



Abigail Kingsley Alling

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Occupation:

1991 - PRESENT Founder and President, **Biosphere Foundation** and its project the **Planetary Coral Reef Foundation** (PCRF).

Biosphere Foundation is a US *501 (c) 3* organization (Federal ID # 86-0686472) with a primary goal to inspire intelligent stewardship of our earth's biosphere. Its projects aim to contribute to the existing knowledge about the biosphere and to inspire individuals to join conservation programs through hands-on field work or educational programs. During this time she also oversaw Studio of the Sea, Wastewater Gardens®, The Coral Reef Satellite Mission, and Mars On Earth® Programs.

2011 - Present: Director **Biosphere Association**, a registered UK Charity #1145458 representing the work of Biosphere Foundation in Europe

1985 - 1994: The Biosphere 2 Project

Ms. Alling was one of the eight "biospherians" to live inside Biosphere 2, a 3.15-acre Laboratory for Global Ecology, from 1991 – 1993. Additionally:

1993 – 1994: Assistant Director of Biospheric Research & Development, Space Biospheres Ventures (SBV) and Overall Head of Transition to the next experiment

1991 - 1993: Director of Marine Systems Ecological Systems and Scientific Chief while residing inside Biosphere 2 for two years during its first mission. Responsible for the research and development program for the overall Biosphere 2 experiment as well as the day-to-day operational management of the ocean and marsh biomes, streams and horticulture areas

1985 – 1994: Director of Marine Ecological Systems (SBV). Responsible for the design, development, operation and research of two biomes: the 1,000,000 gallon ocean and mangrove marsh systems in Biosphere 2

1986 – 1991: President, Ocean Expeditions Inc. (OEI)

"Expedition to Circumnavigate South America," including a six week voyage to the Antarctic Peninsula. Ms Alling was the Expedition Chief

Release of two dolphins from captivity with Oceanic Research and Communication Alliance

1985 - 1986: Project Coordinator, Cetacean Seas Research. Design and construction in Sri Lanka of a 44 foot sloop for marine mammal studies and films

1985 – 1986: UNEP Scientific Consultant at NARA (National Aquatic Resource Agency) for its Sri Lankan Small Cetacean Entrapment Project and Indian Ocean Marine Mammal Sanctuary Program

1981 – 1984: Scientist onboard vessel Tulip for a World Wildlife Fund Indian Ocean Marine Mammal Sanctuary Research Program

1981: Field Research Assistant for a Humpback Whale Population Study, Greenland for the Marine Mammal Commission

Education:

1983-1985: M.S., Honors. The School of Forestry and Environmental Studies, Yale University, CT

1977-1982: B.A., Biology, Honors. Middlebury College, Middlebury, VT

1981: Zoology Lab, Honors. Cambridge University, Cambridge, England

1979: Organic Chemistry, Honors. Harvard University, Cambridge, MA

1979: Semester in Nepal, Honors. Experiment in International Living

1977: Sea Semester, Honors, Boston University, Boston, MA

Fellowships/Memberships:

Fellow, Institute of Marine Engineering, Science and Technology

Fellow, World Academy of Art and Science

Fellow, Linnean Society, UK

Fellow, New York Explorers Club

Member, The New York Academy of Sciences

Committee Member, Espace Mer, France

Associate Member, Institute for Advanced Studies in Life Support

Board of Directors, Journal of Life Support and Biosphere Science, USA

Awards:

2017 Outstanding Contribution to Marine Sustainability Award, IMarEST

1993 Woman of the Year, Elle Magazine

1981 Thomas J. Watson Fellowship, USA
International Cetacean Society Award, USA

Research and Expeditions:

2011- Present: **Biosphere Stewardship Education Programs**, Bali Barat National Park, Bali, Indonesia

2009- Present: **'Friends of Menjangan' Conservation Program**, Bali Barat National Park, Indonesia

2012- 2016 **Sri Lanka Marine Mammal Conservation** with special emphasis on ship-strikes affecting the status of the pygmy blue whale and sperm whale populations.

