

**Observations of the southern right whale (*Eubalaena australis*)
relevant to the management of right whale populations**

R. Payne and V. Rowntree, Whale Conservation Institute,
191 Weston Road, Lincoln, MA 01773

1990 was the twentieth year of our study of the population of southern right whales (*Eubalaena australis*) along the shores of Peninsula Valdes, Argentina. The whales begin to appear in June, reach peak numbers in September and October, and have left the area by December. Every year since 1971 we have made at least one aerial survey of the 500 km perimeter of the Peninsula. We fly at an altitude of 500 feet in a single-engine CESSNA 182, and when we encounter whales we circle over them at 200-300 feet and take photographs of each individual's callosity pattern. We note the whales' location, their behavior and the presence of any calves.

The whales concentrate in three distinct regions, but always near shore, along the five-meter depth contour. The three aggregation areas appear to have different functions as indicated by their different proportions of females with calves, females without calves, males and subadults (Payne, 1986). Not all the whales return to the Peninsula each year. We see about 130 adults and 35 calves in a typical year, but a total of 1,099 individuals have been identified during the twenty years of the study. Mature females tend to return to the Peninsula only in the years when they calve. The mean calving interval is estimated to be 3.6 years. The minimum age of first calving is 7 years; the modal age is 9 years. The population was estimated to contain 1,200 whales in 1986 and to be increasing at 7.6% per year (Payne, Rowntree, Perkins, Cooke and Lankester, 1990). We report here four observations of the right whale population

at Peninsula Valdes which may be useful in the management of right-whale populations.

1. Over the course of the study we have seen a net movement of whales away from the eastern outer coast of the Peninsula and into the southern bay. To quantify this shift we compared the mean number of whales in each area in the 1970s to that in the 1980s. For each year, we calculated the largest number of adults sighted in each area in either September or October (the months of peak abundance); these maximum abundances were then averaged for the decades 1971-80 and 1981-90 (Table 1). While the number of adults in the northern bay remained roughly constant, the number along the eastern outer coast decreased and the number in the southern bay increased. The northern bay has been set aside as a sanctuary for right whales. The southern bay contains the largest port on the Peninsula and is the site of an aluminum plant that discharges toxic effluent into the bay. The whales are seen here swimming under the pier, around moored fishing boats and among wind surfers. Though it is more usual to see whales in the southern bay concentrating near a town with a growing whale-watch industry, where mothers and calves frequently encounter whale-watch boats. We are unable to explain this increased popularity of the disturbed southern bay, and decreased popularity of the relatively pristine eastern outer coast. However, our observations clearly indicate that patterns of habitat use may change over time scales on the order of decades.

2. In collaboration with Jose Truda Palazzo and Maria do Carmo Both we have documented two instances in which females were seen with calves at Peninsula Valdes and at Laguna, Brazil (some 2,100 km to the north) in different years. A third female was seen at Peninsula Valdes without a calf and in a latter year with a calf off Laguna. The females were not seen

with calves at both locations in the same year. These observations indicate that females may use more than one calving ground.

3. In the 1980s, large oval marks began to appear on the backs of some whales at the Peninsula. The marks seem to occur on individuals of both sexes and all ages, and the number of whales with marks has increased with time. We do not know what causes the marks. Two obvious possibilities are disease and injury; to distinguish between them we are currently trying to obtain skin samples for analysis.

4. Finally, we describe some direct interactions between right whales and people. We worked with three Argentine students who compared the swimming speeds of whales in the northern bay, which is a whale sanctuary with restricted boat traffic, to swimming speeds of whales in the southern bay in an area within sight of whale-watch activity (Colombo, Arias and Garciarena, 1990). The swimming speeds of mother-calf pairs in the two bays were the same, but other whales swam significantly faster in the southern (more disturbed) bay (Table 2). All categories of whales spent more time stopping and turning (i.e. milling) in the northern bay than in the southern bay.

Bibliography

- Colombo, G.A., A. Arias, and D. Garciarena. 1990. A possible effect of whale watching on right whales (*Eubalaena australis*). Abstract from IV Reunion de Trabajo de Especialistas en Mamiferos Acuaticos de America del Sur. November, 1990. Valdivia, Chile.
- Palazzo, J.T., R. Payne, M.C. Both, and P. Simones-Lopez. 1990. Movements of southern right whales (*Eubalaena australis*) individually identified off Brazil. Abstract from IV Reunion de Trabajo de Especialistas en Mamiferos Acuaticos de America del Sur. November, 1990. Valdivia, Chile.
- Payne, R. 1986. Longterm behavioral studies of the southern right whale (*Eubalaena australis*). Rep. Int. Whal. Commn (Special Issue 10):161-167.
- Payne, R. V. Rowntree, J.S.Perkins, J.G. Cooke, and K. Lankester. Population size, trends and reproductive parameters of right whales (*Eubalaena australis*) off Peninsula Valdes, Argentina. Rep. Int. Whal. Commn. (Special Issue 12):271-278.

Table 1. Mean of greatest number of adult right whales sighted on Sept or Oct survey flights, by region

	1971-1980	1981-1990
	_____	_____
Golfo San Jose (northern bay)	46 _ 15.1	42 _ 24.5
Eastern outer coast	49 _ 18.5	24 _ 16.6
Golfo Nuevo (southern bay)	19 _ 8.6	56 _ 19.4

Table 2. Mean swimming speeds(km/h). Divided into readings taken at intervals of less and greater than 5 minutes

Bay	Group Type					
	Readings < 5 min			Readings > 5 min		
	M&C	non-M&C	All	M&C	non-M&C	All
_____	_____	_____	_____	_____	_____	_____
Golfo San Jose (protected bay)	1.62	1.21	1.30	0.52	0.62	0.59

Golfo Nuevo (nr. whale-watch)	1.78	2.03	1.83	1.14	1.56	1.24
----------------------------------	------	------	------	------	------	------