Evaluating the EDRR process for aquatic weeds

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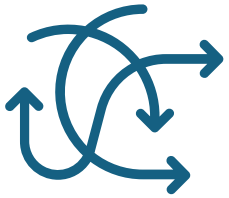
With funding from

Delta Stewardship Council

A CALIFORNIA STATE AGENCY

Need for EDRR research

Silos in organization by taxonomic group or organizational jurisdiction



Few structures to coordinate actions among groups

Few communication structures between broader prevention and monitoring efforts and EDRR programs

Little previous capacity and/or gap analysis

Project Goals

1. Understand key natural history and ecological relationships of ribbon weed (*Vallisneria australis*)
   - Literature review
   - Laboratory and field data collection
2. Evaluate the draft Delta EDRR framework and coordination table
   - Stakeholder engagement through interviews

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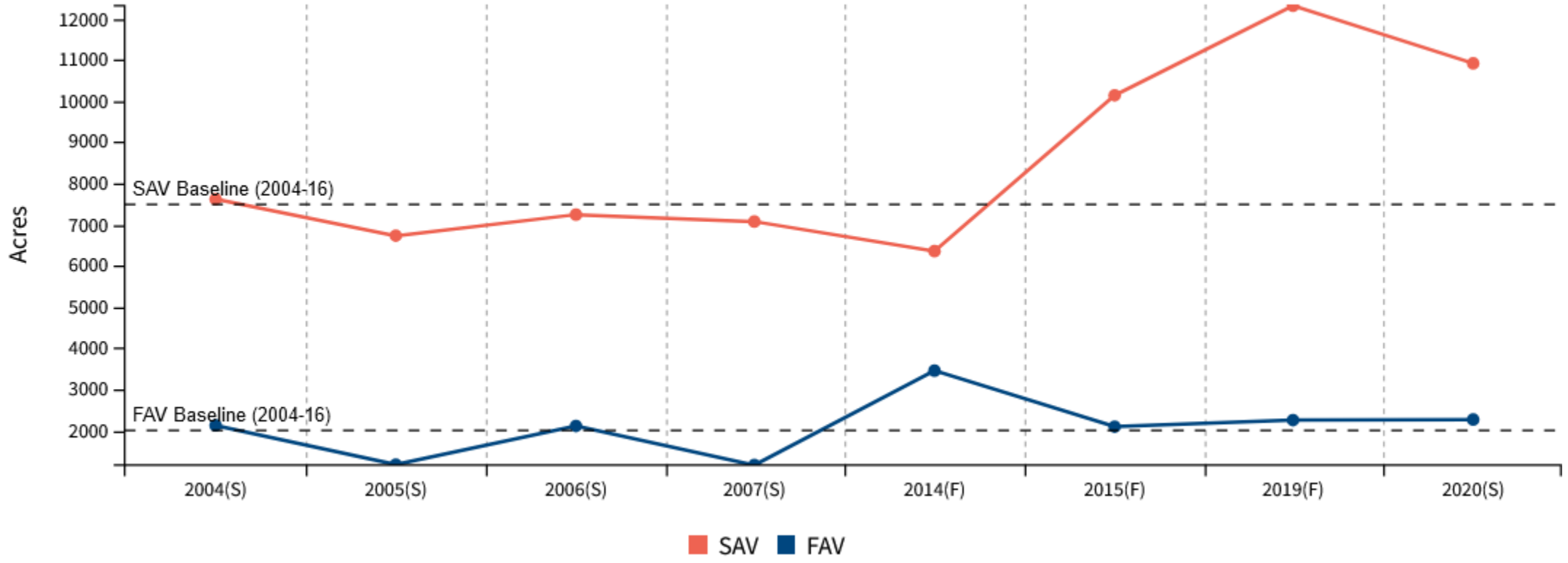
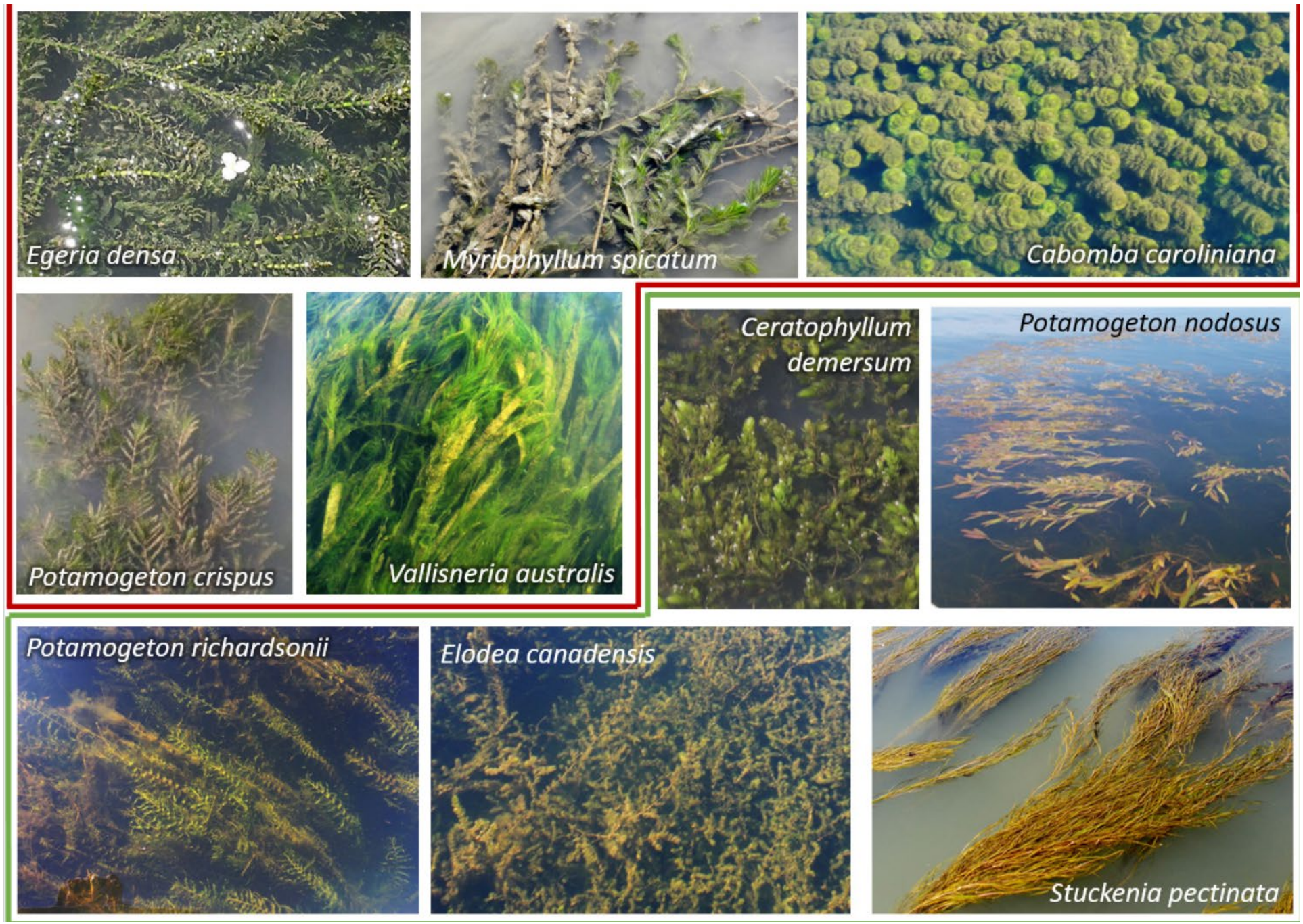
SAV increasing through time in Delta



