

115.10

DATA FILE

AQUA STAR - PELAGIC BIRD COUNT SUMMARY

BY

Stephen Woodley

Contract Report

1978



115.10
CWS-AR
Woodley
1978

CANADIAN WILDLIFE SERVICE

Aqua Star - Pelagic Bird Count Summary

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The Aqua Star was at sea for a total of eleven days, during the period of Jan. 23 to Feb. 4, 1978. For the most part, we were located over the Continental Slope (42 52' N, 61 53' W) about 120 nautical miles south-east of Halifax.

The ship was engaged in intensive benthic mapping, prior to the installation of a Chevron drilling rig next month. The work did not involve the use of explosives or other methods that would seemingly alter bird behaviour.

Black Legged Kittiwakes were the most common bird on the slope, often reaching aggregates of 1000. Juvenile Kittiwakes represented only 3% of the total present, indicating the possibility of higher concentrations elsewhere.

Auk counts, were never high, although small Dovekie flocks were generally present. These seemed most common over the slope, but this should be checked with the raw data. There were lesser numbers of Thick-Billed Murres and a few Puffins, also mainly in the slope region.

Fulmars were commonly present after about 50 miles from land. Light to dark phases were well represented as a gradient, with a few birds being almost black. The ratio of light to dark birds was approximately 6:1 .

Great Black Back Gulls were constantly with the ship in numbers that fluxuated as high as 40. Over 1/3 of these were immature birds.

(2)

Herring Gulls were rarely seen at a distance from land and ~~I~~landic and Glaucous Gulls were only seen close to land.

Occasional sightings included a Ganett, a Skua and a few Wilsons Petrels.

Respectfully submitted,

Stephen Woodley

Aqua Star Pelagic Bird Count - Species list

- (1) Black Legged Kittiwake
- (2) Great Black Back Gull
- (3) Northern Fulmar - light and dark phase
- (4) Herring Gull
- (5) Islandic Gull
- (6) Glaucous Gull
- (7) Gannet
- (8) Dovekie
- (9) Thick Billed Murre
- (10) Atlantic Puffin
- (11) Wilsons Petrel
- (12) Skua

- this list is for birds seen at least 10 miles from land.

Whale Sightings - Aqua Star

Feb. 1978

Jan. 25, 1978 - 42 52' N 61 53' W

- tentative I.D. Saddleback Dolphin
- attracted by seismic activity

Jan. 26, 1978 - 42 54' N 61 49' W

- 3 Saddleback Dolphins

Jan. 26, 1978-- 42 54' N 61 48' W

- 4 black dolphins - unidentified
- approx. 10 feet, stubby headed
- travelling north-west

Jan. 30, 1978 - 13 black dolphins - unidentified

- approx. 12 feet, stubby headed
- seemed entirely black
- 3 saddleback dolphins
- appeared as soon as seismic gear was turned on
- headed south-west

Feb. 2, 1978- 3 dolphins - unidentified

- approx. 6 feet, black on top
- jumped clear of water but visability was poor.

Aqua Star Pelagic Bird Count

Jan. 24, 1978

Recording notes:

Observation time- from satellite time (G.M.T.)

Position- from satellite - constantly updated and very accurate.

Angle of View- degree and direction as per ship. ie.- 180 degrees starboard.

Direction- in degrees from ships navigation.

ship- Aqua Star

company - Fairfield Aquatronics
111 Windmill Road
Sunbury-on-Thames
Middlesex, England
89892

work- seismic survey

area- lat. $42^{\circ}N$ lon. $63^{\circ}W$ south-west of Sable Island

observer- Stephen Woodley
P.O. Box 757
Sackville , N.B.
EOA 3C0

Aqua Star- Log of Voyage

- Jan. 23--- depart Halifax 8:00 PM to test navigation equipment
- no birding done
- Jan. 24--- initially returned to Halifax to drop off personal
- birding slow except for usual winter gulls
- a few Kittiwakes present and some small flocks of Dovekies (1-4)
- weather overcast, snow flurries, temp. 6°C, winds light.
- Jan. 25--- woke this morning at seismic site
- weather scattered clouds, light winds, temp. 12°C
- ship stationary most of day while working on equipment
- large concentrations of Kittiwakes present (up to 1000) that moved in and out of ship area all day, often forming large flocks on the water
- only 3 % of Kittiwakes are juveniles as determined on two counts of 100 birds
- Great Black Back Gulls in significant numbers and often associated with the Kittiwakes
- Fulmars showed a ratio of 6 : / , light to dark phase.
- Dovekies present in small numbers and in small groups.
- Jan. 26--- at 8:30 began to return to Halifax because of faulty equipment and impending storm
-this is the second Halifax to job site transect
- weather foggy, rain, temp. 10°C, winds light in the morning developing into force 9 gale by 6:00 PM with heavy seas.
- Dovekies present in small numbers and in small groups.
- one only Brunnich Murre sighted
- Fulmars common around ship
- Jan. 27--- put out of Halifax at 8:00 PM into rain and heavy seas.
- no birding done
- Jan. 28--- upon waking we were to Halifax as heavy seas last night had broken ~~at~~ antennae.

Jan. 31--- ship cruised job site all day doing seismic runs

- weather overcast to scattered cloud, light south-west winds, temp. improving to 10°C in mid afternoon.
- seismic activity may have cleared the auks out of the area as very few were sighted- there was one flock of 15 Dovekies
- Kittiwakes were very common and in large numbers (200)

Feb. 1--- ship cruised job site all day doing seismic runs.

- weather overcast to scattered cloud, with snow flurries in the morning, light to moderate north-west winds brought cool temp. (-2 to 8°C)
- Fulmars common all day- at one time grouping to 25. The light to dark phases are very evident as a colour gradient and it is often difficult to label individuals.
- some flocks of Dovekies (up to 20) were sighted and there were a few scattered Murres. The Murres generally flush far from the ship and it is difficult to speciate at a distance. Thick Billed Murre is definitely present but I have no positive I.D. for the Common Murre.
- Kittiwakes again a very common bird, always present and reaching aggregates of 600. They were seen feeding on several occasions in tight groups, but the food source was not determined. The Captain suggested it may be herring fry.
- significant numbers (approx. 30) of Great Black Back Gulls both adults and immatures were never far from ship.

Feb. 2--- ship generally stationary today doing bottom sampling.

- weather overcast, 20-25 knot north-west winds brought temp. of -3 to +3. Snow flurries often impaired visibility.
- birding painfully slow today with general complement of Fulmars, Kittiwakes, and Black Backed Gulls - few Dovekies.
- of interest is the evening grouping of Kittiwakes. Birds gather from all directions and settle on water near ship. This total is often the daily high count of Kittiwakes.
- Began color coding the Fulmars today according to the L1, L2, D1, D2 classification.

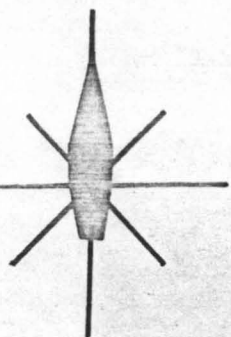
Feb. 3, 1978 --- Ship stationary most of day except for ~~early~~ early morning seismic runs.

- Birding quite unproductive when stationary, but Auks were encountered as soon as we moved out of the immediate working location. Dovekie flocks are generally small (less than 8) but very tight. There may be a looser social arrangement between these small flocks as several are usually found in one location.
- The night flight of Kittiwakes was again repeated with numbers reaching 500.

Feb. 4, 1978 --- Ship stationary for the morning : began to cruise to Halifax at 12:00 noon.

- Weather overcast, snow, freezing spray, temp. -6 C
- Made an Auks only transect up the Continental Slope. Here were the greatest numbers of Dovekies and Murres.
- Still no positive I.D. for Common Murre.

PIROP



Date : Jan. 24/78.
 Ship : Aqua Star
 Obs : Steve Woodley
 Page : 1

Observation period: 12:10 GMT to 12:30 GMT

Position or Decca 44°26' N 63°10' W

Type of watch all Reliability good

Visibility good Weather overcast, 6°C, light winds

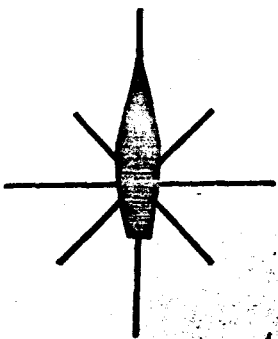
State of Sea gentle swell Ship Speed 10 knots

Direction 340° Activity cruising to Halifax

Angle of view 180° Height 20'
port

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
12:10	HG	2nd yr			2	var.	following ship
	BLKW	Ad			1	?	low over water
	HG	Ad			1	var.	following ship
12:20	HG	1st yr			2	var.	following ship - garbage
	"	2nd yr			1	var.	"
	"	Ad			2	var.	"
	GBBG	Ad			1	var.	"
12:30							45°20' N 63°45' W

PIROP

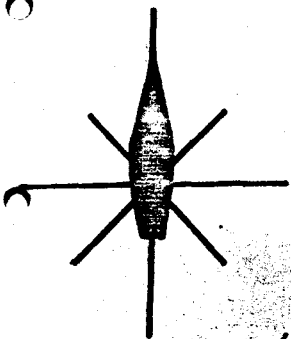


Observation period: 1650 GMT to 1720 GMT
 Position or Decca 44° 24' N 63° 04' W
 Type of watch all Reliability good
 Visibility good Weather overcast, light winds, c
 State of Sea light swell Ship Speed 11 knots
 Direction S.E. Activity cruising to job site
 Angle of view 180° Height 20'
port no ice

Date : Jan. 24/78
 Ship : Aqua Star
 Obs : Stephen C. Bodley
 Page : 3

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
1650	HG	Ad			2	var.	following ship
	G B B C	1st yr			1	var.	"
	"	Ad			1	var.	"
1700	G B B C	Ad			3	var.	"
	"	2nd yr			1	var.	"
	HG	Ad			2	var.	"
	"	1st yr?			1	var.	" (ship to 1/2 speed)
1710	G B B C	Ad			4	var.	following ship.
	"	1st yr			3	var.	"
	"	2nd yr			2	var.	"
	HG	Ad			4	var.	"
	"	1st yr			2	var.	"
	"	2nd yr			1	var.	"
	Glaucous Gull	Ad			2	var.	"
1720							44° 24' N 62° 57' W

PIROP

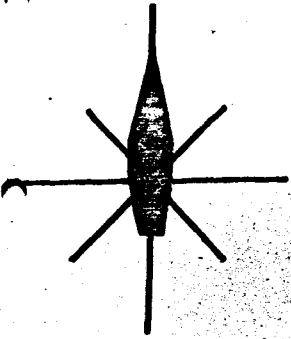


Observation period: 17:30 GMT to 18:10 GMT
 Position or Decca 44° 24' N 62° 55' W
 Type of watch all Reliability good
 Visibility good Weather overcast, light SE winds
 State of Sea mild swell Ship Speed 11 knots
 Direction 140° Activity cruise to job site
 Angle of view 180° Height 20'
forward

Date : Jan 24/78
 Ship : Aqua Star
 Obs : Stephen Ubedley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
17:30	HG	Ad			2	var.	around ship
17:40	nil						
17:50	HG	Ad			2	var.	around ship
							44° 22' N 62° 51' W
18:00	BLKW	Ad			1	var	around ship
	Glaucous Gull	Ad			1	var	following ship
	HG	Ad			4	var	"
	"	and yr			2	var	"
	GBBG	Ad			4	var	"
	"	1st yr			2	var	"
	Dovekie	Ad			1	S.E.	flew ahead of ship - off water
18:10							44° 20' N 65° 13' W

PIROP



Observation period: 18:30 GMT to 19:00 GMT

Position or Decca 44° 23' N 62° 46' W

Type of watch all Reliability good

Visibility fair Weather overcast, snow, light winds

State of Sea 2m swell Ship Speed 10.5 knots

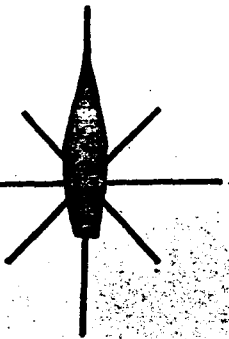
Direction 145° Activity Cruise to job site

Angle of view 180° Height 20'
starboard

Date : Jan. 24/78
Ship : Aqua Star
Obs : Steve Woodley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
18:30	Islandic Gull	Ad			2	var.	following ship
	HG	Ad			1	var.	"
	GBBG	Ad			3	var.	"
	"	2nd yr			2	var.	"
18:40	Islandic Gull	Ad			1	var.	"
	GBBG	Ad			4	var.	"
18:50	Islandic Gull	Ad			1	var.	"
	HG	Ad			1	var.	"
	GBBG	Ad			4	var.	"
	GBBG	2nd yr			1	var.	"
19:00							44° 22' N 62° 44' W
							<u>Note</u> : 19:08 GMT Adult Kittiwake

PIROP

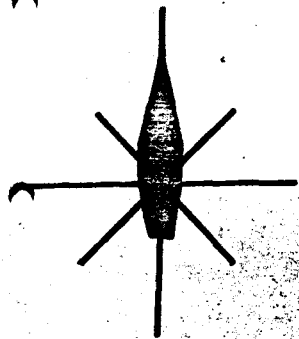


Observation period: 19:30 GMT to 20:00 GMT
 Position or Decca 44° 20' W 62° 40' W
 Type of watch all Reliability good
 Visibility fair Weather overcast, S.W. winds 10k
 State of Sea 1-2m swell Ship Speed 11 knots
 Direction 140° Activity cruising to job site
 Angle of view 180° Height 20'
port

