

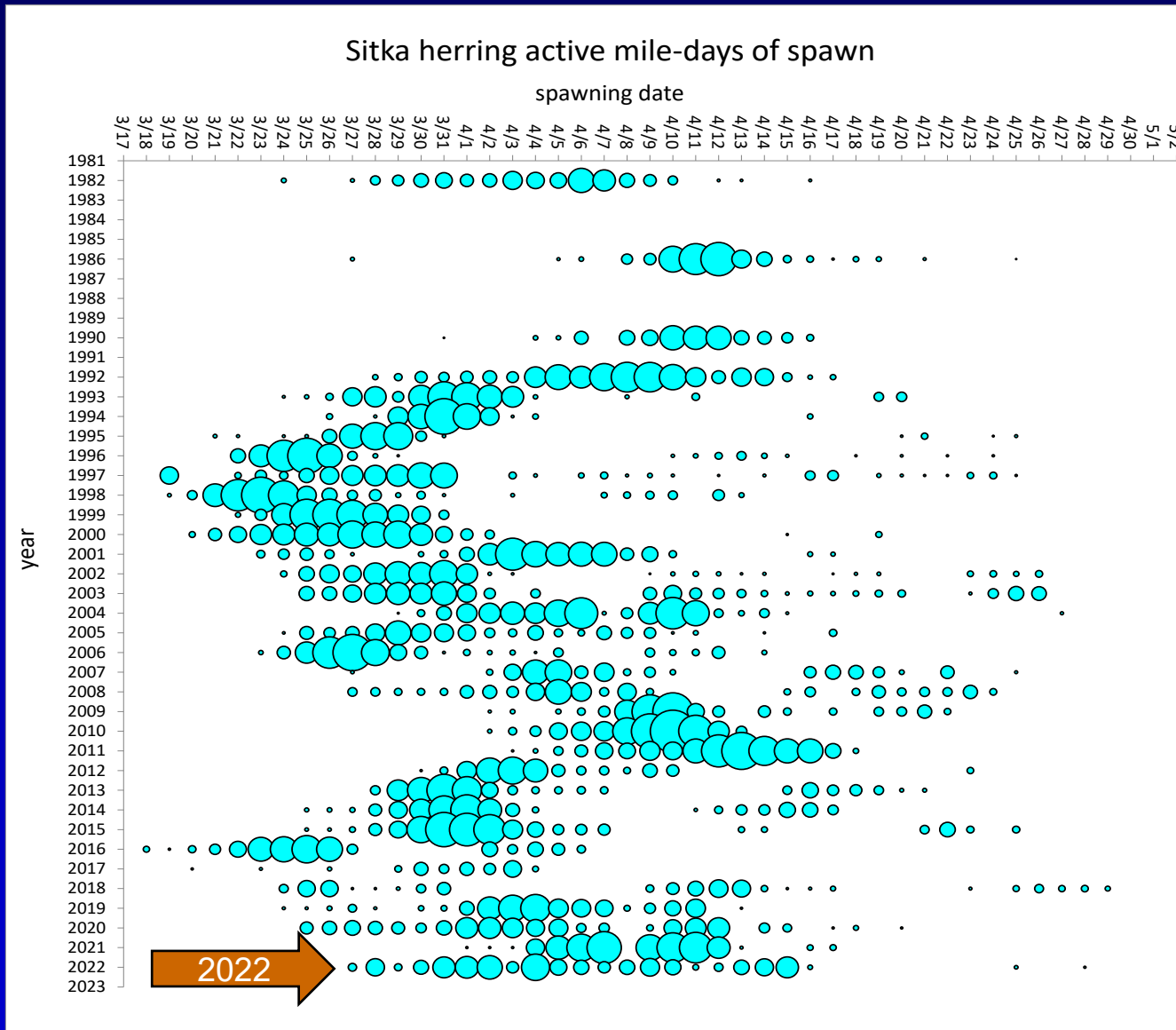
2022 Herring Stock Assessment Surveys in Sitka Sound



