

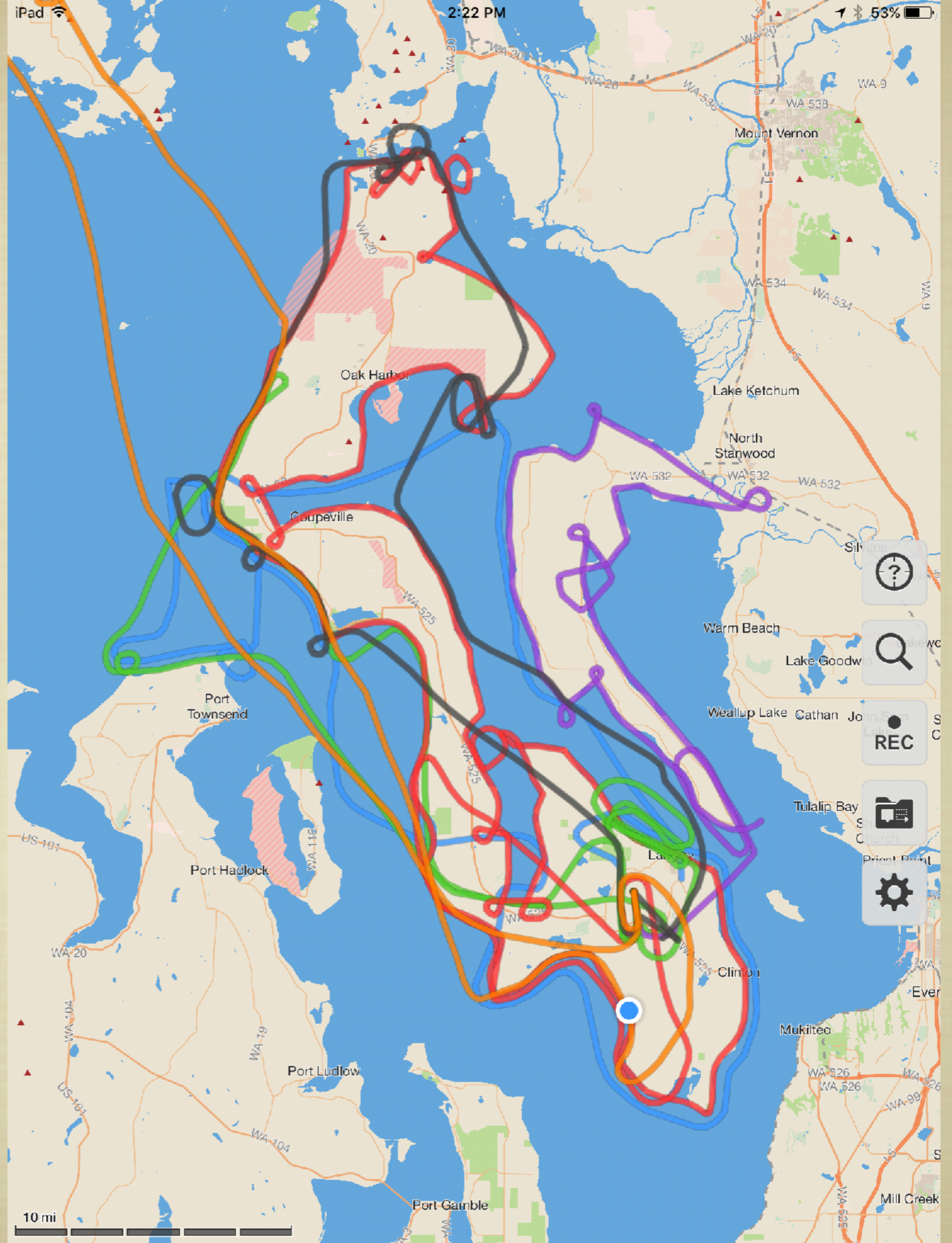
2016 SITES



Source: Esri, DigitalGlobe, GeoEye, Earthstar (Imaging), IGN, IGP, swiss

2016 AERIAL FLIGHT LOG ISLAND COUNTY

