saw a remarkable drop in the number of seals taken by local sealers. In 1921 an Ordinance was enacted to give fur seals absolute protection, and armed guards were posted at seal colonies to stop poaching. By this time the Canadian schooners were no longer working about the islands, but poachers were coming across from the South American coast, and a few enterprising Falklanders had their own sealing vessels.

In 1928 the Falkland Islands and Dependencies Sealing Company was formed to extract sealion oil. This closed down in 1931 during the depression, started again in 1935 and ran for a further three years, during which 39,696 animals were taken; oil production totalled about 2600 tons. Between 1929 and 1937 J.E. Hamilton studied the herds for the *Discovery* Committee, and produced two reports in 1934 and 1939, which indicated a population of about 380,000 of which 80,000 were pups. This is the only fairly detailed census of the species to have been made in the area prior to the present investigations.

In 1949, another sealing venture, the South Atlantic Sealing Company, sponsored by the Colonial Development Corporation, was formed, and in 1950 started sealing from the base at Albemarle that was used in the 1930s, aiming at full utilisation of the sealions and taking oil, skins, meat and bone. The first season was a failure due to technical troubles and a shortage of seals. This two-year venture accounted for 3045 sealions.

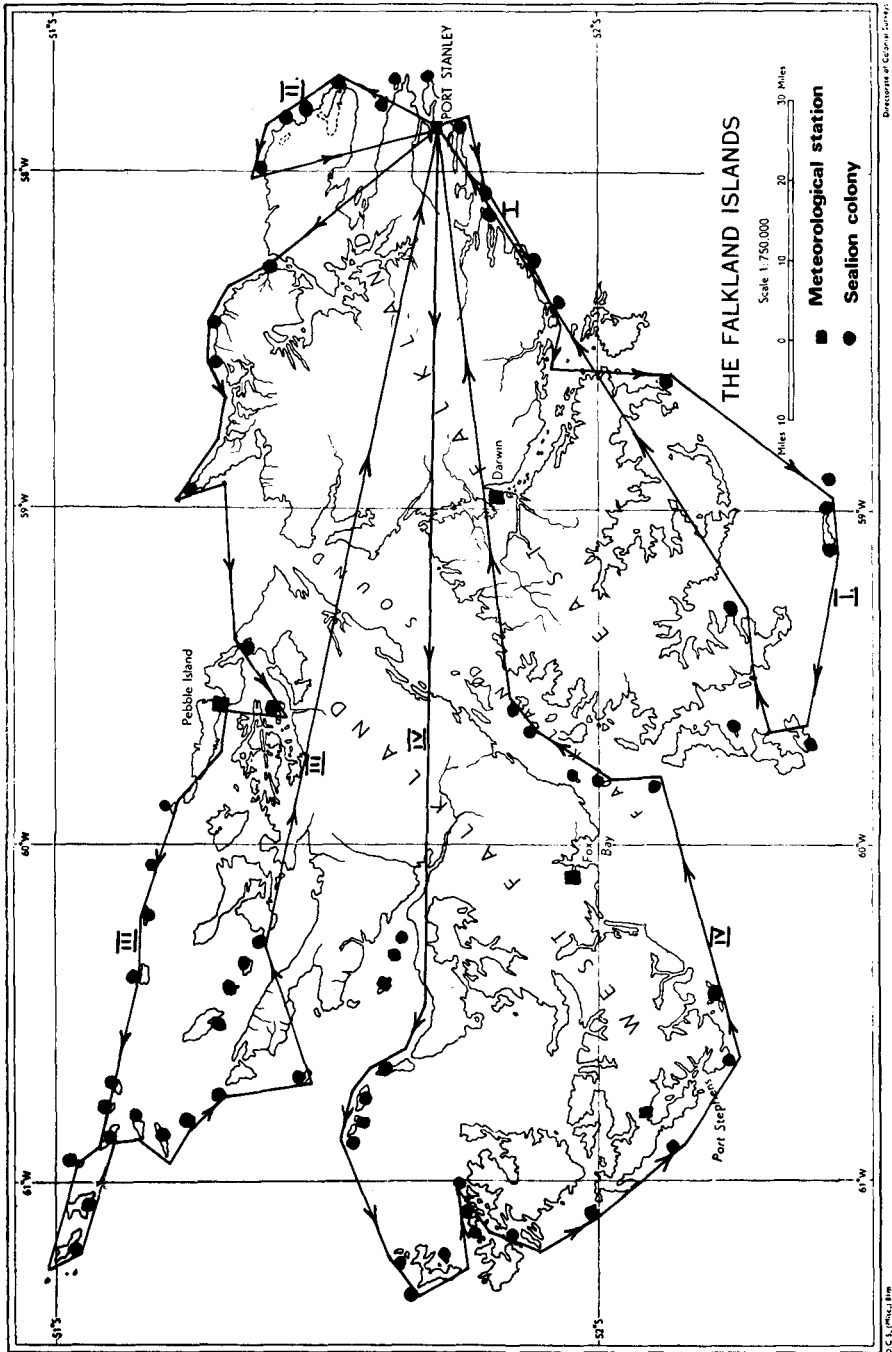
Ten years later, in 1962, another licence allowed 1500 sealions to be taken for their pelts, which were to be tanned for leather. At this stage virtually nothing was known about the size of the Falklands sealion herds, apart from what Hamilton had reported thirty years earlier, and a 1953 note by Dr R.M. Laws, based on Hamilton's figures as the best available at the time.² When in 1958 W.N. Bonner, then Sealing Inspector for South Georgia, was asked to allocate a quota for sealions, he based his calculations on Hamilton's census and suggested 15,000 adult males for the first three years and 10,000 thereafter. He did, however, point out that a pup census should be carried out regularly, in order to check the size of the herds, and adjustments made to the annual kill. The need for a sealion census was enforced by the author's own preliminary investigations, which pointed to a reduction in numbers since the Hamilton census.