Kyle Hebert
Alaska Department of
Fish and Game

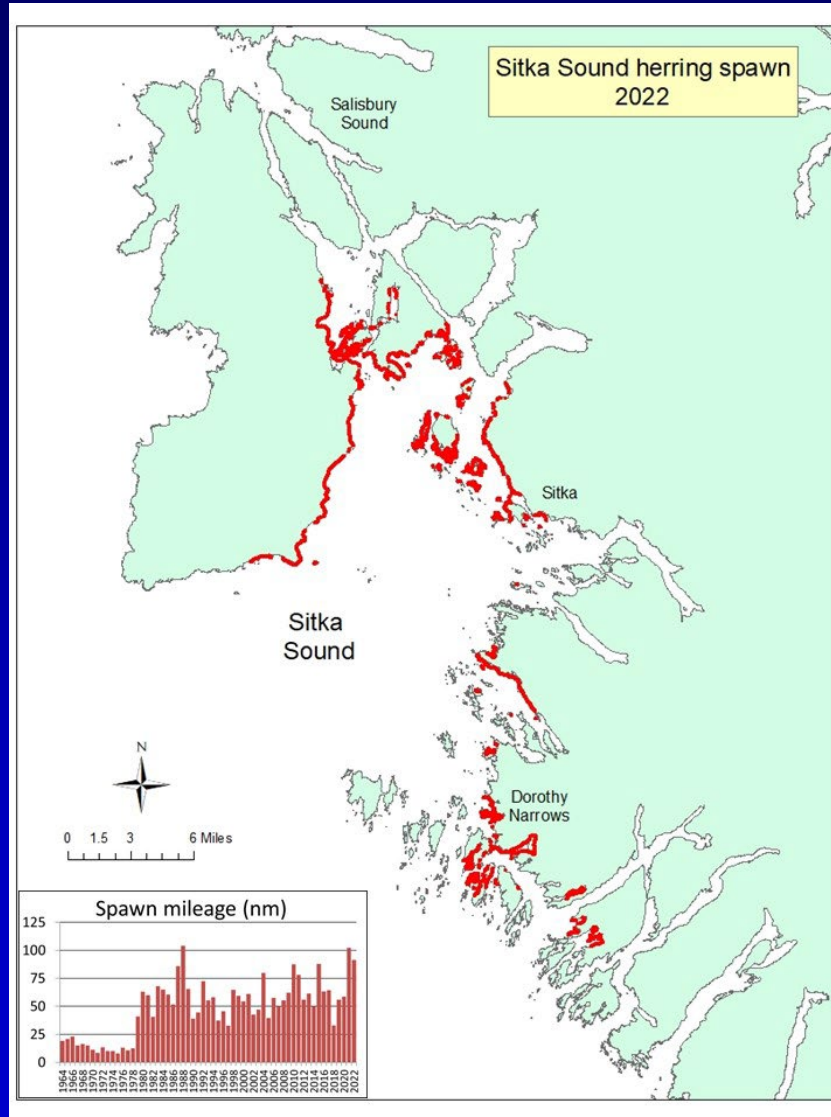
March 21, 2023

Spawn Timing



