

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center

101 Pivers Island Road
Beaufort, NC 28516

Cruise Report

Date Submitted: 10/23/2024

Platform: NOAA Ship PISCES

Cruise Number: PC-24-05

Project Title: Southeast Fishery-Independent Survey (SEFIS)

Cruise Dates: 08/02/2024 - 09/30/2024

Submitted by:  Date: 2024.10.23 06:54:56 -04'00' Date: 10/23/2024
Field Party Chief

Approved by: KELLISON.GREGOR Digitally signed by KELLISON.GREGORY.TODD.13 65849206 Date: 2024.10.31 17:26:42 -04'00' Date: 10/31/2024
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INTRODUCTION

The NOAA Ship *Pisces* hosted the Southeast Fishery-Independent Survey (SEFIS) for a research cruise in continental shelf and shelf-break waters off North and South Carolina in 2024. SEFIS was created by the National Marine Fisheries Service in 2010 and operates out of the NOAA-Beaufort Laboratory. This survey was created to conduct applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics.

The plan was to conduct primary SEFIS trap-video operations during two legs (24 DAS) and mapping for one 20-d leg. Leg 1 would occur in the region between Cape Hatteras, NC, and the VA-NC state line, in hopes of expanding our survey northward. Leg 2 would sample traditional trap-video sites between Cape Hatteras, NC, and northern South Carolina. Only two sea days were lost due to late departure from Pascagoula due to bad weather (1 DAS) and a mechanical issue (1 DAS), which delayed the start of leg 1.

Planned dates	Actual dates	Leg	Objective	Planned DAS	Realized DAS
August 2-7	August 6-11	Transit	Transit	6	6
August 11-22	August 13-22	Leg 1	Trap-video	12	10
August 27-Sept 7	August 27-Sept 7	Leg 2	Trap-video	12	12
September 11-30	September 11-30	Leg 3	Mapping	20	20
Total				50	48

Summary of Objectives:

1. Fishery-independent sampling of randomly selected stations in North and South Carolina. Baited chevron traps, with two mounted high-definition video cameras were utilized for (a) hardbottom reef fish community assessments, (b) collection of reef fish for biological samples (i.e., otoliths and gonads), and (c) comparative gear sampling (cameras versus traps).
2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.
3. Use a conductivity, temperature, depth (CTD) instrument package to collect environmental data (temperature, salinity, dissolved oxygen, turbidity) at camera-trap sampling locations.
4. Multibeam sonar mapping (random zig-zag pattern) to estimate proportion and amount of hardbottom across survey range.
5. Mapping and trap-video sampling between Cape Hatteras, NC, and the VA-NC state line for potential northward survey expansion.

6. Sample in Kitty Hawk Wind Energy Area and Carolina Long Bay Wind Energy Area to collect baseline fish and habitat information.

MATERIALS AND METHODS

Camera-Trap Sampling

Camera-trap gear consisted of two high definition video cameras mounted to a chevron fish trap. Additionally, one of the six traps in a group included an attached stereo-video camera for future fish length measurements. Chevron traps were composed of plastic-coated wire mesh. GoPro cameras (model HD Hero[®] 9) were attached above the mouth and nose of the trap. Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at least 200 m apart on suspected or known hardbottom habitats, and soak time was targeted for approximately 90 min. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted while traps were soaking. Fish catches were processed after trap retrieval. All fish were enumerated, weighed, and measured to the nearest millimeter. Individuals of priority species (mostly species found in the snapper-grouper complex) were further processed for additional lengths and biological samples (otoliths, gonads, and DNA). Video files were downloaded and backed up on digital media storage devices. Biological samples and video files were brought to the Beaufort Laboratory for further processing and analysis.