1965 Survey

In the early part of 1965 the author carried out an aerial survey of the Falklands, with the object of locating as many sealion breeding places as possible and determining numbers as accurately as possible. While sealions were the main objective of the study, observations were also made of the five or six fur seal localities and of elephant seals.

The survey was done in a de Havilland Beaver float-plane of the Falkland Islands Government Air Service, modified slightly to improve viewing and facilitate photography, and most of the coastline and off-lying islands were covered in four flights, between January 20 and March 5 1965, the time span

Distribution of sealion colonies and the survey flight lines





BEAVER FLOAT AIRCRAFT used for the survey at Fox Bay East

being due to the fact that an aircraft could only be used when it was not required for passenger flights, and because good flying weather was essential. The survey was supported by IUCN and financed by WWF and the author, with the cooperation of the Falkland Islands Government. On each flight the aircraft carried a pilot and three observers, one of whom sat in the co-pilot's seat with a map and noted the course flown and the positions where seals were seen. The other two observers in the rear were equipped with camera, notebooks and binoculars.

The procedure found to be most effective was to fly along the coast at about 115 knots and an altitude of 200 feet, a height and speed that made it easy to spot groups of seal well ahead. When a group was sighted the aircraft descended to about 100 feet and slowed to about 90 knots. On the first run over, the observers noted numbers and presence or absence of pups; a second run over the seals was made to photograph and check the numbers. The first run alerted the seals at the water's edge and also flushed any lying in the tussock grass that flanks many beaches. On the second run also, the seals, being alerted, were all sitting up and more easily seen and photographed. A third run was sometimes made if large numbers were in the tussock, or the first count thought to be not reliable. With very small numbers on an exposed beach one run was sufficient. The two observers made independent counts or, if numbers were too high to count, an estimate. After the flight the figures were compared and usually agreed.

The photographs were used to check on the counts and whether pups were present, thus proving a breeding group. A Rolleicord camera, giving a 2¼ inch-square negative was used with Tri-X film, exposed at 400 ASA and developed in Microdol. The negatives were examined by sandwiching them in glass and projecting on to white paper. Even in the negatives the seals were easily identified; each animal was then marked on the paper in pencil, and the pencil marks totalled, ensuring that no seals were counted twice; enlarging the original negatives to a considerable size made counting easy. Most negatives were later printed so that the presence of pups could be verified on those beaches noted as breeding places.

Results

The aerial photographs showed that the counts made from the air were quite reliable. Numbers in the photographs were generally slightly less than the counts and estimates, because usually the photograph did not cover the entire group.

The total number of seals counted and estimated was 18,876; of these 5516 were pups and the remaining 13,360 adults and juveniles. The figures need some correction to allow for seals missed in the tussock and under overhanging rocks and ledges, while the first flights on January 20 also need a small correction to allow for pups born after the survey was made. Some adults have been missed because they were in the water. But the pod formation of pups which takes place at this period was still intact, usually on open beaches where they were easily sighted, and this is the most reliable age-group on which to base the census.

Flight	Date	Adult Seal	Pups	Percentage of Pups
I	20-1-65	1902	651 (716)	34 (38)
II	20-1-65	660	120 (132)	18 (20)
III	2-2-65	7550	3290	43
IV	5-3-65	3248	1445	45
TOTAL		13360	5506 (5583)	

The numbers counted on the various flights are tabulated above, the figures in brackets representing the corrected pup total for the first two flights, which have been increased by 10 per cent to allow for subsequent births. A further arbitrary correction, of 5 per cent for animals not seen from the air, gives a total of 5862 pups and 14,028 adults, which can be conveniently rounded off to 6000 and 14,000.