2009- 2011: **Sea Turtle & Coral Reef Conservation Program**, Durai Island, Anambas Islands, Indonesia.

1995- 2006: **Closed system research and development for Mars On Earth®**, a manned life support system for Mars

2006: Laboratory Biosphere – third generation **Russian Mir wheat** propagation experiment

1995- 2005: **Laboratory Biosphere** (a 12' closed system chamber) research and development with atmosphere & water recycling with soils and crops -

1995- 2008: **Planetary Coral Reef Expedition** to 49 locations worldwide- www.pcrf.org

1993- Present: **Wastewater Gardens®** - ecological wastewater recycling R & D in Mexico, Bali, New Mexico (USA)

1995- 2003: Pioneered the **Coral Reef Satellite Mission** concept: a project to put a satellite in space to map and monitor reefs and to create an urgently needed first comprehensive baseline map of living coral reefs. Partners in this effort included the Massachusetts Institute of Technology (MIT) and the Scripps Institution of Oceanography

1991- 1994: Mapping **coral reef health and vitality** at Turneffe Atoll, Belize

1991-1993: **Biosphere 2 Closed System Experiment** with a crew of 8 persons.

1985- 1994: **Closed Ecological Systems** research and development, Biosphere 2

1985- 1994: **Ocean and Marsh Biome** research and development, Biosphere 2

1989: **Test Module 3-day Closed System Experiment**, Biosphere 2

- 1989: Research on **humpback whale genetics in Antacrica** with the National Cancer Research Institute
- 1988- 1989: Marine mammal sightings, **Circumnavigation of South America** Voyage
- 1987: **Readaptation and release of two captive bottlenose dolphins**, Golden Isles, Savannah, Georgia
- 1986: **British Columbia, Canada killer whale** communication study
- 1983- 1984: Research on the **behavior, ecology and vocalizations of blue whales** and sperm whales off the east coast of Sri Lanka
- 1983: Research on the exploitation and **by-catch of small cetaceans in Sri Lanka**
- 1982- 1984: Participant in a WWF **Indian Ocean Marine Mammal Sanctuary** research project to study sperm and blue whales and the distribution of marine mammals off the coast of Sri Lanka
- 1982: Research on the exploitation, distribution and population of the **white beaked dolphin off Labrador, Canada**
- 1981: Research on the **Yangtze River dolphin, China**
- 1981: Participant in a research project studying the distribution of **humpback whales off Greenland**
- 1979: General **Survey of Nutrition in Nepal**, Dhopakel and Taplejung

Books:

A. Alling. 2015. Forward in: *Coral Reefs – A Handbook For Their Future*. IMarEST, UK.

A. Alling. 2010. *Reefs in Crisis*. Chapter included in *OCEANS. Companion Book to the DisneyNature Film Oceans, edited by Jon Bowermaster*

A. Alling, M. Nelson, S. Silverstone. 1993. *Life Under Glass: The Inside Story of Biosphere 2*, The Biosphere Press, Oracle, AZ

A. Alling, M. Nelson, S. Silverstone. 1994. *Life Under Glass: The Inside Story of Biosphere 2*. Translated in Japanese and Dutch and republished

“Studio of the Sea” films: Studio of the Sea is a project of the Biosphere Foundation that has made over 40 mini-films about life at sea, ocean challenges and island cultures. Its archive consists of 3 terrabytes of HD and DV footage. The films are online at www.studioofthesea.org.

The most well known include:

Menjangan ~ A Music Video. 2016. Youtube at Biosphere Foundation
A Selection of Studio of the Sea Films. 2010. Xinya Television, China
Reuse or Refuse. 2009. Youtube at Biosphere Foundation
Water Music & Mbambanga Dance. 2008. World Water Expo Zaragoza Spain.
Whaling Wall. 2008. Youtube at Biosphere Foundation
Canary is Dead. 2008. Link TV
Deep Trouble. 2007. Youtube at Biosphere Foundation
Going, Going, Gone. 2007. Youtube at Biosphere Foundation
Canary is Dead. 2007. Current TV
Our World – A visual journey into Biosphere 2. 2006. Youtube at Biosphere Foundation
About Studio of the Sea. 2005. Link TV

Documentaries:

Vanishing Coral. 2017. A film by US KCET & Earth Focus about the challenges facing coral reefs today and the efforts underway in NW Bali by the local community to steward their reefs.