Date : Jan 24/78
 Ship : Agua Star
 Obs : Stephen Whadley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
19:30	BLKW	Ad			3	var.	around ship
	Wilson's Petrel				1	var.	flitting over surface
	Islandic Gull	Ad			1	var.	around ship
	G B B G	Ad			3	var.	" , soaring
	"	1st yr			1	var.	"
	"	2nd yr			1	var.	"
19:40	BLKW	Ad			4	var	"
	G B B G	Ad			5	var.	"
	"	2nd yr			2	var.	"
19:50	Islandic Gull	Ad			1	var.	"
	G B B G	Ad			2	var.	flew ahead of ship
	Dovekie				2	east	flew ahead of ship
20:00							44° 16' N 63° 01' W

PIROP



Observation period: 12:00 GMT to 12:30 GMT

Position or Decca 42° 51' N 61° 53' W

Type of watch all Reliability good

Visibility fair Weather overcast; light SW winds

State of Sea gentle swell Ship Speed 0 knots

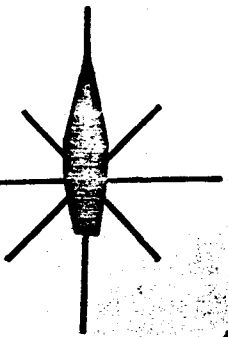
Direction N.A. Activity stationary - equipment repair

Angle of view 360° Height 20'
walk around ship

Date : Jan. 25/78
 Ship : Agua Star
 Obs : Steve Woodley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
12:00	Fulmar		L		18±4	var.	around ship - low on water
	"		D		2	var.	"
	BLKW	Ad			10±2	var.	"
	GBBG	Ad			6	var.	"
12:10	Fulmar		L		20±5	var.	"
	"		D		5±1	var.	"
	BLKW	Ad			14±2	var.	no immatures sighted!
	GBBG	Ad			5±1	var.	around ship - flying
	"	im			2	var.	"
12:20	Fulmar		D		5±1	var.	} ships garbage just tossed overboard - big confusion
	"		L		25±5	var.	
	BLKW	Ad!			50±8	var.	
	GBBG	Ad			8±1	var.	
	"	im			2	var.	
	Skua				1		just wandered by heading east

PIROP



Date : Jan. 25/78
 Ship : Aqua Star
 Obs : Steve Woodley
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Observation period: 1640 ^{various intervals:} GMT to 1750 GMT

Position or Decca 42° 51' N 61° 54' W

Type of watch all Reliability good

Visibility excellent Weather sunny, 12°C, light winds

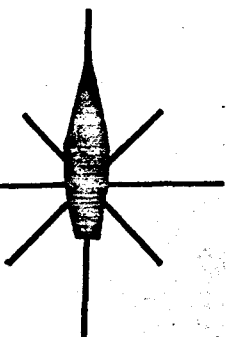
State of Sea mild swell Ship Speed 0

Direction NA Activity stationary; equipment repair

Angle of view 360° Height 20'
walk around ship

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
1640	BLKW	Ad			120±20	still and var.	most on water
to 1650	GBBG	Ad			10±2	still	on water
1650	BLKW	Ad			300±40	still	on water, far off ship
to 1700	GBBG	Ad			10±2	still	"
	"	2nd yr			6	still	"
	Fulmars	Ad	L		4	var.	sometimes with GBBG
1720	Fulmars		L		5	var.	around ship
to 1730	GBBG	Ad			10	still	on water
	"	im			4	still	"
	BLKW	Ad			310±40	still	on water, large flock; probably same birds as earlier although there is constant migration and immigration
1740	BLKW	Ad			300±40	var.	cohesive flying pattern
to 1750	"	im			4	"	around ship
	GBOG	Ad			8	"	"
	"	im			4	"	"
	Fulmars		L		6	var	around ship

PIROP



Observation period: 1830 GMT to 1850 GMT

Position or Decca 42°53'N 61°48'W

Type of watch all Reliability good

Visibility excellent Weather fair, warm, light winds

State of Sea mild swell Ship Speed 6 knots

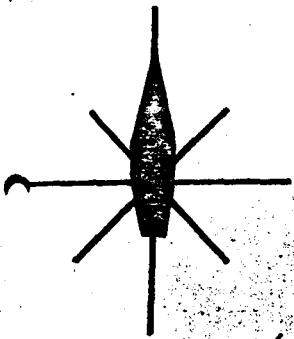
Direction 67° Activity dragging seismic lines

Angle of view 180° Height 20'
port

Date : Jan. 25/78
Ship : Agua Star
Obs : Stephen Woodley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
1830	Dovekie				8	on water	dove - disappeared
	BLKW	Ad			9	var.	flying around ship
	"	im			1	var.	"
	GBBG	Ad			1	var.	"
	"	2nd yr			1	var.	"
	Fulmar		O		2	var.	"
			L		2	var.	"
1840	Kitt ^{BLKW}	Ad			6	var.	around ship
	GBBG	Ad			6	var.	
	GBBG	im			3	var.	
1850							41°52'N 61°48'W

PIROP

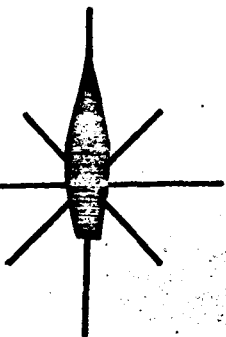


Observation period: 19:00 GMT to 19:20 GMT
 Position or Decca 42° 43' N 61° 48' W
 Type of watch all Reliability good
 Visibility excellent Weather warm^{12°C}, light winds clear
 State of Sea mild swell Ship Speed 5.5 knots
 Direction 251° Activity dragging seismic lines
 Angle of view 180° Height 20'
port

Date : Jan. 25/78
 Ship : Aqua Star
 Obs : Stephen Woodkey
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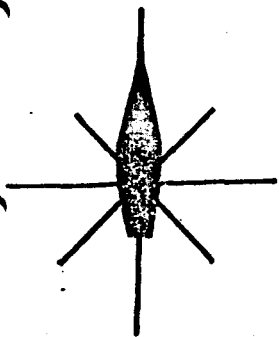
TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
1900	BLKW	im			3	var.	Flying around ship
	"	Ad			100±10	var.	low "
	Fulmar		L		5	var.	"
	GBBG	Ad			5	var.	"
1910	BLKW	Ad			19±2	var.	} chasing buoy on end of seismic line
	GBBG	Ad			6	"	
	"	2nd yr			2	"	
	Fulmar		L		2	"	
1920							42° 53' N 61° 49' W

PIROP

Observation period: 19:50 GMT to 20:20 GMTPosition or Decca 42°52'N 61°50'WType of watch all Reliability goodVisibility Fair Weather overcast, 10°C, light SW windsState of Sea mild swell Ship Speed 4 knotsDirection 251° Activity dragging seismic linesAngle of view 180° Height 20'
starboardDate: Jan 25/78Ship: Aqua StarObs: Stephen WoodleyPage: 15

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
19:50	Fulmar		L		4	var.	cruising around ship
	"		O		1	var.	"
	BLKW	Ad			8	var.	"
							note - large group of Kittiwakes chasing seismic buoy - too far away to count.
20:00	BLKW	Ad			65±10	var.	around ship
	GDBG	Ad			5	"	"
	"	im			3	"	"
	Fulmar		L		3	"	"
20:10	BLKW	Ad +im			400±50	food source?	seem to be feeding in large flock
	Fulmar	Ad	L		1	var.	around ship
	GDBG	2nd yr			1	feeding	with Kittiwakes
20:20							42° 52' N 61° 53' W

PIROP



Observation period: 2030 GMT to 20:50 GMT

Position or Decca 42° 52' N 61° 54' W

Type of watch all Reliability good

Visibility fair (dark) Weather overcast, 10°C, light winds

State of Sea mild swell Ship Speed 4.0 knots

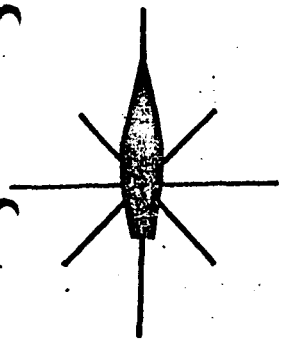
Direction 251° Activity dragging seismic lines

Angle of view 180 Height 20'
port

Date : Jan 25/78
Ship : Aqua Star
Obs : Steve Bradley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
20:30	HG	Ad			2	still	on water
	BLKW	Ad _{im}			150±20	var	around ship, flying
	GBBG	Ad			5	var.	"
	"	im			2	var.	"
	Fulmar		L		5	var.	"
	"		D		1	var.	"
20:40	BLKW	Ad			40±5	var.	"
	Fulmar		L		4	"	"
	GBBG	Ad			2	"	"
20:50							42° 53' N 61° 53' W
							discontinued due to darkness

PIROP



Observation period: 12:00 GMT to 12:30 GMT

Position or Decca 42°54'N 61°50'W

Type of watch all Reliability good

Visibility 500 meters Weather fog; light rain, 4°C

State of Sea mild swell Ship Speed 5.5 knots ; 0

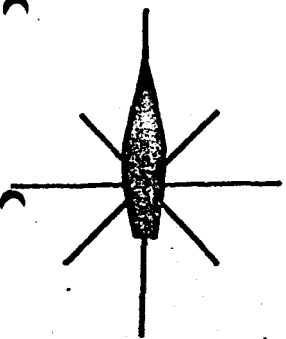
Direction 71° Activity dragging seismic gear; then stop

Angle of view 180° Height 20'
port

Date : Jan 26/78
Ship : Aqua Star
Obs : Steve Woodley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
12:00	GDBG	Ad			1	var	around ship, flying
	"	2nd yr			1	var	"
12:10	Thick-billed Bryannid Murre		W		1	?	dove in front of ship; disappeared
	GDBG	Ad			1	var.	around ship
	"	2nd yr			2	var.	"
12:20							42°54'N 61°49'W - ship stopped
	GDBG	Ad			1	var.	around ship
	"	2nd yr			1	var.	"

PIROP

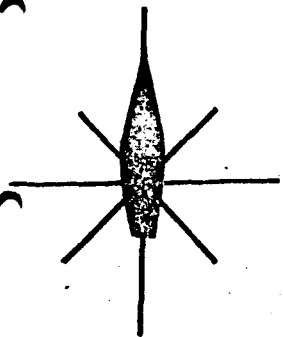


Observation period: 12:30 GMT to 13:20 GMT
 Position or Decca 42°55' N 61°48' W
 Type of watch a// Reliability good
 Visibility 500 meters Weather fog, rain, 8°C, light winds
 State of Sea 1-2m swell Ship Speed 10 knots
 Direction 324° Activity stationary; then return to Halifax
 Angle of view 180° Height 20'
port

Date : Jan. 26/78
 Ship : Aqua Star
 Obs : Steve Woodley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
12:30	BLKW	Ad			2	var.	flying around ship
	GDBG	Ad			1	"	"
							now full speed - 11k - to Halifax
							heading 324° True
13:50	BLKW	Ad			3	var.	flying around ship
	"	im			1	"	"
	GDBG	Ad			2	"	"
	"	2nd yr			2	"	"
	Fulmar		L		1	"	"
13:10	Dovekie		W		1	214°	flew off water in front of ship
	BLKW	Ad			5	var	flying around ship
	GDBG	Ad			1	var	"
	"	2nd yr			2	var	"
13:20							42°59' N 61°52' W

PIROP



Observation period: 13:10 GMT to 13:40 GMT

Position or Decca 42° 59' N 61° 52' W

Type of watch all Reliability good

Visibility 500 m Weather fog, rain, 8², light winds

State of Sea mild swell Ship Speed 11 knots

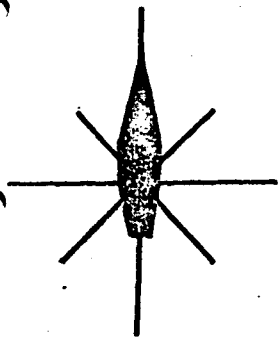
Direction 223° Activity return to Halifax

Angle of view 180° Height 20'
port

Date : Jan. 26/78
Ship : Aqua Star
Obs : Steve Woodley
Page : 19

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
13:10	Dovekie		W		6	300°	very timid; flush in front of ship
	G B B G	Ad			2	var.	flying around ship
	"	2nd yr			2	var.	"
	BLKW	Ad			4	"	"
	"	im			1	"	"
13:20	Dovekie		?		2	dove	- seemed to be summer plumage
	G B B G	Ad			2		soaring
	"	2nd yr			1		around ship
	BLKW	Ad			5		"
							43° 02' N 61° 55' W
13:30	BLKW	Ad			6	var.	around ship
	G B B G	Ad			2	"	"
	"	2nd yr			2	"	"
13:40							43° 03' N 61° 56' W

PIROP

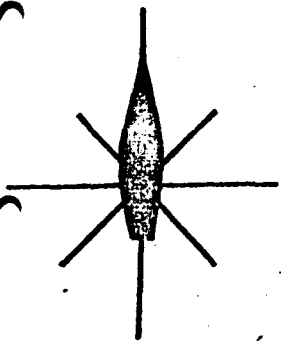


Observation period: 14:40 GMT to 15:30 GMT
 Position or Decca 43° 12' N 62° 05' W
 Type of watch all Reliability good
 Visibility 500 m Weather rain, fog, light winds, 10°C
 State of sea mild swell Ship Speed 11 knots
 Direction 223° Activity return to Halifax
 Angle of view 180° Height 20'
Forward

Date : Jan. 26
 Ship : Aqua Star
 Obs : Steve Whadley
 Page : 2

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
14:40	Dovekie				7	S.W.	groups of 1,6
	BLKW	Ad			4	var	flying
							43° 13' N 62° 07' W
14:50	Fulmar		L		2	var	low over water
	HG	Ad			1	"	flying around ship
	BLKW	Ad			1	"	"
							43° 15' N 62° 09' W
15:00	HG	Ad			1	still	on water
							43° 16' N 62° 10' W
15:10	HG	Ad			1	var	flying visibility reduced to 1000m
							43° 17' N 62° 11' W
15:20	HG	Ad			1	var	flying
	BLKW	Ad			2	var	" - fog bank
							43° 18' N 62° 12' W

PIROP



Observation period: 15:40 GMT to 16:10 GMT

Position or Decca 43° 20' N 62° 14' W

Type of watch all Reliability o.k.

