

Then and Now: Mapping Invasive Aquatic Plants on the Chehalis

Chehalis Weed Management Area Meeting

October 30, 2024

Lauren Kuehne, Omfishient Consulting



Omfishient Consulting

Overview

- Goals
- Methods
- Purple Loosestrife
- Parrotfeather
- Brazilian Elodea

Goals

- Compile survey and treatment datasets
- Assess – as much as possible – current distribution and trends
- Purple loosestrife, Parrotfeather, Brazilian elodea

	A	B	C	D	E	F	G	H	I
	Organization Name	Contact Person	Species that was surveyed/treated	Survey and Control	Year(s)	Month or time period	River section/mile/area where the survey/treatment started	River section/mile/area where the survey/treatment ended	How is the data stored (e.g., Google map, ArcGIS shape report, Excel spreadsheet, etc)
2	Univ of WA	Lauren Kuehne	Parrotfeather	Survey+Control	2013-2014	July-August	Centralia	~3 miles below Porter	spreadsheet
3	Univ of WA	Lauren Kuehne	Elodea	Survey Only	2013-2014	July-August	Centralia	~3 miles below Porter	database
4	Univ of WA	Lauren Kuehne	Parrotfeather	Survey+Control	2015-2016	Summer	Chehalis	Montesano	spreadsheet and shapefiles
5	Univ of WA	Lauren Kuehne	Parrotfeather	Survey+Control	2018-2019	June, September	Four specific locations	Four specific locations	spreadsheet
6	Univ of WA	Lauren Kuehne	Parrotfeather	Survey Only	2020	July	Adkinson Slough	Below Porter	spreadsheet
7	Lewis County	Bill Wamsley/Kuehne/Resource Management	Parrotfeather	Survey+Control	1995-1997	June-September	Chehalis	Montesano	report and spreadsheets
8	Lewis County	Bill Wamsley/Kuehne/Resource Management	Loosestrife	Survey Only	1996	June 27-July 12	Oakville Bridge	Montesano	report
9	Chehalis Tribe	Ben Amidon	Parrotfeather	Survey+Control	2021-2023	August-September	Chehalis River Mile 37	Chehalis River Mile 53	report, database
10	Chehalis Tribe	Ben Amidon	Parrotfeather	Survey Only	2024	August 5-9		Oakville	
11	Chehalis Tribe	Ben Amidon	Elodea	Survey Only	2024	August 5-9		Oakville	
12	Grays Harbor	Danika Davis	Parrotfeather	Survey Only	2024	August 5-9		Satsop	
13	Grays Harbor	Danika Davis	Elodea	Survey Only	2024	August 5-9		Satsop	
14	Thurston County	Mike Murphy	Elodea	Survey+Control		August-September	Plummer Lake - Porter	Porter in past, Independence Slough since 2021	
15	Thurston County	Mike Murphy	Parrotfeather	Survey+Control	2018-2023	August-September	Thurston County Stretch	Independence Slough	
16	Thurston County	Mike Murphy	Loosestrife	Survey+Control	2023	August-September	Thurston County Stretch	Independence Slough	
17	Grays Harbor	Evergreen Diving	Elodea	Survey Only	2023	??		21	52 spreadsheet, kmz files
18	Dept of Natural Resources	Carlo Abbruzzese	Loosestrife	Survey+Control	2024	July	Chehalis River Surge Plain	Chehalis River Surge Plain	
19	Dept of Natural Resources	Carlo Abbruzzese	Elodea	Survey+Control	2024	July	Chehalis River Surge Plain	Chehalis River Surge Plain	
20	Dept of Natural Resources	Carlo Abbruzzese	Parrotfeather	Survey+Control	2024	July	Chehalis River Surge Plain	Chehalis River Surge Plain	
21	Dept of Natural Resources	Carlo Abbruzzese	Yellow flag	Survey+Control	2024	July	Chehalis River Surge Plain	Chehalis River Surge Plain	
22	Dept of Natural Resources	Carlo Abbruzzese	Knotweed	Survey+Control	2024	July	Chehalis River Surge Plain	Chehalis River Surge Plain	

Historical Longitudinal survey

Chehalis to Montesano (90 km)

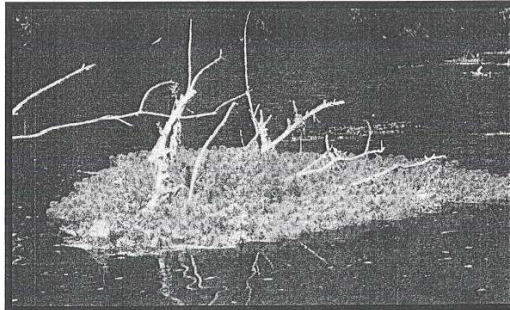
Mainstem and side channels
surveyed by canoe and airboat
in 1996-1997

Locations georeferenced using
coordinates, site descriptions

Observations on control, some
environmental measures

Integrated Aquatic Plant Management Plan for Parrotfeather Management on the Chehalis River

Prepared by:
Lewis County Noxious Weed Control Board
Bill Wamsley, Coordinator
Kevin Hupp, Project Leader
January, 1997



Funded by:
Washington State Dept. of Ecology
Freshwater Aquatic Weeds Management Program
& Lewis County

Lewis County Noxious Weed Control Board
360 NW North St. MS: AESO2
Chehalis, WA. 98532
(360) 740-1215

1996 Site Information for Noxious Weeds

Parrotfeather

Site Number 1

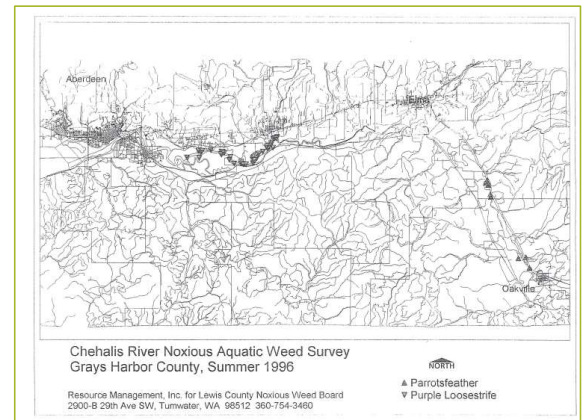
Address or common place name where seen: Chehalis River, below Garrard Creek
Legal description: T16N, R5W, Sec. 36, SW SE
Estimated size of infestation: Acre or greater
Type of waterway: Backwater slough
Nearest estimated river mile: River Mile #44
GPS coordinates: 123.15.355 46. 49. 428 Way point (WP)#60
Date found: 7/14/96

Site Number 2

Address or common place name where seen: Chehalis River; Prather / Maple Lane
Legal description: T15N, R3W, Sec. 36, SE NW
Estimated size of infestation: greater than 100 sq. ft. and less than 1 acre.
Type of waterway: Backwater slough
Nearest estimated river mile: River Mile #59
GPS coordinates: 123.01.971 46.47.111 WP #90
Date found: 7/24/96

Site Number 3

Address or common place name where seen: Chehalis River, Galvin Bend
Legal description: T 15N., R 3W., Sec. 35, NW SE
Estimated size of infestation: At least 16 individual sites. (acre or greater)
Type of waterway: Main channel of the Chehalis River
Nearest estimated river mile: River Mile #64
GPS coordinates: 123.01.233 46.44.586 WP #190
Date found: 9/20/96



Contemporary Surveys & Treatment

Chehalis to Montesano (90 km)

Parrotfeather extent (abundance) mapped using handheld GPS

Waypoints and/or polygons used to map presence

Area or extent calculated (polygons) or estimated (points)