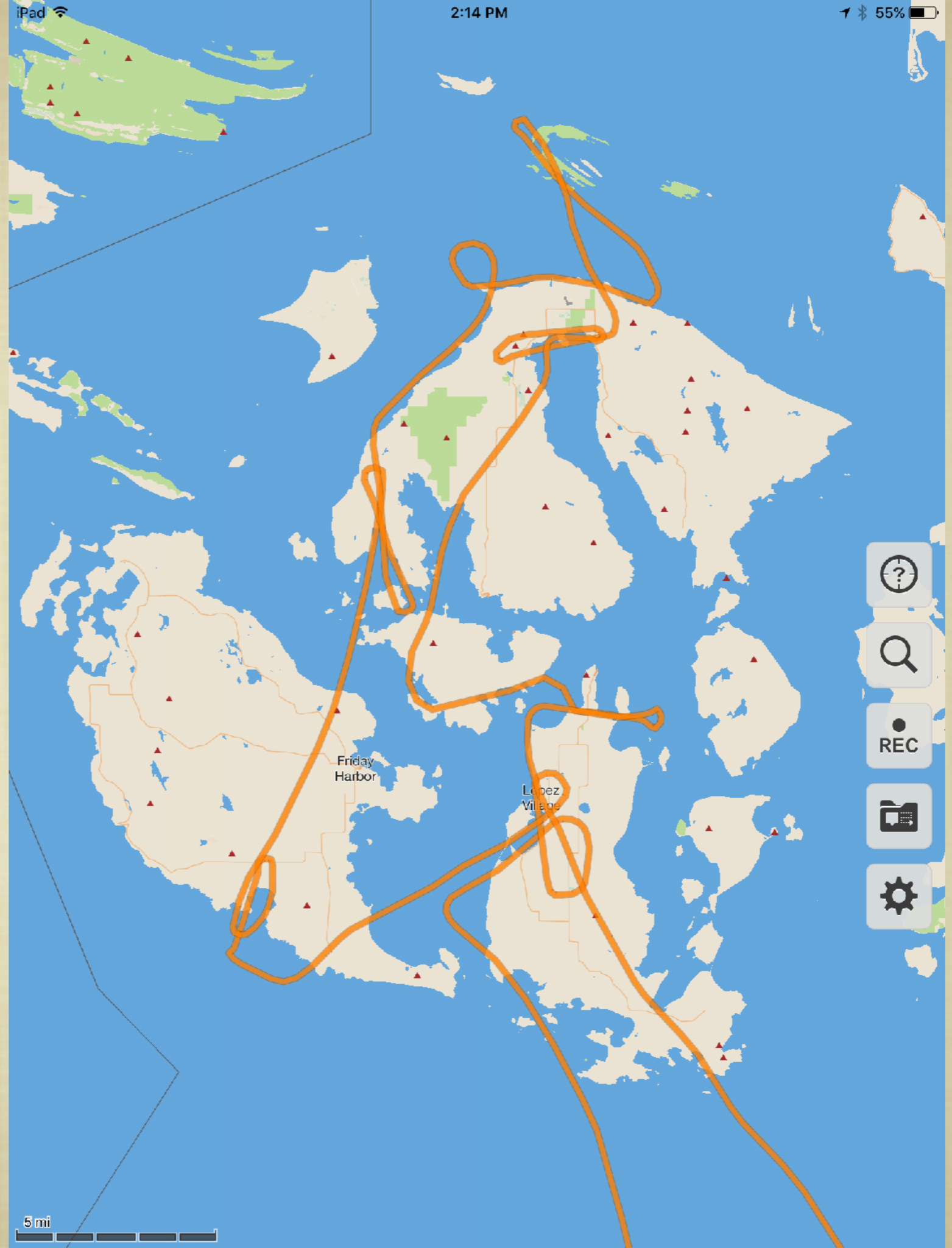
5 FLIGHTS
(EELGRASS,
KELP, LIDAR)

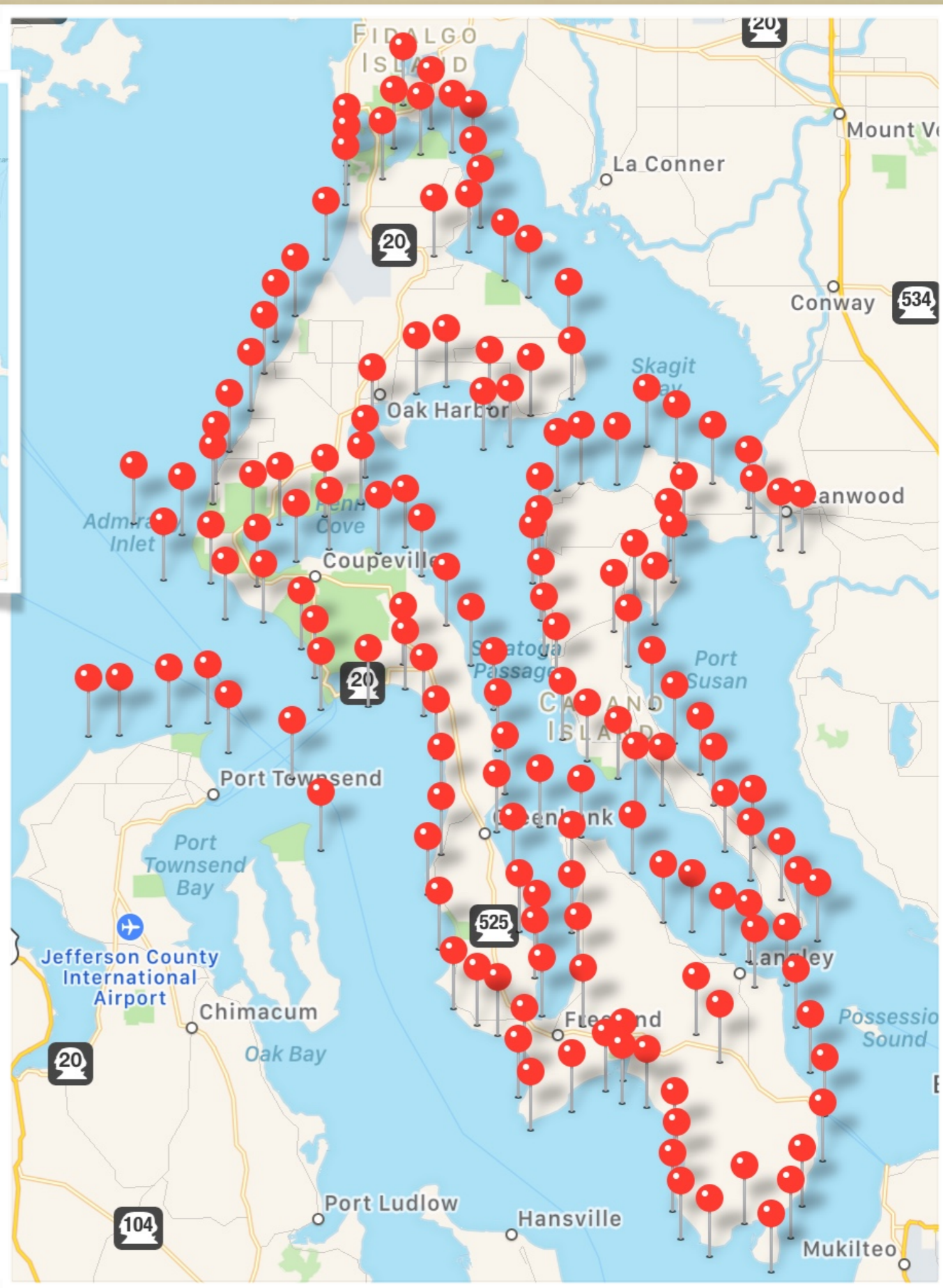
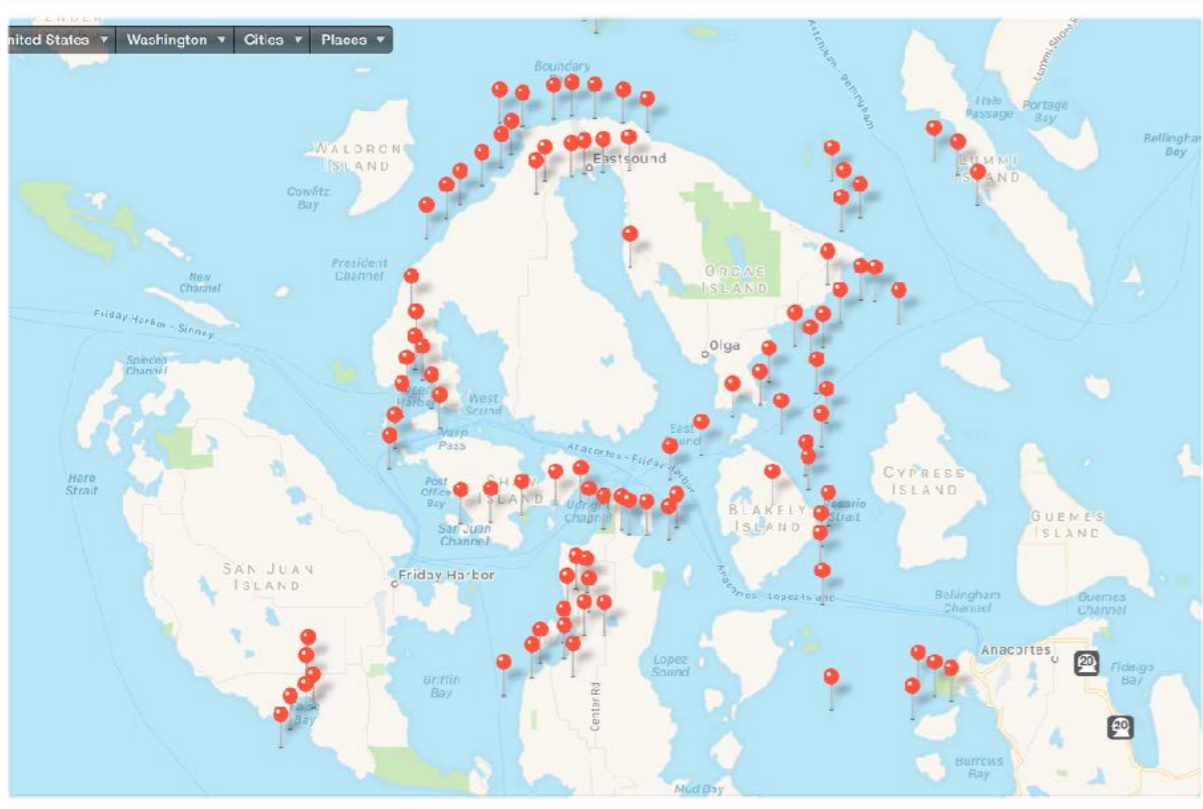


