



# Center for Coastal Studies Provincetown

HIEBERT MARINE LABORATORY  
5 Holway Avenue  
Provincetown, MA 02657  
tel (508) 487-3623 fax (508) 487-4695

## Right Whale Ecology Program – 2019 Season Summary

Keith Hankowsky - Intern  
Christy Hudak – Vessel Cruise Chief Scientist, Aerial Observer  
Amy James – Aerial Observer/Flight Coordinator  
Pippa Low - Volunteer  
Brigid McKenna – Aerial Observer/Data and Matching Manager  
Kate McPherson - Intern  
Charles “Stormy” Mayo - Director  
Alison Ogilvie – Aerial Observer/Intern Coordinator

With the close of the 2019 season we are providing an end-of-field-season general summary of the surveillance and documentation Cape Cod Bay work carried out in Cape Cod Bay in collaboration with the Massachusetts Division of Marine Fisheries with funding from the National Oceanic and Atmospheric Administration and supplemental funding from Oregon State University, the Disney Conservation Foundation, the Fuller Foundation, the Bruce J. Anderson Foundation, the Towle Ocean Conservation Fund, and individual contributions. Intensive work on the large volume of data collected during the 2019 season will be underway for the next several months: photo matching, database entry and management, zooplankton and CTD analysis, and ultimately the preparation and submission of photos and data along with the preparation of reports and papers. The information here is preliminary and, particularly with regard to summaries of data, will change as analysis proceeds. Please do not quote this summary before you check with us.

The aerial surveillance work during 2019 would not be possible without the aerial support provided by Avwatch, Inc., Chris Kluckhuhn (CEO), Trevor Laue (PIC), and the exceptional pilots at Avwatch.

During the 2019 season, which included the documentation of early arriving right whales in December 2018, CCS field teams collaborated with colleagues undertaking special studies in Cape Cod Bay and adjacent waters, including:

- Woods Hole Oceanographic Institution – drone photogrammetry (Michael Moore)
- Northeast Fisheries Science Center, NOAA – biopsy darting (Lisa Conger)
- Oregon State University/Cornell University – environmental DNA (eDNA) collection
- Cornell University – acoustics and vocalization studies
- Water Quality Monitoring Program, CCS – water and zooplankton collection (Amy Costa)
- Marine Animal Entanglement Response Program, CCS – aerial support (Scott Landry)
- Stellwagen Bank National Marine Sanctuary – tag telemetry (Dave Wiley)

Over the next several months the data collected during the 2019 season will be shared with the North Atlantic Right Whale Consortium and through the NARWC will be made available to scientists and managers with bona fide research and management responsibilities, as prescribed by the Consortium. Thus, in addition to maintaining the databases at CCS, data will be validated and stored by the Consortium at the University of Rhode Island and at the New England Aquarium. Close collaboration with the NARWC in furtherance of the conservation of the North Atlantic right whale is an essential part of the work we do in Cape Cod Bay.

### Aerial Surveillance 38 surveys flown

- 35 survey days
- 195 survey hours
- 13,412 nautical miles flown
- 4.5 hours dedicated to disentanglement support
- 13,906 photos taken for individual right whale ID
- 261 unique individual right whales
- 4 out of 7 known mother/calf pairs of 2019
- 07 April 2019 – Season’s peak: 129 individuals sighted on one flight
- 07 April 2019 – CCS’ first M/C pair (#1204 and calf) sighted in CCB (R/V Selkie, NOAA documented #1204 and calf in CCB - on 06 April 2019)

### Total number of flights/month

Month	Surveys	CCB	Adjacent	CCB Hours	Adjacent Hours
November	2	1	1	4.1	4.6
December	6	3	3	13.9	12.1
January	2	2	0	8.4	0
February	4	3	1	17.0	3
March	8	8	0	51.2	0
April	8	6	2	41.0	5.5
May	8	6	2	26.5	7.3
<b>Total</b>	<b>38</b>	<b>29</b>	<b>9</b>	<b>162.1</b>	<b>32.5</b>

### Sightings by species – Aerial Only

Species	Aerial - CCB	Aerial - Adjacent	Aerial Total
Right whale	957	35	992
Fin whale	88	38	126
Humpback whale	111	178	289
Minke whale	22	18	40
Sei whale	14	40	54
Unidentified large whale	12	5	17
Pilot whale	0	4	4
Harbor porpoise	0	2	2
Atlantic white-sided dolphin	265	318	583
Common dolphin	2	13	15

Sightings by species – Aerial Only (cont’d.)