Surveys and/or control along mainstem and adjacent wetlands

Calculate area from polygons

Points with area estimate

Parrotfeather 2015 2016

Chehalis River

	A	B	C	D	E	F	G	H	I
1	Organization Name	Contact Person	Species that was surveyed/treated	Survey and Control	Year(s)	Month or time period	River section/mile/area where the survey/treatment started	River section/mile/area where the survey/treatment ended	How is the data stored (e.g. Google map, ArcGIS shape report, Excel spreadsheet, etc)
2	UW of WA	Lauren Kuatira	Parrotfeather	Survey+Control	2013-2014	July-August	Centralia	~3 miles below Porter	spreadsheet
3	UW of WA	Lauren Kuatira	Elodea	Survey Only	2013-2014	July-August	Centralia	~3 miles below Porter	database
4	UW of WA	Lauren Kuatira	Parrotfeather	Survey+Control	2015-2016	Summer	Chehalis	Montesano	spreadsheet and shapefiles
5	UW of WA	Lauren Kuatira	Parrotfeather	Survey+Control	2016-2019	June, September	Four specific locations	Four specific locations	spreadsheet
6	UW of WA	Lauren Kuatira	Parrotfeather	Survey Only	2020	July	Alkanon Slough	Below Porter	spreadsheet
7	Leaven County	BM Wansley/Kuater/Resource Management	Parrotfeather	Survey+Control	1995-1997	June-September	Chehalis	Montesano	report and spreadsheets
8	Leaven County	BM Wansley/Kuater/Resource Management	Loosestrife	Survey Only	1998	June 27-July 12	Chehalis Bridge	Montesano	report, database
9	Chehalis Tribe	Ben Ammon	Parrotfeather	Survey+Control	2021-2023	August-September	Chehalis River Mile 37	Chehalis River Mile 43	report, database
10	Chehalis Tribe	Ben Ammon	Parrotfeather	Survey Only	2024	August 5-9	Chehalis	Chehalis	
11	Chehalis Tribe	Ben Ammon	Elodea	Survey Only	2024	August 5-9	Chehalis	Chehalis	
12	Grays Harbor	Danika Davis	Parrotfeather	Survey Only	2024	August 5-9	Saltsp	Saltsp	
13	Grays Harbor	Danika Davis	Elodea	Survey Only	2024	August 5-9	Saltsp	Saltsp	
14	Thurston County	Mike Murphy	Elodea	Survey+Control	2018-2023	August-September	Plummer Lake - Porter	Porter in past, Independence Slough since 2021	
15	Thurston County	Mike Murphy	Parrotfeather	Survey+Control	2018-2023	August-September	Thurston County Slough	Independence Slough	
16	Thurston County	Mike Murphy	Loosestrife	Survey+Control	2023	August-September	Thurston County Slough	Independence Slough	
17	Grays Harbor	Evergreen Diving	Elodea	Survey Only	2023	??		21	52 spreadsheet, kmz files
18	Dept of Natural Resources	Carlo Abbruzzese	Loosestrife	Survey+Control	2024	July	Chehalis River Surge Plan	Chehalis River Surge Plan	
19	Dept of Natural Resources	Carlo Abbruzzese	Elodea	Survey+Control	2024	July	Chehalis River Surge Plan	Chehalis River Surge Plan	
20	Dept of Natural Resources	Carlo Abbruzzese	Parrotfeather	Survey+Control	2024	July	Chehalis River Surge Plan	Chehalis River Surge Plan	
21	Dept of Natural Resources	Carlo Abbruzzese	Yellow flag	Survey+Control	2024	July	Chehalis River Surge Plan	Chehalis River Surge Plan	
22	Dept of Natural Resources	Carlo Abbruzzese	Woodweed	Survey+Control	2024	July	Chehalis River Surge Plan	Chehalis River Surge Plan	

Purple loosestrife, *Lythrum salicaria*

- Long-lived perennial
- Purple-to-magenta flowers
- Flowers on a dense spike, 2-10 feet in height
- Stem 4 sided, square in cross section
- Lance-shaped leaves
- Prolific seed producer: one plant can produce up to 2 M seeds!
- To help limit spread, flower tops can be cut



Purple loosestrife might be confused with...

Purple loosestrife



Native fireweed



Native *Spirea*

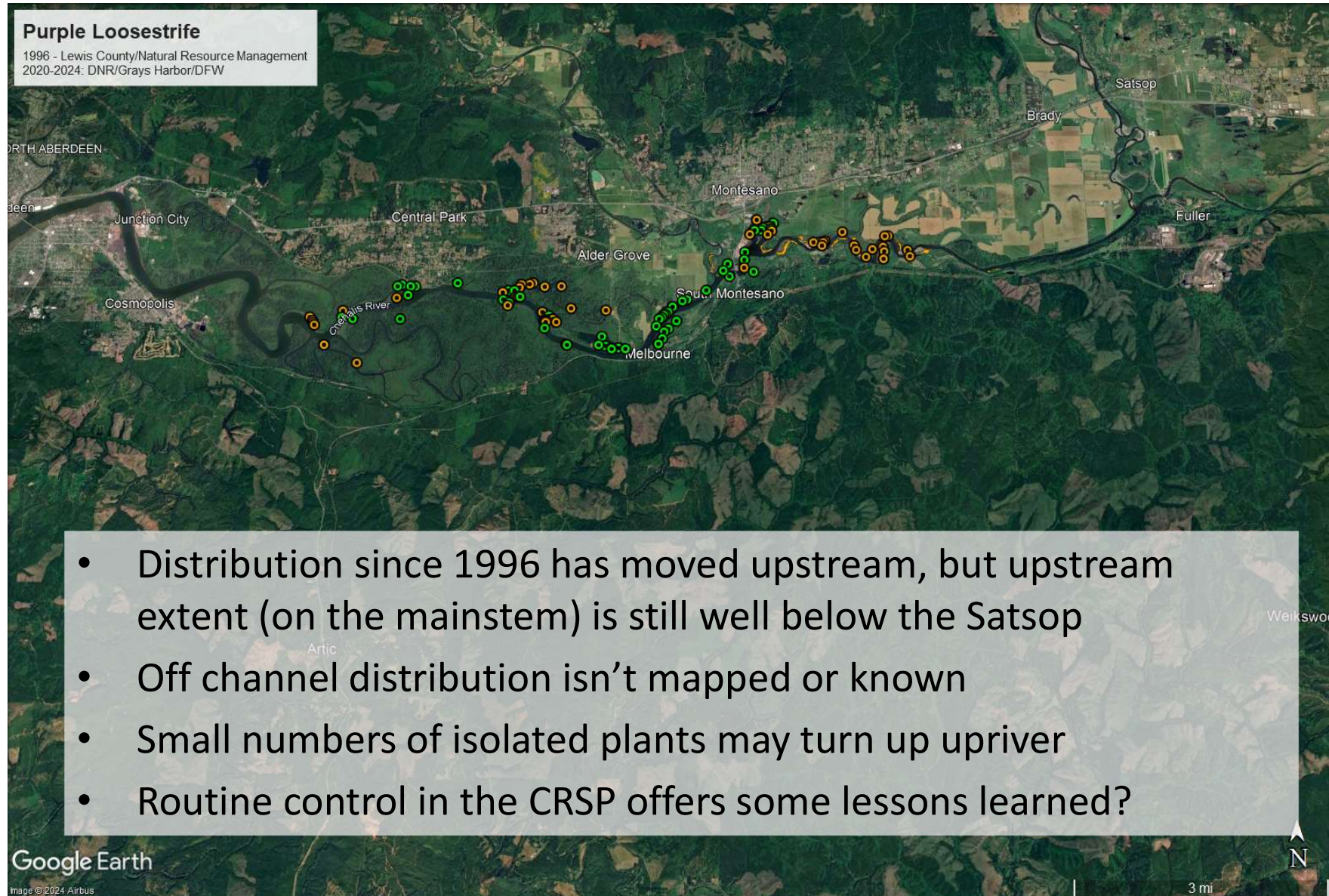


- Purple loosestrife – leaves opposite – others alternate
- Loosestrife flowers attached to the stalk – 5-6 petals
- Fireweed flowers not attached directly to stalk – 4 petals
- *Spirea* flowers look “woolly” with 25-50 stamens per flower, leaves oblong, not pointed



Purple Loosestrife

1996 - Lewis County/Natural Resource Management
2020-2024: DNR/Grays Harbor/DFW



- Distribution since 1996 has moved upstream, but upstream extent (on the mainstem) is still well below the Satsop
- Off channel distribution isn't mapped or known
- Small numbers of isolated plants may turn up upriver
- Routine control in the CRSP offers some lessons learned?