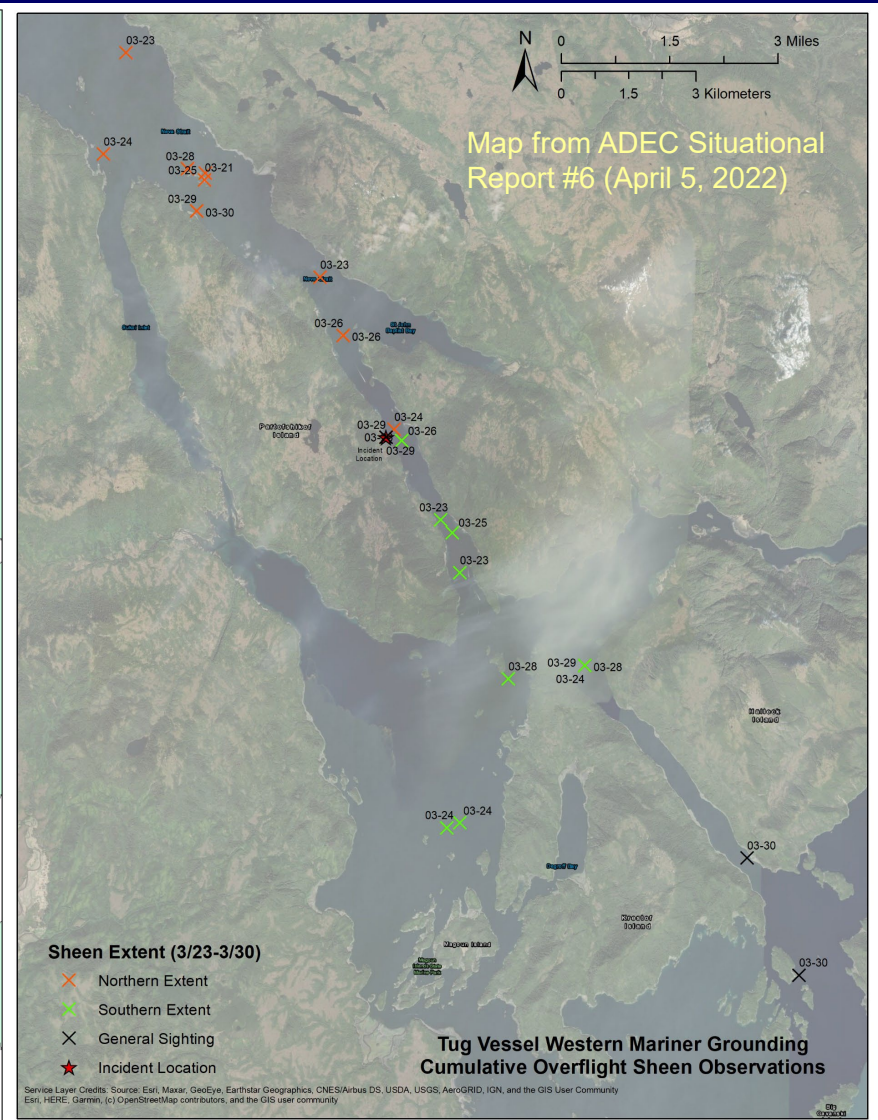
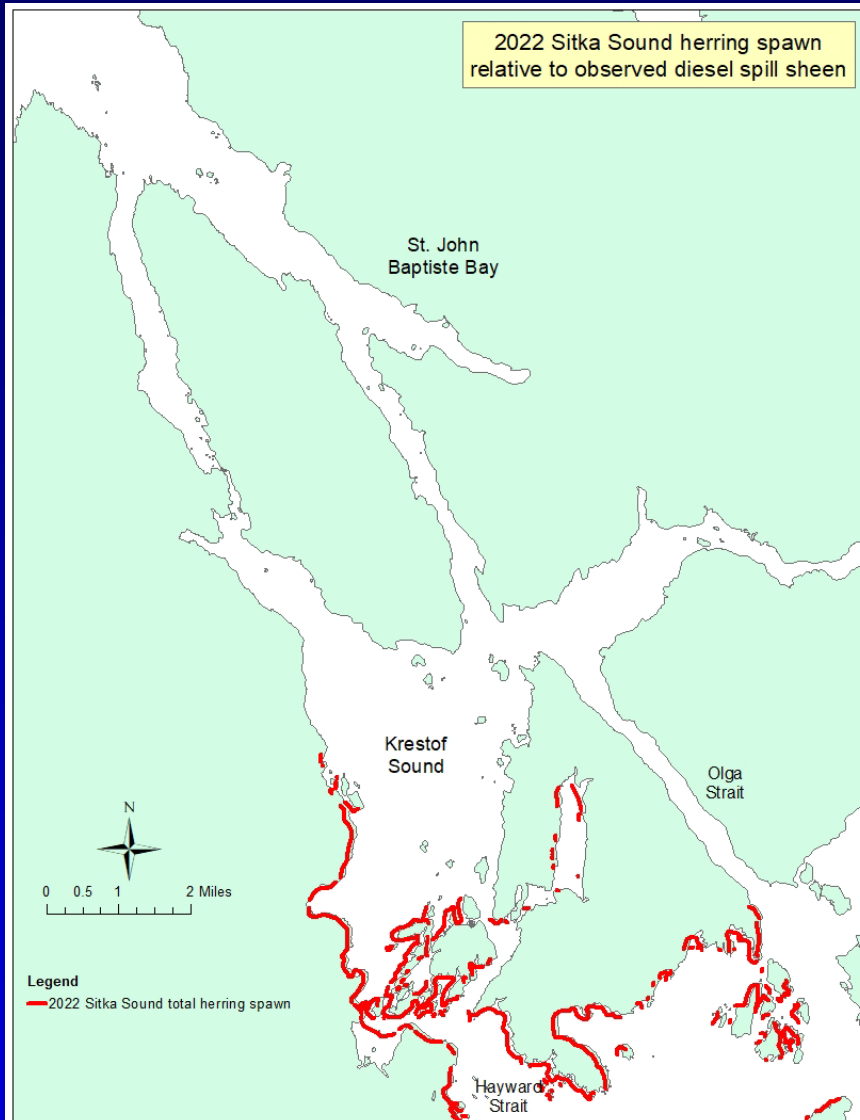
Largest bubble in 2022 = 19 nm; largest bubble all years = 49 nm

