



# Sightings and Strandings of Seals in South Carolina

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## Abstract

Reported seal sightings in the southeastern United States have increased dramatically in the last decade. Possible explanations for this increase in sightings and possible southerly shift in range of seals include: increased seal populations, depleted food resources in northern latitudes, climatic changes, greater public awareness, or some combination of factors. The objective of this project is to provide managers with reports of seal sightings from South Carolina that have not been published since 1966. Prior to 1994, there were only four records of seal sightings from South Carolina in the literature. Since 1994, when the National Ocean Service in Charleston, South Carolina began recording sightings, there have been 26 sightings. The majority of these sightings have been of harbor seals (*Phoca vitulina concolor*) although one sighting of a harp seal (*Pagophilus groenlandica*) has been documented. Twenty (76.9%) of the sightings have occurred in central South Carolina, in Charleston and Georgetown counties. Sightings have occurred in every month except October and November, with most sightings occurring in April ( $n=5$ ). Twenty sightings (one of which was treated for injuries, tagged, and released) were of living individuals and six were dead stranded. Length and/or sex could not be determined for most of the individuals sighted, in part because most sightings consisted of in-water observations. Lengths for those individuals that could be estimated were between one meter and 1.6 meters in length, suggesting an increase in population and/or range extension. Continued and proper response to sightings of seals in South Carolina will undoubtedly add to our knowledge of southern distributions.



Figure 1. Harbor seal hauled out on beach in Myrtle Beach, SC, 4/13/03.



Figure 2. Dead harbor seal on North Island, SC, 12/12/95

## Methods

- Opportunistic sightings were gathered from the public, South Carolina Department of Natural Resources personnel, NOAA personnel, Coastal Carolina University personnel, and SC Marine Mammal Stranding Network volunteers, and verified by a biologist.
- Opportunistic sightings were also gathered during NOAA and SCDNR aerial surveys for marine mammals and turtles.
- Strandings were reported by SC Marine Mammal Stranding Network volunteers and verified by NOAA personnel.
- Life history and skeletal samples were collected on stranded seals.
- Verification of species of stranded seals was performed through genetic analysis of skin submitted to NMFS.

## Results (see Figures 3, 4, Table 1)

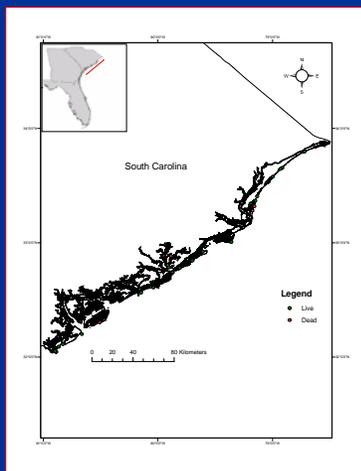


Figure 3. Spatial distribution of seal sighting and strandings in South Carolina, 1994-2004.

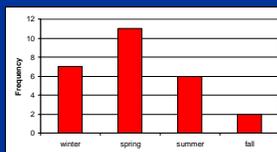


Figure 4. Seasonal distribution of seal sightings and strandings in SC, 1994-2004.