Environmental Data Collection

Environmental data were collected with a Seabird CTD instrument package (model SBE 9) and SEAL software. CTD casts were conducted near the middle of the camera-trap soak period; instruments were lowered to within 2 m of the bottom. Numerous water profile measurements were taken, including temperature (°C), salinity, dissolved oxygen (mg/L), average sound velocity (m/s), fluorescence (mg/m³), and beam transmission (%). CTD data were archived for further processing at the Beaufort Laboratory. SCS 5 was used to collect specific information for each fishing and CTD event, including soak time/cast duration as well as start and end latitude, longitude, and depth (m).

Multibeam Sonar Data Collection

The EM2040 was used by Pisces Survey Technicians to map seafloor habitats during overnight hours when trap and video sampling was not occurring. Two types of mapping occurred: random zig-zag lines to estimate hardbottom (leg 3) and priority areas not previously mapped (legs 1, 2, and 3).

RESULTS AND DISCUSSION

Camera-Trap Sampling

A total of 282 stations were sampled with camera-trap gear during PC-24-05 (Table 1). From these traps, fish were collected and worked up for length frequency data. Various reef fish species were further processed for otolith, gonad, stomachs, and DNA tissue. No traps were lost.

Environmental Data Collection

A total of 49 CTD casts (Table 1) associated with trap-video sampling were conducted during the cruise (note that additional CTD casts were conducted for mapping purposes). CTD data will be processed with Seabird SBE Data Processing software (version 7.2), and archived in a database at the NMFS-Beaufort Laboratory for future analysis.

Multibeam Sonar Mapping

Seafloor mapping occurred during the 20 mapping days as well as many evenings during trap-video cruises. A total of 51 line transects were mapped, and approximately 15 additional priority areas were mapped.

Time Lost

Only 2 sea days out of 50 were lost due to late departure from Pascagoula due to bad weather (1 DAS) and a mechanical issue (1 DAS), which delayed the start of leg 1 by 2 DAS.

Acknowledgments

We thank the NOAA Ship *Pisces* officers and ship's company for their hard work during our cruise. In particular I want to thank Chief ST Todd Walsh for leading the mapping operation and did a fantastic job!

CRUISE PARTICIPANTS

Transit: August 6-11, 6 DAS

Name	Title	Organization
No scientists on board		

Leg I: August 13-22, 10 DAS

Name	Title	Organization
Nate Bacheler	FPC	NOAA-NMFS-SEFSC
Erin Pickett	Video lead	CIMAS
Zach Gillum	Watch chief	CIMAS
David Hoke	Deck watch	NOAA-NMFS-SEFSC
Brad Teer	Watch chief	CIMAS
Roldan Munoz	Deck watch	NOAA-NMFS-SEFSC
Andrew Fuehring	Deck watch	CIMAS

Leg II: August 27 - September 7, 12 DAS

Name	Title	Organization
Zeb Schobernd	FPC	NOAA-NMFS-SEFSC
Kevan Gregalis	Video lead	NOAA-NMFS-SEFSC
Zach Gillum	Watch chief	CIMAS
Nikolai Klibansky	Deck watch	NOAA-NMFS-SEFSC
Matt Green	Deck watch	FedGeek
Brad Teer	Watch chief	CIMAS
Walt Rogers	Deck watch	CIMAS
Erin Pickett	Deck watch	CIMAS
Jack Prior	Deck watch	NGI

Leg III: September 11-30, 20 DAS

Name	Title	Organization
No scientists on board		

Table 1. Summary of station coordinates, depth (m), date, and time (GMT) for each fishing event (camera-trap, Gear=324) and CTD cast (Gear=298) conducted on the PC-24-05 survey.