2016 AERIAL FLIGHT LOG

SJA

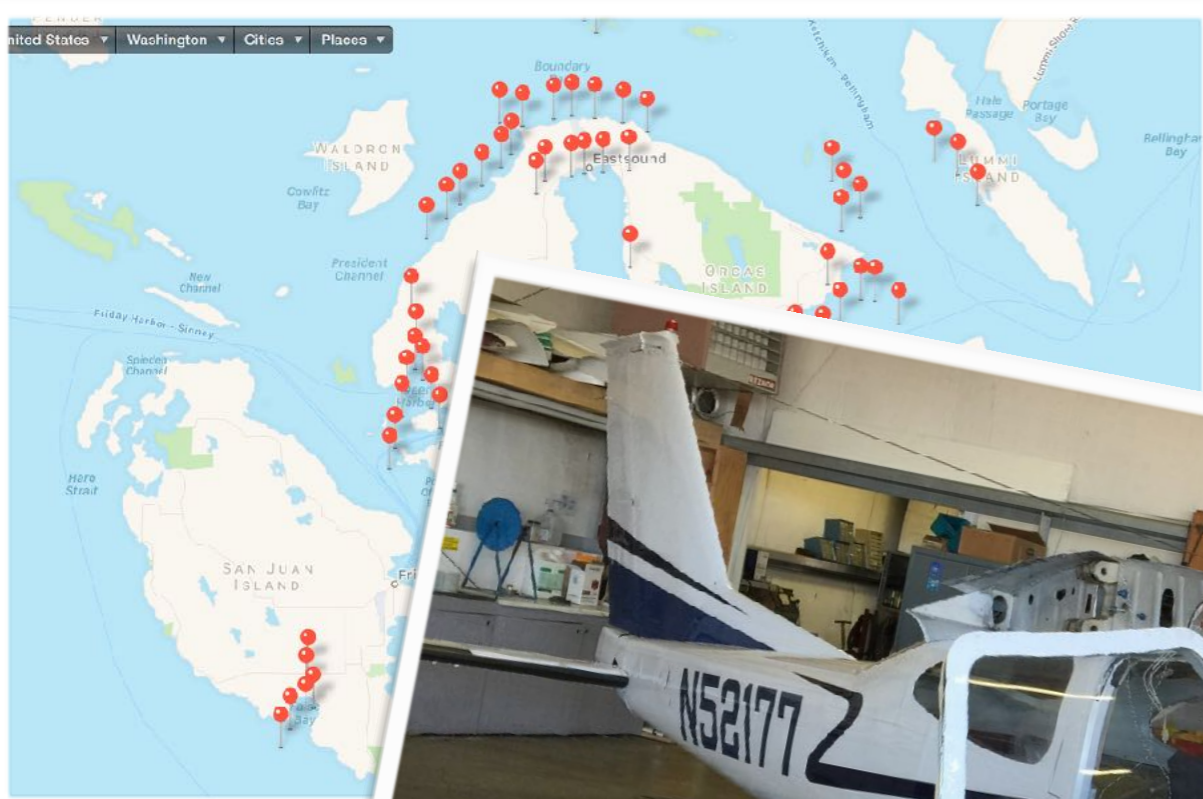
1 FLIGHT





AERIALS FOR 2016

2906 PHOTOS



AERIALS
2906 PHOTOS

RESULTS FOR 2016

ZOSTRA MARINA BED AREA MEASUREMENTS

2009-2016

Site Code	Site Name	Date	N	Zm Area (ha)	95% CI	Site Code	Site Name	Date	N	Zm Area (ha)	95% CI
cps0761	Dave Macke County Park, Maxwelton	23-Jun-11	12	4.0	± 0.8	swh0923	N of Dines Pt North, Whidbey	9-Aug-12	10	3.6	± 0.8
cps0761	Dave Macke County Park, Maxwelton	9-Aug-16	12	5.7	± 0.7	swh0923	N of Dines Pt North, Whidbey*	8-Jul-15	11	2.6	± 0.7
cps0766-0772	Useless Bay: Deer Lagoon to Wahl Rd	8-Aug-16	2	Recon Only		swh0927	Honeymoon Bay, Whidbey*	17-Aug-09	14	10.9	± 1.0
cps0776	Mutiny Bay Boat Ramp, SW Whidbey*	3-Aug-14	11	7.1	± 1.2	swh0927	Honeymoon Bay, Whidbey	7-Jul-12	12	10.2	± 1.1
flats29	Cornet Bay, Whidbey*	27-Aug-09	7	20.6	± 5.3	swh0927	Honeymoon Bay, Whidbey*	6-Jul-15	12	10.9	± 1.2
flats29	Cornet Bay, Whidbey	3-Aug-10	10	16.2	± 3.8	swh0930	S Harbor Hills Dr, Whidbey*	17-Jun-09	12	3.8	± 0.9
flats29	Cornet Bay, Whidbey	9-Jun-11	8	22.5	± 4.4	swh0930	S Harbor Hills Dr, Whidbey	26-Jun-12	11	3.8	± 0.8
flats29	Cornet Bay, Whidbey	11-Jul-12	9	21.7	± 3.8	swh0932	Freeland Park, Whidbey*	19-Jun-09	10	13.1	± 2.3
flats29	Cornet Bay, Whidbey	15-Jun-13	8	21.0	± 3.1	swh0932	Freeland Park, Whidbey	31-Jul-10	12	15.0	± 1.3
flats29	Cornet Bay, Whidbey*	18-Jun-14	11	19.3	± 3.6	swh0932	Freeland Park, Whidbey	7-Jun-11	11	15.0	± 1.0
flats29	Cornet Bay, Whidbey*	22-Jun-15	12	18.2	± 3.2	swh0932	Freeland Park, Whidbey	9-Jun-12	10	13.2	± 1.6
flats29	Cornet Bay, Whidbey*	27-Jun-16	11	17.1	± 3.4	swh0932	Freeland Park, Whidbey	31-May-13	13	14.5	± 1.7
swh0851	Ala Spit Beach Access, Whidbey	19-Jun-14	1	Recon Only		swh0932	Freeland Park, Whidbey*	3-Jul-14	11	14.9	± 1.5
swh0875	Midway Blvd, Oak Harbor	29-Jun-13	12	6.0	± 2.4	swh0932	Freeland Park, Whidbey*	10-Jun-15	13	14.6	± 1.7
swh0885	Blower's Bluff North, Whidbey	28-Jun-13	10	18.0	± 1.7	swh0932	Freeland Park, Whidbey*	28-Jun-16	14	14.9	± 1.6
swh0885	Blower's Bluff North, Whidbey*	15-Aug-14	9	20.9	± 3.9	swh0934	NW of Lone Lake, Whidbey*	18-Jun-09	18	4.9	± 0.5
swh0888	E of Monroe Landing	17-Jul-10	12	8.0	± 1.6	swh0934	NW of Lone Lake, Whidbey	6-Aug-12	9	5.5	± 1.4
swh0888	E of Monroe Landing	6-Jul-11	10	5.9	± 1.8	swh0937	East of Honeymoon Bay, Whidbey*	12-Aug-09	10	9.0	± 1.0
swh0888	E of Monroe Landing	21-Aug-12	10	5.4	± 2.2	swh0937	East of Honeymoon Bay, Whidbey	7-Aug-12	12	9.1	± 0.6