Species	Aerial - CCB	Aerial - Adjacent	Aerial Total
Unidentified dolphin	138	157	295
Grey seal	2	0	2
Harbor seal	8	0	8
Unidentified seal	248	85	333
Basking shark	1	2	3
		<b>Total</b>	<b>2584</b>

Opportunistic Submissions – shore and R/V Ibis

11 submissions  
 767 photos taken  
 30 unique individual right whales

Vessel Surveys

26 cruises (of which 7 were right whale eDNA dedicated cruises)  
 181.5 hours on the water  
 4,632 photos taken  
 84 unique individual right whales photographed  
 2 out of 7 mother/calf pairs observed  
 First vessel cruise: 01 December 2018  
 605 zooplankton samples collected (73% analyzed to low taxon to date)
 

- 94 surface
- 112 oblique
- 399 pump samples (vertical or transect)

 293 eDNA samples collected and filtered  
 24 habitat cruise reports sent to colleagues and management agencies

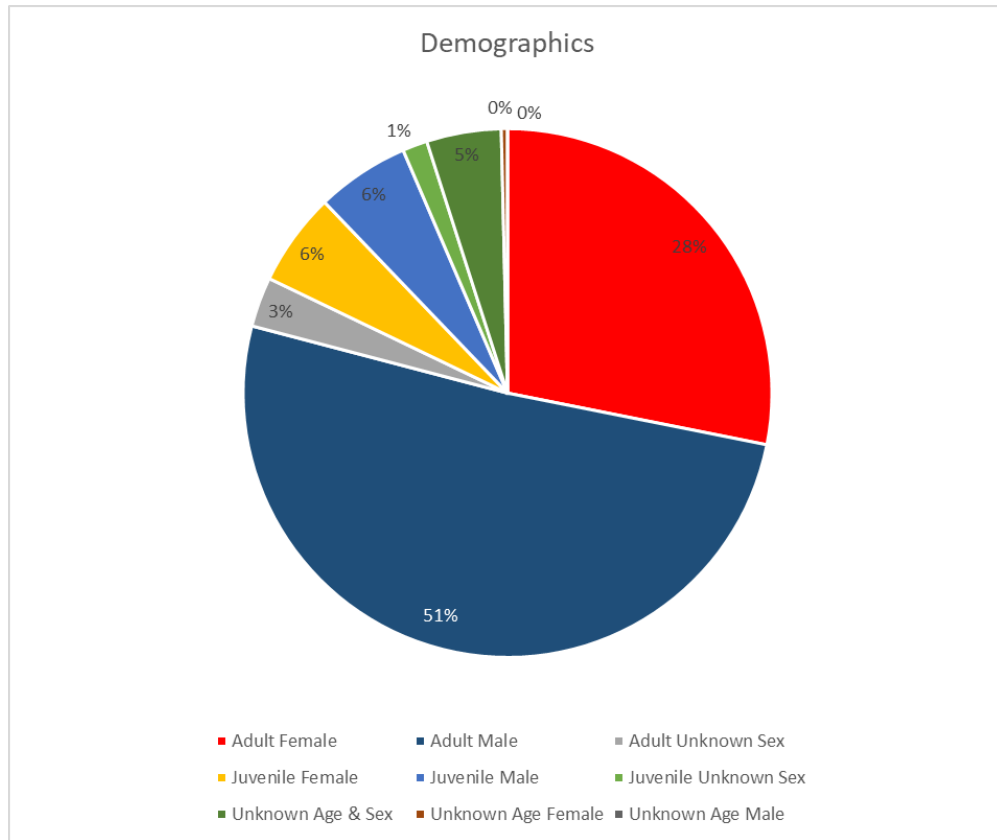
Sightings summary R/V Shearwater and Skymaster

**267\*** individual right whales identified (~ 65% of the population)  
 35 individual right whales on an injury monitoring list (APB)  
 91\* sightings of APB individuals submitted to NEAq  
 19,305 photographs for right whale individual documentation  
 4 of 7 known mother/calf pairs

*\*Numbers will likely increase after all data are processed*

Age Class	Sex
4 Calves	90 Females
34 Juveniles	149 Males
216 Adults	28 Unknown Sex
13 Unknown Age	

Preliminary Demographic Breakdown: all platforms



Total sightings by species

Species	Aerial	Vessel	Total
Right whale	992	294	1286
Fin whale	126	6	132
Humpback whale	289	2	291
Minke whale	40	3	43
Sei whale	54	2	56
Unidentified large whale	17	3	20
Pilot whale	4	0	4
Harbor porpoise	2	40	42
Atlantic white-sided dolphin	583	26	609
Common dolphin	15	18	33
Unidentified dolphins	295	0	295
Grey seal	2	24	26
Harbor seal	8	13	21
Unidentified seal	333	2	335
Basking shark	3	0	3
<b>Total</b>			<b>3196</b>