Collection number	Gear	Date	Time (GMT)	Latitude	Longitude	Depth (m)
243415	324	8/14/2024	11:27	36.27296	-75.17849	39
243416	324	8/14/2024	11:30	36.27604	-75.17749	39
243417	324	8/14/2024	11:36	36.28370	-75.17829	38
243418	324	8/14/2024	11:50	36.28481	-75.19793	39
243419	324	8/14/2024	11:52	36.28704	-75.19858	38
243420	324	8/14/2024	11:54	36.28973	-75.19781	39
243421	298	8/14/2024	16:22	36.30793	-75.20566	34
243422	324	8/14/2024	15:27	36.29119	-75.19974	39
243423	324	8/14/2024	15:32	36.29792	-75.19974	38
243424	324	8/14/2024	15:34	36.29999	-75.19951	38
243425	324	8/14/2024	15:36	36.30308	-75.19978	39
243426	324	8/14/2024	15:39	36.30542	-75.19823	39
243427	324	8/14/2024	15:44	36.31158	-75.19984	37
243428	298	8/14/2024	16:22	36.30793	75.20566	34
243429	324	8/14/2024	18:28	36.38207	-75.24399	40
243430	324	8/14/2024	18:29	36.38226	-75.24121	41
243431	324	8/14/2024	18:35	36.38763	-75.23534	42
243432	324	8/14/2024	18:42	36.39358	-75.22562	39
243433	324	8/14/2024	18:51	36.38681	-75.21255	34
243434	324	8/14/2024	18:55	36.39191	-75.21053	36
243435	298	8/14/2024	19:21	36.30793	75.20566	34
243436	324	8/15/2024	11:04	36.43762	-75.33943	31
243437	324	8/15/2024	11:14	36.43924	-75.31974	32
243438	324	8/15/2024	11:22	36.43304	-75.30585	32
243439	324	8/15/2024	11:26	36.42873	-75.30704	30
243440	324	8/15/2024	11:36	36.42753	-75.29077	30
243441	324	8/15/2024	11:44	36.41787	-75.28422	31
243442	298	8/15/2024	11:59	36.41324	-75.28614	30
243443	324	8/15/2024	14:42	36.39461	-75.28553	35
243444	324	8/15/2024	14:49	36.39561	-75.26964	38
243445	324	8/15/2024	14:56	36.39642	-75.25356	38
243446	324	8/15/2024	15:05	36.40721	-75.25178	36
243447	324	8/15/2024	15:11	36.41918	-75.25148	36
243448	324	8/15/2024	15:16	36.42565	-75.24633	35
243449	298	8/15/2024	15:56	36.39165	-75.28549	36
243450	324	8/15/2024	17:12	36.41879	-75.23339	37
243451	324	8/15/2024	17:21	36.42778	-75.22026	36

243452	324	8/15/2024	17:25	36.43038	-75.21501	36
243453	324	8/15/2024	17:29	36.43081	-75.20822	37
243454	324	8/15/2024	17:37	36.42383	-75.20151	35
243455	324	8/15/2024	17:38	36.42517	-75.20006	35
243456	298	8/15/2024	18:17	36.41998	-75.23537	37
243457	324	8/16/2024	11:24	36.41887	-75.41407	28
243458	324	8/16/2024	11:26	36.42123	-75.41156	29
243459	324	8/16/2024	11:30	36.42447	-75.41065	32
243460	324	8/16/2024	11:33	36.42717	-75.41103	32
243461	324	8/16/2024	11:36	36.42969	-75.40874	32
243462	324	8/16/2024	11:55	36.45786	-75.40553	28
243463	298	8/16/2024	12:10	36.45860	-75.40412	28
243464	324	8/16/2024	15:30	36.34059	-75.61179	26
243465	324	8/16/2024	15:31	36.34232	-75.61014	26
243466	324	8/16/2024	15:35	36.34378	-75.60571	25
243467	324	8/16/2024	15:37	36.34604	-75.60477	27
243468	324	8/16/2024	15:40	36.35028	-75.60362	25
243469	324	8/16/2024	15:43	36.35089	-75.59926	26
243470	298	8/16/2024	16:24	36.33819	-75.61414	24
243471	324	8/16/2024	18:47	36.45327	-75.40795	29
243472	324	8/16/2024	18:50	36.45248	-75.40512	29
243473	324	8/16/2024	18:58	36.44673	-75.40913	29
243474	324	8/16/2024	19:03	36.44490	-75.40705	29
243475	324	8/16/2024	19:09	36.44045	-75.41014	30
243476	324	8/16/2024	19:14	36.43635	-75.41069	31
243477	298	8/16/2024	19:30	36.43326	-75.40863	31
243478	324	8/17/2024	11:00	35.32848	-75.37723	26
243479	324	8/17/2024	11:02	35.33022	-75.37539	26
243480	324	8/17/2024	11:04	35.33212	-75.37312	25
243481	324	8/17/2024	11:07	35.33300	-75.37025	27
243482	324	8/17/2024	11:09	35.33157	-75.36738	26
243483	324	8/17/2024	11:15	35.33325	-75.36525	25
243484	298	8/17/2024	11:26	35.33575	-75.36508	26
243485	324	8/17/2024	14:13	35.33587	-75.36731	25
243486	324	8/17/2024	14:16	35.33617	-75.36475	25
243487	324	8/17/2024	14:20	35.33561	-75.36083	26
243488	324	8/17/2024	14:23	35.33932	-75.35892	24
243489	324	8/17/2024	14:26	35.33912	-75.35640	21
243490	324	8/17/2024	14:32	35.34129	-75.35310	22
243491	298	8/17/2024	14:40	35.34474	-75.35281	26