swh0888	E of Monroe Landing	27-Jul-13	13	5.9	± 1.6	swh0940	East of Dine's Point, Whidbey*	4-Jun-09	10	6.8	± 1.5
swh0888	E of Monroe Landing*	16-Jul-14	10	5.6	± 2.0	swh0940	East of Dine's Point, Whidbey	10-Aug-12	11	8.3	± 1.1
swh0888	E of Monroe Landing*	23-Jun-15	13	5.5	± 1.6	swh0940	East of Dine's Point, Whidbey*	7-Jul-15	12	7.7	± 0.8
swh0888	E of Monroe Landing*	9-Jul-16	12	5.1	± 1.5	swh0943	Baby Island, SE Whidbey*	19-Aug-09	13	17.7	± 2.0
swh0890	W of Monroe Landing	16-Jul-10	12	0.0	± 0.0	swh0943	Baby Island, SE Whidbey	11-Aug-12	13	18.0	± 1.3
swh0892	San de Fuca, Whidbey	30-Jul-10	9	0.0	± 0.1	swh0943	Baby Island, SE Whidbey*	9-Jul-15	12	18.7	± 1.0
swh0893	Kennedy's Lagoon, Whidbey	29-Jul-13	12	0.0	± 0.0	swh0954	N of Brooks Hill Rd, SE Whidbey*	31-Jul-14	10	20.6	± 1.8
swh0894	Mueller Park, Whidbey	30-Jul-10	12	0.0	± 0.0	swh0955	West Langley, SE Whidbey*	1-Aug-14	11	14.7	± 1.5
swh0896	Carriage Heights Ln	19-Jul-10	0	0.0	± 0.0	swh0957	Port of South Whidbey	20-Jun-11	10	9.1	± 1.5
swh0898	W of Lovejoy Point, Coupeville	2-Jul-10	12	1.0	± 0.6	swh0957	Port of South Whidbey*	2-Aug-14	12	11.0	± 1.4
swh0898	W of Lovejoy Point, Coupeville	13-Jul-13	11	1.2	± 0.7	swh0957	Port of South Whidbey*	20-Jul-15	12	11.2	± 1.2
swh0898	W of Lovejoy Point, Coupeville	25-Jun-16	10	0.8	± 0.4	swh0963	S Summerhill Drive, SE Whidbey*	21-Jul-15	9	14.6	± 0.7
swh0899	Lovejoy Point, Coupeville*	28-Jul-13	10	1.3	± 0.7	swh0966	Clinton Ferry Terminal	21-Jun-11	11	7.5	± 1.2
swh0900	Mineral Spring, Coupeville*	26-Aug-09	14	1.4	± 1.0	swh0967	S of Clinton Ferry Terminal	22-Jun-11	13	2.7	± 1.0
swh0900	Mineral Spring, Coupeville	17-Jun-10	11	1.3	± 1.2	swh0971	South Glendale, SE Whidbey*	9-Jun-15	11	6.8	± 2.4
swh0900	Mineral Spring, Coupeville	10-Jun-11	14	0.9	± 0.9	swh0973	Possession, SE Whidbey	19-Jul-11	12	13.7	± 2.4
swh0900	Mineral Spring, Coupeville	23-Jul-12	10	1.5	± 1.5	swh1565	Cama Beach, Camano Island	8-Aug-12	12	3.6	± 1.0
swh0900	Mineral Spring, Coupeville	12-Jul-13	13	1.2	± 1.1	swh1567	Camano Island State Park	26-Jul-16	10	1.3	± 1.0
swh0900	Mineral Spring, Coupeville	24-Jun-16	11	1.0	± 1.2	swh1568	Lowell Point, Camano Island	26-Jul-16	7	0.1	± 0.2
swh0920	S of Pratt's Bluff South, Whidbey	25-Jul-16	13	5.4	± 1.1	swh1570	Elger Bay, South Camano	26-Jul-13	11	18.2	± 2.1
						swh1574	Camp Diana West, South Camano*	4-Aug-14	10	17.1	± 2.3