2022 Sitka Sound Herring Total Spawn – 91.5 nm (5th highest on record)



(mean 1980 - 2021 is 60.1 nm)

2022 Sitka Sound Herring Spawn Relative to Observed Diesel Spill Sheen

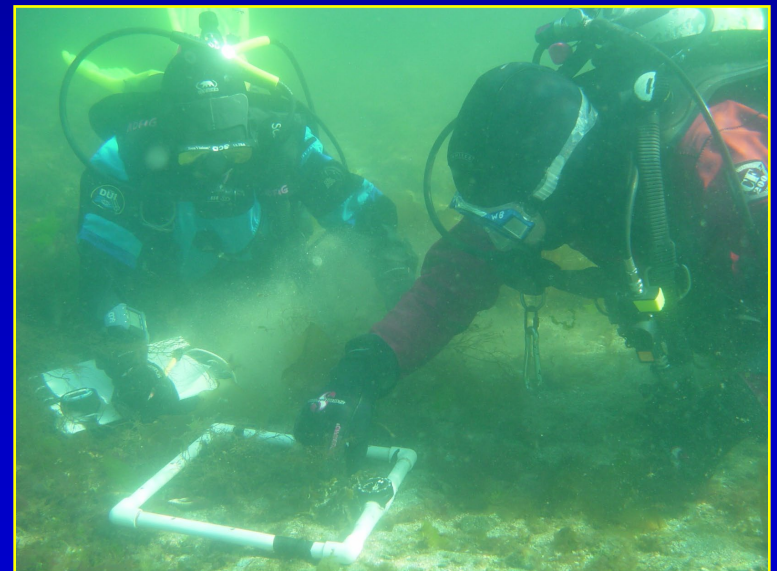


Egg Deposition Dive Survey



1st - Aerial survey
to map length of
spawn zone

2nd – Dive survey
to estimating width
of spawn zone and
egg density

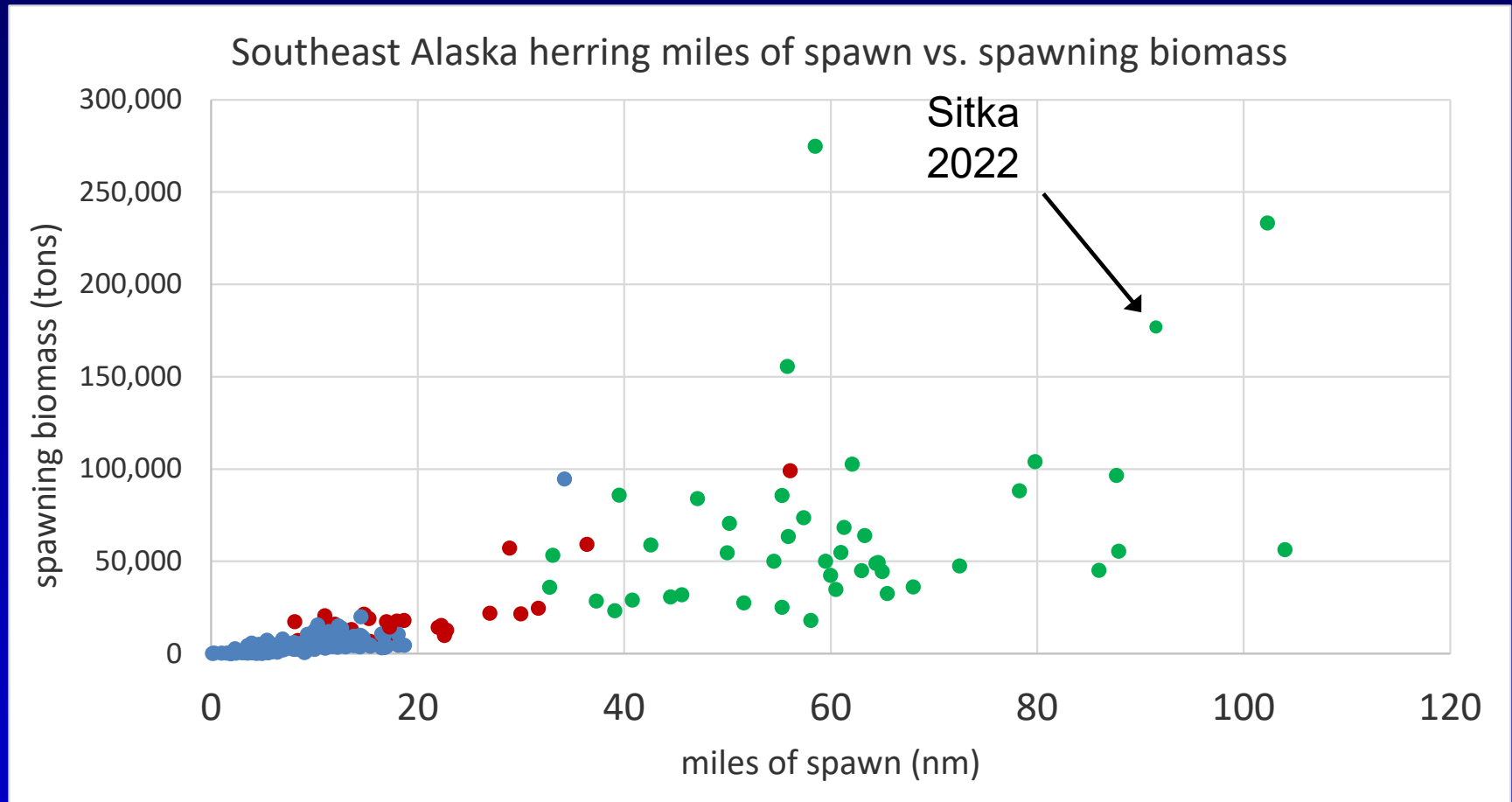


Dive Survey



Goal –
unbiased estimate of
total herring eggs for
Sitka Sound stock

Spawn Miles vs Biomass (Why dive surveys are so important)