It can be assumed that the 14,000 animals included at least 6000 cows to produce the 6000 pups. The remaining 8000 is made up of adult and immature bulls, a few virgin females on shore at this time to mate, and juveniles of both sexes. The counts and photographs showed the average number of cows in each harem to be about six, which agrees with Hamilton and gives a figure of 1000 bulls and 7000 immature animals. In addition to the sealions on the beaches there would also be quite a large number, mostly adult females and immatures of both sexes, feeding at sea.

The herd is thus composed of:

Pups	6000
Cows	6000
Bulls	1000
Immatures	7000
Total	20000

In fact some cows would be at sea feeding, so that the actual proportion on the beaches would be smaller, and the number of immatures correspondingly higher. Assuming that at the very most 50 per cent of the population was at sea feeding at the same time of the census, a possible additional 10,000 animals of various age groups had to be added, giving a grand total of 30,000 animals of all



*SEALION COLONY discovered during the survey
on a small offshore tussock island*

SEALIONS on a typical breeding beach



age groups. But in all these calculations the numbers have been on the optimistic side, and it can safely be said that in 1965 the herd numbered 30,000 animals *at the very most*. Since Hamilton's calculation in 1935 was about 380,000, there had evidently been a drastic reduction in the past thirty years. The accuracy of the aerial survey was checked by careful ground counts in the same season, both before and after the flights, and these largely substantiated the aerial census. The next year a further backup survey was made in the Beaver using the same system but with a special 4 x 5 aerial camera, and after that 'stations' counted on the north coast of East Falkland were checked using a Royal Naval Helicopter; both surveys satisfied the author that the main survey results were accurate and the method used reliable.

A count of Low Island in the breeding season showed 450 sealions present, of all ages and sexes; Hamilton had counted 3316 *pups*. Similarly Split Island had 400 in 1965, where in 1936 there had been 3325 *pups*. In 1965 there were 26 adults and 6 pups on Carcass Reef, the first time for many years, but 30 years before there had been 226 *pups*.

Discussion

The results of the 1965 aerial survey show that the sealion population in the Falkland Islands had declined drastically over the previous thirty years. Commercial exploitation, which was going on at the time of Hamilton's census, comes first to mind, but this is recorded as accounting for under 40,000 animals, which should not have harmed a herd as large as Hamilton estimated. The greatest number recorded as taken in any one year was 9219 in 1935, which should have been more than replaced by the 80,000 pups Hamilton calculated would have been born that year. Between 1936 and 1939, if Hamilton's figures are correct, sealing was only accounting for 1.5 per cent of the total population annually, which is well within safe limits. Operations were carried out mostly in the vicinity of the sealing station at Albemarle in West Falkland, and this could have depleted only the local stocks. No large-scale sealing was done between 1939 and 1949, and this gap should have allowed the herds to recover from any effects of over-sealing in the 1930s.

In the years 1949-52 during the operations of the South Atlantic Sealing Co., reports about the seal stocks are conflicting. On the one hand the shortage of seals is given as a reason why the venture failed, but on the other, Laws, reporting on the Falkland seals says that Hamilton's estimate of 380,000 was if anything too conservative, and gives the sealion population as 400,000.² The level of commercial exploitation recorded does not seem heavy enough to explain the decline in stocks. The possibility that food resources had suddenly disappeared or become very limited seems most improbable; the *Discovery* investigations demonstrated the richness of marine life in the South Atlantic waters around the Falklands, and there is no evidence of any subsequent major change. The area is not extensively fished, nor has fishing developed appreciably since 1936, and observation and subjective estimates suggest that there is still abundant food to support the seals both of the Falklands and on the adjacent South American coast. Neither is there any evidence that the mainland stocks have increased to a level at which they compete seriously with the Falklands' population for food. It seems equally unlikely that breeding space has been reduced in the last 30 years by man's activities. The areas inhabited by sealions are mostly unsuitable for sheep or any other human use, and the human

population is no greater now than it was in the 1930s. The sealions' main breeding area in the western islands is largely unpopulated by either man or sheep.

Disease or infestation by parasites is a possible cause that cannot be overlooked. In the Pribilof Islands hook-worm is a major cause of mortality in the fur seal herd, especially among pups, but only reaches high levels when the seal density on the beaches is high. Severely infected pups die ashore, and many carcasses on the beaches provide conspicuous evidence of an epidemic. A series of such natural disasters in the Falklands at the level necessary to decimate stocks would surely have been noticed. However, it is worth recording that several former sealers still living in the islands remember vividly the poor condition of many of the seals brought in during the operation of the Albemarle station in the period 1949-52, and speak of lesions on the lungs of such animals. What these might have been it is now impossible to say, but it may be that at that time the herds were infected with some malady. It is most unlikely that the decline in numbers results from a mass migration, for seals are extremely loth to leave an established breeding place. Even when they are exploited at far too high a level the remnants of the population will return to the same breeding places with disastrous results.