Visibility poor, <100 m Weather rain, fog, light winds

State of Sea 1-2 m Ship Speed 10.5 knots

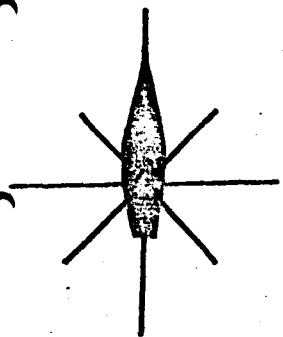
Direction 322° Activity return to Halifax

Angle of view 180° Height 20'
forward

Date: Jan. 26/78
Ship: Aqua Star
Obs: Steve Woodley
Page: 22

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
15:40	H G	Ad			1	var.	around ship
	Fulmar		L		1	"	across bow-low
							43° 21' N 62° 15' W
15:50	H G	Ad			1	var	flying
	Dovekie				3	west	away from boat-off water
							43° 22' N 62° 16' W
16:00	Dovekie				1	love	no reappearance
	BLKW	Ad			1	var	flying around ship
	H G	Ad			1	var	"
							43° 23' N 62° 17' W

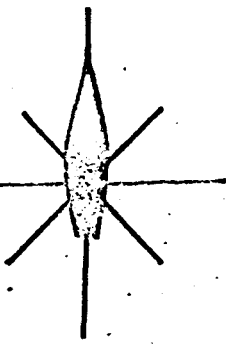
PIROP



Observation period: 17:00 GMT to 18:00 GMT
 Position or Decca 43°30'N 62°25'W
 Type of watch all Reliability good
 Visibility 100 m Weather fog, rain, 40k winds, 10°
 State of Sea 3-5 m Ship Speed 10 knots
 Direction 120° Activity return to Halifax
 Angle of view 180° Height 20'
forward

Date : Jan 26
 Ship : Agua Star
 Obs : Steve Woodley
 Page : 27

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
17:00	nil						poor visibility 43°31'N 62°26'W
17:10	Dovekie				6	west	groups of 4, 2 43°32'N 62°27'W
17:30	Fulmar	L			3	var	flying 43°33'N 62°29'W
17:30	Dovekie				8	west	flushed away from ship
	BLKW	Ad			4	var	flying around ship 43°35'N 62°30'W
17:40	Dovekie				3	west	flew off water
	BLKW	Ad			1	var	flying 43°36'N 62°32'W
17:50	Dovekie				1	S.W.	off water in front of ship
	Fulmar	L			2	var.	flying 43°37'N 62°33'W



Observation period: 16:50 GMT to 17:20 GMT

Position or Decca 41°11'N 63°10'W

Type of watch all Reliability good

Visibility good Weather scattered cloud, 5c, heavy winds

State of Sea 3-4 meters Ship Speed 10 knots

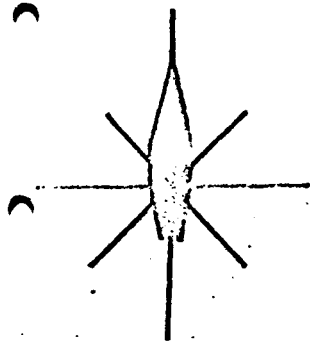
Direction 321° Activity return to Halifax

Angle of view 180° Height 20'
forward

Date : Jan. 28/78
Ship : Aqua Star
Obs : Steve Woodley
Page : 27

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
16:50	Fulmar		L		1	var	flying
	Dovekie				1	west	off water in front of ship
17:00	Fulmar		L		4	var	flying
	Dovekie				3	S.W.	low over water
17:10	BLKW	Ad			4	var.	flying around ship
	G B B G	2nd yr			1	var	"
	HG	Ad			1	var.	"
	Dovekie				1	south west	away from ship
							44° 14' N 63° 14.5' W

PIROP

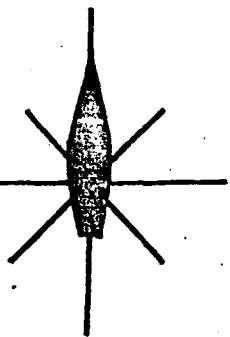


Observation period: 12:50 GMT to 14:00 GMT
 Position or Decca 42°25'N 63°22'W
 Type of watch all Reliability good
 Visibility good - ^{sup} glare Weather 1/2, overcast, snow, S.W. winds
 State of Sea mild Ship Speed 5 knots
 Direction 110° Activity Halifax to job site
 Angle of view 180° Height 20'
forward

Date : Jan 29
 Ship : Aqua Star
 Obs : Steve Woodley
 Page : 28

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
12:50	GBBG	Ad			1	still	on water
13:00	none						
13:10	nil						
13:20	nil						-ship up to 10 knots 44°25'N 63°17'W
13:30	Fulmar	L ₂			3	south	flying
	"	Di			1	"	"
	GBBG				1	var	"
	Dovekie				8	SW	"
13:40	Dovekie				17	south	group of 10, 7 ship heading 150°
	HG	Ad			1	var	flying
	BLKW	Ad			1	var	"
	GBBG	2nd yr			1	var	"
13:50	Dovekie				17	south east	one group 44°21'N 63°12'W
14:00							44°20'N 63°11'W

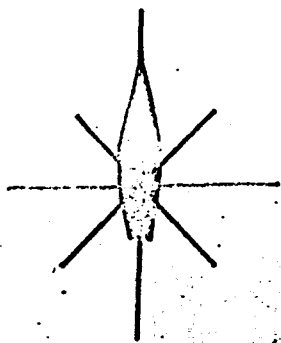
PIROP



Observation period: 14:10 GMT to 14:50 GMT
 Position or Decca 44° 18' N 63° 09' W
 Type of watch all Reliability good
 Visibility good fair Weather winds 25k 12, snow
 State of Sea 1-2mswell Ship Speed 10.5 knots
 Direction _____ Activity cruise to job site
 Angle of view 180° Height 20'
 port

Date : Jan 29
 Ship : Aqua Star
 Obs : Steve Windley
 Page : 29

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
14:10	GBBG	Ad			2	var	flying around ship
	"	im			3	var	"
	HG	Ad			1	var	" heavy snow
14:20	BLKW	Ad			1	"	"
	GBBG	Ad			1	"	"
							44° 16' N 63° 08' W
14:30	BLKW	Ad			3	var	flying
	Fulmar		L ₂		2	var	"
	GBBG	Ad			11	still	on water
	"	Ad yr			3	still	"
	HG	Ad			2	var	flying
	Dovekie				1	S.W.	off water in front of ship
14:14	BLKW	Ad			2	var	flying
	Dovekie				3	west	"
	GBBG	Ad			3	var	"
							43° 13' N 63° 06' W

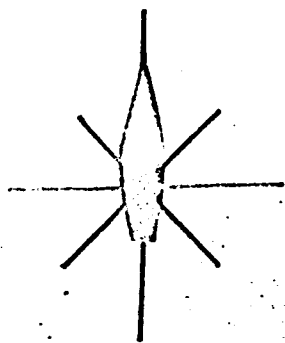


Observation period: 15:10 GMT to 15:50 GMT
 Position or Decca 44°09'N 62°02'W
 Type of watch all Reliability good
 Visibility at good Weather overcast, 1°C, sw winds
 State of Sea 1-3 m Ship Speed 10 knot
 Direction 149° Activity Halifax to job site
 Angle of view 180° Height 20'
port

Date : Jan 29/78
 Ship : Agua Star
 Obs : Steve Woodley
 Page : 30

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
15:10	BLKW	Ad			5	var.	following ship
	GBBG	Ad			5	"	"
	"	im			3	"	"
	HG	Ad			2	"	"
15:20	BLKW	Ad			8	var.	"
	Islandic Gull	Ad			1	"	"
	HG	Ad			1	"	"
	GBBG	Ad			4	"	"
	"	2nd yr			2	"	"
							44°07'N 63°01'W
15:30	Fulmar		L2		5	var	flying ahead of ship
	BLKW	Ad			4	var	around ship
	Dovekie				3	south	flying up in front of ship
	GBBG	Ad			4	var	following ship
	"	2nd yr			2	var	" 44°05'N 62°54'W
	Wilson's Petrel				1	s.w.	followed ship for a few minutes
15:40	Fulmar		L2		2	var	front of ship
	GBBG	Ad			4	var	flying
		im			1	var	"
	BLKW	Ad			6	var	"
	Dovekie				3	southwest	low over water
	Puffin				1	"	" 44°04'N 62°58'W

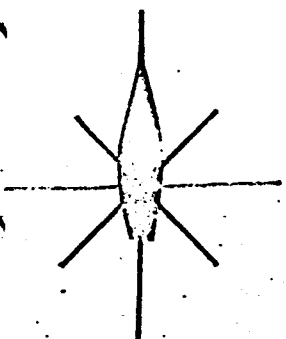
PIRDP



Observation period: 16:40 GMT to 17:20 GMT
 Position or Decca 43° 56' N 62° 52' W
 Type of watch all Reliability good
 Visibility good Weather 5°C, scattered cloud, 15 knots
 State of Sea 1-3 m Ship Speed 10.5 knots
 Direction 148° Activity Halifax to job site
 Angle of view 180° Height 20'
port

Date : Jan 29
 Ship : Aqua Star
 Obs : Steve Woodley
 Page : 31

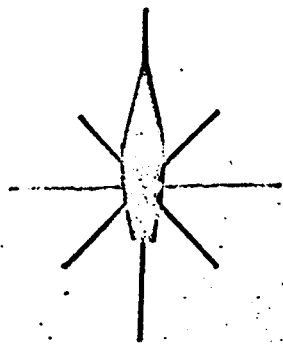
TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
16:40	BLKW	Ad			12	var.	flying around ship
	"	im			2	var	"
	Puffin				1	south	flushed off water
	Dovekie				5	S.W.	" , 1 group
16:50	HG				1	var	flying
	Dovekie				9	south	groups of 5, 4
	BLKW	Ad			11	var	flying
	"	im			2	var	"
17:00	Dovekie				19 ± 2	SSS	groups of 10, 5, 4
	Murre sp.				1	S	
	Fulmar		L ₁		1	N.W	- seem to be drawing Dovekies
	BLKW				8	var	ahead of ship and they may
	G.B.B.C	Ad			2	"	be counted twice
	"	2nd yr				"	
17:10	Dovekie				15	SW	flushed by ship
	BLKW	Ad			12	var	flying
	G.B.B.C	Ad			5	"	"
	Fulmar		L ₁		2	"	"



Observation period: 18:30 GMT to 19:10 GMT
 Position or Decca 43°40'N 62°38'W
 Type of watch all Reliability good
 Visibility good Weather 1°C, scattered cloud, light SW wind
 State of sea mild Ship Speed 11 knots
 Direction 149° Activity Halifax to job site
 Angle of view 180° Height 20'
Forward

Date : Jan. 24/78
 Ship : Aqua Star
 Obs : Steve Woodley
 Page : 33

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
18:30	Dovekie				14	south	flushed by ship
	BLKW	Ad			6	var	flying
	GBBG	Ad			2	var	"
	Fulmar		L2		2	"	"
							43°38'N 62°36'W
18:40	Dovekie				11	south	flushed by ship
	Thick Billed Murre				1	SE	"
	BLKW	Ad			7	var	flying around ship
	"	im			1	var	"
							43°31'N 62°35'W
18:50	BLKW	Ad			9	var	around ship
	Puffin				2	south	one dove, one blew
	Dovekie				14	south	flushed by ship
	GBBG	Ad			7	var	
		2nd yr			3	var	
	H.G	Ad			2	var	
	Murre sp				1	dove	
19:00	Dovekie				11	SW	group of 3 dove; groups of 5, 3, flew
	BLKW	Ad			6	var	flying
	Puffin	im			6	north	
	Murre sp				2	S.E.	flushed by ship 42°33'N 62°32'W



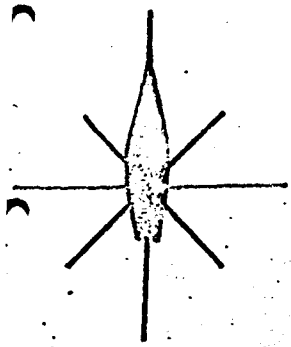
Date : Jan 29/78
 Ship : Aqua Star
 Obs : Steve Woodley
 Page : 15

Observation period: 20:10 GMT to 21:00 GMT
 Position or Decca 43°24'N 62°25'W
 Type of watch all Reliability good
 Visibility good Weather 1°C, snow, overcast,
 State of Sea mild Ship Speed 11 k
 Direction 149° Activity Halifax to job site
 Angle of view 180° Height 20'
forward

light
winds

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
20:10	BLKW	Ad			8	var	flying
	Fulmar		L ₂		1	var	"
	Dovekie				3	south	flushed of water
	BLKW	im			2	var	flying
							43°22'N 62°24'W
20:20	BLKW	Ad			9	var	flying
	Fulmar		L ₂		1	var	"
							43°20'N 62°22'W
20:30							
20:30	Fulmar		L ₂		1	var	around ship
	Puffin				1	dove	in front of ship
	BLKW	Ad			6	var	
							43°19'N 62°21'W
20:40	BLKW	Ad			4	var	flying around ship
	GDBG	2nd yr			1	var	"
							43°18'N 62°20'W
20:50	Fulmar		L ₂		1	var	flying
	BLKW	Ad			1	"	"
	GDBG	Ad			1	"	"
	HG	Ad			1	"	"
							43°16'N 62°19'W