Parrotfeather (*Myriophyllum aquaticum*)

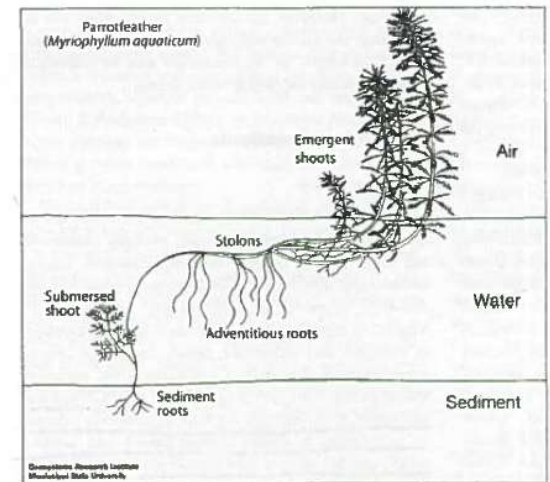
- Forms dense mats that interfere with infrastructure, impede flow^{5,6}
- Outcompetes native vegetation
- Reduces oxygen^{7,8}
- Altered invertebrate communities⁸
- Associated with fish that tolerate dense vegetation and reduced oxygen⁸



⁵Guillarmod 1979, ⁶Moreira et al. 1999, ⁷Hussner, 2009, ⁸Kuehne, Olden & Rubenson 2016

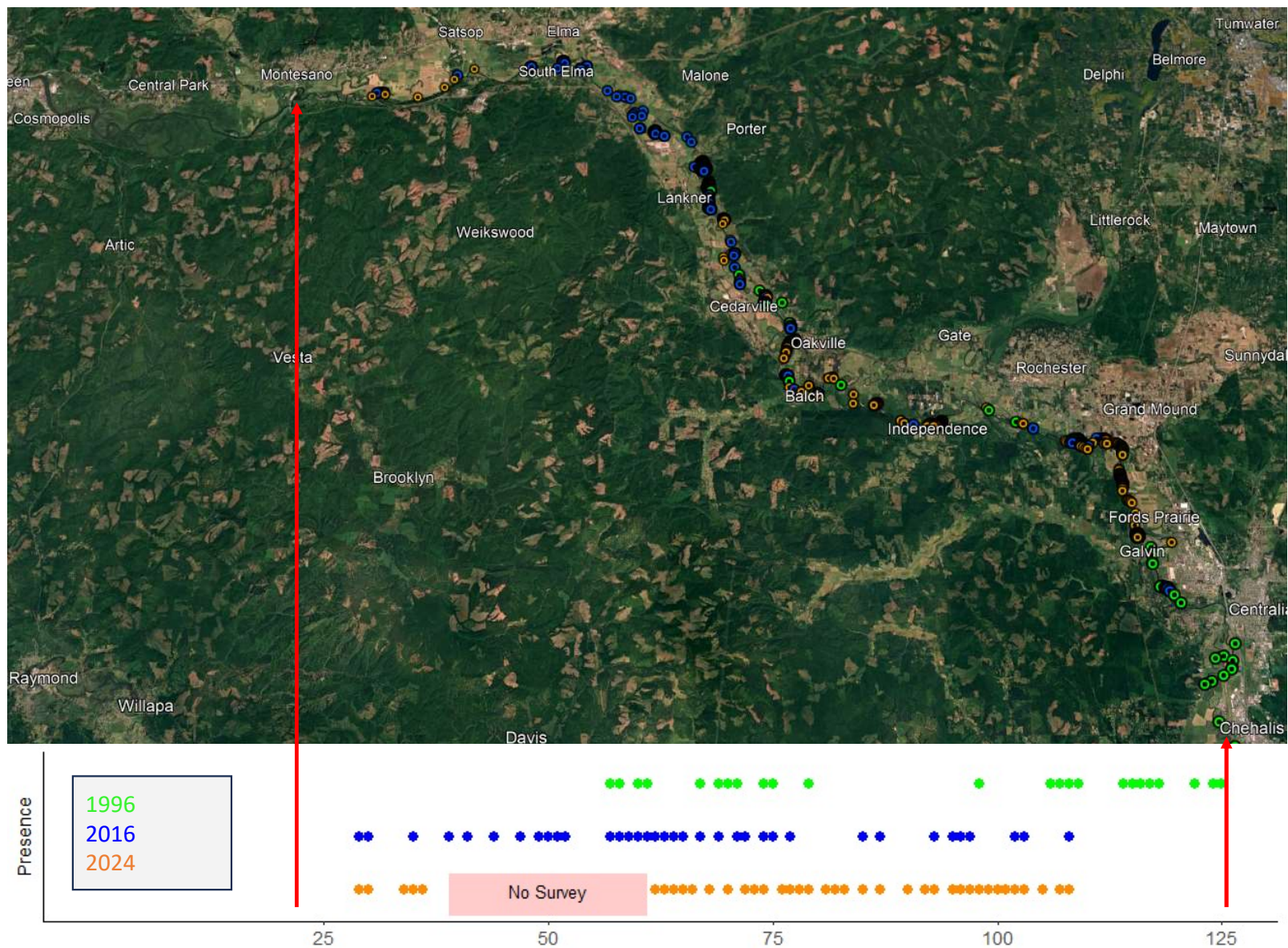
Parrotfeather: distribution

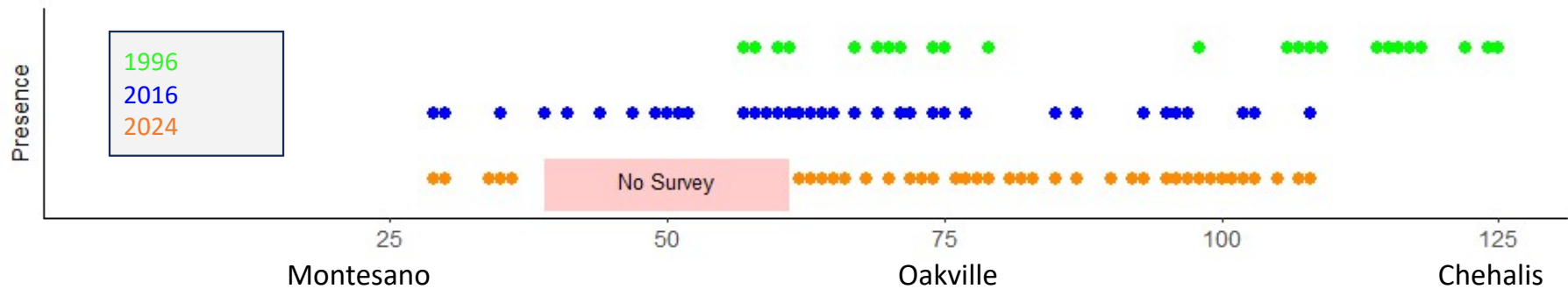
- Favors slow-moving wetland habitat
- Tolerates cold, drawdowns, some salinity^{1,2}
- Does not tolerate high/variable flows^{3,4}
- Only female plants in N. America; spreads vegetatively
- Mechanical or physical control are not advised



¹Wersal et al. 2013, ²Thouvenot et al. 2012, ³Moreira et al, 1999, ⁴Hussner & Lösch 2005