* Zm Area calculated by Eelgrass Team, not DNR

Site	Date	Track	N	Sum of GPS Speed Values				SP Area	Zm	Zm Area	±	95% CI
Comparison to DNR 2012 Results												
flats29	11-Jul-12	28	305	104.8	140.3	0	15.4	260.5	31.918	0.572	18.3	
		3	825	302.3	501.1	0	109.2	913.9	31.918	0.623	19.9	
		34	412	194.1	256	0	0	450.1	31.918	0.569	18.2	
		35	1248	386.3	409.9	0	154.8	1006	31.918	0.482	15.4	
		5	504	184.1	113.3	0	0	297.4	31.918	0.381	12.2	
		1	837	193.4	751.1	0	0	945.4	31.918	0.794	25.4	
		18	1756	313.3	828.3	0	0	1141.6	31.918	0.726	23.2	
		2	969	134	944.9	0	0	1078.9	31.918	0.876	28.0	
		32	1014	541.6	609.8	0	0	1152.4	31.918	0.529	16.9	
	Totals		7870.0	2353.9	4554.7	0.0	279.4	7246.2	31.918	0.654	20.9	± 3.3
								DNR	33.820	0.643	21.7	± 3.7
swh0888	21-Aug-12	10	293	253.3	45	0	0	298.3	14.151	0.151	2.1	
		11	409	241	166.3	0	0	407.3	14.151	0.408	5.8	
		12	384	88.2	280.2	0	0	368.4	14.151	0.761	10.8	
		13	280	72.1	221	0	0	293.1	14.151	0.754	10.7	
		14	395	197.6	184.9	0	0	382.5	14.151	0.483	6.8	
		16	294	126.2	156.8	0	0	283	14.151	0.554	7.8	
		26	258	217.8	36.3	0	0	254.1	14.151	0.143	2.0	
		3	334	292.4	39.9	0	0	332.3	14.151	0.120	1.7	
		5	313	326.6	32.8	0	0	359.4	14.151	0.091	1.3	
		8	430	277.6	146.3	40.3	0	439.2	14.151	0.333	4.7	
	Totals		3390.0	2092.8	1309.5	40.3	0.0	3417.6	14.151	0.383	5.4	± 2.3
								DNR	14.180	0.383	5.4	± 2.2
swh0932	9-Jun-12	11	440	144.1	238.4	0	0	382.5	22.262	0.623	13.9	
		12	284	89.7	227	0	0	316.7	22.262	0.717	16.0	
		13	340	111.5	158.9	20.7	0.9	292	22.262	0.546	12.2	
		15	275	47.4	187.8	0	0	235.2	22.262	0.798	17.8	
		19	375	140.9	201.2	94	4	379.7	22.262	0.536	11.9	
		23	151	74.5	66	0	0	140.5	22.262	0.470	10.5	
		8	301	116.7	173.8	0	1.6	292.1	22.262	0.598	13.3	
		28	397	202	186.3	10.4	0	398.7	22.262	0.467	10.4	
		6	540	151.8	182	72.1	3.5	406.7	22.262	0.451	10.0	
		9	539	97	286.4	9.4	0.8	393.6	22.262	0.729	16.2	
	Totals		3642.0	1175.6	1907.8	206.6	10.8	3237.7	22.262	0.591	13.2	± 1.7
								DNR	21.830	0.594	13.0	± 1.6