243492	324	8/17/2024	16:28	35.34211	-75.35893	24
243493	324	8/17/2024	16:31	35.34423	-75.35548	23
243494	324	8/17/2024	16:34	35.34464	-75.35100	24
243495	324	8/17/2024	16:36	35.34663	-75.34816	24
243496	324	8/17/2024	16:47	35.35619	-75.33699	27
243497	324	8/17/2024	17:01	35.36363	-75.32133	26
243498	298	8/17/2024	17:11	35.36523	-75.31700	26
243499	324	8/18/2024	11:38	34.62916	-76.15363	39
243500	324	8/18/2024	11:41	34.62605	-76.15261	39
243501	324	8/18/2024	11:45	34.62387	-76.14656	39
243502	324	8/18/2024	11:48	34.62337	-76.14310	40
243503	324	8/18/2024	11:56	34.62438	-76.14040	39
243504	324	8/18/2024	12:01	34.62285	-76.13690	40
243505	298	8/18/2024	12:13	34.62492	-76.12940	38
243506	324	8/18/2024	14:23	34.60559	-76.13637	40
243507	324	8/18/2024	14:30	34.60351	-76.13637	40
243508	324	8/18/2024	14:35	34.60574	-76.14335	39
243509	324	8/18/2024	14:38	34.60601	-76.14725	39
243510	324	8/18/2024	14:40	34.60252	-76.14876	39
243511	324	8/18/2024	14:44	34.59929	-76.14573	39
243512	298	8/18/2024	14:55	34.59739	-76.14951	38
243513	324	8/18/2024	16:45	34.61507	-76.16217	38
243514	324	8/18/2024	16:47	34.61488	-76.16467	38
243515	324	8/18/2024	16:49	34.61470	-76.16816	38
243516	324	8/18/2024	16:57	34.60396	-76.17167	38
243517	324	8/18/2024	17:01	34.60309	-76.17842	38
243518	324	8/18/2024	17:07	34.60538	-76.18925	37
243519	298	8/18/2024	17:16	34.60648	-76.19502	37
243520	324	8/19/2024	11:00	34.54309	-76.40089	19
243521	324	8/19/2024	11:02	34.54080	-76.40171	21
243522	324	8/19/2024	11:10	34.53879	-76.40159	20
243523	324	8/19/2024	11:12	34.53723	-76.40373	20
243524	324	8/19/2024	11:15	34.53401	-76.40305	20
243525	324	8/19/2024	11:19	34.52943	-76.40453	20
243526	298	8/19/2024	11:29	34.52626	-76.40161	20
243527	324	8/19/2024	14:14	34.56728	-76.33354	26
243528	324	8/19/2024	14:20	34.56542	-76.33199	29
243529	324	8/19/2024	14:23	34.56561	-76.33575	29
243530	324	8/19/2024	14:29	34.55962	-76.33788	25
243531	324	8/19/2024	14:34	34.55377	-76.33225	29