Odyssey in 2 Biospheres. 2015. A film by French Director Michelle Decoust about three Directors & Officers of Biosphere Foundation who lived inside the Biosphere 2 project and who apply critical discoveries made to conservation & education project in NW Bali.

Acid Test: The Global Challenge of Ocean Acidification. 2009. A film by the National Resources Defense Council that used footage from BF's *Studio of the Sea*.

An Inconvenient Truth. 2006. Academy award winning film by Paramount Classics and Participant Productions that featured the work of PCRf and the fact that coral reefs are an early warning sign for global warming.

Dragon of the Seas. 2004. 52 minute documentary film about the PCRf Coral Reef Research program by ADR Productions, France.

Indonesia Beyond the Reefs. 1999. 90 minute National Geographic Television program about Raffles Marina Marine Parks of Indonesia expedition with PCRf's ship and crew.

The Coral Dance. 1998. 30 minute documentary film on the PCRf Coral Reef Research and Wastewater Gardens® by Japan Asahi TV, French Canal + TV, and British 3BM Production.

Buddha and the Biosphere - Vis a Vis. 30 minute documentary about life inside the two year Biosphere 2 project by Point du Jour - France 3 - Borromée Productions.

Numerous International films about the Biosphere 2 project. 1986-1994

Back to the Sea. 1987. National Geographic film about the release of two bottlenose dolphins, *Joe and Rosie*

Scientific Publications & Posters:

Marcus Eriksen, Max Liboiron, Tim Kiessling, Martin Thiel, Louis Charron, Abigail Alling, Laurent Lebreton, Heather Richards, Barent Roti, Nicolas C. Ory, Valeria Hidalgo-Ruz, Erika Meerhoff, Carolynn Box and Anna Cummins. 2017. *Microplastic sampling with the AVANI trawl compared to two neuston trawls in the Bay of Bengal and South Pacific*. Environmental Pollution.

Ilangakoon, A. and A Alling. 2016. *Cetacean sightings, mixed-species assemblages and the easternmost record of *Indopacetus pacificus* from the northern Indian ocean*. Marine Biodiversity Records. 9:8. 4 pp.

Priyadarshana, T., Randage, S.M., Alling, A., Calderan, S., Gordon, J. Leaper, R. Porter. L.2015. *Distribution patterns of blue whale (*Balaenoptera musculus*) and shipping off Southern Sri Lanka*. 2015. Regional Studies in Marine Science. Elsevier online at <http://dx.doi.org/10.1016/j.rsma.2015.08.002/>.

Also online at: <http://www.sciencedirect.com/science/article/pii/S2352485515000341>

Priyadarshana, T., Randage, S.M., Alling, A., Calderan, S., Gordon, J. Leaper, R. Porter. L.2015. *An update on work related to ship strike risk to blue whales off southern Sri Lanka*. Paper SC66aHIM presented to the IWC Annual Meeting June, 2015. 13pp.

Tilak Priyadarshana, C. Milner, M. Van Thillo, E. Heywood¹, A. Forrest, L. Sato, and A. Alling¹ 2015. *A note on acoustic and visual observations of sperm whales off southeast Sri Lanka*. Accepted in University of Ruhuna Journal, Sri Lanka. 7pp.

Randage, S.M., A. Alling, K. Currier, E. Heywood. 2014. *Review of the Sri Lanka Blue Whale, *Balaenoptera musculus* ssp., with observations on its distribution in the shipping lane*. J. Cetacean Res. Manage.14:43-49. 7pp.