1 ha = 2.47 Acres

RESULTS OF DNR AND EELGRASS TEAM BY SITE

■ DATA & CALCULATIONS

■ 2013 SWH0885

■ INCREASING TRENDS FOR SWH0885 & SWH0955

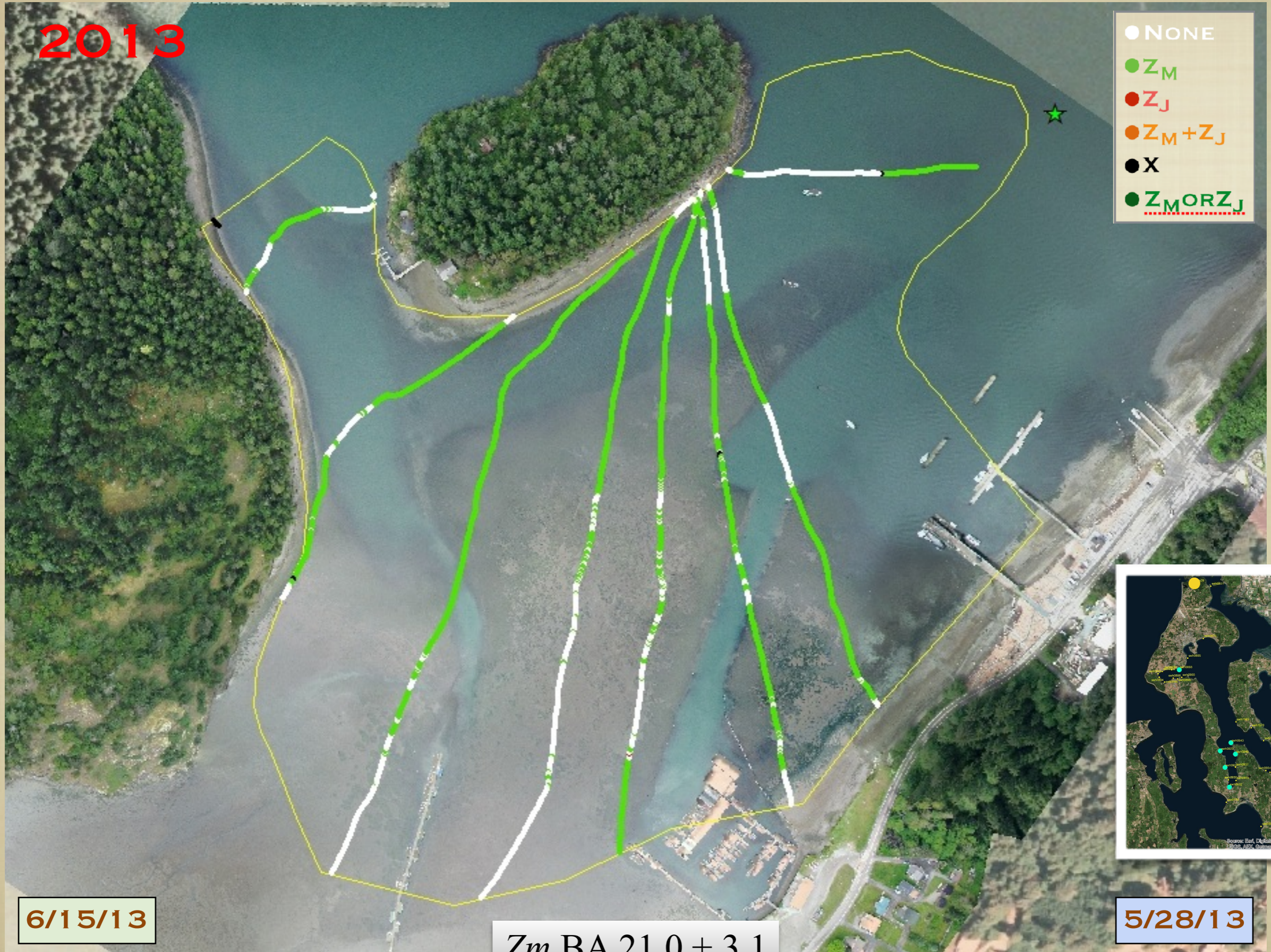
■ STANDARD ERRORS

Year	Site	DNR		Team	
		Bed Area	95%CI	Bed Area	95%CI
2006	swh0885	11.9	0.5		
2011	swh0885	13.6	1.1		
2013	swh0885	17.5	0.7	18.0	1.7
2014	swh0885			20.9	3.9
2003	swh0940	7.3	0.3		
2004	swh0940	7.1	0.4		
2005	swh0940	8.1	0.3		
2006	swh0940	7.9	0.4		
2007	swh0940	7.8	0.3		
2009	swh0940			6.8	1.5
2012	swh0940			8.3	1.1
2015	swh0940			7.7	0.8
2001	swh0943	18.5	0.8		
2002	swh0943	18.2	0.6		
2003	swh0943	17.8	0.3		
2004	swh0943	18.4	0.5		
2005	swh0943	19.2	0.4		
2009	swh0943			17.7	2.0
2012	swh0943			18.0	1.3
2015	swh0943			18.7	1.0
2005	swh0955	6.1	0.3		
2006	swh0955	7.4	0.2		
2007	swh0955	7.7	0.2		
2008	swh0955	8.2	0.4		
2009	swh0955	9.6	0.4		
2011	swh0955	12.7	0.5		
2014	swh0955			14.7	1.5
2006	swh0973	14.4	1.1		
2007	swh0973	12.4	0.9		
2008	swh0973	13.4	1.5		
2009	swh0973	12.6	1.2		
2010	swh0973	14.5	1.0		
2011	swh0973			13.7	2.4
2012	swh1574	15.7	1.6		
2013	swh1574	16.9	0.6		
2014	swh1574			17.1	2.3
Calculated by ICMRC Team					