243532	324	8/19/2024	14:43	34.54920	-76.34129	25
243533	298	8/19/2024	14:52	34.54816	-76.34538	27
243534	324	8/19/2024	16:44	34.52994	-76.34650	24
243535	324	8/19/2024	16:49	34.52675	-76.35374	22
243536	324	8/19/2024	16:52	34.52358	-76.35280	23
243537	324	8/19/2024	16:54	34.52264	-76.34900	24
243538	324	8/19/2024	17:00	34.51632	-76.35152	23
243539	324	8/19/2024	17:02	34.51436	-76.35032	23
243540	298	8/19/2024	17:10	34.51101	-76.34985	24
243541	324	8/20/2024	11:24	35.01296	-75.46711	49
243542	324	8/20/2024	11:42	35.01479	-75.46320	49
243543	324	8/20/2024	11:45	35.01237	-75.46384	50
243544	324	8/20/2024	11:53	35.00500	-75.45385	51
243545	324	8/20/2024	12:02	34.99742	-75.46096	51
243546	324	8/20/2024	12:06	34.99388	-75.46088	51
243547	298	8/20/2024	12:16	34.99073	-75.45942	52
243548	324	8/20/2024	15:39	34.93563	-75.45868	64
243549	324	8/20/2024	15:43	34.93312	-75.46196	62
243550	324	8/20/2024	15:46	34.93058	-75.45754	63
243551	324	8/20/2024	15:50	34.92909	-75.45987	64
243552	324	8/20/2024	15:53	34.92712	-75.46233	62
243553	324	8/20/2024	15:55	34.92718	-75.46606	62
243554	298	8/20/2024	16:05	34.92889	-75.47034	64
243555	324	8/20/2024	18:29	34.91888	-75.49844	60
243556	324	8/20/2024	18:36	34.92366	-75.50108	57
243557	324	8/20/2024	18:39	34.92212	-75.50354	56
243558	324	8/20/2024	18:49	34.92683	-75.51715	53
243559	324	8/20/2024	18:53	34.92269	-75.52294	52
243560	324	8/20/2024	18:57	34.91842	-75.52633	53
243561	298	8/20/2024	19:08	34.91503	-75.52693	54
243562	324	8/21/2024	11:29	36.08836	-74.89346	82
243563	324	8/21/2024	11:39	36.10630	-74.88502	82
243564	324	8/21/2024	11:45	36.11450	-74.88061	84
243565	324	8/21/2024	11:53	36.12800	-74.87357	86
243566	324	8/21/2024	11:57	36.13060	-74.86844	88
243567	324	8/21/2024	12:02	36.13459	-74.86572	88
243568	298	8/21/2024	12:11	36.13878	-74.86800	87
243569	324	8/21/2024	15:44	36.02937	-75.05268	39
243570	324	8/21/2024	15:48	36.03256	-75.05318	40
243571	324	8/21/2024	15:50	36.03182	-75.05684	41