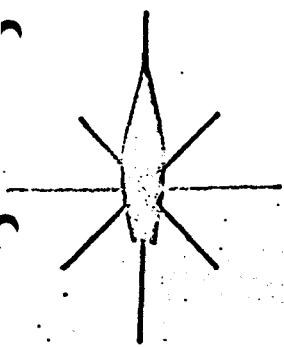
PIROP

Observation period: 12:30 GMT to 13:30 GMTPosition or Decca 43°12'N 62°15'WType of watch all Reliability goodVisibility good Weather scattered cloud, -6°C, 20kts windsState of Sea choppy, 2m Ship Speed 10.5 knotDirection 324° Activity ^{CRUISING} return toward HalifaxAngle of view 180° Height 20'
forwardDate: Jan 30/78
Ship: Aqua Star
Obs: Steve Woodley
Page: 76

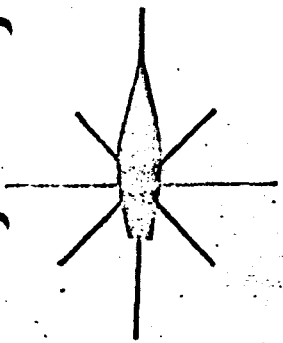
TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
12:30	BLKW	Ad			3	var	around boat
	GBBG	Ad			4	"	"
	"	2nd yr			2	"	"
12:40	Murre sp.				5	NE	flushed ahead of ship
	Dovekie				3	south	"
	HG	Ad			1	var	flying around ship 43°15'N 62°19'W
12:50	HG	Ad			1	var	flying 43°16'N 62°19'W
13:00	Fulmar		L ₂		1	SW	low over water
	HG	Ad			1	var	around ship 43°17'N 62°21'W
13:10	Fulmar		L ₂		1	var	flying low 43°18'N 62°21'W
13:20	Fulmar		L ₂		4	var	
	Dovekie				1	dove	

43°19'N 62°22'W

PIROP

Observation period: 13:20 GMT to 14:00 GMTPosition or Decca 43°19' N 62°22' WType of watch all Reliability goodVisibility good Weather 2°C, clear, 20k sea windsState of Sea 2 meters Ship Speed 10.5 kDirection 325° Activity cruising toward HalifaxAngle of view 180° Height 20'
forwardDate: Jan 30/78
Ship: Aqua Star
Obs: Steve Woodley
Page: 37

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
13:20	Murre sp.				3	west	flushed by ship
	GBBG	Ad			1	var	flying
	BLKW	Ad			2	var	"
	Dovekie				17	UNW	flushed by ship
							43°20' N 62°24' W
13:30	Fulmar		L2		1	var	flying
	Dovekie				3	S.W	flushed
							43°22' N 62°25' W
13:40	Dovekies				40±2	SW	groups of less than 10
	thick billed Murre				7	SW	flushed ahead of ship
							43°23' N 62°27' W
13:50	Murre sp.				6	SW	ahead of ship
	Dovekie				9	SW	"
							43°24' N 62°28' W
							U-turn-back to work site



Observation period: 14:20 GMT to 15:00 GMT

Position or Decca 43°26'N 62°30'W

Type of watch all Reliability good

Visibility fair Weather overcast, snow, 3°C, SW wind

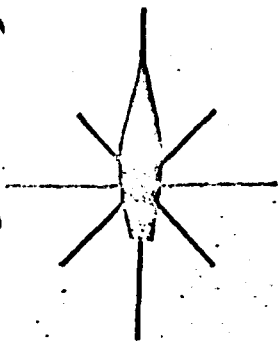
State of Sea choppy, 2m Ship Speed 10.5 knots

Direction 152° Activity cruising to job site

Angle of view 180° Height 20'
forward.

Date : Jan 30/78
Ship : Aqua Star
Obs : Steve Coadley
Page : 38

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
14:20	Puffins				8	SW	} all into wind
	Murre sp				2	SW	
	Dovekies				6	SW	
							43°25'N 62°29'W
14:30	Dovekie				3	dove	
	Fulmar	L ₂			1	var	flying
							43°23'N 62°27'W
14:40	Dovekie				4	SW	into wind
							43°22'N 62°26'W
14:50	Dovekie				6	SW	one dove
	HG	Ad			1	var	flying
							43°20'N 62°24'W



Observation period: 16:50 GMT to 17:50 GMT

Position or Decca 43°03'N 62°08'W

Type of watch all Reliability good

Visibility good Weather overcast, 7°C, light winds

State of Sea mild swell Ship Speed 11 knots

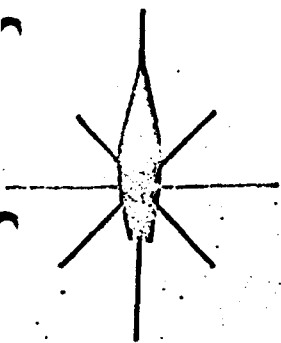
Direction 146° Activity cruising to job site

Angle of view 180° Height 20'
Forward

Date : Jan 30/78
Ship : Aqua Star
Obs : Steve Woodley
Page : 40

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
16:50	Thick Billed Murre				2	dove	near ship 47°02'N 62°01'W
17:00	BLKW	Ad			1	var	some songlare 43°01'N 62°05'W
17:10	Fulmar		L ₂		2	sw	
	Dovekie				2	dove	42°59'N 62°04'W / shelf edge
17:20	nil						42°58'N 62°02'W
17:30	Thick Billed Murre				4	dove	nearship speed to 4 knots 42°57'N 62°01'W
17:40	Dovekie				2	dove	tried to fly but was couldn't get off ino
	Thick Billed Murre				1	dove	light winds
	BLKW	Ad			6	var	flying
	GYSBG	Ad			7	var	"
	n	im			2	var	"
							42°56'N 62°00'W

PIROP



Date : Jan. 30/78
 Ship : Aqua Star
 Obs : Steve Woodley
 Age : 41

Observation period: 18:00 GMT to 18:40 GMT

Position or Decca 42°55'N 61°59'W

Type of watch all Reliability good

Visibility good Weather scattered cloud, 5%, light winds

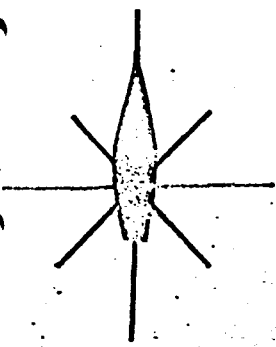
State of Sea 1 meter Ship Speed 6.5 knots

Direction 142° Activity playing out seismic lines

Angle of view 360° Height 20'

walk around ship

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
18:00	GBBG	Ad			7	var.	around ship, flying
	"	im			2	var.	"
	BLKW	Ad			26±2	var.	"
							42°54'N 61°58'W
18:10	BLKW				150±20		near to group feeding over
	GBBG	Ad			6	var	upwelling
	"	im			2	var	
							42°51'N 61°58'W
18:20	BLKW	Ad im			200±20		large in flights of kittiwakes
18:30	Dovekie				3	dove	near ship
	Kittiwake	Ad im			200±20	var	around ship
							42°53'N 61°57'W

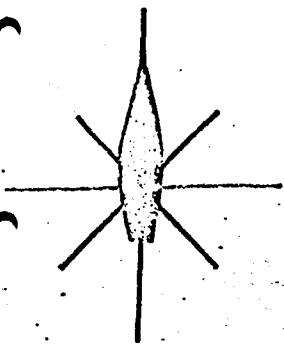


Date : Jan. 30
 Ship : Aqua Star
 Obs : Steve Ubdley
 Page : 943

Observation period: 19:20 GMT to 20:10 GMT
 Position or Decca 42°49'N 61°57'W
 Type of watch all Reliability good
 Visibility good Weather scattered cloud, 8°C, light wind
 State of Sea mild 1m Ship Speed 5.5 knots
 Direction 167° Activity dragging seismic lines
 Angle of view 180° Height 20'
port

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
19:20	BLKW	Ad			5	var.	flying 42°49'N 61°57'W
19:30	GBBG	Ad			7	var	flying around ship
	"	im			1	var	"
	BLKW	Ad			16	var	" 42°58'N 61°56'W
19:40	BLKW	Ad			7	var.	flying
	GBBG	Ad			3	var.	" 42°47'N 61°55'W
19:50	BLKW	Ad			100 ± 15	var.	- ship turning 180°
	GBBG	Ad			12	var.	- new heading 325°
	"	im			4	var.	
20:00	GBBG	Ad			41	still	on water; in large flock
	"	im			12	still	
	BLKW	Ad im			130 ± 20	var.	flying

PIR0P

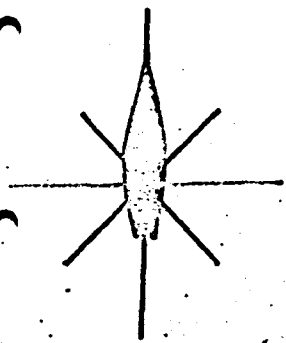


Date : Jan. 30/78.
 Ship : Aqua Star
 Obs : Steve Woodley
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Observation period: 20:10 GMT to GMT
 Position or Decca 42°50'N 61°57'W
 Type of watch all Reliability good
 Visibility good Weather clear, 8°C, light winds
 State of Sea mild Ship Speed 6 knots
 Direction 374° Activity dragging seismic lines
 Angle of view 180° Height 20'
forward

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex...)
20:10	<i>nil</i>						
							<u>42°50'N 61°57'W</u>
20:20	<i>BLKW</i>	<i>Ad</i>			<i>7</i>	<i>var</i>	<i>Flying around ship</i> <u>42°50'N 61°57'W</u>
20:30	<i>BLKW</i>	<i>Ad</i>			<i>8</i>	<i>var.</i>	<i>flying</i>
	<i>"</i>	<i>im</i>			<i>1</i>	<i>var</i>	<i>"</i>
	<i>Fulmars</i>		<i>L2</i>		<i>2</i>	<i>190°</i>	
	<i>Gannett</i>	<i>Ad</i>				<i>70°</i>	<i>just flashed across bow!!</i> <u>42°51'N 61°57'W</u>
20:40	<i>GBBE</i>	<i>Ad</i>			<i>8</i>	<i>var</i>	<i>on water and flying</i>
	<i>"</i>	<i>im</i>			<i>3</i>	<i>"</i>	<i>"</i>
	<i>BLKW</i>	<i>Ad</i>			<i>120±30</i>	<i>"</i>	<i>"</i>
	<i>"</i>	<i>im</i>			<i>4</i>	<i>"</i>	<i>"</i>
	<i>Fulmar</i>		<i>L2</i>		<i>1</i>	<i>"</i>	<i>flying</i> <u>42°51'N 61°58'W</u>

PIROP



Date : Jan. 31/77
 Ship : Aqua Star
 Obs : Steve Woodley
 Page : 45

Observation period: 12:30 GMT to 13:10 GMT

Position or Decca 43°0'N 63°10'W

Type of watch all Reliability good

Visibility fair Weather overcast, snow, 0°C, light clouds

State of Sea mild chop Ship Speed 5.5 knots

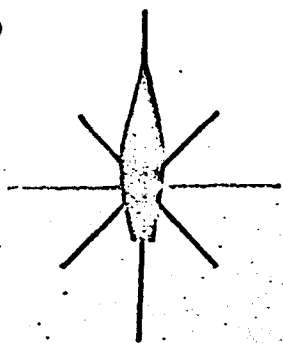
Direction _____ Activity hauling seismic lines

Angle of view 180° Height 10'
forward

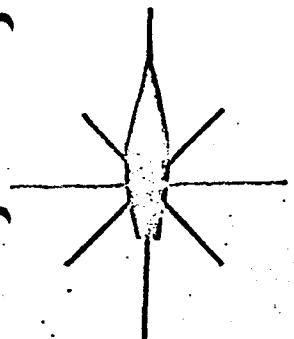
TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
12:30	Dovekie's				9	210°	
	Fulmar		L2		2	var	
	GBBG	Ad			2	var	
	BLKW	im			1	var	
	GBBG	Ad			2	?	Seen by crew member
	Gannet	Ad			1	var	
12:40	Dovekie				3	219°	flushed by ship
	GBBG	Ad			2	var	flying around ship
	"	2nd yr			1	var	"
	BLKW	Ad			3	var	"
12:50	BLKW	Ad			4	var	
	Fulmar		L2		2	var	
	GBBG	Ad			3	var	
	Dovekie				3	210°	into wind
13:00	GBBG	Ad			2	var.	
	BLKW	Ad			9	var.	
	Dovekie				4	210°	flying to wind
	Fulmar		D2		1	var	

42° 51' N 62° 02' W

PIROP

Observation period: 13:20 GMT to 14:00 GMTPosition or Decca 42° 51' N 62° 02' WType of watch all Reliability goodVisibility good Weather scattered cloud, 1° light windsState of Sea mild, 0-1m Ship Speed 5.6 knotsDirection 129° Activity dragging seismic linesAngle of view 180° Height 20'
portDate : Jan. 31/78
Ship : Aqua Star
Obs : Steve Ubedley
Page : 46

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
13:20	Fulmar		2,		1	var.	flying around ship
	BLKW				6	var.	"
	GBBG				10	var.	behind ship
							42° 50' N 62° 00' W
13:30	GBBG	Ad			10	var	
	"	im			3	var	all 2nd yr birds
	BLKW	Ad			3	var	moving in from south
							42° 50' N 62° 00' W
13:40	BLKW	Ad			14	from south	
	GBBG	Ad			6	var	
	Dovekies				2	210°	south into light winds
							42° 50' N 61° 59' W
13:50	Dovekies				3	south	
	DLKW	Ad			9	var	
	"	im			2	var	
	GBBG	Ad			3	var	
							42° 49' N 61° 57' W