FLATS29 - CORNET BAY

2013

- NONE
- Z_M
- Z_J
- $Z_M + Z_J$
- X
- $Z_M \text{ OR } Z_J$



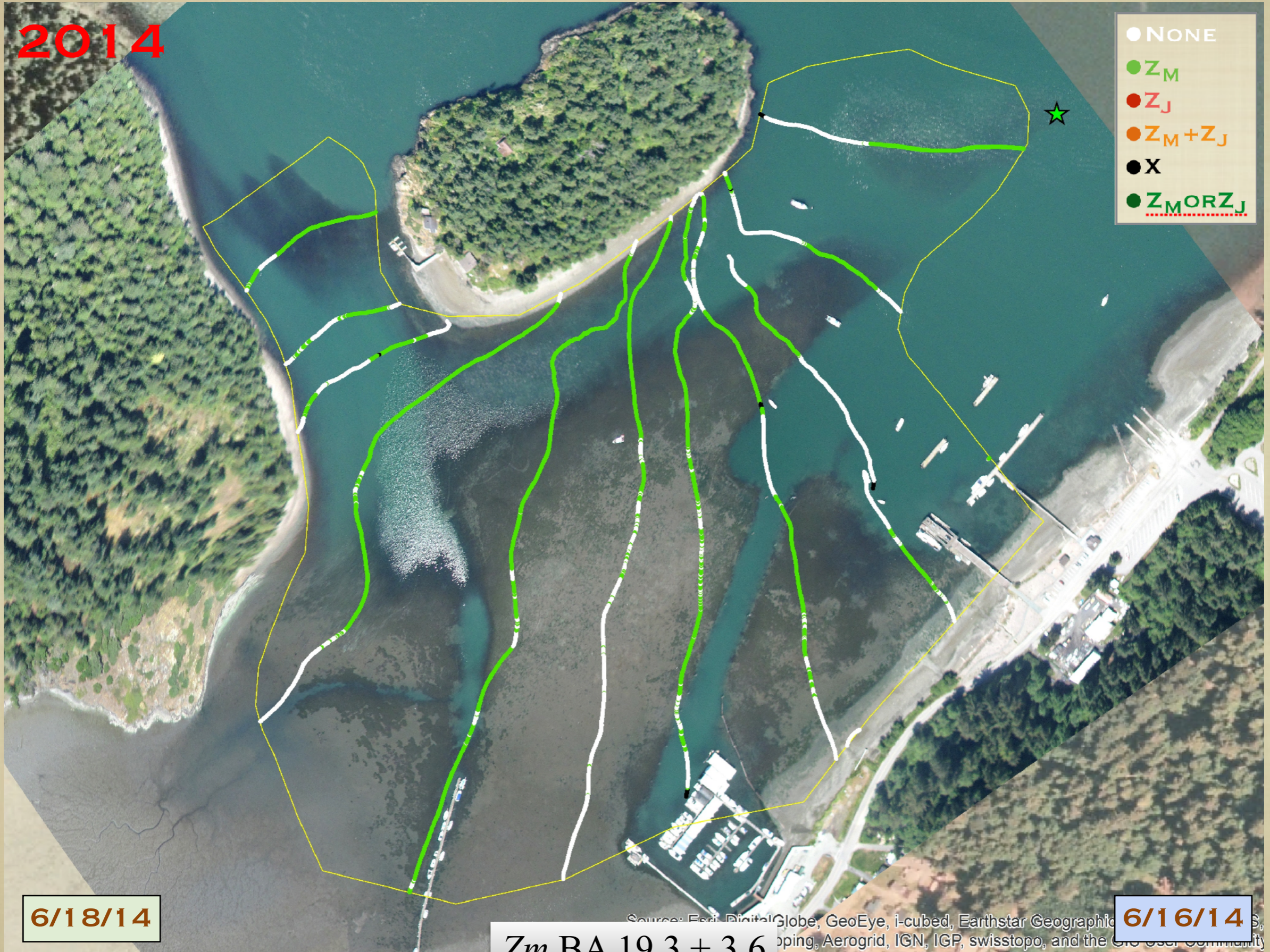
6/15/13

Z_m BA 21.0 ± 3.1

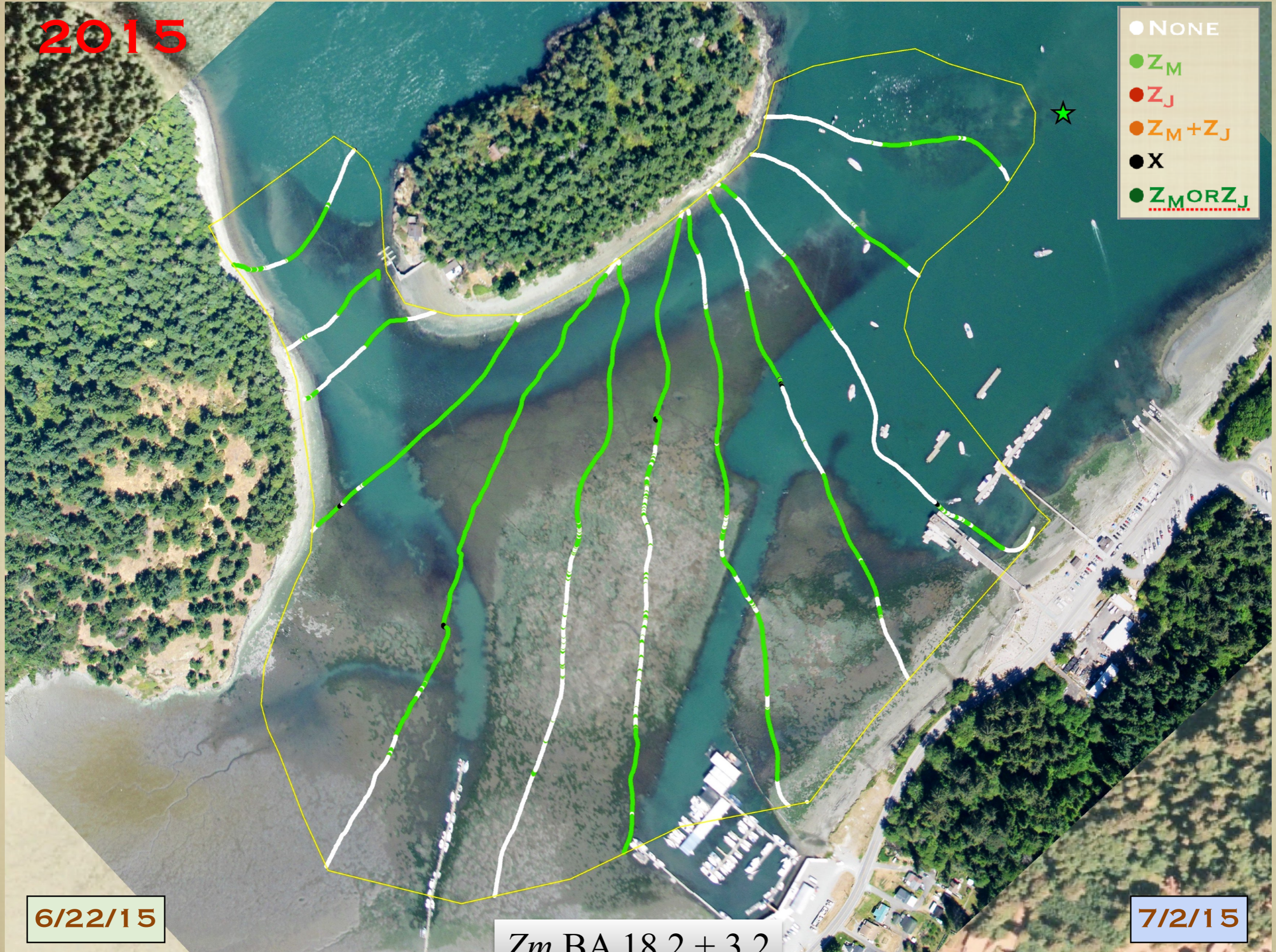
5/28/13



FLATS29 - CORNET BAY