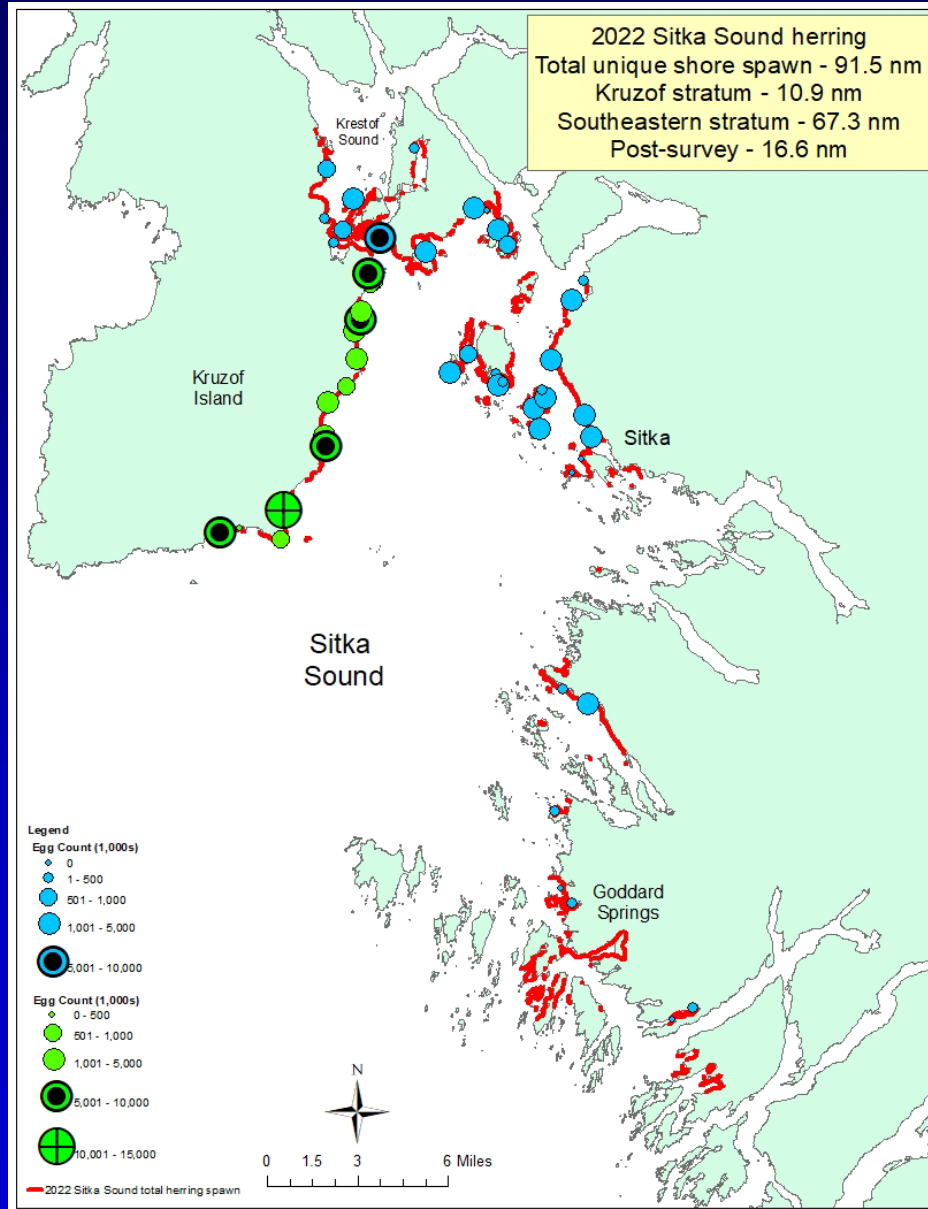


Green - Sitka (ASA modeled)

Red - Craig (ASA modeled; except 2022 is biomass accounting)

Blue - All other SEAK stocks (spawn deposition estimate)

2022 Relative Egg Abundance



Survey
split into
two strata:

Kruzof

15 transects
(green)

Southeastern

35 transects
(blue)

Stratifying allows:

- 1) Spreading transects throughout
- 2) Lowering overall variance by grouping similar spawning habitats

Sitka Sound herring spawn metrics (last 10 years)

Year	spawn mileage (nm)	mean transect length (m)	spawn area (m ²)	egg density (eggs/m ²)	total egg deposition (trillions)
2013	61.3	76.0	8,629,698	852,680	8.330
2014	50.0	62.5	5,784,311	616,221	3.960
2015	87.9	43.9	7,142,409	578,850	4.594
2016	63.3	80.4	9,428,167	592,993	5.979
2017	62.3	48.7	5,810,652	508,433	3.618
2018	33.1	94.4	5,540,258	692,405	4.262
2019	55.8	90.4	9,339,573	789,657	8.195
2020	58.5	145.5	12,984,592	1,598,671	23.065
2021	102.3	91.6	17,221,563	1,426,809	27.302
2022	91.5	97.4	16,125,602	813,231	14.571
Average	66.6	83.1	9,800,682	846,995	10.388

Aerial survey

Dive survey

Newest data point for ASA model

Age / Size Data Collection



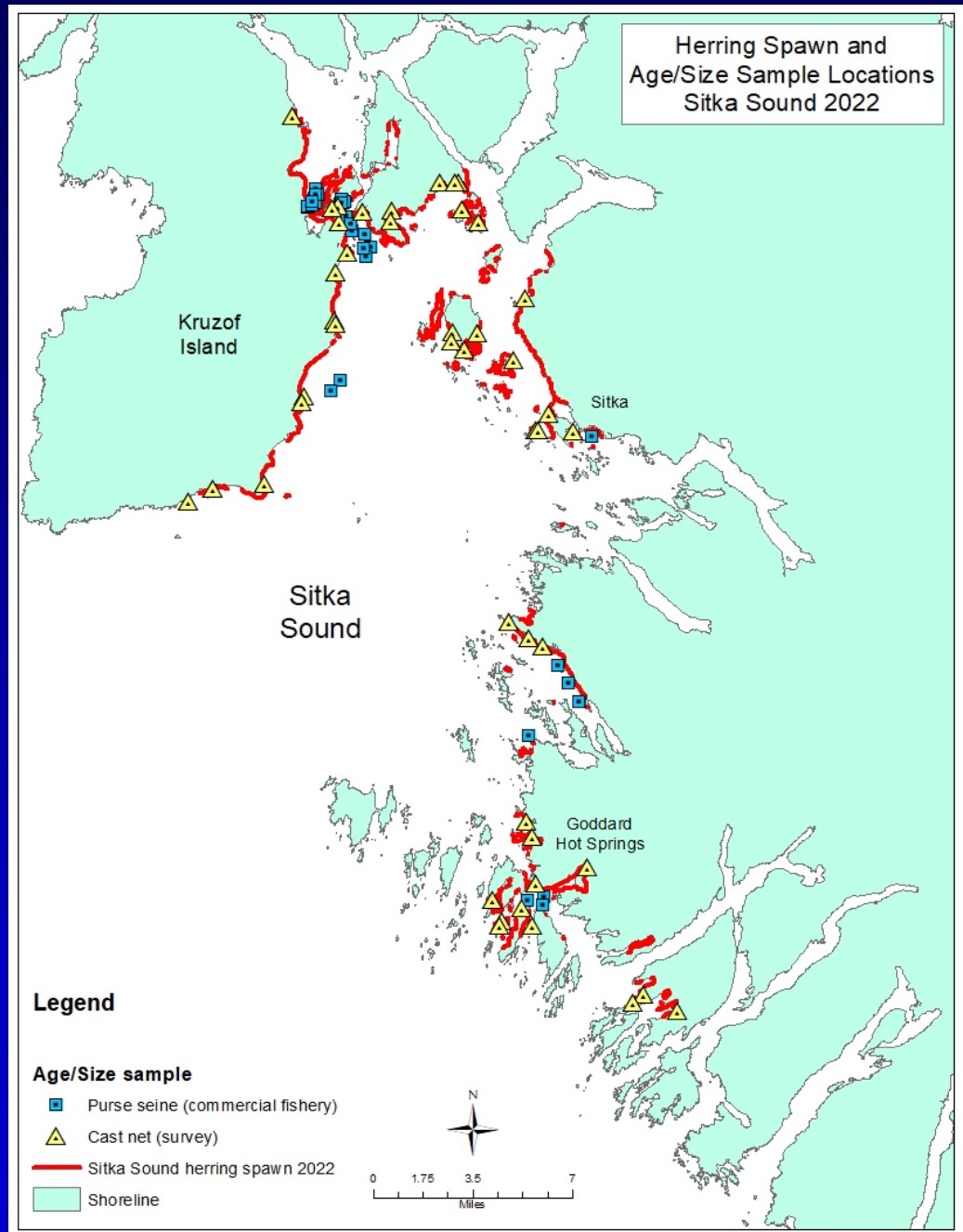
Spawning population
(cast net)