243572	324	8/21/2024	15:54	36.03389	-75.05887	41
243573	324	8/21/2024	15:57	36.03661	-75.05858	42
243574	324	8/21/2024	16:07	36.03652	-75.06109	43
243575	298	8/21/2024	16:23	36.03959	-75.05935	44
243576	324	8/28/2024	11:38	34.90918	-75.51389	56
243577	324	8/28/2024	11:41	34.90677	-75.51508	56
243578	324	8/28/2024	11:47	34.90562	-75.51696	55
243579	324	8/28/2024	11:51	34.90286	-75.51844	57
243580	324	8/28/2024	11:56	34.90152	-75.52092	56
243581	324	8/28/2024	12:00	34.89903	-75.52248	58
243582	298	8/28/2024	12:00	34.89531	-75.52422	57
243583	324	8/28/2024	14:20	34.87209	-75.50721	57
243584	324	8/28/2024	14:24	34.87144	-75.51090	55
243585	324	8/28/2024	14:29	34.86802	-75.51284	55
243586	324	8/28/2024	14:46	34.86526	-75.51438	55
243587	324	8/28/2024	14:51	34.86867	-75.51705	56
243588	324	8/28/2024	14:57	34.86859	-75.52004	60
243589	298	8/28/2024	15:11	34.87028	-75.52429	67
243590	324	8/28/2024	17:20	34.86570	-75.52590	57
243591	324	8/28/2024	17:25	34.86255	-75.53322	62
243592	324	8/28/2024	17:29	34.86070	-75.53262	62
243593	324	8/28/2024	17:34	34.86003	-75.52798	59
243594	324	8/28/2024	17:36	34.85799	-75.52950	58
243595	324	8/28/2024	17:46	34.85590	-75.52728	57
243596	298	8/28/2024	18:06	34.85468	-75.52432	62
243597	324	8/29/2024	11:28	34.70276	-75.82908	41
243598	324	8/29/2024	11:32	34.69906	-75.83182	40
243599	324	8/29/2024	11:37	34.69727	-75.83844	40
243600	324	8/29/2024	11:41	34.69990	-75.84391	40
243601	324	8/29/2024	11:45	34.70280	-75.84836	40
243602	324	8/29/2024	11:50	34.70990	-75.85171	41
243603	298	8/29/2024	11:58	34.71408	-75.85305	38
243604	324	8/29/2024	14:32	34.66696	-75.72970	60
243605	324	8/29/2024	14:40	34.66790	-75.73827	58
243606	324	8/29/2024	14:43	34.66687	-75.74135	57
243607	324	8/29/2024	14:55	34.65899	-75.73683	61
243608	324	8/29/2024	15:04	34.64943	-75.74150	61
243609	324	8/29/2024	15:13	34.65154	-75.75156	59
243610	298	8/29/2024	15:22	34.65279	-75.75692	58
243611	324	8/29/2024	18:16	34.55343	-75.78784	102

243612	324	8/29/2024	18:21	34.55487	-75.79654	102
243613	324	8/29/2024	18:28	34.55113	-75.80205	92
243614	324	8/29/2024	18:34	34.55385	-75.80594	76
243615	324	8/29/2024	18:43	34.54979	-75.80790	83
243616	324	8/29/2024	18:49	34.54366	-75.81443	75
243617	298	8/29/2024	19:02	34.54095	-75.82064	74
243618	324	8/30/2024	11:30	34.50881	-76.01110	47
243619	324	8/30/2024	11:39	34.51638	-76.01997	45
243620	324	8/30/2024	11:44	34.51111	-76.02255	46
243621	324	8/30/2024	11:53	34.49740	-76.02634	47
243622	324	8/30/2024	12:00	34.50140	-76.03382	45
243623	324	8/30/2024	12:03	34.50037	-76.03709	44
243624	298	8/30/2024	12:14	34.49812	-76.04287	44
243625	324	8/30/2024	14:47	34.49065	-75.86523	88
243626	324	8/30/2024	14:54	34.48405	-75.87361	82
243627	324	8/30/2024	15:01	34.47725	-75.88217	78
243628	324	8/30/2024	15:10	34.47604	-75.87843	85
243629	324	8/30/2024	15:14	34.47426	-75.88347	81
243630	324	8/30/2024	15:20	34.46851	-75.89247	79
243631	298	8/30/2024	15:28	34.46578	-75.89461	80
243632	324	8/30/2024	17:54	34.48526	-75.87746	76
243633	324	8/30/2024	17:57	34.48175	-75.87861	79
243634	324	8/30/2024	18:07	34.48778	-75.88339	74
243635	324	8/30/2024	18:17	34.48340	-75.89057	74
243636	324	8/30/2024	18:20	34.48000	-75.89342	73
243637	324	8/30/2024	18:23	34.47691	-75.89683	72
243638	298	8/30/2024	18:32	34.47312	-75.90241	73
243639	324	8/30/2024	20:33	34.43300	-75.93814	73
243640	324	8/30/2024	20:38	34.42459	-75.94345	72
243641	324	8/30/2024	20:41	34.42181	-75.94404	75
243642	298	8/30/2024	20:53	34.41794	-75.94511	78
243643	324	8/31/2024	11:14	34.54529	-76.24395	37
243644	324	8/31/2024	11:18	34.54690	-76.23705	37
243645	324	8/31/2024	11:24	34.55194	-76.23173	38
243646	324	8/31/2024	11:27	34.55453	-76.23427	37
243647	324	8/31/2024	11:30	34.55841	-76.23284	37
243648	324	8/31/2024	11:34	34.56130	-76.23551	37
243649	298	8/31/2024	11:41	34.56289	-76.23947	36
243650	324	8/31/2024	14:17	34.55251	-76.22417	38
243651	324	8/31/2024	14:24	34.56130	-76.22800	37