Date	Number of Seals	Location	Latitude	Longitude	County	Type	Species
1-Apr-1852	1	Folly Beach	NA	NA	Charleston	sighting-alive	unknown
26-Jan-1905	1	Santee River	NA	NA	Georgetown	stranding-dead	unknown
30-Mar-1860	1	Hilton Head Island	NA	NA	Beaufort	stranding-dead	unknown
1-Feb-1870	1	South Island	NA	NA	Georgetown	stranding-dead	Harbor
1-Mar-1994	1	Obidoway Beach	33.36294	-79.14963	Georgetown	sighting-alive	unknown
24-Mar-1994	1	Morris Island	32.74122	-79.373	Charleston	sighting-alive	Harbor
12-Dec-1995	1	North Island	33.2907	-79.1749	Georgetown	stranding-dead	Harbor
26-Feb-1996	1	Cape Roman	33.00652	-79.35945	Charleston	sighting-alive	unknown
1-Jun-1996	1	North Inlet, Baruch	33.34225	-79.19227	Georgetown	sighting-alive	unknown
10-Sep-1996	1	Kannah Island	32.60947	-80.03979	Charleston	sighting-alive	Harbor
11-Sep-1996	1	North Island	33.31977	-79.18294	Georgetown	stranding-dead	Harbor
25-Mar-1997	2	Capers Island	32.84916	-79.89654	Charleston	sighting-alive	unknown
1-Apr-1997	2	1 mile off Turtle Island	32.04762	-80.88641	Jasper	sighting-alive	Harbor
1-Apr-1997	2	Turtle Island	32.0524	-80.89648	Jasper	sighting-alive	Harbor
7-Jul-1997	1	Wando River	32.88432	-79.88721	Berkeley	stranding-dead	unknown
22-Aug-1997	1	Golden City Boh	33.57654	-78.59262	Georgetown	sighting-alive	Harp
24-Aug-1997	1	Charleston Island	32.92511	-80.85232	Beaufort	sighting-alive	unknown
25-Aug-1997	1	Hilton Head Island	32.11201	-80.82873	Beaufort	sighting-alive	unknown
6-Apr-1999	1	Sealrook Island	32.56267	-80.14817	Charleston	sighting-alive	Harbor
13-Dec-1999	3	Pawley's Island	33.40481	-79.135	Georgetown	sighting-alive	unknown
1-Feb-2000	1	Myrtle Beach	33.69569	-79.91939	Horry	sighting-alive	Harbor
20-Feb-2000	1	Pinehick Island	33.32441	-80.92881	Beaufort	stranding-dead	Harbor
13-Sep-2001	1	Bull Island	32.35299	-79.6087	Charleston	sighting-alive	unknown
3-Jun-2001	1	Patton's Point	32.78491	-79.90668	Charleston	sighting-alive	Harbor
16-May-2002	1	IQP Beach Inlet	32.77024	-79.80547	Charleston	sighting-alive	unknown
17-May-2002	1	Atlantic Beach	33.7368	-78.72085	Horry	sighting-alive	unknown
13-Apr-2003	1	Myrtle Beach State Park	33.65452	-78.5376	Horry	sighting-alive	Harbor
21-Jan-2004	1	Morris Island	32.74291	-79.37172	Charleston	sighting-alive	Harbor
11-Feb-2004	1	Deepees Island	32.84468	-79.69889	Charleston	sighting-alive	Harbor
21-Mar-2004	1	Joiners Bank, HR	32.20191	-80.664	Beaufort	sighting-alive	unknown

Table 1. Date, number of seals per date, location, type of event, and species of seals in South Carolina. Events from 1852 to 1970 were not included in the analysis.



Figure 5. Distribution of harbor seal (gray stippling) and harp (dark lines) in the northwest Atlantic

## Discussion

Two species of pinnipeds (harbor and hooded seals (*Cystophora cristata*) have been recorded from the southeast United States (Caldwell and Golley 1965, Mignucci-Giannoni and Odell 2001); where they are recorded as "stranding" once every 1 to 5 years and rarely, respectively (Geraci and Lounsbury 1993). There has never been a harp seal sighting reported from SC; this presentation represents the first such record. This historical sighting pattern changed in the mid-1990's. Since that time, seal sightings/strandings in SC have averaged just over 2 per year. Near the same time, sighting/strandings of hooded seals increased dramatically in the southeastern US and northwest Caribbean. A number of possible causes for this trend can be identified: (1) heightened awareness, both by the public as well as the scientific community, (2) increased seal population sizes, (3) depletion of prey resources, (4) climate change, (5) shift in breeding/calving grounds and (6) artifactual. Certainly the number of people using SC's coastal regions has increased since the era spanned by historical seal sightings (*i.e.* 1852-1970). Over the last decade, the SC stranding network has grown and become more active. In the northwest Atlantic all 3 stocks of seals (harbor, harp and hooded) have increased since the 1970's (Waring *et al.* 2004). These apparent increases may result in more competition amongst conspecifics and between phocid species, driving seals beyond traditional ranges. The collapse of various fish stocks in the northwest Atlantic has been well documented (Tosa 1996). Such failures may play a role in extralimital seal sightings in one of two ways: (1) depletion of prey species causing seals to forage over wider areas and/or (2) increase in non-commercial (*i.e.* seal prey) species freed from top-down population control in-turn fueling the reported growth in seal stocks. Climate change could allow seals to expand their traditional ranges and open up new areas for breeding and calving. The increase in SC sightings may simply represent a small number of seals repeatedly sighted over the course of months or years and not an upswing in the actual number of seals in SC. Total lengths were obtained from few of the 26 seals listed in Table 1; most that were measured were small (1 to 1.6 m), suggesting that these seals were recently weaned or juvenile individuals. Sergeant *et al.* (1973) observed adult harp seals forcing immature seals into sub-optimal feeding areas. Such agonistic behaviors when coupled with already depleted fish stocks could explain the recent pattern in SC seal sightings/strandings. This possibility is further supported by the emaciated condition of at least some of the SC seals as well as the observed seasonal pattern in sightings/strandings (see Fig 4).

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