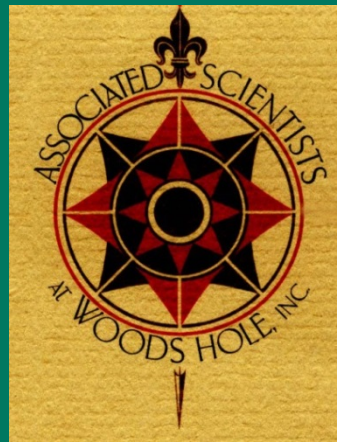
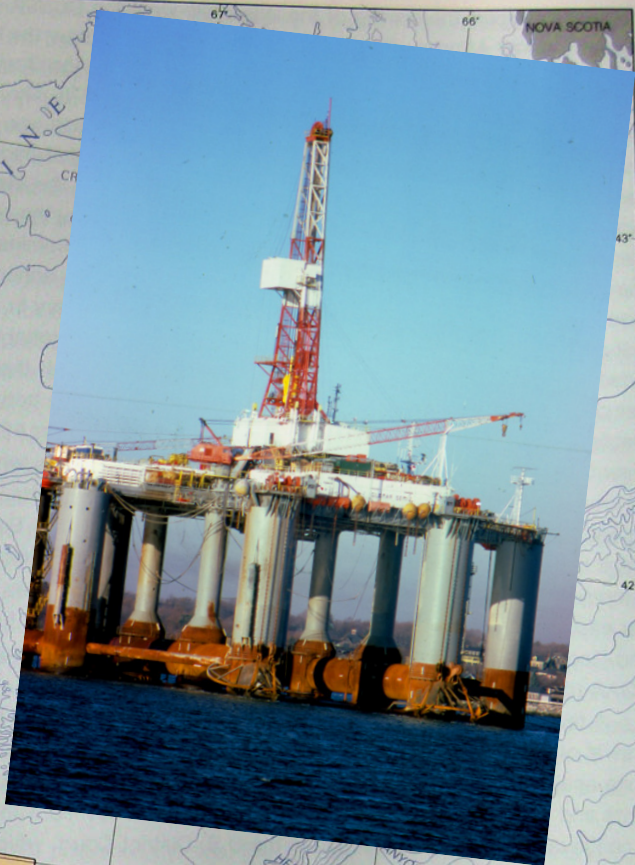


# Quadrotor Drones for Ocean Science

Jim Hain

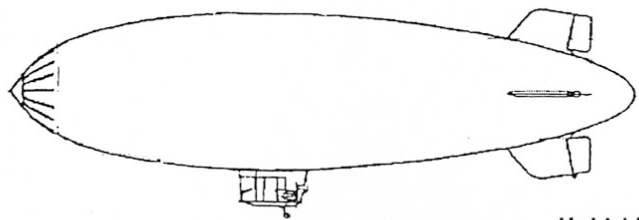


# The “low and slow” research aircraft community

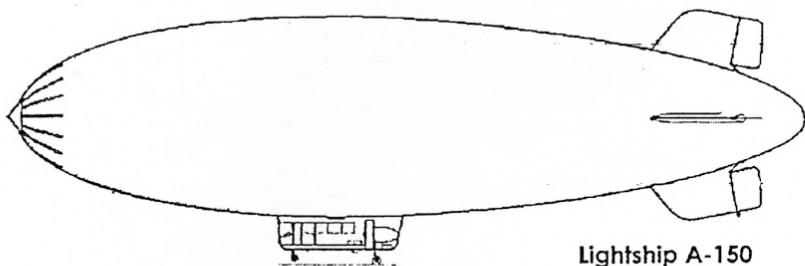


AERO-MARINE SURVEYS, INC.

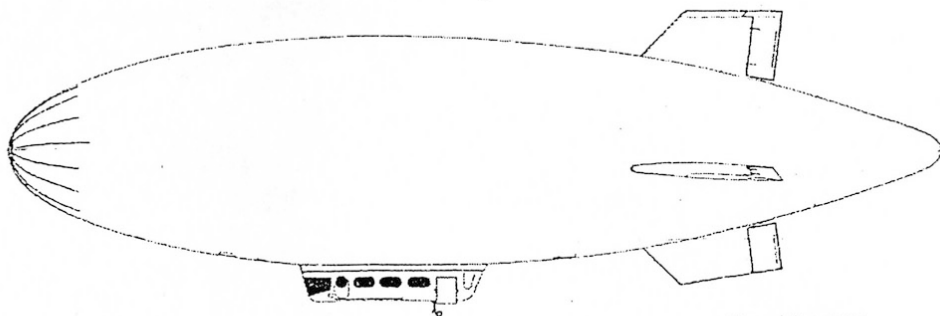




Lightship A-60+



Lightship A-150



Skyship 600





15 February 2007

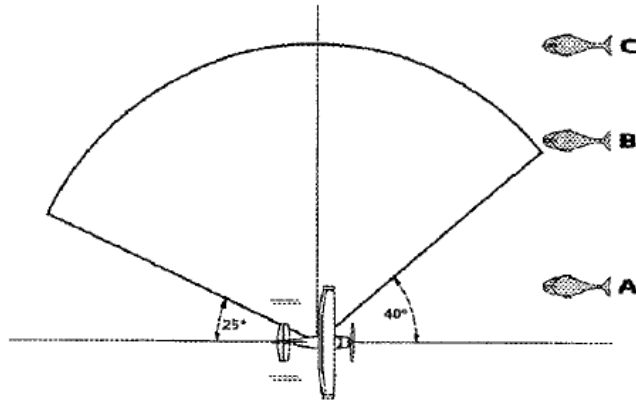


Figure 3. The view field from a Cessna-182 survey aircraft. Downward vision is obscured below a 60° vertical angle from the horizon. Three cases illustrate how a whale might "pass through" this field: A) whale 1/8 nmi (0.2 km) from trackline, maximum 15 sec exposure; B) whale 0.9 nmi (1.7 km) from trackline, maximum 1 min 22 sec exposure; and C) whale 1½ nmi (2.8 km) from trackline, just touches view-field tangent instantaneously.