243652	324	8/31/2024	14:28	34.56670	-76.22840	36
243653	324	8/31/2024	14:31	34.57130	-76.22680	36
243654	324	8/31/2024	14:37	34.57720	-76.21980	36
243655	324	8/31/2024	14:39	34.57870	-76.21670	36
243656	298	8/31/2024	14:45	34.56217	-76.20417	36
243657	324	8/31/2024	16:59	34.52313	-76.21428	39
243658	324	8/31/2024	17:03	34.52447	-76.20889	39
243659	324	8/31/2024	17:12	34.53424	-76.21173	39
243660	324	8/31/2024	17:15	34.53717	-76.21450	39
243661	324	8/31/2024	17:23	34.54305	-76.20818	39
243662	324	8/31/2024	17:32	34.55864	-76.20594	38
243663	298	8/31/2024	17:40	34.56214	-76.20406	38
243664	324	8/31/2024	20:15	34.52695	-76.25522	37
243665	324	8/31/2024	20:18	34.52411	-76.25160	38
243666	324	8/31/2024	20:27	34.51732	-76.24923	38
243667	324	8/31/2024	20:33	34.52441	-76.26277	36
243668	324	8/31/2024	20:40	34.52069	-76.26272	37
243669	324	8/31/2024	20:44	34.51869	-76.25768	37
243670	298	8/31/2024	20:50	34.51535	-76.25362	37
243671	324	9/1/2024	11:21	34.23987	-76.39431	34
243672	324	9/1/2024	11:25	34.23513	-76.39550	32
243673	324	9/1/2024	11:32	34.23244	-76.40003	32
243674	324	9/1/2024	11:39	34.23428	-76.40304	32
243675	324	9/1/2024	11:42	34.23107	-76.40455	34
243676	324	9/1/2024	11:47	34.23568	-76.40721	32
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243678	324	9/1/2024	15:40	34.30514	-76.57849	29
243679	324	9/1/2024	15:43	34.30212	-76.58112	29
243680	324	9/1/2024	15:48	34.29711	-76.58436	27
243681	324	9/1/2024	15:57	34.28756	-76.57720	27
243682	324	9/1/2024	16:08	34.27923	-76.58611	30
243683	324	9/1/2024	16:15	34.27756	-76.58731	30
243684	298	9/1/2024	16:19	34.28082	-76.59038	31
243685	324	9/1/2024	18:46	34.26012	-76.60983	30
243686	324	9/1/2024	18:48	34.25900	-76.60701	30
243687	324	9/1/2024	18:52	34.25629	-76.60198	32
243688	324	9/1/2024	18:56	34.25196	-76.59752	31
243689	324	9/1/2024	18:59	34.24806	-76.59515	30
243690	324	9/1/2024	19:09	34.24242	-76.59413	31
243691	298	9/1/2024	19:15	34.24561	-76.59687	33