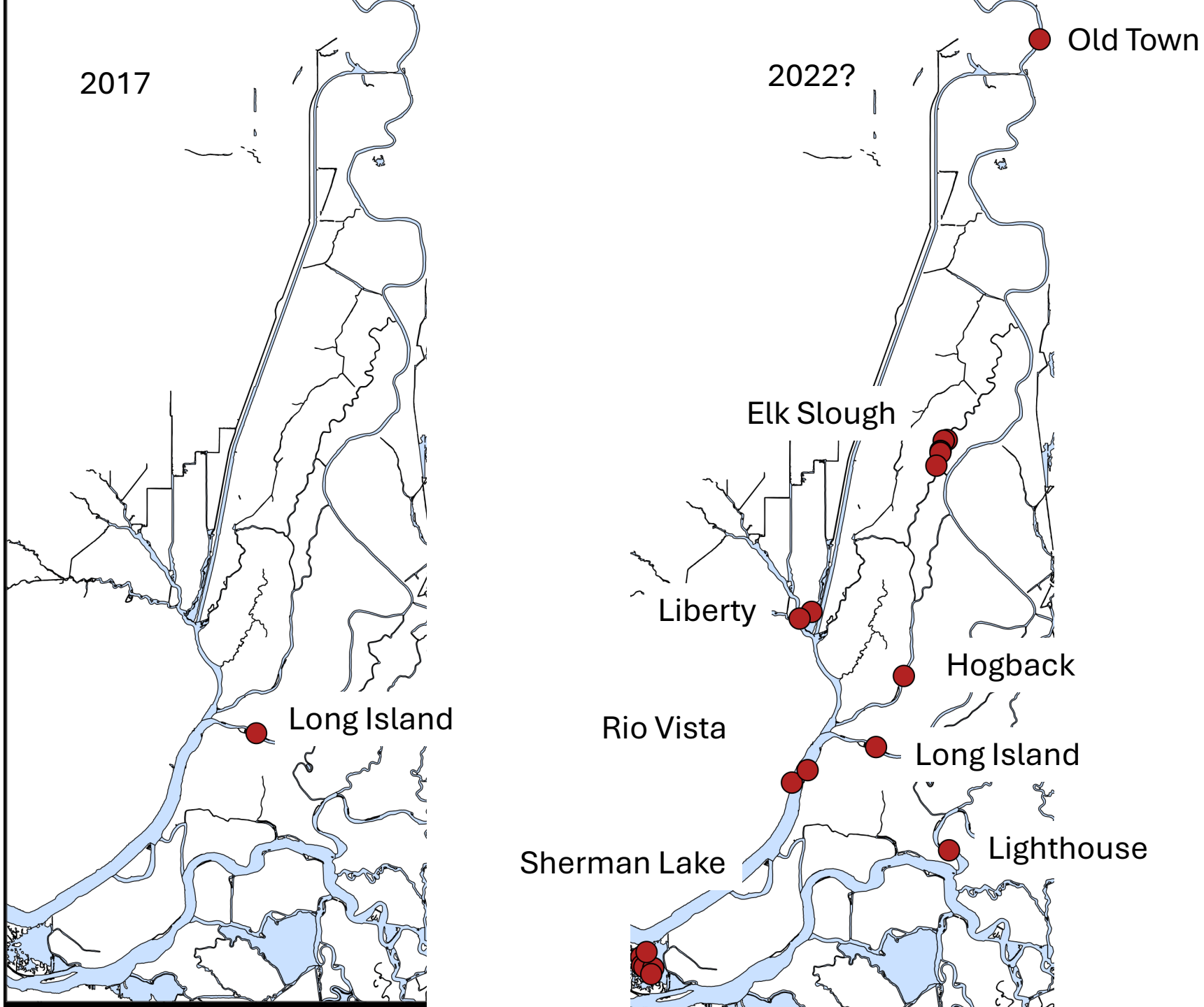
Ustin et al. 2021


Egeria densa
Myriophyllum spicatum
Cabomba caroliniana
Potamogeton crispus
Vallisneria australis
Ceratophyllum demersum
Potamogeton nodosus
Potamogeton richardsonii
Elodea canadensis
Stuckenia pectinata

Pic: Rasmussen

Vallisneria australis

(ribbon grass or Australian eelgrass)



Map from Nick Rasmussen (DWR)