Commercial Catch
(from vessels)

Age/size sample locations in Sitka Sound 2022

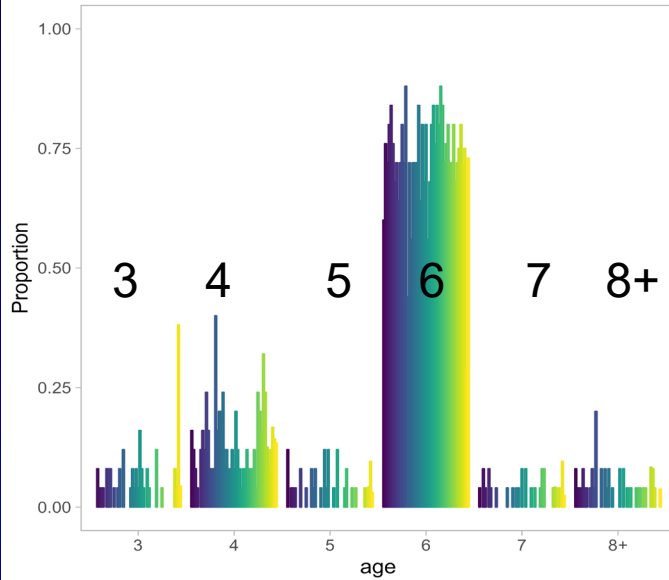
Commercial – blue
Survey - yellow



2022 Observed Age Composition (individual samples)

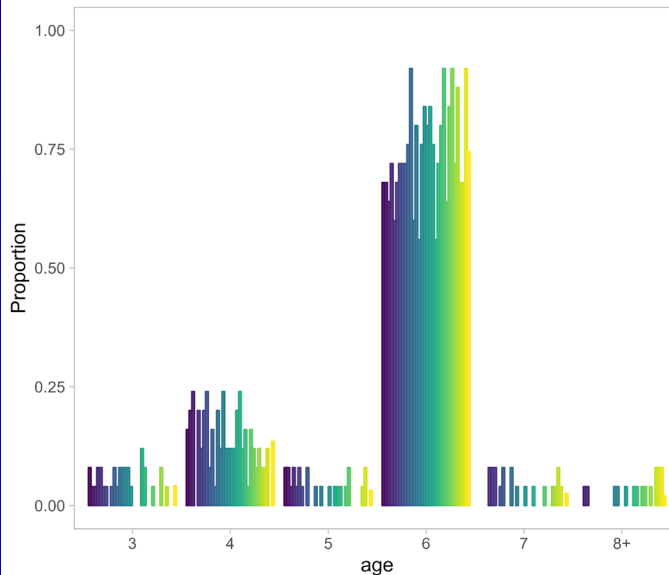
Cast Net
47 samples

Sitka Sound (Spring 2022) age composition by number (Cast Net)