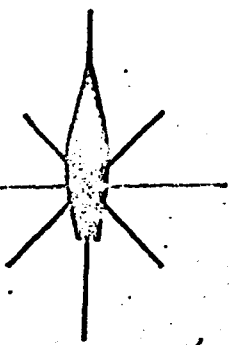


Observation period: 14:20 GMT to 15:00 GMT
 Position or Decca 42°50'N 61°55'W
 Type of watch all Reliability good
 Visibility good Weather scattered cloud, 50%, light winds
 State of Sea mod swell Ship Speed 5.5 knots
 Direction 40° Activity dragging seismic lines
 Angle of view 180° forward Height 20'

Date : Jan 31/78
 Ship : Aqua Star
 Obs : S. Woodley
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TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
14:20	BLKW	Ad			4	var	flying ship turning 180° 42°50'N 61°55'W
14:30	BLKW	Ad			4		
	"	im			2		
	Dovekie				15	NE	one group
	Murre sp.				1	NE	solitary with Dovekies 42°51'N 61°54'W
14:40	Dovekies				3	NE	wind from WNW
	Fulmar		D ₂		2	var	flying
	BLKW	Ad			4	var	"
							42°52'N 61°53'W
14:50	GBBG	Ad			4	var	
	BLKW	Ad			5	var	
							42°53'N 61°52'W

PIROP



Date: Jan 31/78
 Ship: Aqua Star
 Obs: Steve Woodley
 Age: 48

Observation period: 15:00 GMT to 15:30 GMT

Position or Decca 42°53'N 61°52'W

Type of watch all Reliability good

Visibility good Weather fair, 10°C, light NW winds

State of Sea mild swell Ship Speed 6 knots

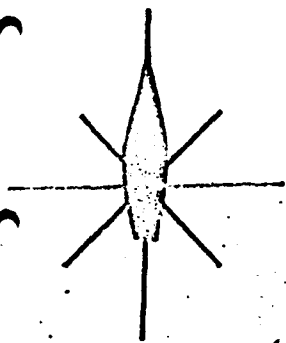
Direction 35° Activity dragging seismic lines

Angle of view 180° Height 20'

port

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
5:00	GBBG	Ad			6	var	soaring very high
	BLKW	Ad			4	var	
	Fulmar		L ₂		1	var	
							42°53'N 61°51'W
5:10	GBBG	Ad im			25±4		flock following behind ship
	BLKW	Ad			10	var	some soaring - wind increasing
	"	im			2	var	shift to 250° heading
							42°51'N 61°51'W
5:20	GBBG	Ad			15±3	var	} on water and soaring in group
	"	im			18±5	"	
	BLKW	Ad			17±4	"	
	"	im			2	var	
	Fulmar		L ₁		1	"	-winds increasing a bit of the west
							42°53'N 61°53'W

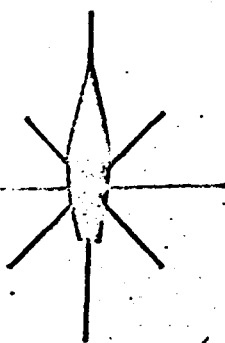
PIROP



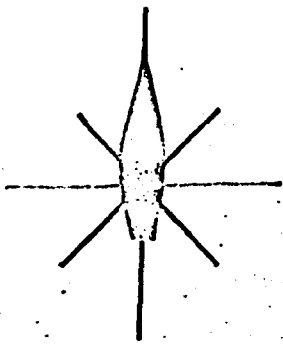
Observation period: 15:30 GMT to 16:00 GMT
 Position or Decca 42°53'N 61°53'W
 Type of watch all Reliability good
 Visibility good Weather scattered clouds, 8°C, 15k NW winds
 State of Sea mild swell Ship Speed 5.5 knots
 Direction 251° Activity dragging seismic lines
 Angle of view 180° Height 20'
forward

Date : Jan 31/78
 Ship : Aqua Star
 Obs : Steve Woodley
 Page : 49

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex...)
15:30	BLKW	Ad			50±10	var	soaring and diving ahead of ship in tight group - may be feeding 42°53'N 61°54'W
15:40	BLKW	Ad			2	var.	around ship 42°52'N 61°55'W
15:50	BLKW	Ad			4	var	low over water 42°52'N 61°56'W
	GBBG	2nd yr				var	

Observation period: 18:00 GMT to 18:40 GMTPosition or Decca 42° 54' N 61° 52' WType of watch all Reliability goodVisibility good Weather scat. cloud, 5°C, light windsState of Sea 1.5m Ship Speed 5.7 knotsDirection 160° Activity dragging seismic linesAngle of view 180° Height 20'
forwardDate : Jan. 31/78
Ship : Aqua Star
Obs : Steve Whalley
Page : 51

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
18:00	BLKW	Ad			6	var	flying ship turning to 240° 42° 54' N 61° 52.5' W
18:10	GBBG	2nd yr			1	var	flying ship turning to 160°
	BLKW	Ad				var	" 42° 54' N 61° 53' W
18:20	BLKW	Ad			8	var.	flying around ship 42° 53' N 61° 52' W
18:30	BLKW	Ad			8	var.	42° 52' N 61° 52' W
18:40	BLKW	Ad			6	var	flying
	"	im			1	var	" 42° 52' N 61° 51' W

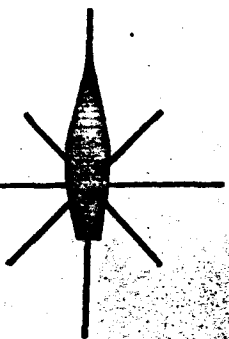


Observation period: 19:00 GMT to 19:40 GMT
 Position or Decca 41° 52' 61° 52' W
 Type of watch all Reliability good
 Visibility heavy chop Weather scat cloud, 8°C, ^{moderate} light wind
 State of Sea heavy chop Ship Speed 5.5 K
 Direction 342° Activity dragging seismic lines
 Angle of view 180° Height 20'
forward

Date : Jan. 31
 Ship : Aqua Star
 Obs : S. Woodley
 Page : 52

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
19:00	BLKW	Ad			4	var	flying 42° 52' N 61° 52' W / ship turning
19:10	Fulmar		L ₂		4	var	in front of ship, low over
	"		D ₂		2	var	water 42° 52' N 61° 52' W
19:20	BLKW	Ad			48 ± 5	var	came in from south
	"	im			2	var	
	Murre sp.				1	west	- ship turned to new heading 341° 42° 51' N 61° 52' W
19:30	BLKW	Ad			50 ± 10	var	circling in large spiral over one area 42° 51' N 61° 52.5' W

PIROP



Observation period: 2050 GMT to 2120 GMT

Position or Decca 42°50' N 61°53' W

Type of watch all Reliability good

Visibility good Weather scattered cloud, 80% light winds

State of Sea mild swell Ship Speed 5.5 knots

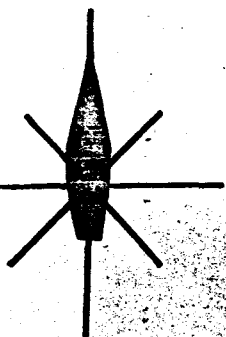
Direction 340° Activity dragging seismic lines

Angle of view 180° Height 20'
forward

Date : Jan. 31/78.
Ship : Aqua Star
Obs : Steve Whodley
Page : 53

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
2050	Kittiwakes	Ad?			40±5	var.	around ship (changing course)
	GBBG	im			2		
							42°50' N 61°53.5' W
2100	Kittiwakes	Ad.			10	var	around ship
							42°52' N 61°54' W
2110	Kittiwake	Ad			21	var	around ship
	"	im			8	var	"
	GBBG	Ad			1	var	low over water
	Fulmar		D		1	var	"
							42° 52.5' N 61° 54.5' W
							watching discontinued due to darkness

PIROP



Observation period: 2000 GMT to 2050 GMT

Position or Decca 42.54N 61.54W

Type of watch all Reliability good

Visibility good Weather scattered cloud, 8c, light winds

State of Sea mild swell Ship Speed 5.5 knots

Direction 167 Activity dragging seismic lines

Angle of view 180 Height 20'

forward

Date : Jan 31/78
 Ship : Agua Star
 Obs : Steve Whadley
 Page : 54

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex...)
2000	Kittiwake ^{DBW}	Ad			9		in from south
	GBBG	2nd yr			1	var.	low over water
							42 53.5 61 54.2
2010	Kittiwake ^{DBW}	Ad			30 ± 5		moving in from south
	"	im			4		
	GBBG	Ad			1		moving with kittiwakes
							42 53 N 61 54 W
2020	Kittiwake ^{DBW}	Ad			11	var.	around ship
	"	im.			1	var.	"
							42 52 N 61 53.5 N
2030	GBBG	Ad			4	still	on water
	"	im			1	still	"
	Kittiwake	Ad			11	var	
	"	im			3	var	
							42 51 N 61 53 W
2040	Kittiwake	Ad			19 ± 2	var	around ship
	"	"			3	var	"
	GBBG	Ad			2	var	42° 50.5' N 61° 53' W

PIROP

DATE Feb. 1/78

SHIP Agua Star

OBSERVERS: Steve Woodley
overcast, -2°C, winds
from north, snow
visibility - 500m

PROGRAM FOR INTEGRATED
 RESEARCH ON PELAGIC BIRDS

AT-SEA DAILY LOG

5.4 knots

SHIP Direction

dragging seismic lines
 OBSERVATION PERIOD: 1230 TO 13:10

PAGE NO. 55

viewing angle - 180° forward

TIME	SPECIES	AGE	PLS	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
12:30	Murre sp.			2	0°	flew off water (Brunnich's?)
	Thick Billed Brunnich Murre			5	1 dove 4 north	off water into wind
	Fulmar		L	4	var	around ship
	"		D	1	var	"
						(ship turning) - new head 237°
12:40	Kittiwake ^{BLKW}	Ad		14	var	came in from west
	BLKW	im		1	var	"
	Fulmar		L	3	var.	around
						42° 56' N 61° 42.5' W
12:50	Fulmar		L	4	var.	around ship, on water
	GBBG	Ad		6	still var.	" , on water
	HG	Ad		3	still var.	" , "
	GBBG	im		2	still	"
						42° 55.5' N 61° 43' W
13:00	Fulmar		D	1	var.	around ship
	"		L	1	var.	"
	BLKW	Ad		7	var	"
	HG	Ad		2	var	"

13:10

42° 55' N 61° 44.5' W

PIROP

DATE Feb. 1/78

SHIP Aqua Star

OBSERVERS: Steve Woodley
N.W. Winds, overcast,
snow flurries, 1°C
visibility 1/2 mile

PROGRAM FOR INTEGRATED
 RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

5.2 knots

SHIP Direction

245°

dragging seismic lines
 OBSERVATION PERIOD:

13:00

TO

13:40

PAGE NO. 56

all species

viewing angle 180° forward

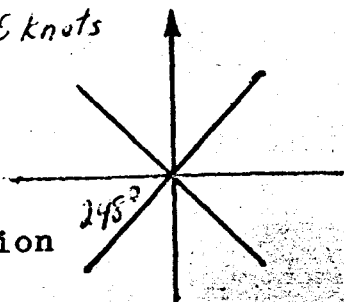
TIME	- SPECIES -	A G E	P L	A S S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
13:10	BLKW Kittiwake	Ad			6	var.	around ship, flying
	BLKW	im			2	var.	"
							42°55' N 61°45.5' W
13:20	Ouvekie		w		5	N.W.	into winds, scared off water
	Murre sp.				1	NW	flying across bow, into wind
	HG	Ad			1	var.	around ship
	Fulmar		L		1	var.	"
	BLKW	Ad			5	var.	"
							42°54.5' N 61°46.5' W
13:30	Fulmar		L		2	var.	around ship (heavy flurries ^{snow})
	BLKW						
	Thick Billed Brannich's Murre				1	NW	flying low over water
	HG						
	*Fulmar		L		15	still	in one flock sitting on
	"		D		2	still	water - scattered when ship approached
							- light to dark phase definitely a colour gradient and not distinct
13:40							42°54' N 61°47.5' W

speed 5.5 knots

PIROP

DATE Feb. 1/78

SHIP Direction



PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

SHIP Aqua Star
OBSERVERS: Steve Woodley
N.W. winds, overcast, snow
flurries, 1°
visibility 1/2 mile

dragging seismic lines
OBSERVATION PERIOD:

14:10 TO 15:09

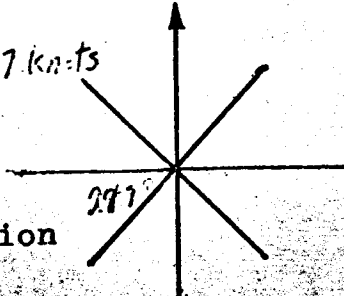
PAGE NO. 57

all species

viewing angle - 180° forward

TIME	- SPECIES -	A G E	P L	A S S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
1410	BLKW	Ad			7	var.	flying around ship
	GBOG	Ad			2	var.	" , captured food(?)
	BLKW	im			1	var.	"
							42°53' N 61°52' W
1420	Fulmar		L		3	var.	cruising ahead of ship, low
	BLKW	Ad			4	var.	flying around ship
							42°52.5' N 61°53.5' W
1430	Fulmar		L		6	var.	Cruising ahead of ship, swooping
	"		D		1	var.	and sometimes breaking water (feeding)
	BLKW					var.	around ship
							42°52' N 61°55' W
1440	BLKW	Ad			3	var.	around ship, flying
							42°52' N 61°56' W
1450	BLKW	Ad			11	var.	around ship
	BLKW	im			2	var.	"
							42°51.5' N 61°57' N