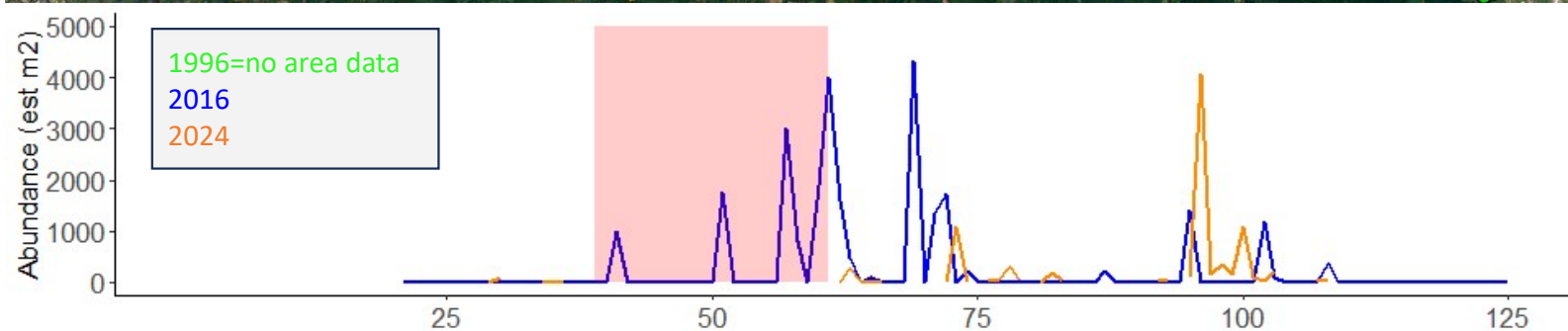
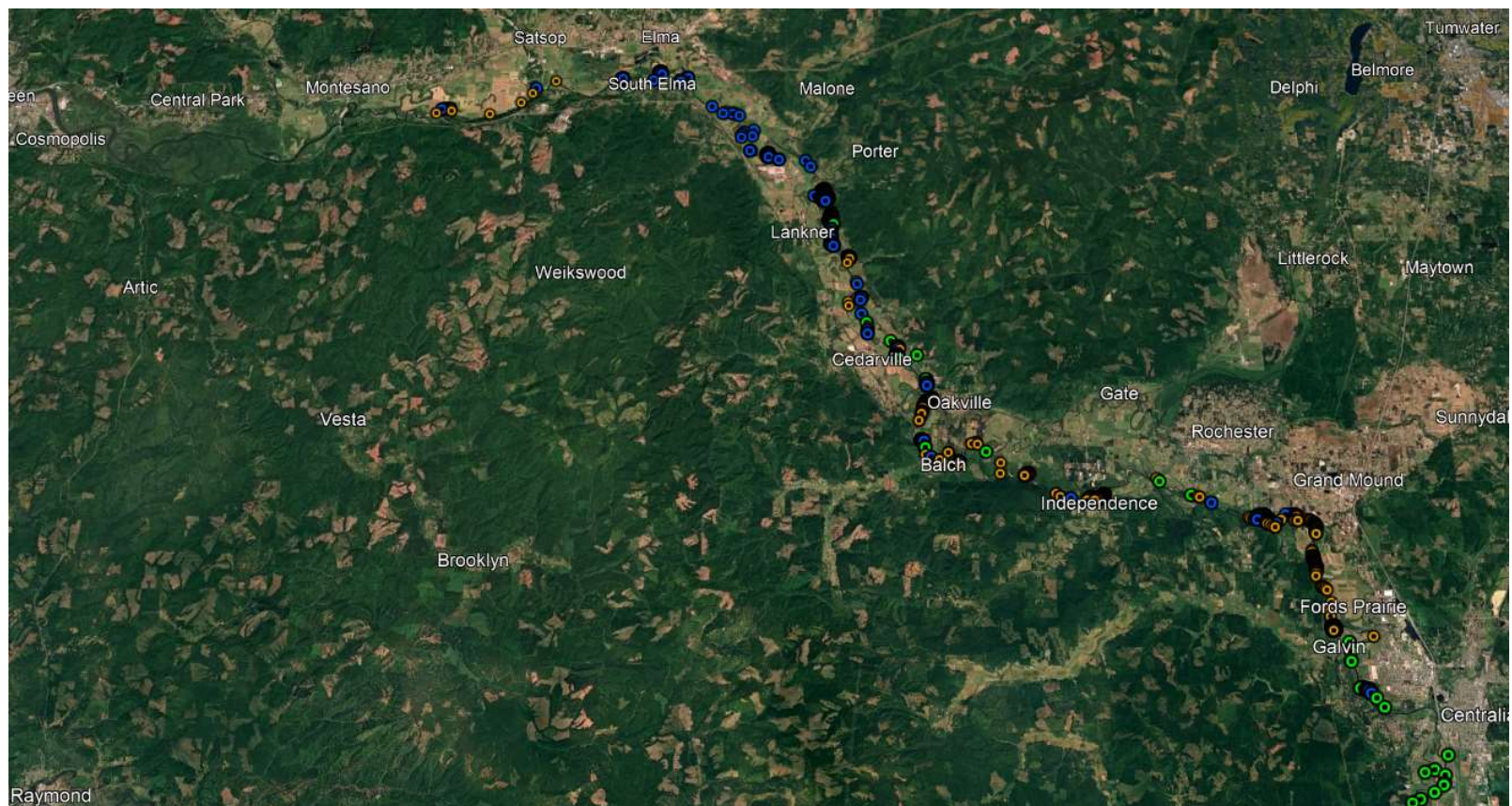


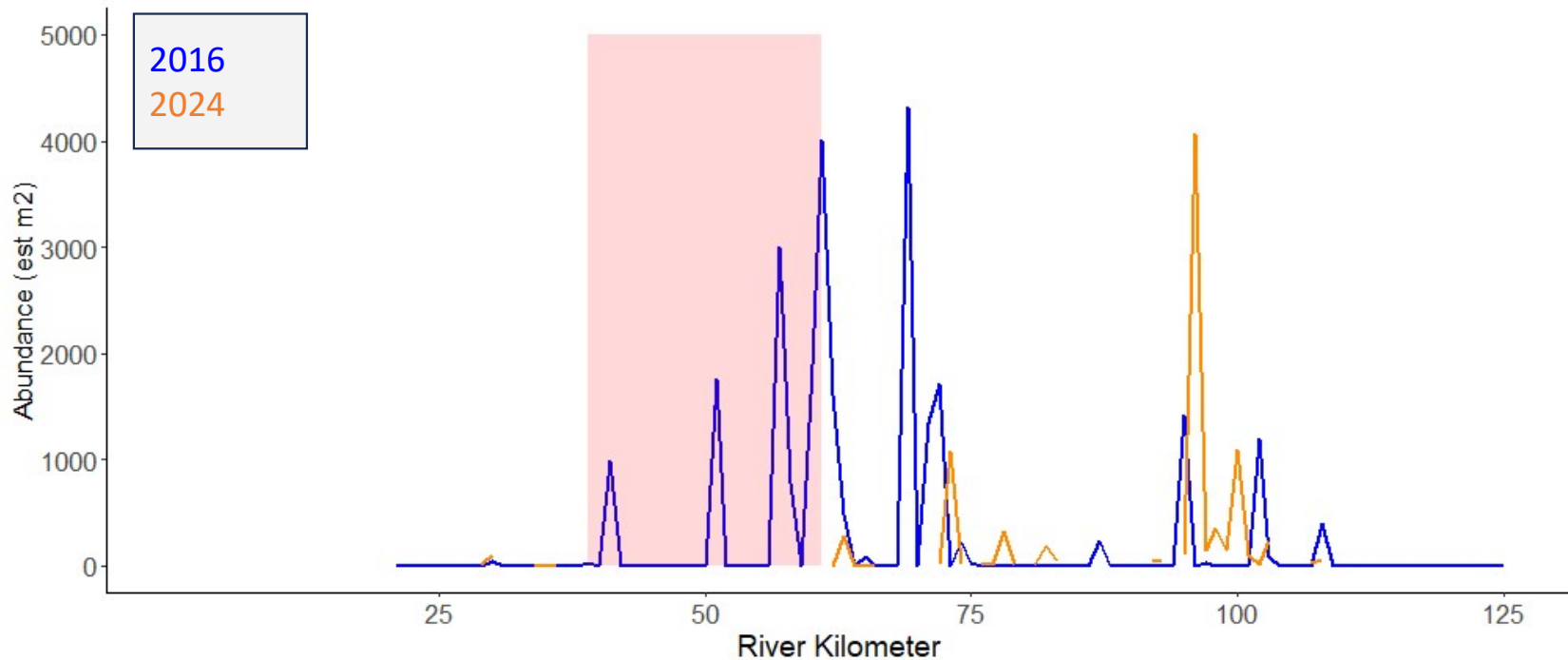
- Distribution since 1996 has moved downstream
- Downstream extent is the WDFW Ferbrache Unit (~Brady Loop access point), but abundance is very low below Elma
- High, scouring flows upstream and tidally influenced, large flows downstream likely constrain the abundance