Priyadarshana, T., Randage, S.M., Alling, A., Calderan, S., Gordon, J. Leaper, R. Porter. L.2014. *Preliminary Results of Surveys to Investigate Overlap Between Shipping and Blue Whale Distribution off Sri Lanka*. Paper SC65bHIM presented to the IWC Annual Meeting June, 2014. 11pp.

Dustan, P., Orla Doherty, Carol Milner, Amber Lehman and Abigail Alling. 2014. *Ecological Tipping Point of Coral Reefs in NW Bali, Indonesia*. Poster presented at Ocean Sciences Meeting, Honolulu, Hawaii February 23-28, 2014.

Orla Doherty, Carol Milner, Phillip Dustan, Stuart Campbell, Shinta Pardede, Tasrif Kartawijaya and Abigail Alling. 2013. *Report on Menjangan Island's Coral Reef: A Bali Barat National Park Marine Protected Area*. Atoll Research Bulletin 599, 17pp.

Carol Milner, Katharine Currier, Blake Kopcho, Abigail Alling. 2013. *A Status Report on the Coral Reefs at Pulau Durai, Anambas Islands Indonesia*. Atoll Research Bulletin 591, 17pp.

M. Nelson, N.S. Pechurkin, J.P. Allen, Abigail K. Alling, L.A. Somova and J.I. Gitelson, 2010. *Bioengineering of Closed Ecological Systems for Ecological Research, Space Life Support and the Science of Biospherics*, Chapter 11 in Volume 10, 2010, DOI: 10.1007/978-1-60327-140-0 ENVIRONMENTAL BIOTECHNOLOGY in the Handbook of Environmental Engineering series, Editors: Lawrence K. Wang, Volodymyr Ivanov and Joo-Hwa Tay, The Humana Press, Inc., Totowa, NJ

Visscher, A., A-L. Paul, M. Kirst, A. K. Alling, S. Silverstone, G. Nechitailo, M. Nelson, W.F. Dempster, M. Van Thillo, J. P. Allen, R. J. Ferl. 2009. *Effects of a Spaceflight Environment on Heritable Changes in Wheat Gene*. *Astrobiology* May 9 (4): 359-67.

Tanya Ribakoff, Orla Doherty, Paul McCurdy, Katharine Currier, Abigail Alling. 2008. *Declining Coral Health and Fish Diversity at Sagharughombe Reef, Solomon Islands Before and After the 2007 Tsunami and Earthquake*. Poster presented at the International Coral Reef Symposium, July 2008.

Katie Olds, Phil Dustan, Abigail Alling. 2008. *Eight Years of Coral Reef Data from Melanesia and Southeast Asia: Vitality, Percent Coverage, Reef Area and the Affects of an Earthquake*. Poster presented at the International Coral Reef Symposium, July, 2008.

Lindsey Feldman, Abigail Alling, Kitty Currier, Orla Doherty, Phil Dustan, Heather Logan, Carol Milner. 2008. *The Planetary Coral Reef Foundation*. Poster presented at the International Coral Reef Symposium, July, 2008.

Alling, A., Doherty, O., Logan, H., Feldman, L., Dustan, P. 2007. *Catastrophic Coral Mortality in the Remote Central Pacific Ocean: Kirabati Phoenix Islands*. *Atoll Research Bulletin*, 551. National Museum of Natural History Smithsonian Institution, Washington DC.

Nelson, M, Dempster, W.F., Alling, A, Allen, J., Rasmussen, R, Silverstone, S., and Van Thillo, M. 2006. *Cowpeas and pinto beans: yields and light efficiency of candidate space crops in the Laboratory Biosphere closed ecological system*. COSPAR 2006 in Beijing, in press *Adv. Space Research*

Alling, A. 2006. *Silent Death*. *Ocean Magazine*. April, 2006

Alling, A., Van Thillo, M., Dempster, W., Nelson, M., Silverstone, S., Allen, J. 2005. *The Mars On Earth® Project: Lessons Learned from Biosphere 2 and Laboratory Biosphere Closed Systems Experiments*. *Jpn. So. Biol. Sci. Space*, Vol. 19, No. 4: 250-260.