Speed 5.7 kn-ts



SHIP Direction

PIROP

PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

DATE Feb. 1 / 78

SHIP Aqua Star

OBSERVERS: Steve Woodley
N.W. winds overcast, 4°
mild swell
visibility 1/2 mile

Dragging Seismic Lines
OBSERVATION PERIOD:

15:00 TO 15:30

PAGE NO. 58

viewing angle - 180° forward

TIME	SPECIES	AGE	PLAS	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
						<u>42° 51.5' N 61° 57' W</u>
<u>15:00</u>	<u>HG</u>	<u>Ad</u>		<u>1</u>	<u>var</u>	<u>flying around ship</u>
	<u>GBBG</u>	<u>Ad</u>		<u>1</u>	<u>var</u>	<u>"</u>
	<u>"</u>	<u>im</u>		<u>1</u>	<u>var</u>	<u>"</u>
	<u>Fulmar</u>		<u>L</u>	<u>2</u>	<u>var</u>	<u>"</u>
	<u>BLKW</u>	<u>Ad</u>		<u>4</u>	<u>var</u>	<u>flying; some diving to feed and successful</u>
						<u>42° 51' N 61° 58.5' W</u>
<u>15:10</u>	<u>Fulmar</u>		<u>L</u>	<u>6</u>	<u>var.</u>	<u>around ship changing course</u>
	<u>GBOG</u>	<u>Ad</u>		<u>14 ± 2</u>	<u>feeding</u>	<u>feeding over new heading 64°</u>
	<u>"</u>	<u>in</u>		<u>6</u>	<u>"</u>	<u>one area - successful</u>
	<u>Fulmar</u>		<u>D</u>	<u>1</u>		<u>chasing im G.BBG for food</u>
	<u>BLKW</u>	<u>Ad</u>		<u>40 ± 5</u>	<u>feeding</u>	<u>a feeding frenzy in one area</u>
						<u>-bothered by Fulmars</u>
						<u>42° 51' N 61° 57.5' W</u>
<u>15:20</u>	<u>GBBG</u>	<u>Ad</u>		<u>3</u>	<u>still</u>	<u>on water</u>
	<u>"</u>	<u>2nd yr</u>		<u>1</u>	<u>still</u>	<u>"</u>
	<u>BLKW</u>	<u>Ad</u>				
	<u>Fulmar</u>		<u>L</u>	<u>2</u>		
						<u>42° 51.5' N 61° 56.5' W</u>

Speed - 5.0 knots

PIROP

DATE Feb. 1/78

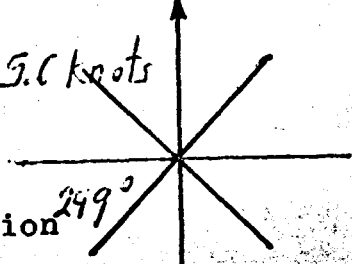
SHIP Aquar Star

PROGRAM FOR INTEGRATED RESEARCH ON PELAGIC BIRDS AT-SEA DAILY LOG

OBSERVERS: Stephen Woodley
overcast, 4°C, NW winds
mild swell
visibility good

SHIP
Direction

249°



dragging seismic lines

OBSERVATION PERIOD: 17:00 TO 17:30

PAGE NO. 60

all species

view - 180° forward

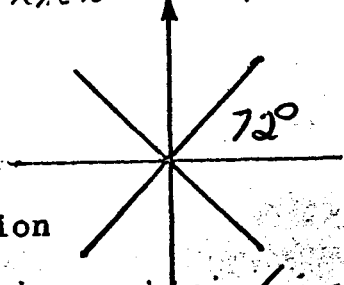
TIME	- SPECIES -	A G E	P L	A S S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
							42° 51.5' N 61° 57' W
1700	BLKW	Ad			5	var	flying around ship
	GBOG	1st yr			1		chasing 2nd yr bird for
	"	2nd yr			1		food
							42° 51.5' N 61° 57.5' W
1710	BLKW	Ad			3	var.	flying around ship
	GBOG	Ad			2	var.	"
	"	1m			1	var.	"
							42° 51' N 61° 58.5' W
1720	BLKW	Ad			4	WAR	around ship
	Bovekies				2	WNW	off water into wind (ship turning)
							42° 51' N 61° 60' W

Speed 5.1 knots

PIROP

DATE Feb. 1/78

SHIP Direction



PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

SHIP Agua Star

OBSERVERS: Stephen Wexley
scattered cloud, 6E, light
N.W. winds, visibility - 900
swell ~ 1 m

dragging seismic lines
OBSERVATION PERIOD: 17:50 TO 18:20
all species

PAGE NO. 61
view - 180° forward

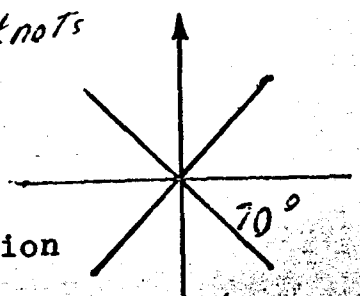
TIME	SPECIES	AGE	PL	SEX	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
							<u>42° 50' N 61° 58' W</u>
17:50	murre sp				3	N.W.	low over water in wind
	Dovekie		W		1	still	stayed on water while ship passed
	Fulmar		D		1	var.	around ship
	BLKW	Ad			4	var.	"
							<u>42° 50' N 61° 57' W</u>
18:00	Fulmar		L		2	var.	around ship
	Dovekie		W		1	N.W.	flying low over water - into wind
	Murre sp.				2	N.W.	low over water - into wind
	Fulmars		W		25±3	feeding	feeding over 1 area - far off ship
	BLKW	Ad			6	var	soaring in front of ship
	GBBG	Ad			2	var	"
							<u>42° 50.5' N 61° 55.5' W</u>
18:10	Dovekie				4	N.W.	offwater; one almost pure white
	Murre sp.				1	N.W.	left water far from ship - ship
	Fulmar		L		1	var	
	BLKW	Ad!			50±5	SE.	coming to ship from N.W. (downwind)
							<u>42° 51' N 61° 54.5' W</u>

speed 5.7 knots

PIROP

DATE Feb. 1/78

SHIP Direction



PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

SHIP Aqua Star

OBSERVERS: Steve Woodley
scattered clouds, 6°c.
light NE winds
visibility - good seas mild
swell

dragging seismic lines
OBSERVATION PERIOD: 18:30 TO 19:00

PAGE NO. 62

all species

view 180° forward

TIME	- SPECIES -	AGE	PLS	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
18:30	BLKW	Ad		1	var	flying around ship 42°51.5' N 61°52' W
18:40	Thick Billed Murre			3	→	took off in to N.E. winds, then turned to fly S.E., landed after 1 km
	BLKW	Ad		3	var.	around ship
	Dovekie			7	N.E.	into wind - these auto don't fly fast, but spook easily 42°52.5' 61°51'
18:50	GBBG	1st yr		1	var.	around ship
	BLKW	Ad		2	var	" ship turning to new heading 42°52.5' N 61°51.5' W

pred knots

PIROP

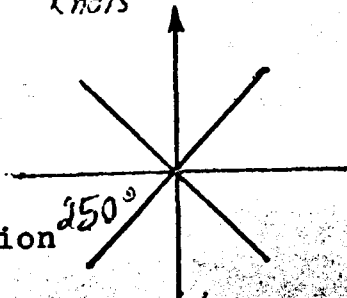
DATE Feb. 1/78

SHIP Aqua Star

PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

OBSERVERS: Steve Woodley
scattered cloud, 6°C, light
NE winds, good visibility
sea - mild swell

SHIP
Direction



dragging seismic lines
OBSERVATION PERIOD: 19:30 TO _____
all species

PAGE NO. 63

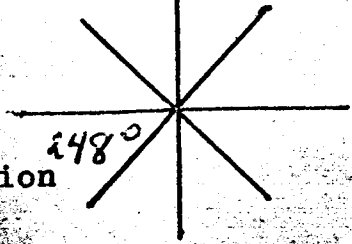
view 180° forward

TIME	- SPECIES -	A G E	P L	A S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
							<u>42° 52' N 61° 52' W</u>
19:30	BLKW	Ad			400±40	feeding	} feeding together in a group (expelling?) (sun glare off port bow)
	GDBG	Ad			30±5	"	
	"	im			15±4	"	
	Fulmar		D ₂		.1	var.	soaring off water
							<u>42° 52' N 61° 53' W</u>
19:40	Dovekie				22	NW	wind shifted some - into wind - groups of 3 and 6, 4, 2, 2, 2, 11 - all same direction except 1 dove for air
	BLKW	Ad	im		50±7		coming in from north west
							<u>42° 52' N 61° 54.5' W</u>
19:50	BLKW	Ad			5	var.	around ship (wind increasing and real very choppy)
							<u>42° 51.5' N 61° 55.5' W</u>
20:00	BLKW	?			800±100	var.	estimate of 800±100 birds tracking ship
	Dovekies				11	NW	groups of 5, 2, 2, 2 - but birds feeding and successful in the area - three grouping may represent loose flocks
							<u>42° 51' N 61° 57' W</u>

Speed - 5.5 knots

PIROP

DATE Feb 1 / 78



SHIP Direction

PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

SHIP Aqua Star

OBSERVERS: Steve Woodley
scattered clouds, 6°C, moderate
N.W. winds, clear
heavy chop on water

OBSERVATION PERIOD: 2010 TO 2050
all species

PAGE NO. 64
180° forward

TIME	SPECIES	AGE	PLS	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
2010	Dovekie			11	NW	off water; into wind - small group
	Fulmar		L2	1	var	around ship
	BLKW	Ad		15	var	" 42°51'N 61°58'W
2020	BLKW	Ad		6	var	flying around ship 42°50.5'N 61°58.5'W
						(ship turning) to
2040	Dovekie			1	dove	
	GBBG	2nd yr		1	var	crossing around ship
	BLKW	Ad		10	var	" 42°51'N 61°58.5'W
2050	Fulmar		L2	2	var	around ship
	GBBG	2nd yr		1	"	"
	BLKW	Ad		8	"	" 42°51'N 61°58'W

BERNARD KING

GULL CRY

PENZANCE - NEWLYN.

(Lands End)

Ken Owers

speed 5.5 knots

PIROP

DATE Feb. 1/78

SHIP Agua Star

PROGRAM FOR INTEGRATED

RESEARCH ON PELAGIC BIRDS

OBSERVERS: Steve Woodley
scattered cloud, 4°C, mod brk
Mod winds, clear
seas - heavy chop

AT-SEA DAILY LOG

OBSERVATION PERIOD: 2050 TO 2130
all species

PAGE NO. 65

view - 180° forward

TIME	- SPECIES -	AGE	PLS	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
2050	Fulmar		L2	2	var	ahead of ship
	"		D1	2	"	"
	GBBG	Ad		2	still	in water
	"	im		5	still	"
	BLKW	Ad		14	var.	flying around ship
	"	im		3	var.	"
						42° 51.5' N 61° 56.8' W
2100	BLKW	Ad		1	"	ahead of ship
2100	BLKW	Ad		7	"	"
	GBBG	2nd yr		2	"	"
	BLKW	im		2	"	"
						42° 52' N 61° 55.5' W
2110	Fulmars		L1 L2	8	var	flying around ship
	GBBG	Ad		6	"	"
	"	2nd yr		4	"	"
	BLKW	Ad		8	"	"
	"	im		2	"	"
						42° 52' N 61° 54' W

2021 - about 600 ± 100 kittiwakes darkness
 just flew in from the
 east in one group

PIROP

DATE Feb. 2/78

SHIP Aqua Star

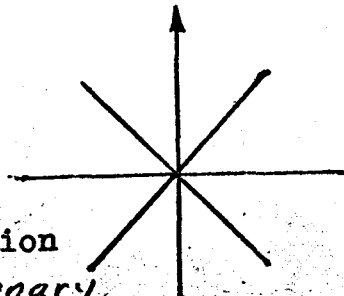
OBSERVERS: Steve Woodley

overcast; 25-30 knot
N/NW winds, -3°C

visibility - fair
sea - heavy chop - 1-2m

PAGE NO. 66

PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG



SHIP
Direction
stationary

OBSERVATION PERIOD: 12:00 TO 12:30

all species

view 360°-well around

TIME	- SPECIES -	A G E	P L S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
						<u>42° 51' N 61° 54' W</u>
<u>12:00</u>	<u>Fulmars</u>		<u>L₁</u>	<u>7</u>	<u>var</u>	<u>around ship, flying</u>
	<u>"</u>		<u>G₁</u>	<u>4</u>	<u>var</u>	<u>" (one almost black)</u>
	<u>GBBG</u>	<u>Ad</u>		<u>2</u>	<u>"</u>	<u>"</u>
<u>12:10</u>	<u>GBBG</u>	<u>Ad</u>		<u>6</u>	<u>"</u>	<u>"</u>
	<u>Fulmar</u>		<u>L₁</u>	<u>4</u>	<u>"</u>	<u>"</u>
	<u>"</u>		<u>L₂</u>	<u>7</u>	<u>"</u>	<u>"</u>
	<u>"</u>		<u>D₁</u>	<u>6</u>	<u>"</u>	<u>"</u>
	<u>"</u>		<u>D₂</u>	<u>2</u>	<u>"</u>	<u>"</u>
	<u>GBBG</u>	<u>im</u>		<u>2</u>	<u>"</u>	<u>"</u>
<u>12:20</u>	<u>GBBG</u>	<u>Ad</u>		<u>3</u>	<u>"</u>	<u>"</u>
	<u>"</u>	<u>1st yr</u>		<u>1</u>	<u>"</u>	<u>"</u>
	<u>Fulmar</u>		<u>L₁</u>	<u>6</u>	<u>"</u>	<u>" , some on water.</u>
	<u>"</u>		<u>L₂</u>	<u>16</u>	<u>"</u>	<u>"</u>
	<u>"</u>		<u>D₁</u>	<u>6</u>	<u>"</u>	<u>"</u>
	<u>"</u>		<u>D₂</u>	<u>2</u>	<u>"</u>	<u>"</u>
						<u>(snow flurries mixed with freezing rain)</u>
<u>12:30</u>						<u>42° 51' N 61° 53.5' W</u>