**WDFW
Ferbrache Unit
(downstream
extent of
parrotfeather)**

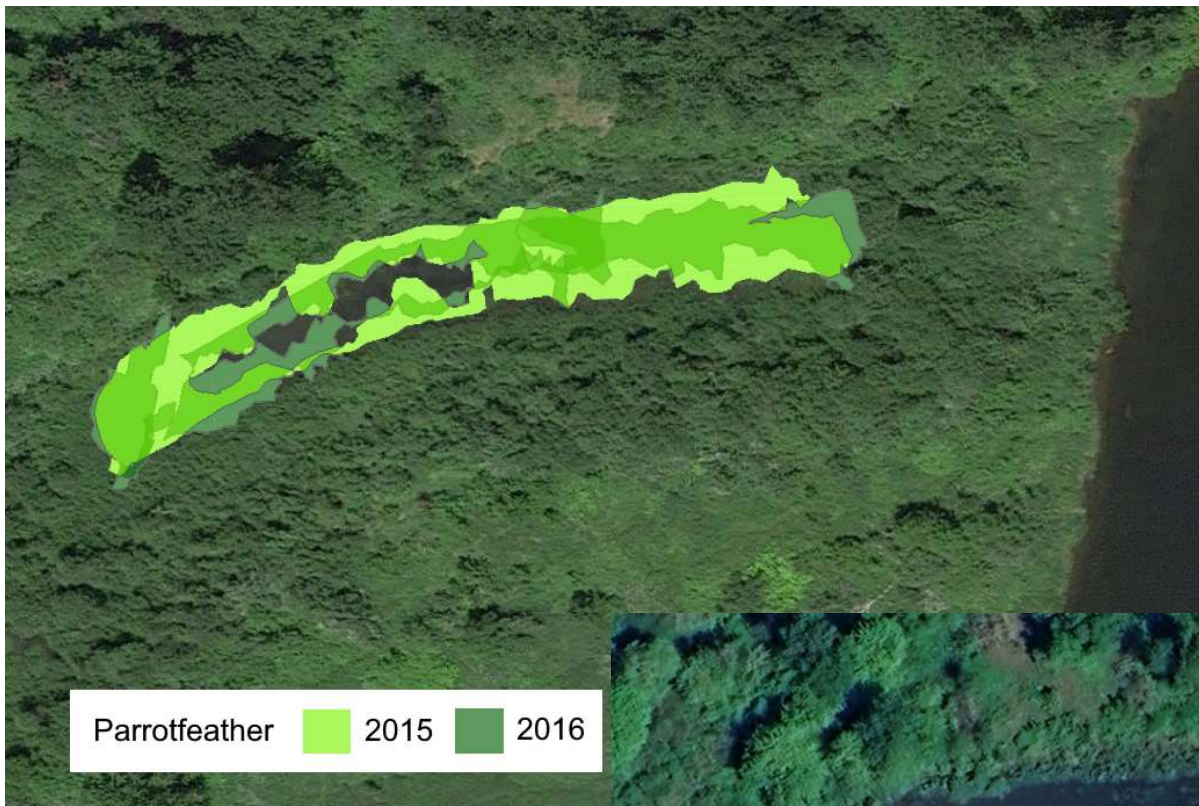






- Between 2016-2024 Thurston County and The Chehalis Tribe have done consistent parrotfeather control
- Large reductions in some large sites, and only one new high-abundance site*

*Porter to Elma, a zone with high abundance in the past, was skipped this year, so changes in those sites are not known