H. Morowitz., J.P. Allen, M. Nelson and A. Alling. 2005. *Closure as a Scientific Concept and its Application to Ecosystem Ecology and the Science of the Biosphere*. *Advances in Space Research*. 35(9):1552-6.

William F. Dempster, J.P. Allen, A. Alling, M. Nelson, S. Silverstone, M. Van Thillo. 2005. *Atmospheric dynamics in the Laboratory Biosphere with wheat and sweet potato*

crops. *Advances in Space Research*. 2005;35(9):1552-6.

M. Nelson, W.F. Dempster, S. Silverstone, A. Alling, J.P. Allen and M. Van Thillo. 2005. *Crop Yield and Light/Energy Efficiency in a Closed Ecological System: Two Laboratory Biosphere Experiments*. *Advances in Space Research* 35 (2005) 1539-1543.

Silverstone, S., M. Nelson, A. Alling and J.P. Allen. 2005. *Soil and Crop Management: Lessons from the Laboratory Biosphere 2002-2004*. *Advances in Space Research Adv* 35(9):1544-51.

Silverstone, S., M. Nelson, A. Alling, J. Allen. 2003. *Development and research program for a soil – based bioregenerative agriculture system to feed a four person crew at a Mars base*. *Adv. Space Res.* 31(1): 69-75.

Nelson, M., W. Dempster, A. Alling, J.P. Allen, R. Rasmussen, S. Silverstone and M. Van Thillo. 2003. *Initial experimental results from the Laboratory Biosphere closed ecological system facility*. *Adv. Space Res.* 31(7):1721-1730, 2003.

Dempster, W.F., Van Thillo, M., Alling, A., Allen, J.P., Silverstone, S., Nelson, M. 2004. *Technical review of the Laboratory Biosphere closed ecological system facility*. *Adv. Space Res.*, 34, 1477-1482.

Allen, J.P., M. Nelson, A.K. Alling. 2003. *The legacy of Biosphere 2 for the study of biospherics and closed ecological systems*. Paper presented at the World Space Congress, COSPAR general assembly, Houston, TX, October 2002, *Advances in Space Research*, 2003, Vol. 31, issue 7, 1629-1640.

M. Nelson, J. Allen, A. Alling, W.F. Dempster, S. Silverstone. 2003. *Earth applications of closed ecological systems: relevance to the development of sustainability in our global biosphere*. Paper presented at the World Space Congress, COSPAR general assembly, Houston, TX, October 2002, *Advances in Space Research*, 2003, 31 (7), 1649-1656.

Alling, A, Nelson, M., Silverstone, S and M. Van Thillo. 2002. *Human Factor Observations of the Biosphere 2, 1991-1993, Closed Life Support Human Experiment and Its Application to a Long-Term Manned Mission to Mars*. *Life Support and Biosphere Science* 8:71-82.

Nelson, M., Alling, A, Dempster, W.F., Van Thillo, M. and J. Allen. 2002. *Integration of wetland wastewater treatment with space life support systems*. *Life Support and Biosphere Science* 8 (3/4):149-154.

Salisbury, F.B, Dempster, W.F., Allen, J.P., Alling, A., Bubenheim, D., Nelson, M and S. Silverstone. 2002. *Light, Plants, and Power for Life Support on Mars*. *Life Support and Biosphere Science* 8:161-172.

Allen, J. and A. Alling. 2002. *The design approach for Mars On Earth®, a biospheric closed system testing facility for long-term space habitation*. American Institute of

Aeronautics and Astronautics Inc.IAC-02-IAA.8.2.02.

Nelson, M., Odum, H.T., Brown, M.T., and A. Alling. 2001. *Living off the land: resource efficiency of wetland wastewater treatment*. Adv. Space Res. 27 (9) 1547-1556.

Nelson, M., Alling, A., Dempster, W.F., Van Thillo, M. and J. Allen. 2003. *Advantages of using subsurface flow constructed wetlands for wastewater treatment in space applications: ground-based Mars Base prototype*. Advances in Space Research 31 (7): 1799-804.