PIROP

DATE Feb 2/78

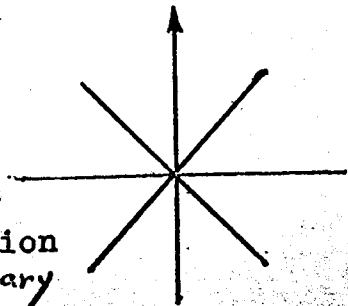
SHIP Aqua Star

PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS

OBSERVERS: Steve Woodley
overcast; 25-30 knot NW wind,
-3°C, fair visibility
1-2 m swell, heavy chop
showing

AT-SEA DAILY LOG

SHIP
Direction
stationary



OBSERVATION PERIOD: 13:00 TO 13:30

PAGE NO. 66 67

view 360° walk around

TIME	- SPECIES -	A G E	P L S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
13:00	Fulmar		L ₁	13	var	on water and flying
	"		L ₂	10	"	"
	"		D ₁	4	"	"
	"		D ₂	1	"	"
	GBBG	1st yr		1	"	"
13:10	BLKW	Ad		2	var	flying
	Fulmar		L ₁	3	still	on water, one group
	"		L ₂	8	"	"
	"		D ₁	3	"	"
	"		D ₂	2	"	"
	GBBG	Ad		3		"
						42° 50.5' N 61° 52.5' N
13:20	HG	A		1	still	on water with Fulmars
	Fulmars		L ₁	3	"	"
	"		L ₂	14	"	"
	"		L ₃	6	"	"
	"		L ₄	1	"	"
	GBBG	Ad		3	var	flying
	"	im		2	var	" (snow-poor visibility)

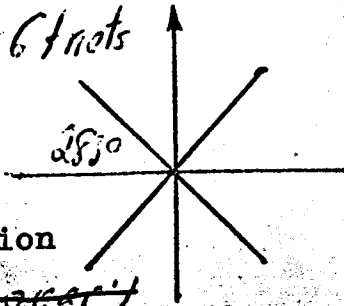
13:30

42 50.5' N 61 52'

speed - 6 knots

PIROP

DATE Feb. 1/78



PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

SHIP Agua Star
OBSERVERS: Steve Woodle
overcast; 25 knot N.W.
winds, snow, fair visib
1-2 m sea swell

OBSERVATION PERIOD: 14:00 TO 14:40

PAGE NO. 68

all species

view - forward 180° - ~~to starboard~~

TIME	- SPECIES -	A G E	P L	A S S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
							<u>42° 50' N 61° 51' W</u> <u>(drifting at about 1.3 knots)</u>
<u>1400</u>	<u>BLKW</u>	<u>Ad</u>				<u>var</u>	<u>flying</u> (ship veering back to jibe)
	<u>Fulmars</u>		<u>L₂</u>		<u>3</u>	<u>"</u>	<u>"</u>
	<u>GBBG</u>	<u>Ad</u>			<u>4</u>	<u>still</u>	<u>on water</u>
	<u>"</u>	<u>im</u>			<u>3</u>	<u>"</u>	<u>"</u>
<u>1410</u>	<u>BLKW</u>				<u>4</u>	<u>var</u>	<u>flying</u> (heavy flocks)
	<u>Fulmar</u>		<u>L₂</u>		<u>1</u>	<u>var</u>	<u>"</u>
							<u>42° 50.5' N 61° 52' W</u>
<u>1420</u>	<u>Fulmar</u>		<u>L₁</u>		<u>2</u>	<u>var.</u>	<u>flying in front of ship</u>
	<u>"</u>		<u>L₂</u>		<u>6</u>	<u>var.</u>	<u>"</u>
	<u>"</u>		<u>D₁</u>		<u>2</u>	<u>var.</u>	<u>"</u>
	<u>"</u>		<u>D₂</u>		<u>1</u>	<u>var.</u>	<u>"</u>
							<u>42° 51.5' N 61° 53' W</u>
<u>1430</u>	<u>BLKW</u>	<u>Ad</u>			<u>1</u>	<u>var</u>	<u>flying</u>
	<u>GBBG</u>	<u>im</u>			<u>1</u>	<u>var</u>	<u>"</u> (very poor visibility)
<u>1440</u>							<u>42° 51.5' N 61° 54' W</u> <u>(now stationary and drifting again)</u>

speed - 0 knots

PIROP

DATE Feb. 2/78

SHIP Aqua Star

SHIP Direction

stationary

PROGRAM FOR INTEGRATED RESEARCH ON PELAGIC BIRDS AT-SEA DAILY LOG

OBSERVERS: Steve Woodley
overcast, 25 knot N.W. winds
snow - 2" E, poor visibility
seas 1-3m and choppy

OBSERVATION PERIOD: 14:40 TO 15:20

PAGE NO. 69

all species

360° walk around

TIME	SPECIES	AGE	PL	SEX	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
1440	nil						
1450	BLKW	Ad			3	var	flying around ship
	GBBG	Ad			2	var	"
	"	2nd yr			1	var	"
							42° 51.5' N 61° 55' W
15:00	GBBG	Ad			8	still	on water
	"	im			8	still	"
	Fulmar		L ₂		2	var	flying
	"		D ₂		1	var	"
	BLKW	Ad			9	"	"
		im			1	"	"
15:10	GBBG	2nd yr			4	var	flying (heavy snow)
	GBBG	Ad			2	var	"
	"	1st yr			1	var.	"
	BLKW				4	var	"
	Fulmar		P ₁		2	var	"
							42° 51' N 61° 54.5' W

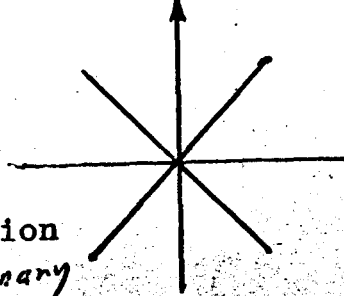
PIROP

DATE Feb 2/78

PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

SHIP Aqua Star

OBSERVERS: Steve Woodley
overcast, 25 knot N.W. winds
-2°C, good visibility
seas 1-3 meters



SHIP Direction stationary

OBSERVATION PERIOD: 1540 TO _____
all species

PAGE NO. 70
180° forward

TIME	SPECIES	AGE	PLS	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
						<u>42° 51' N 61° 54' N</u>
<u>1540</u>	<u>Fulmar</u>		<u>L1</u>	<u>1</u>	<u>var</u>	<u>flying</u>
	<u>"</u>		<u>L2</u>	<u>1</u>	<u>var</u>	<u>"</u>
	<u>BLKW</u>			<u>3</u>	<u>var</u>	<u>flying</u>
<u>1550</u>	<u>Dovekie</u>			<u>1</u>	<u>still</u>	<u>sitting on water</u>
	<u>GBOG</u>	<u>Ad</u>		<u>8</u>	<u>var</u>	<u>flying and on water</u>
	<u>"</u>	<u>2nd yr</u>		<u>6</u>	<u>var</u>	<u>"</u>
	<u>BLKW</u>			<u>2</u>	<u>var</u>	<u>flying (dolphins - see notes)</u>
<u>1560</u>	<u>Fulmar</u>		<u>L2</u>	<u>2</u>	<u>var</u>	
	<u>Fulmar</u>		<u>L4</u>	<u>1</u>	<u>var</u>	
	<u>GBOG</u>	<u>Ad</u>		<u>8</u>	<u>var</u>	<u>on water and flying</u>
	<u>BLKW</u>	<u>im</u>		<u>1</u>	<u>var</u>	<u>"</u>
	<u>BLKW</u>	<u>Ad</u>		<u>4</u>		<u>"</u>
	<u>GBOG</u>	<u>im</u>		<u>6</u>		
						<u>42° 50.5' N 61° 53.5' W</u>

dolphins - 2 - small - ~ 6 ft
- jumped clear of water
- poor vis. made ID impossible

42° 51' 61° 54'

PIROP

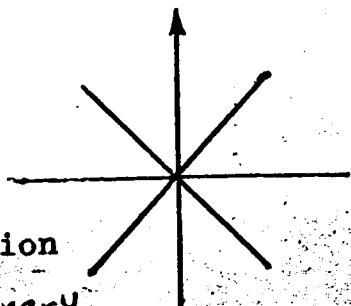
PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

DATE Feb. 1/78

SHIP Aqua Star

OBSERVERS: Steve Woodley
overcast; -7°C, 15 knot
Mod. winds; fair visibility
1-3m swells

SHIP
Direction



Stationary

OBSERVATION PERIOD: 17:09 TO 17:40

all species

PAGE NO. 71

180° forward

TIME	SPECIES	AGE	PL	AS	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
17:00	BLKW	Ad			4	var.	flying around ship
	Fulmar		L ₂		1	'	"
	"						42° 51.5' N 61° 55' N (well site)
17:10	BLKW	Ad			7	var.	flying around ship (ship cruising very slowly around well site, doing temp. profiles)
17:20	BLKW	Ad			2	var	flying around ship
	GBBG	2nd yr			2	var	"
17:30	BLKW	Ad			2	var	flying
	Dovekie	(W)			1	var	on water - dove difficult to see birds on water because of wind chop
17:40							42° 53.5' N 61° 54.5' W

PIROP

DATE Feb 2/78

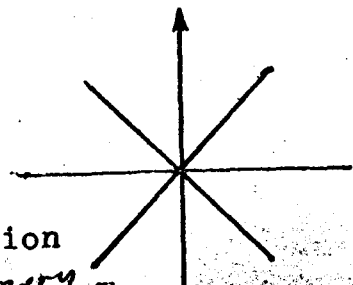
SHIP Aqua Star

OBSERVERS: Steve Woodcock
overcast; 25 knot NW
winds; clear;
sea 1-3 meters

PROGRAM FOR INTEGRATED
 RESEARCH ON PELAGIC BIRDS

AT-SEA DAILY LOG

SHIP Direction



Stationary - circle well site
 OBSERVATION PERIOD: 18:00 TO 18:50

PAGE NO. 72

all species

180° forward view

TIME	SPECIES	AGE	PL	AS	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
1800	BLKW	Ad			4	var	42° 53.5' N 61° 54' W around ship
1810	BLKW	Ad			2	var.	around ship
	GBBG	2nd yr			1	var.	"
							42° 52.5' N 61° 54' W
18:20	GBBG	Ad			1	var.	around ship
	BLKW	Ad			3	"	"
							42° 52' N 61° 54.5' W
18:30	BLKW	Ad			2	var.	around ship, flying
	GBBG	Ad			1	"	"
1840	BLKW	Ad			9	var	flying; on water feeding
	Fulmar	1/2			2	var	"
	BLKW	1im			2	"	"
	GBBG	Ad			1	"	" , on water
	"	2nd yr			2	"	" " "
							(visability again ^{fog, snow} poor)
							42° 51.5' N 61° 54.5' W

PIROP

DATE Feb 2/78

SHIP Aqua Star

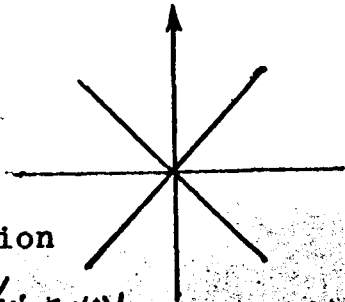
OBSERVERS: S. Woodley
scattered clouds; 20 knot N.W.
winds; 7°C, clear
3 meter swell

PROGRAM FOR INTEGRATED

RESEARCH ON PELAGIC BIRDS

AT-SEA DAILY LOG

SHIP
Direction



stationary

OBSERVATION PERIOD: 19:20 TO 20:00

PAGE NO. 73

all species

180° port view (downwind)

TIME	- SPECIES -	A G E	P L S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
19:20	BLKW	Ad		3	var	flying
	GBBG	Ad		2	"	"
	"	2nd yr		2	"	"
19:30	Fulmar		P1	3		flying
	BLKW	Ad		17		on water
	"	im		2		"
	GBBG	Ad		14		flying around ship
	"	im		8		"
	Fulmar		L2	8		on water; flying
	"		L1	2		"
						42° 51.5' N 61° 54.6' W
19:40	BLKW	Ad				
	GBBG	2nd yr		3	still	on water
	"	Ad		1	"	"
	Fulmar		L2	1	var.	flying
						42° 51' N 61° 54' W
19:50	GBBG	Ad		6	var	in front of ship, flying
	Fulmar		L2	5	"	"
	Fulmar		L1	1	"	"
	BLKW	Ad		9	"	"
	GBBG	im		2	"	"

PIROP

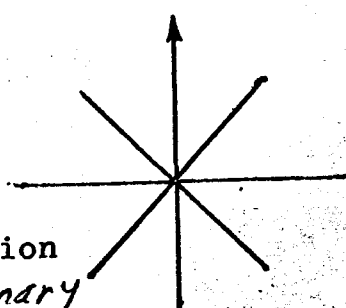
DATE Feb 2/78

SHIP Aqua Star

OBSERVERS: S. Woodley
scattered clouds, 20 knots
all birds, 3°C, clear
1-5 m swell