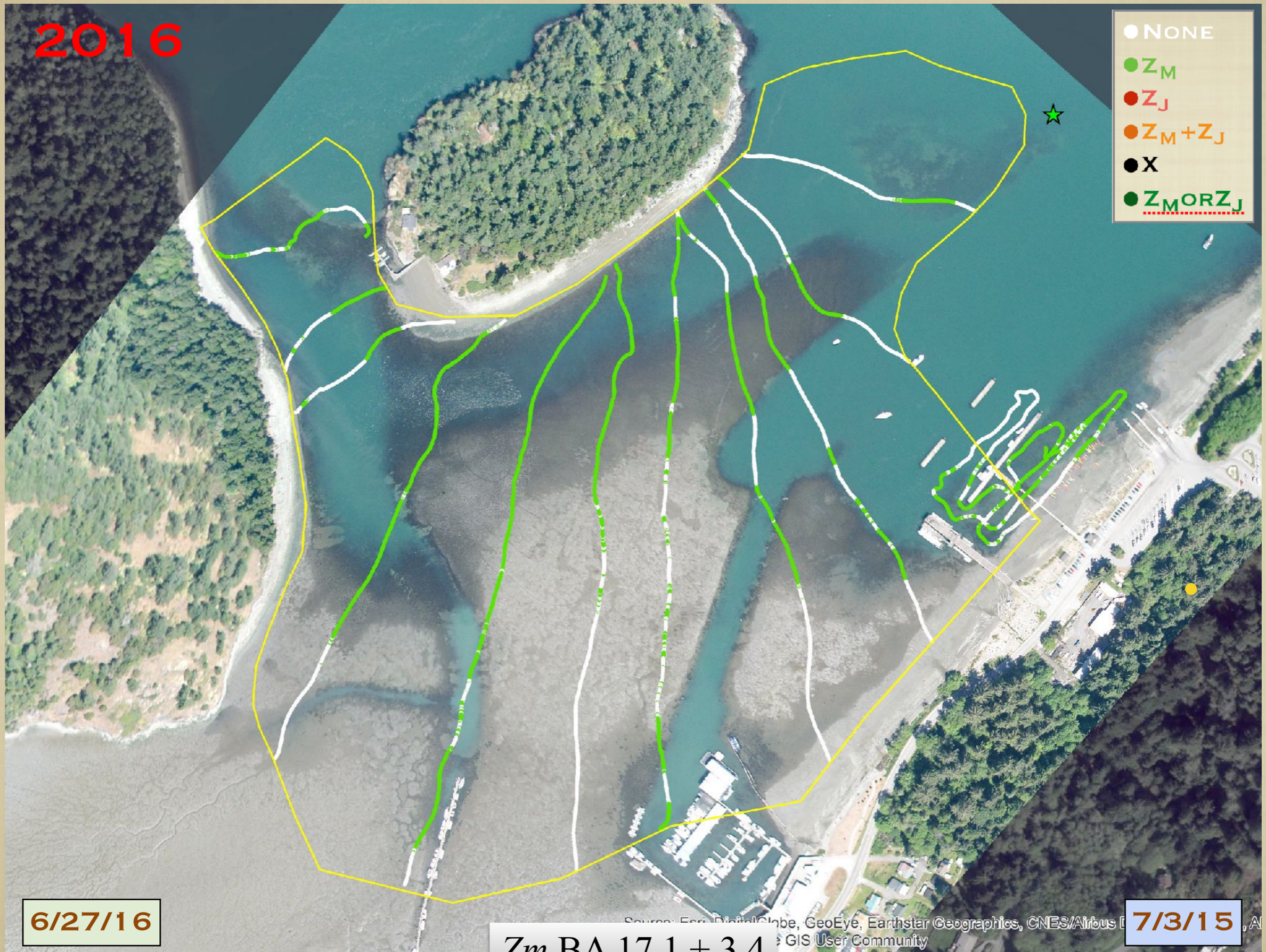
FLATS29 - CORNET BAY



FLATS29 - CORNET BAY

2016

- NONE
- Z_M
- Z_J
- $Z_M + Z_J$
- X
- $Z_M \text{ OR } Z_J$



6/27/16

Z_m BA 17.1 ± 3.4

7/3/15

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus, AerialGIS User Community