Alling, A. 1999. *Mission Overview of the Planetary Coral Reef Foundation*. Linnean Society/NASA/PCRF Remote Sensing of Coral Reefs Conference, London, Dec 15-16, 1999.

Supriya, C., Baumgardner, J., Alling, A., Dustan, P. 1999. *Sensor Specifications for Space Based Coral Reef Monitoring*. Linnean Society/NASA/PCRF Remote Sensing of Coral Reefs Conference, London, Dec 15-16, 1999.

Alling, A., Joe Allen, F. El-Baz. 1998. *A Simulation of an Inhabited Mars Base to be Constructed and Operated in the Egyptian Sahara Desert*. 3rd International Conference Life Support and Biosphere Science, January 11 -15, Disney, Coronado, Florida.

Dustan, P., S. Chakrabarti, A. Alling. 1998. *Mapping and Monitoring the Health and Vitality of Coral Reefs From Satellite: a Biospheric Approach*. 3rd International conference of Life Support and Biosphere Science, January 11 -15, Disney, Coronado, Florida.

Alling, A. 1997. *Pulsing Planet Earth: The Planetary Coral Reef Project*. Explorers Journal. Fall, 1997.

Alling, A. and P. Dustan. 1996. *Coral Reef Ecosystem of Biosphere 2*. 4th International Conference on Closed Ecological Systems. Linnean Society, UK.

A. Alling. 1994. *Two Years Inside Biosphere 2: Looking Back, Looking Ahead*. Illume, V. 6. N.1 (Japan).

M. Van Thillo, W. Dempster, N. Alvarez-Romo, G. Hudman, S. Silverstone, A. Alling, and M. Nelson. 1996. *From Theory to Practice: The Initial Two-Year Closure of Biosphere 2*. Journal of Ecological Engineering.

Nelson, M. and A. Alling. 1993. *Biosphere 2 and its Lessons for Long-duration Space Habitats*. In: Faughnan, ed., Space Manufacturing 9. The High Frontier: Accession, Development and Utilization. AIAA, Washington, D.C. P. 280-287.

M. Nelson, T. Burgess, A. Alling, N. Alvarez-Romo, W.F. Dempster, R.L. Walford, and J.P. Allen. 1993. *Initial results from Biosphere 2: a closed ecological system*

laboratory," Bioscience, 43 (4).

A. Alling, M. Nelson, L. Leigh, R. Frye, T. Macallum, N. Alvarez-Romo. 1993. *A summary of the Biosphere 2 Test Module Research*. An appendix chapter included in *Microcosms and Mesocosms in Scientific Research*, Springer-Verlag, New York by H.T. Odum and R. Beyers.

Baker, C.S., A. Perry, J.L. Bannister, M.T. Weinrich, R.B. Abernethy, J. Calambokidis, J. Lien, R.H. Lambertsen, J. Urban Ramirez, O. Vasquez, P.J. Clapham, A. Alling, S.J. O'Brien, S.R. Palumbi. 1993. *Abundant Mitochondrial DNA Variation and Worldwide Population Structure in Humpback Whales*. *Proceedings of the National Academy of Sciences of the United States of America*. Vol 90. No. 17: 8239-8243

Alling, A. 1992. *Some Implications of Biosphere 2*. *Illume Magazine*, (Japan).

C.S. Baker, R. Slade, J. Bannister, G. Abernethy, A. Alling, and G.K. Chambers. 1992. *Genetic Variability and Stock Identity of Humpback Whales*. Submitted to the International Whaling Commission.

Nelson, M., MacCallum, T.M., Leigh, L.S., Alling, A. and N. Alvarez-Romo. 1991. *Innovative Approaches for Integration in Bioregenerative Testbeds -Biosphere 2 Project*. Paper for Biosphere Symposium, 24 May 1991 sponsored by Japanese CELSS Society and Japanese Society of High Technology in Agriculture. Tokyo, Japan, published in symposium proceedings.