- Survey Cast Net Skiff 2022-03-27 Inner Point North 40, n=25
- Survey Cast Net Skiff 2022-03-28 Freds Creek 44, n=25
- Survey Cast Net Skiff 2022-03-28 Inner Point North 43, n=25
- Survey Cast Net Skiff 2022-03-28 Lava Island 41, n=25
- Survey Cast Net Skiff 2022-03-28 Shoals Point E 42, n=25
- Survey Cast Net Skiff 2022-03-28 Shoals Point West 45, n=25
- Survey Cast Net Skiff 2022-03-29 Middle Island Southwest 46, n=25
- Survey Cast Net Skiff 2022-03-31 Brend's Beach 51, n=25
- Survey Cast Net Skiff 2022-03-31 Brown Point 47, n=25
- Survey Cast Net Skiff 2022-03-31 Freds Creek 53, n=25
- Survey Cast Net Skiff 2022-03-31 Middle Island South 49, n=25
- Survey Cast Net Skiff 2022-03-31 Middle Island southwest 52, n=25
- Survey Cast Net Skiff 2022-03-31 Mountain Point 50, n=25
- Survey Cast Net Skiff 2022-03-31 Rob Point 48, n=25
- Survey Cast Net Skiff 2022-04-01 Eastern Bay 55, n=25
- Survey Cast Net Skiff 2022-04-01 Magou Islands 57, n=25
- Survey Cast Net Skiff 2022-04-01 Middle Island Southeast 54, n=25
- Survey Cast Net Skiff 2022-04-01 Promisla Bay 56, n=25
- Survey Cast Net Skiff 2022-04-02 Eastern Bay 59, n=25
- Survey Cast Net Skiff 2022-04-02 Eastern Bay North 58, n=25
- Survey Cast Net Skiff 2022-04-02 Magou Islands 61, n=25
- Survey Cast Net Skiff 2022-04-02 Promisla Bay 60, n=25
- Survey Cast Net Skiff 2022-04-04 Finn Island 62, n=25
- Survey Cast Net Skiff 2022-04-04 Harbor Point 63, n=25
- Survey Cast Net Skiff 2022-04-05 Eastern Bay 66, n=25
- Survey Cast Net Skiff 2022-04-05 John Brown's Beach 64, n=25
- Survey Cast Net Skiff 2022-04-05 Signaka Islands 67, n=25
- Survey Cast Net Skiff 2022-04-05 Whiting Harbor 65, n=25
- Survey Cast Net Skiff 2022-04-07 Sealing Cove 68, n=25
- Survey Cast Net Skiff 2022-04-07 Whiting Harbor 69, n=25
- Survey Cast Net Skiff 2022-04-08 Hot Springs Bay 73, n=25
- Survey Cast Net Skiff 2022-04-08 Povorotni Point 72, n=25
- Survey Cast Net Skiff 2022-04-08 Redoubt Bay 70, n=25
- Survey Cast Net Skiff 2022-04-08 Redoubt Bay 71, n=25
- Survey Cast Net Skiff 2022-04-10 Big Bay 75, n=25
- Survey Cast Net Skiff 2022-04-10 Goddard Hot Springs 74, n=25
- Survey Cast Net Skiff 2022-04-13 Jackknife Islands 77, n=25
- Survey Cast Net Skiff 2022-04-13 Dorothy Narrows 80, n=25
- Survey Cast Net Skiff 2022-04-14 Golf Island 79, n=25
- Survey Cast Net Skiff 2022-04-14 Jackknife Islands 82, n=25
- Survey Cast Net Skiff 2022-04-14 Kirbas Island 81, n=24
- Survey Cast Net Skiff 2022-04-14 Lodge Island 78, n=25
- Survey Cast Net Skiff 2022-04-15 First Narrows 83, n=25
- Survey Cast Net Skiff 2022-04-15 Gornoi Island Northwest 84, n=24
- Survey Cast Net Skiff 2022-04-25 Krestof Sound West 85, n=21
- Survey, n=1144

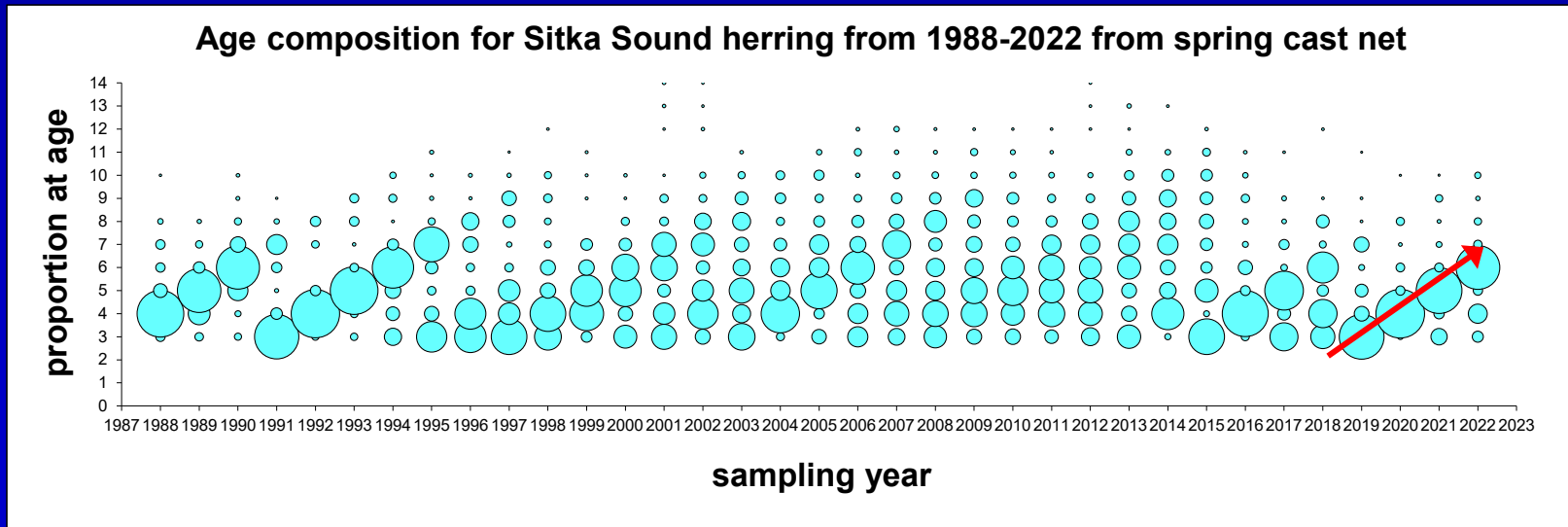
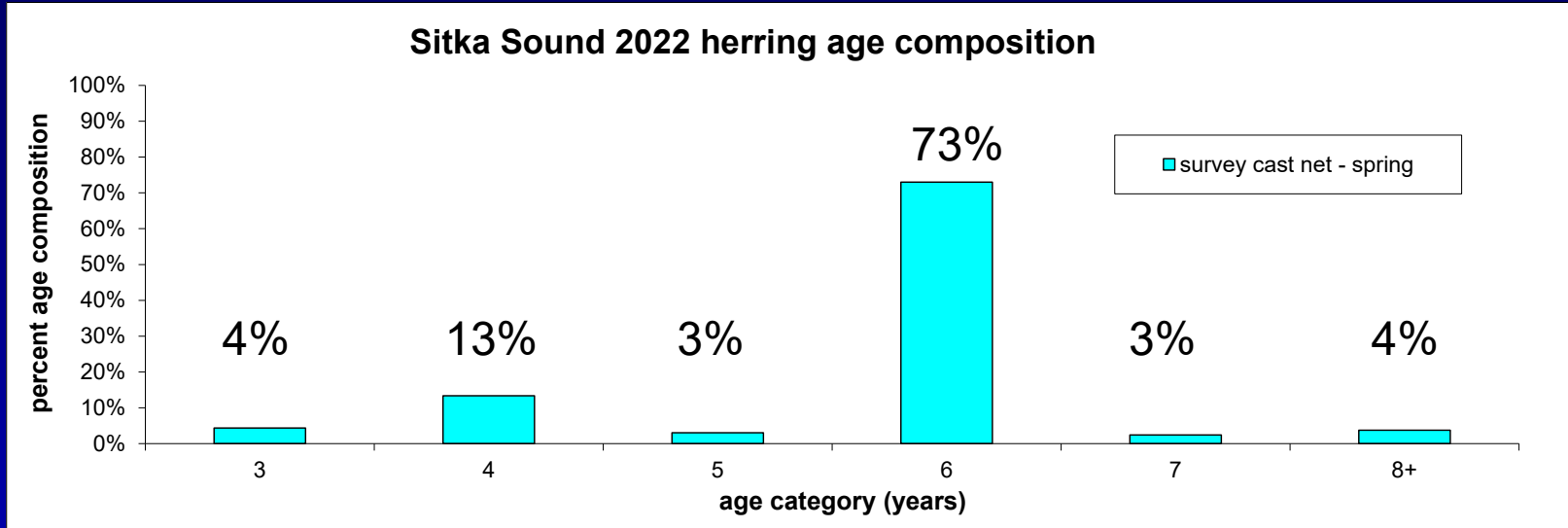
Sitka Sound (Spring 2022) age composition by number (Purse Seine)