PROGRAM FOR INTEGRATED
 RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

SHIP
 Direction
stationary



OBSERVATION PERIOD: 20:30 TO 21:10
all species

PAGE NO. 74
180° forward view

TIME	SPECIES	AGE	SEX	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
20:30	BLKW	Ad?		100±20	var	around ship
	GBSG	Ad		3	"	"
	"	1st yr		1	"	"
	"	2nd yr		2	"	"
20:40	BLKW	Ad		20	var	"
	"	im		2	var	"
	GBSG	Ad		4	var	" , on water
	"	im		6	var	"
	Fulmar		1/2	2	var	"
						42°52'N 61°53.5'W
<u>20:50</u>	Fulmar		1/2	1	var	flying
	BLKW	Ad		11	"	"
	GBSG	Ad		2	"	"
	"	1st yr		1	"	"
21:00	BLKW	Ad		41	var	soaring in front of ship
	"	im		2	var	"
	Fulmar		1/2	5	var	flying, low over water
						42°51.5'N 61°54'W

21:10 ~~strength~~ evening gathering of Kittiwakes, arriving from all directions - approx. 400±50 sitting on water.

percent 5 knots

PIROP

DATE Feb 3/78

SHIP Direction

PROGRAM FOR INTEGRATED RESEARCH ON PELAGIC BIRDS

SHIP Aqua Star

OBSERVERS: Steve Woodley
broken cloud; winds NW
10 knots; +2°C, clear
seas - gentle, 1m swell

AT-SEA DAILY LOG

launching seismic lines

OBSERVATION PERIOD: 12:30 TO 13:30

PAGE NO. 75

all species

180° forward view

TIME	SPECIES	AGE	PL	SEX	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
12:30	nil						42° 53' N 61° 55' W
12:40	BLKW	Ad			2	var	flying
	GBBC	Im			1	"	"
	Fulmar		1/2		1	"	"
							42° 53.5' N 61° 55.5' W
12:50	GBBC	Ad			22 ± 2	var	flying around ship (ship turning)
	BLKW	Ad			1	"	"
							42° 53' N 61° 56' N
13:00	BLKW	Ad			27	var	flying around bow of ship
	Fulmar		1/2		1	"	"
							42° 52' N 61° 55.4' W
13:10	BLKW	Ad			4	var	flying
							42° 51.5' N 61° 55' W
13:20	BLKW	Ad			5	var	flying around ship
	Dovekie				8	WSW	low over water; not directly into wind
							42° 50.5' N 61° 54.7' W

new heading
161°
speed 6 knots

speed 55 knots

PIROP

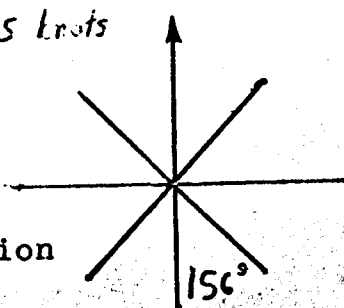
DATE Feb. 7/78

PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS

SHIP Aqua Star

OBSERVERS: Steve Woodley
scattered clouds; 3°C, 10kn
(10/10) winds; clear
seas mild

SHIP
Direction



AT-SEA DAILY LOG

running seismic lines

OBSERVATION PERIOD: 13:30 TO 14:00

PAGE NO. 76

all species

180° forward view

TIME	- SPECIES -	A G E	P L S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
1330	Fulmar		2	4	W5W	cruising in front of ship
	BLKW	Ad		10	var	flying
						42° 49.7' N 61° 54' W (turning to new heading)
13:40	Fulmar	Ad	2	4	var	flying
	BLKW	Ad		25	still	feeding on water
	"	im		2	"	"
	GBPG	Ad		4	"	" with Kittiwake
	"	im		5	"	"
						42° 50' N 61° 54' W
13:50	BLKW	Ad		4	var	flying
	Fulmar		2	1	var	flying (new heading 341°)
						42° 51' N 61° 54.6' W
14:00	BLKW	Ad		3	var	flying
	"	im		1	"	"
14:10	GBPG	Ad		1	var	flying
	"	2d yr		1	"	"
	BLKW	Ad		7	var	"

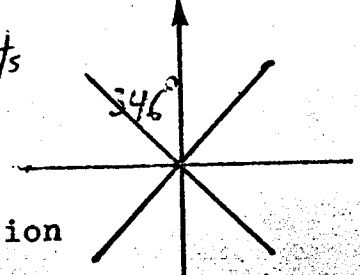
42° 53' N 61° 55.6' W

spread
5.4 knots

PIROP

DATE Feb 3/78

SHIP
Direction



PROGRAM FOR INTEGRATED
RESEARCH ON PELAGIC BIRDS
AT-SEA DAILY LOG

SHIP Aqua Star

OBSERVERS: Steve Woodley
overcast; 7°C, 10-15 knot
N.W. winds, clear
seas 1m swell

dragging seismic lines
OBSERVATION PERIOD:

15:00 TO 15:40

PAGE NO. 77

all species

180° forward view

TIME	- SPECIES -	A G E	P L	A S S	NUMBER	MOVE- MENT	REMARKS (behaviour, sex, food, etc.)
							<u>42° 56.8' N 61° 57' W</u>
<u>15:00</u>	<u>BLKW</u>	<u>Ad</u>			<u>5</u>	<u>var</u>	<u>flying</u>
	<u>GRBG</u>	<u>Ad</u>			<u>2</u>	<u>var</u>	<u>"</u>
<u>15:10</u>	<u>Dovekie</u>				<u>14</u>	<u>NW</u>	<u>low flying, into wind</u>
	<u>Murre sp.</u>				<u>2</u>	<u>NW</u>	<u>flew with one group of</u> <u>dovekies</u>
							<u>- individual groups, ^{of Dovekies} site in</u> <u>tight clusters on water</u>
	<u>BLKW</u>				<u>8</u>	<u>var</u>	<u>flying</u>
	<u>Thick billed Murre</u>				<u>3</u>	<u>dove</u>	<u>dove together near ship</u>
							<u>42° 57.7' N 61° 58.2' W</u>
<u>15:20</u>	<u>Dovekies</u>				<u>3</u>	<u>NW</u>	<u>groups of 2, 1</u>
	<u>BLKW</u>	<u>Ad</u>			<u>500±75</u>	<u>circling</u>	<u>circling over area</u> (<u>chip turning</u>) <u>new heading, 164°</u>
							<u>but dont seem to be feeding</u>
							<u>42° 57' N 61° 58' W</u>
<u>15:30</u>	<u>Dovekies</u>				<u>2</u>	<u>East</u>	<u>Lower over water - not into wind!</u>
	<u>BLKW</u>	<u>Ad</u>			<u>25±2</u>	<u>var</u>	<u>flying</u>
							<u>42° 56' N 61° 57' W</u>

note: we ran into awks as soon as we left well travelled seismic area

PIROP

DATE Feb. 3/78

SHIP Agua Star

OBSERVERS: Steve Abodley
overcast, 52, 10/100
N.W. winds, clear

PROGRAM FOR INTEGRATED
 RESEARCH ON PELAGIC BIRDS

AT-SEA DAILY LOG

SHIP Direction

stationary
 - bottom cores
 OBSERVATION PERIOD: 17:00 TO 18:40
all species

PAGE NO. 79

TIME	SPECIES	AGE	SEX	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
						<u>42° 51.8' N 61° 54.9' W</u>
17:00	BLKW	Ad		23	var	flying around ship
	GBBG	Ad		9	"	"
	"	im		7	"	"
17:10	GBBG	Ad		10 10	var	around ship, flying
	"			6	"	"
	BLKW			75±10	"	"
17:20	BLKW	Ad		300±20	still	on water around ship
17:30						(moving back to well site)
18:20	Fullmar		L2	2	var	flying <u>42° 51' N 61° 55.4'</u>
	GBBG	Ad		6	still	on water
	"	im		3	"	"
	BLKW	Ad		300±20	→	flying, and on water - breaking up and reforming into flocks <u>42° 51' N 61° 55' W</u>
18:30	Govekies			9	N.W.	one group
	BLKW			300±50	var	all around ship
	GBBG	Ad		2	"	around ship

PIROP

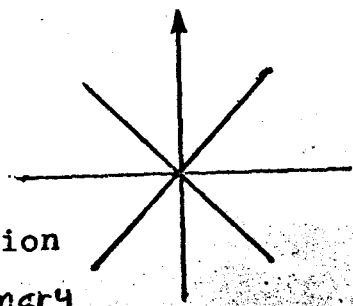
DATE Feb 4/78

SHIP Aqua Star

OBSERVERS: S. Woodley
overcast, snow, -6°C
light N.W. winds
sea 1-2m

PROGRAM FOR INTEGRATED
 RESEARCH ON PELAGIC BIRDS

AT-SEA DAILY LOG



SHIP
 Direction

Stationary

OBSERVATION PERIOD: 12:40 TO 13:30

PAGE NO. 81

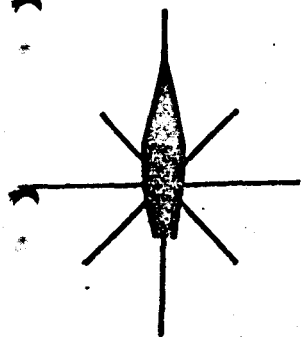
all species

180° for word view

TIME	SPECIES	AGE	PL	SEX	NUMBER	MOVEMENT	REMARKS (behaviour, sex, food, etc.)
12:40	nil						42°49.5'N 61°51.6'N same area as yesterday-well site
12:50	nil						
13:00	Dovekies				5	N.W.	left water and flew low over water - tight group
	GBBG	Ad			1	still	on water
	BLKW	Ad			5	var	flying
	Fulmar	A	L ₂		1	var	flying
	"		D ₂		1	var	
	Thick Billed Murre				1	N.W	single, low over water
13:10	GBBG	Ad			4	still	on water
	"	2nd yr			3	"	"
	Fulmar		D ₂		1	var	flying
	"		L ₂		1	"	"
13:20	Fulmar		L ₂				
	"		D ₁				

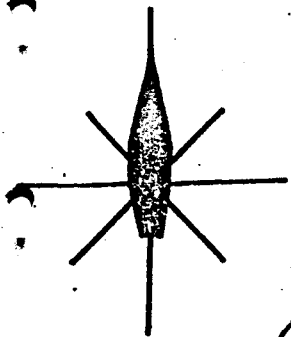
Slip slow ahead to well site - 318°

PIROP

Observation period: 13:30 GMT to 14:10 GMTPosition or Decca 42° 51' N 61° 53' NType of watch all Reliability goodVisibility fair Weather overcast, -6°C, snowState of Sea 1-2 m Ship Speed 6.5 knotsDirection 330° Activity to well siteAngle of view 180° Height 20'
forwardDate : Feb. 4/78
Ship : Aqua Star
Obs : S. Woodley
Page : 82

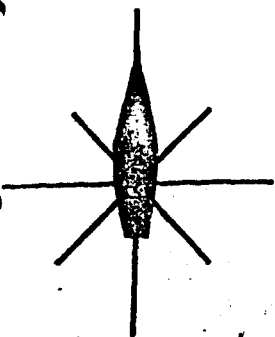
TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
13:30	BLKW	Ad			8	var	flying heavy snow, poor visibility
13:40	Murre sp.				1	N.W	
	Dovekies				8	N.W	one tight group 42° 51.6' N 61° 55' W
13:50	BLKW	imm			4	var	4 juveniles flying together
	"	Ad			12	"	flying ship stopped at -42° 51.8' N 61° 55.2' W
14:00	BLKW				150±2	still	on water, off ship
	Fulmar		L1		1	var	flying
	GBBG	Ad			2	"	"
	"	Ad			1	still	on water
	Fulmar		L2		1	var	flying
							- discontinued 10 min. counts in this stationary position

PIROP

Observation period: 16:00 GMT to 17:00 GMTPosition or Decca 42° 52' N 61° 54' WType of watch ~~all~~ ^{doves} only Reliability goodVisibility fair to poor ^{500m} Weather overcast; -1°C; light NW winds, snowState of Sea 1-2m swell Ship Speed 9 knotsDirection 22° Activity return to HalifaxAngle of view 180° Height 20'
forwardDate : Feb. 4/78
Ship : Arctic Star
Obs : Steve Woodley
Page : 83

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
16:00	nil						
16:10	Dovekie				16	NW	groups of 10, 6
	Thick Billed Murre				1	NE	flew into wind, then turned east
	Murre, sp				1	NW	
							42° 54' N 61° 56' W
16:20	Dovekie	1			5	dove	disappeared 42° 55.2' N 61° 57.4' W
16:39	Dovekie				4	NW	groups of 1, 3 - into wind 42° 56.6' N 61° 59' W
16:40	Dovekie				26	NW	groups of 12, 8, 3, 2) all into wind
	Thick Billed Murre				11	NW	groups of 3, 3, 3, 2 (one could not fly after many attempts)
	Murre sp				3	NW	all singles
16:50	Dovekies				4	NW	groups of 2, 2 (continental shelf) 42° 59.2' N 62° 01.8' W
17:00	Dovekies				6	NW → group of 5 East → singles	43° 00.4' N 62° 03.1' W

PIROP



Observation period: 18:10 GMT to 18:50 GMT
 Position or Decca 43° 00.4' N 63° 03.1' W
 Type of watch Reels only Reliability good
 Visibility fair to poor Weather overcast, snow, -6°C, NW winds
 State of Sea 1 m swell Ship Speed 10.7 knots
 Direction 122° Activity return to Halifax
 Angle of view 180° Height 20'
forward

Date : Feb 4/78
 Ship : Aqua Star
 Obs : S. Woodley
 Page : 84

TIME	SPECIES	AGE	PL	ASS	NUMBER	MOV.	REMARKS, (behaviour, sex....)
18:10	Dovekie				2	NW	flew and then dove right from air 43° 02' N 62° 05' W
18:20	Dovekie				2	NE	low over water (snow - poor visibility) 43° 03' N 62° 06' W
18:30	Dovekie				1	NW	flew off water in front of ship 43° 05' N 62° 07.5' W
18:40	Dovekie				2	North	43° 05' N 62° 08' W
18:50	nil						43° 05.5' N 62° 08.6' W
							-freezing spray, and snow making birding impossible