Atkinson Slough - August 2016

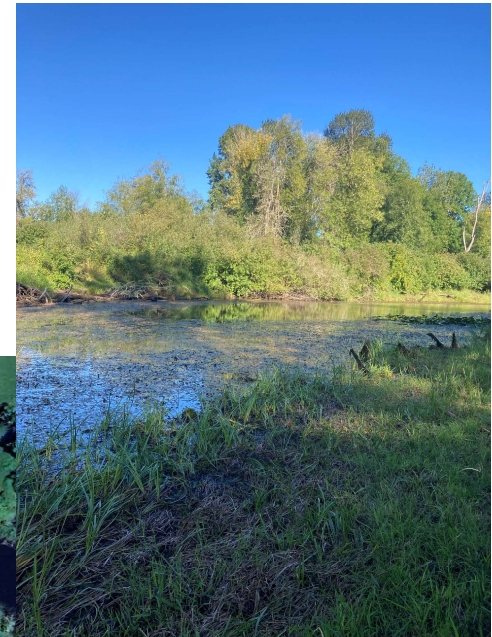
Image © 2024 Airbus

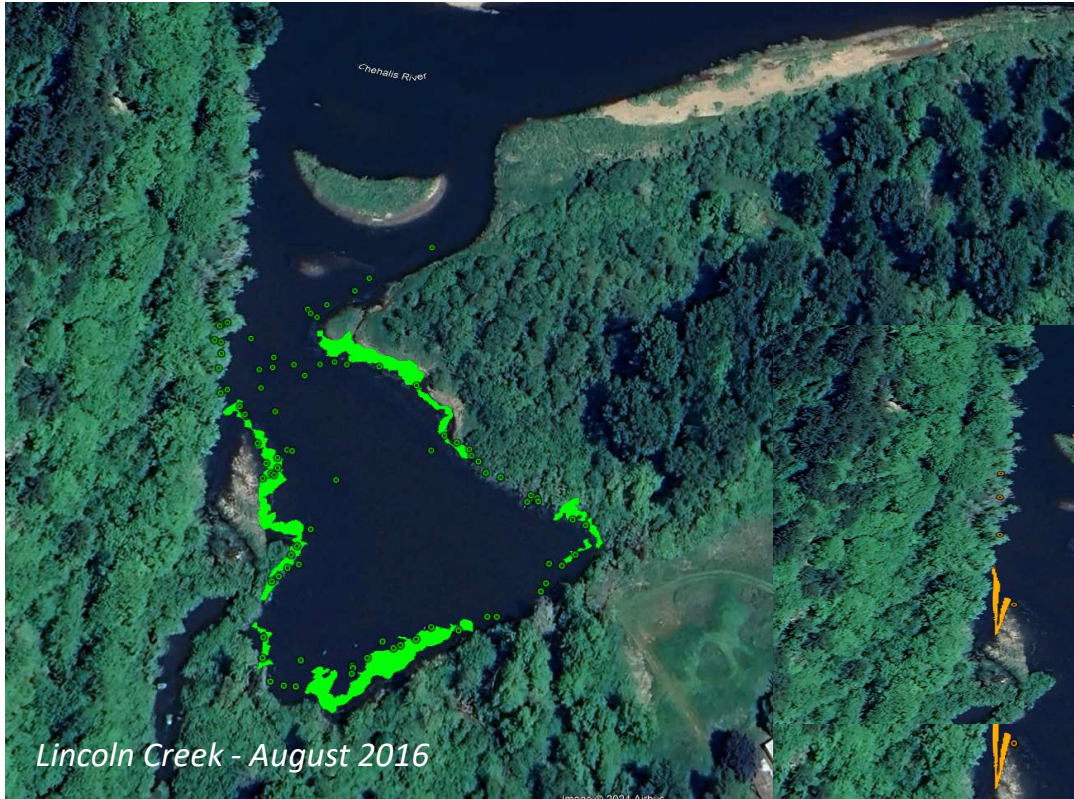


August 2024

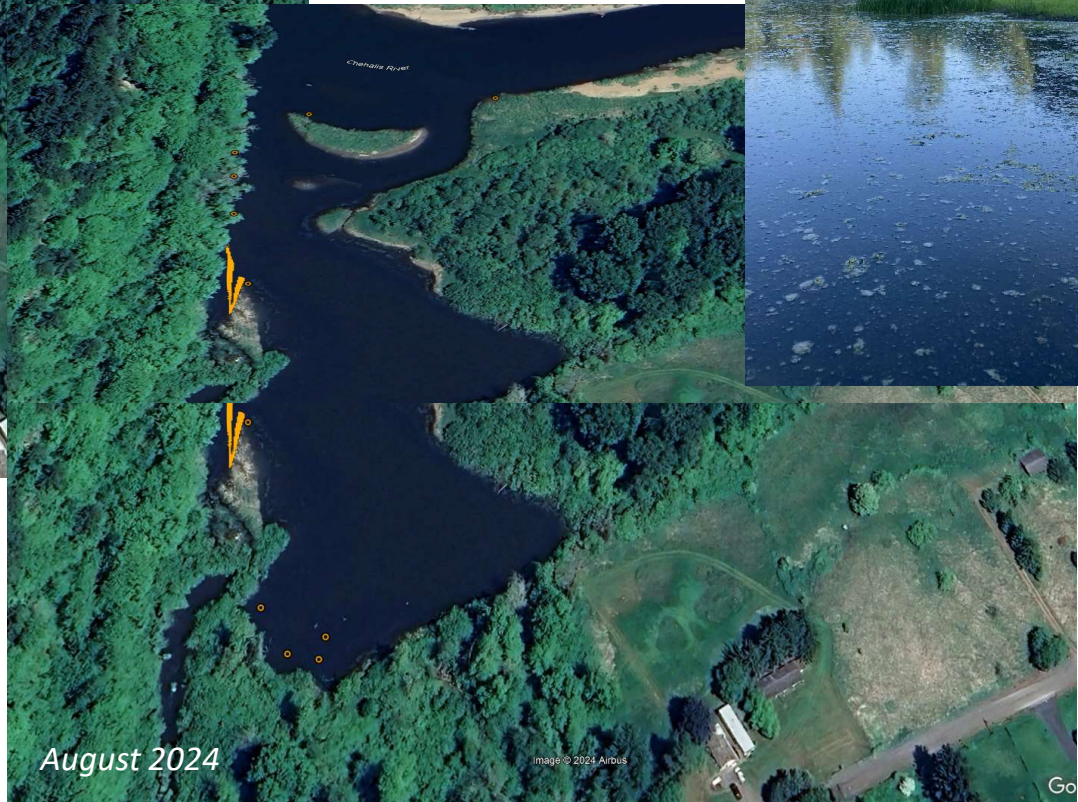
Image © 2024 Airbus

Google Earth





Lincoln Creek - August 2016



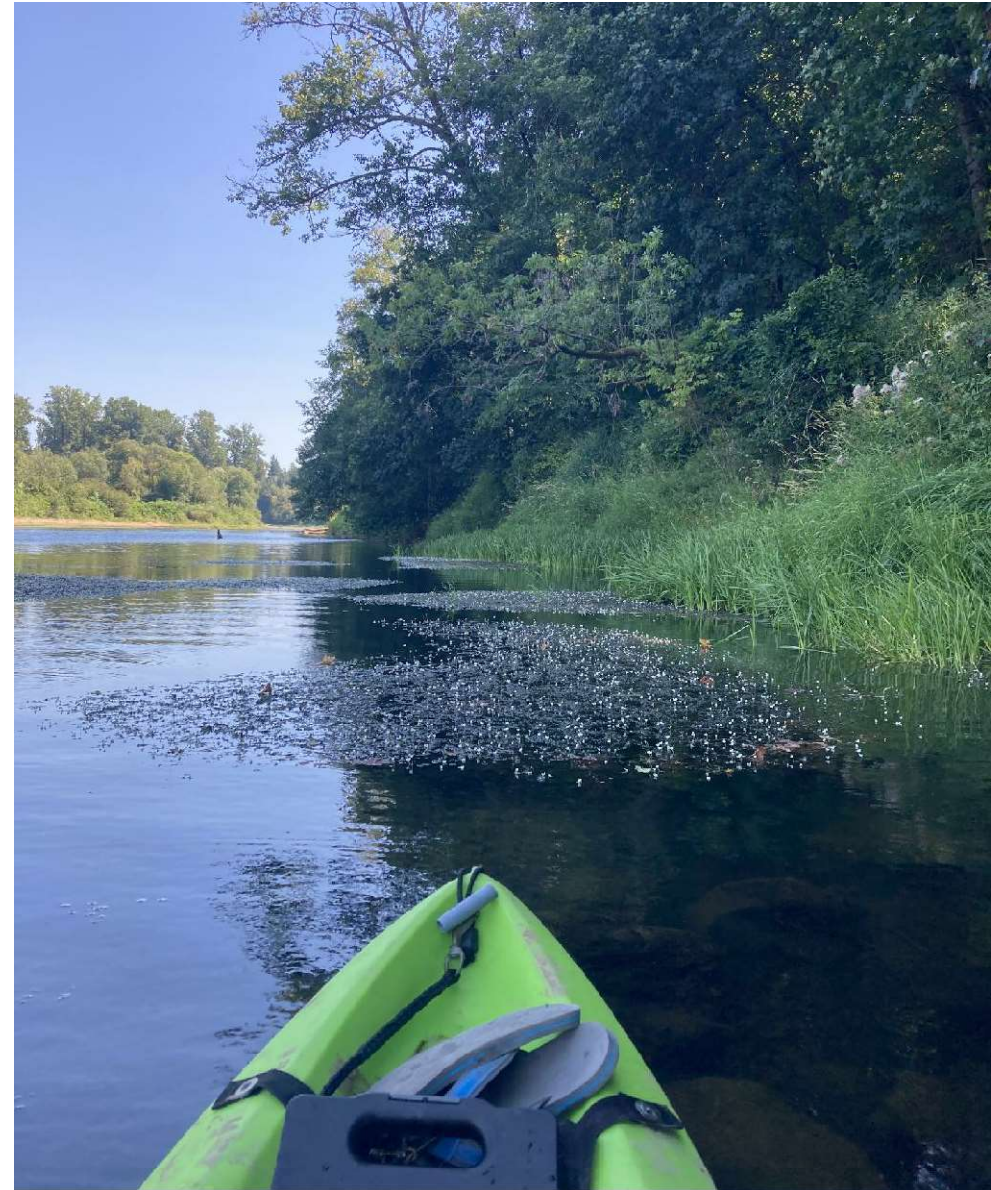
August 2024



Brazilian elodea

Egeria densa

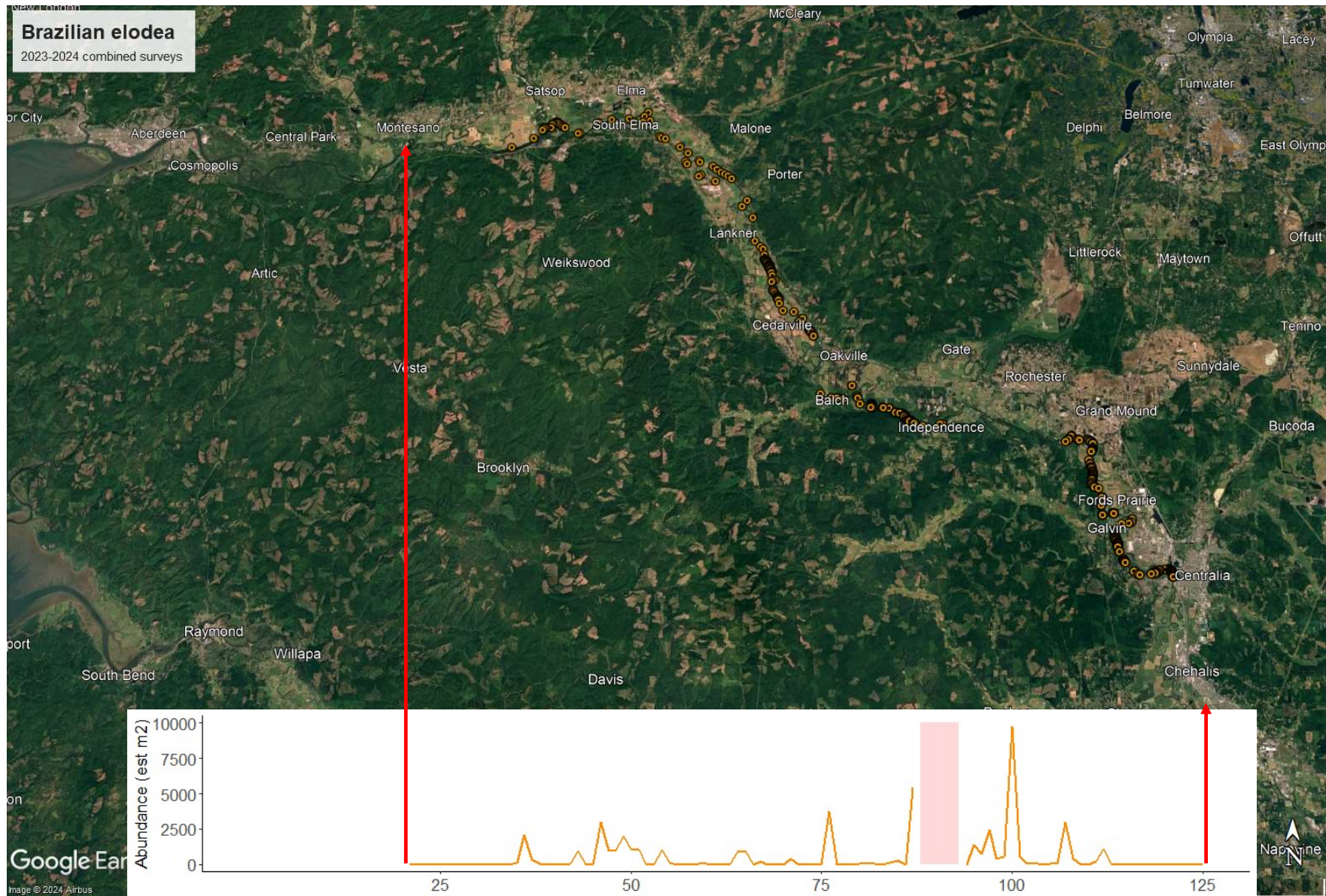
- Flowers 'showy', 3 white petals ~ ¼ in long
- 4-8 leaves per whorl
- Only male plants in U.S.
- Rooted at the bottom, up to 20 feet
- Found in still and flowing waters, lakes, ponds, streams; limited distribution in Washington State