The few isolated cases of human interference are not enough to support the suggestion of illicit slaughter on a level high enough to reduce the herds to their present state. This would have needed well-organised poaching with logistic support to escape detection, and a high profit to justify the work, which is extremely unlikely with sealions. Fur seal poaching would have been more realistic, but there appears to be no decline in their colonies; until 1973 numbers were estimated at 14,000-16,000. Apart from Beauchene Island, all the well known colonies have maintained and in some cases increased their populations.

Conclusions

The lack of continuous checking of seal stocks is one of the most serious mistakes which should be corrected. This could have had important consequences when the last sealing licence was issued and was what prompted this survey, but ironically, by the time this report was available, the venture had collapsed simply because there were too few seals for economic hunting. The reported Beauchene colony was a similar example. The island had not been visited for forty years, but was still believed to hold one of the Falklands' largest fur seal rookeries. A 1953 report on the status of the Falklands fur seal gave an estimate for Beauchene, adding a substantial figure for a likely increase in numbers on this remote and (since 1919) undisturbed island. However, in 1963, 1964, 1965, 1966-67 and 1971 the author made extensive surveys of Beauchene without ever seeing either a seal or any evidence of a rookery there for many years. A checking of the sealers' records showed that in the two months the men were there during the breeding season they had returned only eleven skins. These were almost certainly the last remnants of what had been one of the Falklands' largest colonies.

Note

This survey was made fourteen years ago but recent work by the author on the Falkland sealion stocks indicates that it is still a fair indication of populations today; more important it is a reminder that a full census of all Falkland seals is needed.

Acknowledgments

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Ian Strange, New Island, Falkland Islands.

Parrot News

The ingenious plan to save the endangered Puerto Rican parrot *Amazona vittata* by providing nest boxes for its principal competitor, the exotic pearly-eyed thrasher *Margarops fuscatus*, has helped increase the parrot's wild population from 13 in 1975 to 28 in 1978. The thrashers, which had been preventing the parrots from breeding by driving them out of their nesting holes, preferred the nest boxes, which the US Fish and Wildlife Service placed within 20 metres of the parrots' nests; at the same time the thrashers, in defending their territories against other thrashers, also defended the parrots. Thrashers also helped to solve another parrot problem, parasitism. Both species are victims of warble fly infestation, and research on thrasher chicks produced the answer for both: with Dermatron and Pyrethrin chick survival rates improved by 63 per cent and 100 per cent respectively. The parrot's wild population has now more than doubled, but unfortunately this still only means four breeding pairs, one more than in 1976. Attempts at captive breeding were frustrated by the impossibility of telling the sexes apart and the parrots' readiness to form homosexual bonds if they were mismatched. However a new process developed at San Diego and London Zoos (see *Oryx*, December 1977, p108) has enabled researchers to sex 13 of the birds and to begin an artificial insemination programme.

The maroon-fronted parrot *Rhynchopsitta pachyrhyncha terrisi*, known only from Mexico's two Sierra Madre mountain ranges, was presumed endangered because the high-altitude pine forests were being destroyed; the birds were known to feed on pine seeds but where they nested was unknown. In January 1978 Dirk V. Lanning and Gary Falxa of the Chihuahuan Desert Research Institute, searching for the parrots in the Sierra Oriental, having climbed 1800 metres in pursuit of some heard after sunset, 'a sound similar to that of a distant train. The noise increased to a roar as wave after wave of calling parrots, flying in formation, passed overhead and settled in the trees above us. After two weeks of searching for the birds it was exhilarating to be near over 1600 of them. This sighting allowed us to double our estimate of the minimum size of the . . . population.' Still no nests were found, but on a return trip in the autumn, the parrot's breeding season, they spotted adults frequenting holes in limestone cliffs and heard young parrots in the holes. A closer inspection in November, when the young birds were making their first flights, confirmed that they nested in cliffs and, moreover, were feeding in the smaller trees left standing by the loggers. However, another race in the forests, the thick-billed parrot *R.p. pachyrhyncha*, will not so easily survive the effects of logging, since it nests in holes in tall pine snags.

Pink Pigeons Return

Two pink pigeons bred at the Jersey Wildlife Park have been sent to Mauritius for eventual reintroduction to the wild. With a world population of about 50 birds in the island, *Colomba mayeri* is one of the world's rarest birds; 27 have now been bred in Mauritius and Jersey from 8 birds captured in 1977.