

BIRTH AND POSTNATAL GROWTH OF THE FIN WHALE IN THE CENTRAL MEDITERRANEAN

Lidia Orsi Relini ^{1*} and Fulvio Garibaldi ¹

¹ DISTAV, C.so Europa, 26 - 16132 Genova - ITALY - largepel@unige.it

Abstract

The stranding data of 72 specimens of fin whale, *Balaenoptera physalus*, in the length range 5.05-16 m, were used to ascertain the calving season, the location of the calving grounds and the postnatal growth in the Central Mediterranean. Fin whales are born in a six month period (September-February), at a length of about 5.5 m, in a restricted latitudinal range: the calving area is situated in the northern part of the Western Mediterranean (Ligurian and Tyrrhenian Sea), close to the main summer feeding area. After one year the whale is about 12 m long and after two years about 14 m.

Keywords: *Cetacea, Growth, Ligurian Sea*

In non harvested populations of Cetacea, stranding studies and in particular length measures [1] are a very important source of information. Such is the case of the fin whale in Italian waters; in fact a whaling activity never existed in Italy, also if rare killings of whales were observed in the XIX century. In France stranding studies, after ancient work, were organized in regular form in the seventies. In Italy the Società Italiana di Scienze Naturali established a "Centro Studi Cetacei" in the eighties. The first comparative studies of strandings in the Mediterranean, showed larger numbers of whales on the French than on the Spanish coast, and an increasing gradient towards the Ligurian sector. Stranding data used for the present notes were obtained mainly (N= 52) from Italian and French national databases and in part (N=20) from papers appeared before 1970. Data were selected with the aim to deal with really measured specimens: three types were excluded a) measures with a notation of uncertainty (e.g. "about") b) measures assigned by observers on board to animals at sea c) animals whose length was less than 5 m, probably aborted. Retained data are listed below.

The calving season covers 6 months, September to February. The calving area was obtained mapping stranded neonates [2,3]. Data were first assembled per season and growing size and then in a continuous plot covering 3 years (Fig. 1).



Fig. 1. Plot of the length of stranded whales over a time interval of 38 months. In boxes data used to derive average lengths at age.

The plot shows a growth track, which can be considered the initial part of a Von Bertalanffy growth function; three groups of data positioned above the calving season represent birth, age 1 and age 2. The following average sizes at age of the fin whale can be calculated: **at birth:** 5.6 m, st.d. 0.4 m, N = 16; **at age 1:** 11.9 m, st.d. 1.1 m, N = 11; **at age 2:** 14.0 m, st.d. 0.8 m, N = 11.

Present observations may shake old paradigms such as "weaning takes places when the calf is 6 months old and has reached a total length of about 12 m" and "information is lacking to suggest localized calving grounds" which unfortunately recur also in recent literature [4,5]. The former paradigm derives from whalers interest to minimize mother-calf links, but the calf remains with the mother at least one year; the latter from an improper definition of neonate (to 8 m). A whale of 8 m can be several months old. Recent genetic analyses [6] suggest to steer comparative studies of growth to N. Atlantic.

Data used (date, size, place): **1** 29/11/1995 5.05m *Nonza* **2** 24/02/1997 5.16m *Marseille* **3** 30/11/1993 5.18m *Ajaccio* **4** 28/11/1884 5.3m *Saint-Tropez* **5** 11/12/1995 5.4m *Venzolasca H.C.* **6** 13/12/1916 5.4m *Piombino* **7** 11/11/1982 5.45m *Giglio* **8** 07/11/1984 5.5m *Bouches du Rhone* **9** 23/09/1909 5.5m *Cros de Cagnes* **10** 18/09/1981 5.9m *Giglio* **11** 22/11/1992 5.92m *Pisa* **12** 17/01/1981 6m *Port Camargue* **13** 14/02/1985 6m *Bouches du Rhone* **14** 20/09/1986 6m *Ile du Levant (Var)* **15** 12/12/1995 6m *Oristano* **16** 17/10/1996 6m *Fos* **17** 16/11/1953 6.5m *Ischia* **18** 03/02/1996 6.6m *Reggio Calabria* **19** 23/05/1986 7m *Comacchio* **20** 24/11/1986 7.5m *Vibo Valentia* **21** 14/07/1987 8m *Cagliari* **22** 21/03/1996 8m *Meloria, Livorno* **23** 15/07/1998 8m *Vescovato* **24** 10/6/1871 9m *Antignano* **25** 20/09/1986 9.31m *Pizzo Calabro* **26** 21/07/1991 10m *Barcaggio* **27** Summer 10m *Trieste* **28** 28/03/1900 10.5m *Carloforte* **29** 11/11/1984 11m *Grimaud (Var)* **30** 08/11/2000 11m *Quinto* **31** 03/08/1998 11m *Porto Vecchio* **32** 19/06/1907 11.5m *San Vincenzo* **33** 23/06/1986 11.5m *Livorno* **34** 01/06/1984 12m *Linguizetta* **35** 20/05/1989 12m *Olbia* **36** 10/03/1990 12m *La Spezia* **37** 01/01/1902 12m *Levanto* **38** 10/11/1950 12m *Saintes-Maries* **39** ?/1/1904 12m *Cape Bon* **40** 07/10/1904 12.29m *Sete* **41** 12/10/1997 12.7m *Genova* **42** 23/09/1995 12.8m *Livorno* **43** 01/01/1977 12.9m *Ferry to Genoa* **44** 22/05/1987 12.95m *Ferry to Olbia* **45** 15/02/1990 13m *Cosenza* **46** 20/05/1870 13m *Marseille* **47** 19/09/1982 13m *Villeneuve Les Maguelone* **48** 05/02/1949 13m *Kerkennah* **49** 09/05/1990 13m *Palavas Les Flots* **50** 20/05/1994 13m *Cagliari* **51** 20/02/1991 13.7m *Ellouza* **52** 21/12/1990 13.7m *Leucate* **53** 07/02/1998 13.8m *Livorno* **54** 12/7/1862 13.86m *Pago* **55** 23/10/1896 14m *Framura* **56** 11/12/1997 14m *Procida* **57** 28/06/1986 14m *Gorgona* **58** 26/07/1996 14m *Bastia* **59** 10/02/1953 14m *Salerno* **60** 16/07/1990 14.2m *Cesenatico* **61** 18/08/1986 14.85m *Cartage* **62** 30/12/1980 15m *Kelibia* **63** 13/07/1990 15m *Reggio Calabria* **64** 30/03/1993 15m *Porto Torres* **65** 26/07/1997 15m *Gaeta* **66** 25/09/1997 15m *Stintino* **67** 25/05/1995 15.15m *Livorno* **68** 21/11/1830 15.3m *Corsica* **69** 31/8/1897 15.5m *La Maddalena* **70** 28/04/1990 16m *Porto Torres* **71** 03/08/1991 16m *Brindisi* **72** 09/09/1993 16m *Tolone*.

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