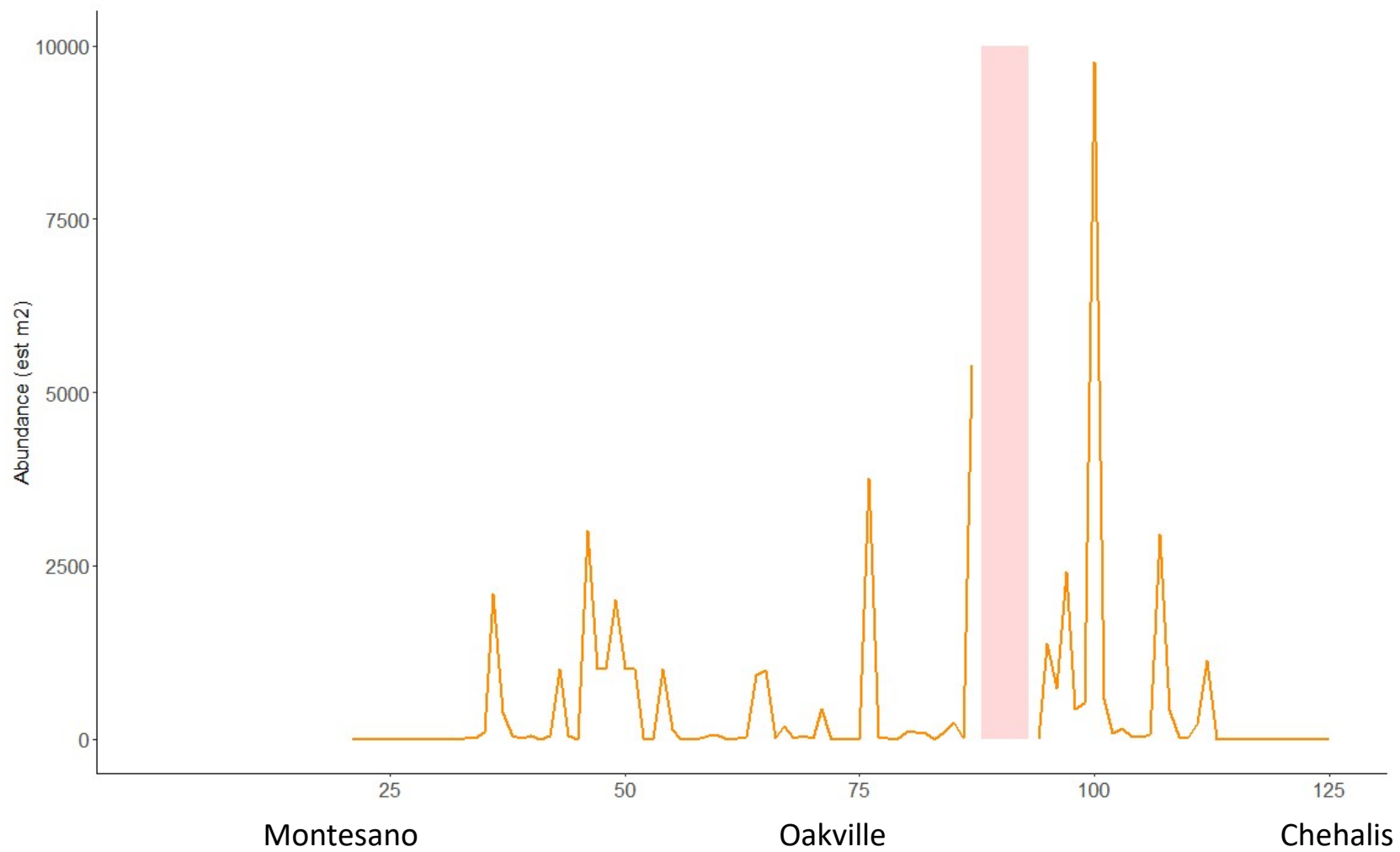


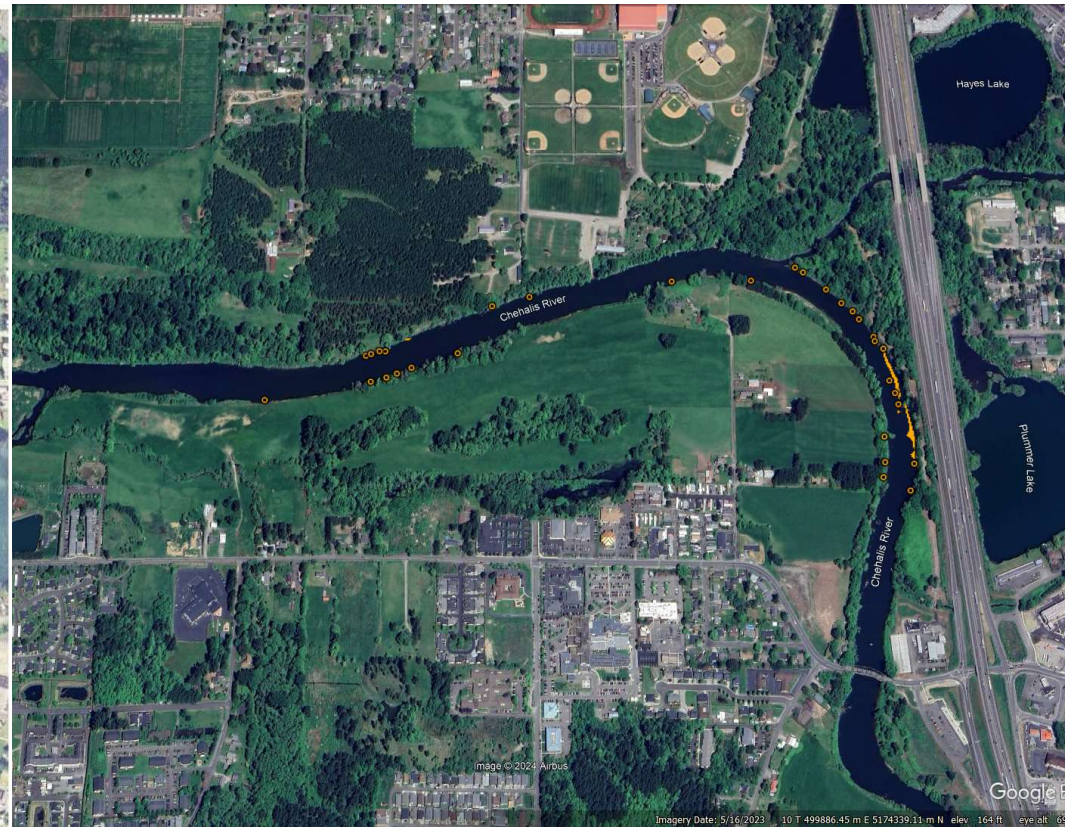
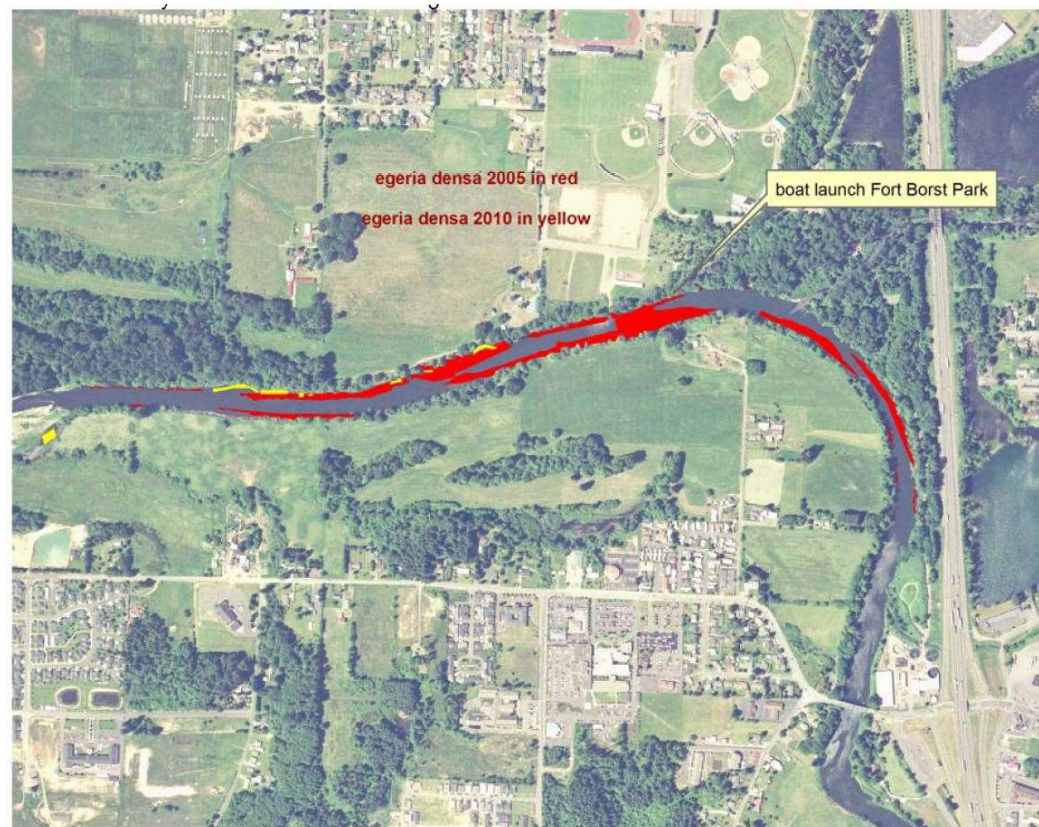
Brazilian vs. native *Elodea*