Nelson, M., L. Leigh, A. Alling, T. MacCallum, J. Allen, and N. Alvarez-Romo, 1991. *Biosphere 2 test module: a ground-based sunlight-driven prototype of a closed ecological system*. Paper for COSPAR XXVIII Plenary Meeting, The Hague, Netherlands, 1990, published in *Natural and Artificial Ecosystems, Advances in Space Research*, v. 12, 5:151-158.

MacCallum, T., M. Nelson, J.P. Allen, L.S. Leigh, A. Alling, N. Alvarez-Romo. 1991. *The Biosphere 2 Project and its Application for Space Exploration and Mars Settlement*. The Case for Mars I V, Volume 76, Science and Technology Series, American Astronautical Society, San Diego.

Alling, A., E. Dorsey, J. Gordon. 1991. *Blue Whales (Balaenoptera musculus) off the Northeast Coast of Sri Lanka: Distribution, Feeding and Individual Identification*. In: *Cetaceans and Cetacean Research in the Indian Ocean Sanctuary*. 1991. S. Leatherwood and G. Donovan. Marine Mammal Technical Report Number 3, United Nations Environment Programme, Nairobi, Kenya. pp. 247-258

MacCallum, T., M. Nelson, J.P. Allen, L.S. Leigh, A. Alling, N. Alvarez-Romo. 1991. *The Biosphere 2 Project and its Application for Space Exploration and Mars Settlement*. The Case for Mars IV, Volume 76, Science and Technology Series, American Astronautical Society, San Diego (in press, 1991).

Nelson, M, MacCallum,T., Leigh, L., Alling, A., Alvarez-Romo, N., 1991. *Innovative Approaches for Integration in Biospheric Testbeds - Biosphere 2 Project*. Paper for Biosphere Symposium, 24 May 1991 sponsored by Japanese CELSS Society and Japanese Society of High Technology in Agriculture. Tokyo, Japan.

Alling, A., Leigh, L., McCallum, T. and Alvarez-Romo, N. 1990. *Biosphere 2 Test Module Experimentation Program*. Biological Life Support Systems, Proceedings of the Workshop on Biological Life Support Technologies: Commercial Opportunities, (ed.) Mark Nelson and Gerald Soffen, Synergetic Press, Tucson, 1990.

Nelson, M., L. Leigh, A. Alling, T. MacCallum, J. Allen, Alvarez-Romo. 1990. *Biosphere 2 Test Module: A Ground-Based Sunlight-Driven Prototype of a Closed Ecological System*. Paper # MF 11.2.6, COSPAR XXVIII Plenary Meeting, The Hague, Netherlands Published in *Advances in Space Research*, Vol.12, number 5, 1991 *Life Sciences and Space Research XXIV* (4), Natural and Artificial Ecosystems, ed. by R.D. MacElroy, M.M. Averner, T.W.Tibbitts, B.B. Bugbee, G.Horneck and E.H. Dunlop, pp 151-158, Pergamon Press, 1991.

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Alling, A. and Payne, R. 1987. *Song of the Indian Ocean blue whale, Balaenoptera musculus ssp.* Paper presented to the scientific meeting "Review of the Indian Ocean Marine Mammal Sanctuary, Seychelles, February, 1987. Unpublished. [Available from <http://www.pcrf.org/bluewhalepaper.pdf>]. 10pp.

Alling, A. and H. Whitehead. 1987. *A preliminary study of the status of the White-beaked dolphin and other small cetaceans off the coast of Labrador*. Canadian Field Naturalist Vol 101(2): 131-135.

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Gordon, J., V. Papastavrou, and A. Alling. 1986. *Measuring blue whales: a photographic technique*. Cetus, 6(2): 5-8.

Alling, A. 1986. *Records of odontocetes in the Northern Indian Ocean (1981-1982) and off the coast of Sri Lanka (1982-1984)*. J. Bombay Nat. Hist. Soc. Vol 83(2): 376-394.

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Greenland: summer 1981. Final Report to Marine Mammal Commission. N.T.I.S.
Publication no. PB82-243924, pp 25.