- Commercial Fishery Purse Seine ALINCHAK 2022-03-26 Mountain Point South 9, n=25
- Commercial Fishery Purse Seine NICHOLAS MICHAEL 2022-03-26 Freds Creek 10, n=25
- Commercial Fishery Purse Seine 2022-03-27 Hayward Strait 11, n=25
- Commercial Fishery Purse Seine 7 Hayward Strait 12, n=25
- Commercial Fishery Purse Seine 2022-03-27 Magou Islands 14, n=25
- Commercial Fishery Purse Seine N 2022-03-27 Hayward Strait 13, n=25
- Commercial Fishery Purse Seine 2022-03-28 Magou Islands 18, n=25
- Commercial Fishery Purse Seine 18 Hayward Strait 16, n=25
- Commercial Fishery Purse Seine 2-03-28 Hayward Strait 15, n=25
- Commercial Fishery Purse Seine 1-28 Magou Islands 17, n=25
- Commercial Fishery Purse Seine 19 Hayward Strait 20, n=25
- Commercial Fishery Purse Seine N 2022-03-29 Hayward Strait 19, n=25
- Commercial Fishery Purse Seine 10 Mud Bay 23, n=25
- Commercial Fishery Purse Seine 2022-03-30 Magou Islands South 21, n=25
- Commercial Fishery Purse Seine 2022-03-30 Hayward Strait 22, n=25
- Commercial Fishery Purse Seine WIND WALKER 2022-03-30 Krestof Sound 24, n=25
- Commercial Fishery Purse Seine ALINCHAK 2022-03-31 Port Krestof 25, n=25
- Commercial Fishery Purse Seine FV LEADING LADY 2022-03-31 Magou Islands South 27, n=25
- Commercial Fishery Purse Seine S MICHAEL 2022-03-31 Mud Bay North 28, n=25
- Commercial Fishery Purse Seine 2022-04-01 Krestof Sound South 29, n=25
- Commercial Fishery Purse Seine 2022-04-01 Mud Bay 28, n=25
- Commercial Fishery Purse Seine NG LADY 2022-04-02 Port Krestof 30, n=25
- Commercial Fishery Purse Seine 2022-04-02 Port Krestof 31, n=25
- Commercial Fishery Purse Seine COLE 2022-04-04 Redoubt Bay 32, n=25
- Commercial Fishery Purse Seine NG LADY 2022-04-04 Crescent Bay 34, n=25
- Commercial Fishery Purse Seine RIDE 2022-04-04 Redoubt Bay 33, n=25
- Commercial Fishery Purse Seine I 2022-04-05 Redoubt Bay 35, n=25
- Commercial Fishery Purse Seine E 2022-04-05 Kanga Bay South 36, n=25
- Commercial Fishery Purse Seine 2022-04-08 Windy Passage 37, n=25
- Commercial Fishery Purse Seine S MICHAEL 2022-04-08 Windy Passage 38, n=25
- Commercial Fishery Purse Seine EMILY NICOLE 2022-04-10 Windy Passage 39, n=25
- Commercial Fishery, n=775

Purse Seine
31 samples

Overall Age composition (observed, spawning population)



Observed size at age / Condition

purse seine / fishery