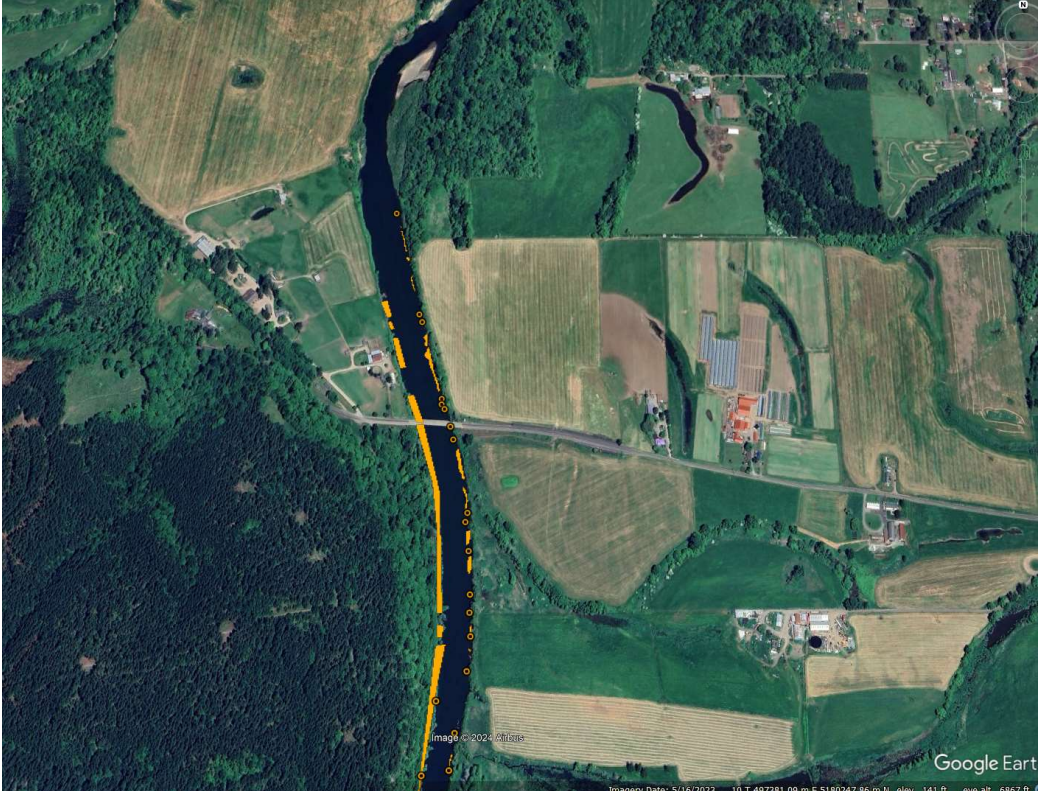
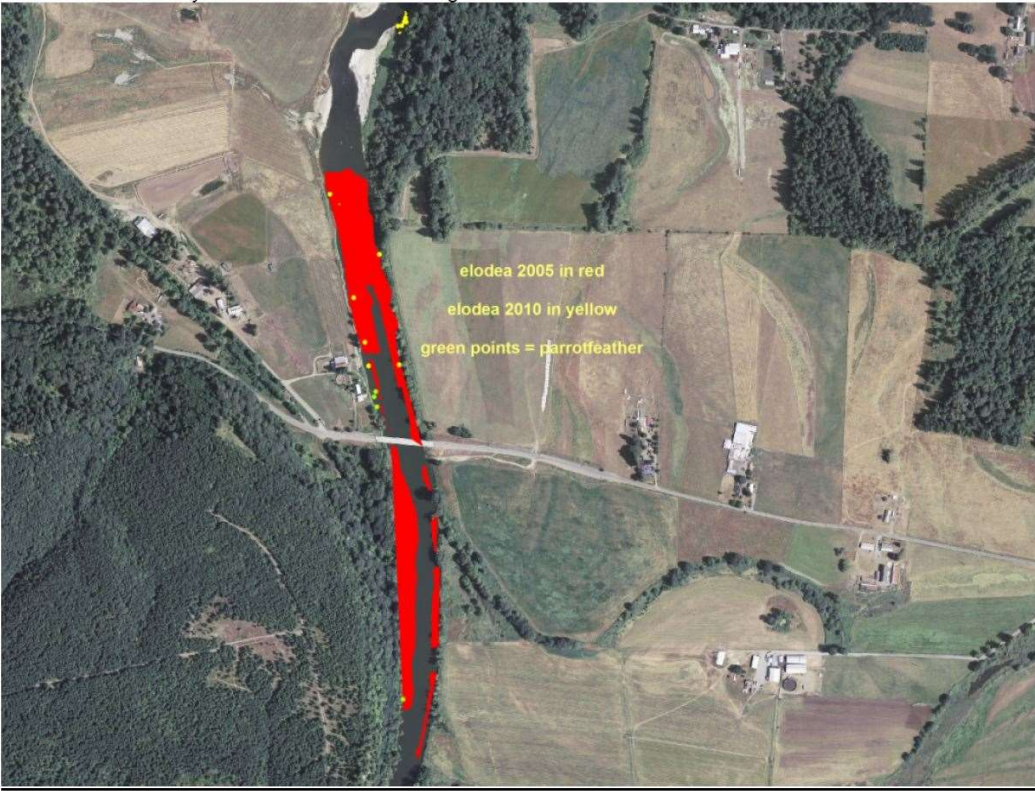
- Larger, bushier than the native waterweed (*E. canadensis*)
- Leaves are 1-3 cm long
- Stems reach the surface of water forming dense mats
- Small white flowers rise above water surface
- Native waterweed smaller, whorls have 3 leaves per node











Feedback on next steps/deliverables

- Data Basin shapefiles
- Useful summaries?
- Inclusion and Acknowledgements?