243692	324	9/2/2024	11:24	33.40266	-77.72274	30
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243694	324	9/2/2024	13:16	33.40134	-77.72863	30
243695	324	9/2/2024	13:23	33.39365	-77.72698	29
243696	324	9/2/2024	13:26	33.39640	-77.73114	29
243697	324	9/2/2024	13:31	33.39536	-77.73793	29
243698	324	9/2/2024	13:37	33.40503	-77.74012	30
243699	298	9/2/2024	13:48	33.41080	-77.73696	30
243700	324	9/2/2024	16:50	33.40218	-77.80083	30
243701	324	9/2/2024	16:56	33.40502	-77.79099	29
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243703	324	9/2/2024	17:15	33.39986	-77.78480	30
243704	324	9/2/2024	17:24	33.39425	-77.78265	30
243705	324	9/2/2024	17:33	33.38935	-77.79889	30
243706	298	9/2/2024	17:41	33.38804	-77.80404	31
243707	324	9/2/2024	19:31	33.39599	-77.81113	31
243708	324	9/2/2024	19:41	33.39186	-77.82683	31
243709	324	9/2/2024	19:45	33.39767	-77.82498	30
243710	324	9/2/2024	19:55	33.39651	-77.83995	32
243711	324	9/2/2024	20:00	33.40197	-77.83698	31
243712	324	9/2/2024	20:08	33.40185	-77.84555	31
243713	298	9/2/2024	20:14	33.40084	-77.84824	31
243714	324	9/5/2024	15:47	33.51892	-77.87884	27
243715	324	9/5/2024	15:54	33.51213	-77.87370	27
243716	324	9/5/2024	16:05	33.51347	-77.86810	27
243717	324	9/5/2024	16:14	33.50558	-77.88061	28
243718	324	9/5/2024	16:23	33.50575	-77.87467	28
243719	324	9/5/2024	16:29	33.50494	-77.86500	28
243720	298	9/5/2024	16:38	33.50607	-77.85672	27
243721	324	9/5/2024	18:46	33.49725	-77.86994	27
243722	324	9/5/2024	18:51	33.49877	-77.86064	28
243723	324	9/5/2024	18:56	33.49726	-77.85414	28
243724	324	9/5/2024	19:02	33.50225	-77.85754	27
243725	324	9/5/2024	19:06	33.50703	-77.86124	26
243726	324	9/5/2024	19:13	33.50849	-77.85392	26
243727	298	9/5/2024	19:19	33.50900	-77.84917	26
243728	324	9/5/2024	21:04	33.47864	-77.87793	29
243729	324	9/5/2024	21:07	33.48178	-77.87513	28
243730	324	9/5/2024	21:13	33.48904	-77.86756	28
243731	298	9/5/2024	21:23	33.49058	-77.86400	27

243732	324	9/6/2024	11:14	33.42390	-77.84906	31
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243734	324	9/6/2024	11:27	33.43628	-77.84024	30
243735	324	9/6/2024	11:32	33.43945	-77.84245	30
243736	324	9/6/2024	11:37	33.44532	-77.84012	30
243737	324	9/6/2024	11:45	33.44412	-77.85270	30
243738	298	9/6/2024	11:53	33.44331	-77.85830	30
243739	324	9/6/2024	13:29	33.45735	-77.85167	30
243740	324	9/6/2024	13:37	33.45995	-77.83838	30
243741	324	9/6/2024	13:44	33.46340	-77.84912	29
243742	324	9/6/2024	13:53	33.46853	-77.85711	30
243743	324	9/6/2024	14:00	33.46937	-77.84561	30
243744	324	9/6/2024	14:05	33.47601	-77.84714	29
243745	298	9/6/2024	14:15	33.48031	-77.85117	29

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