**33 % of MC present**

**55 % of MC at surface**

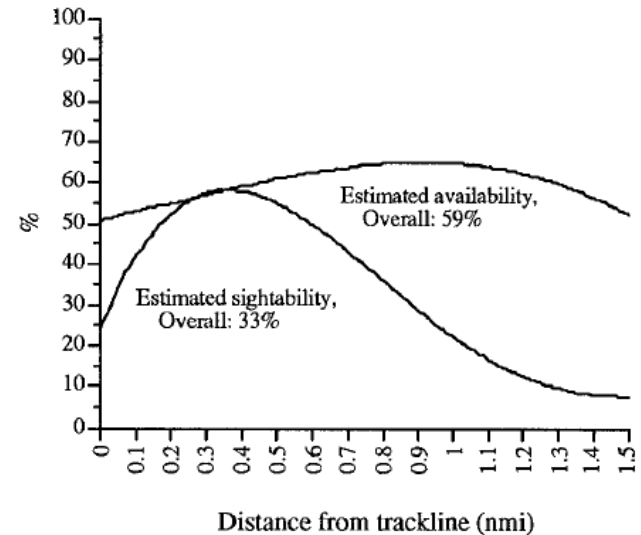
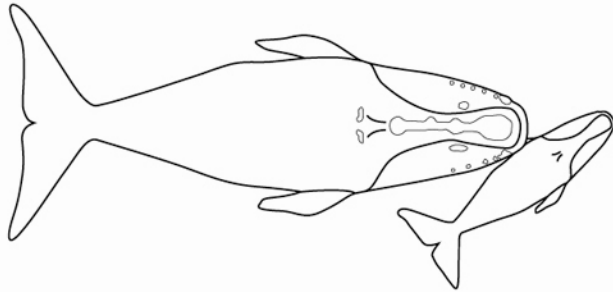


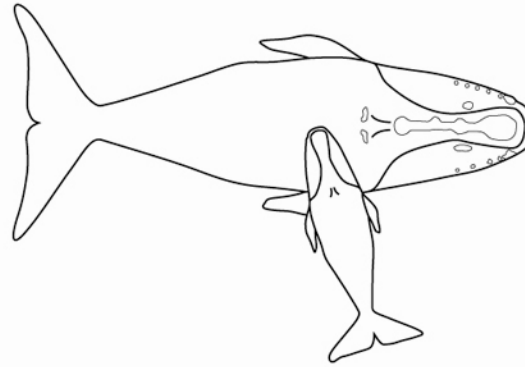
Figure 7. Sightability for mother/calf pairs based on scaling the recorded sighting distance distribution to the calculated sighting availability curve. This was done as follows: 1) the peak in recorded sightings (n=150) for this category was at 0.4 nmi (0.7 km) from the trackline, 2) the calculated sighting availability for this category at this distance was 59%, 3) it was assumed that all mother/calf pairs available to be sighted were sighted at this distance, and 4) recorded sighting values were scaled to the index value of 59% at 0.4 nmi. (1 nmi = 1.85 km.)



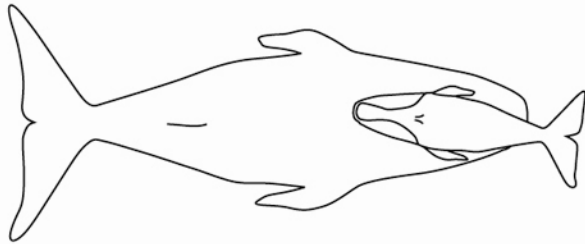
a.



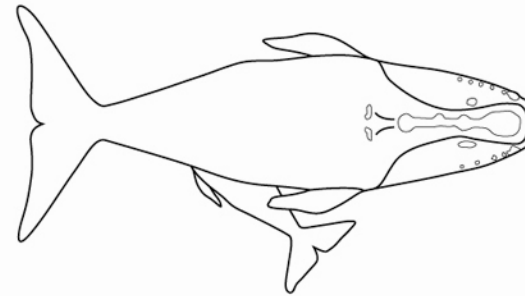
b.



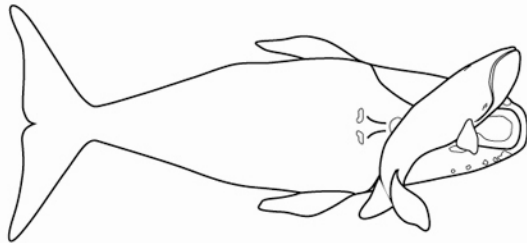
c.



d.



e.





05 January 2011

female yearling of #2645

B. Smith



Photo: PCCS April 16, 2008