VALLISNERIA AUSTRALIS LISTING TIMELINE - 2021

JULY, AUGUST

ID'ED, PEST RATING

DWR requested pest rating from CDFA

OCTOBER

"B" RATING

CDFA proposed "B" rating

NOVEMBER

RISK ASSESSMENT

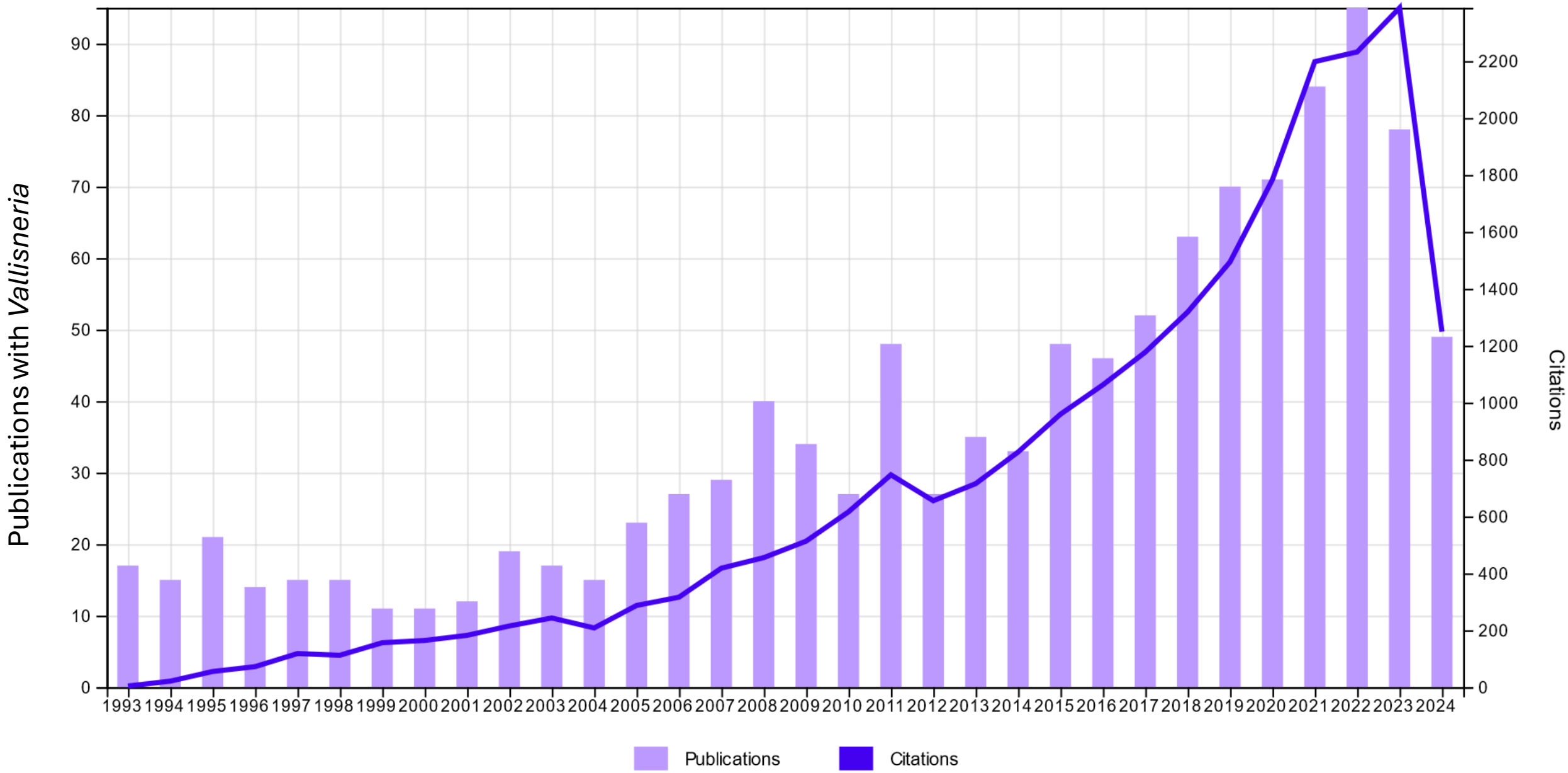
DBW requested risk assessment from DFW Invasive Species Program

SEPTEMBER

"INVASIVE"

Determined to be an invasive spp. Likely to cause harm

Allows DBW to pursue control


Publications with *Vallisneria*
Citations
0
10
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Publications
Citations

Rating as Invasive Species Globally

1. North America:
   - invasive in certain areas where it has been introduced outside its native range.
   - can form dense mats and impact native aquatic ecosystems.
2. Europe:
   - In some areas where introduced, has exhibited invasive behavior
   - can displace native aquatic vegetation
3. Australia:
   - Can grow aggressively, forming dense stands and outcompeting native aquatic plants
4. Asia:
   - Can form expansive populations and negatively impact native flora and fauna

Summarized negative impacts

Habitat Alteration:

Forms dense underwater meadows

Outcompetes native aquatic vegetation

Reduces habitat diversity

Alters light, nutrients, and oxygen.

Reduced Biodiversity:

Suppresses native plant species by shading

Impacts associated wildlife,

Altered Water Quality:

Can improve water clarity by filtering suspended particles

Changes decomposition

Reduces dissolved oxygen levels

Impaired Water Flow:

Impedes water flow

Changes sediment deposition, water circulation, and nutrient dynamics

Economic Implications:

Impedes recreational activities such as boating, fishing, and swimming.

Potential control mechanisms

Mechanical Control	Chemical Control	Biological Control	Physical Barriers	Environmental Manipulations
• Best for small scale extent • Rake or cutters	• Selective herbicides • Paired with barriers (e.g. bubble curtains)	• Natural enemies • Long-term control but difficult to implement	• Underwater curtains as barriers to fragmentation or seeds	• Not yet well-understood, less trials

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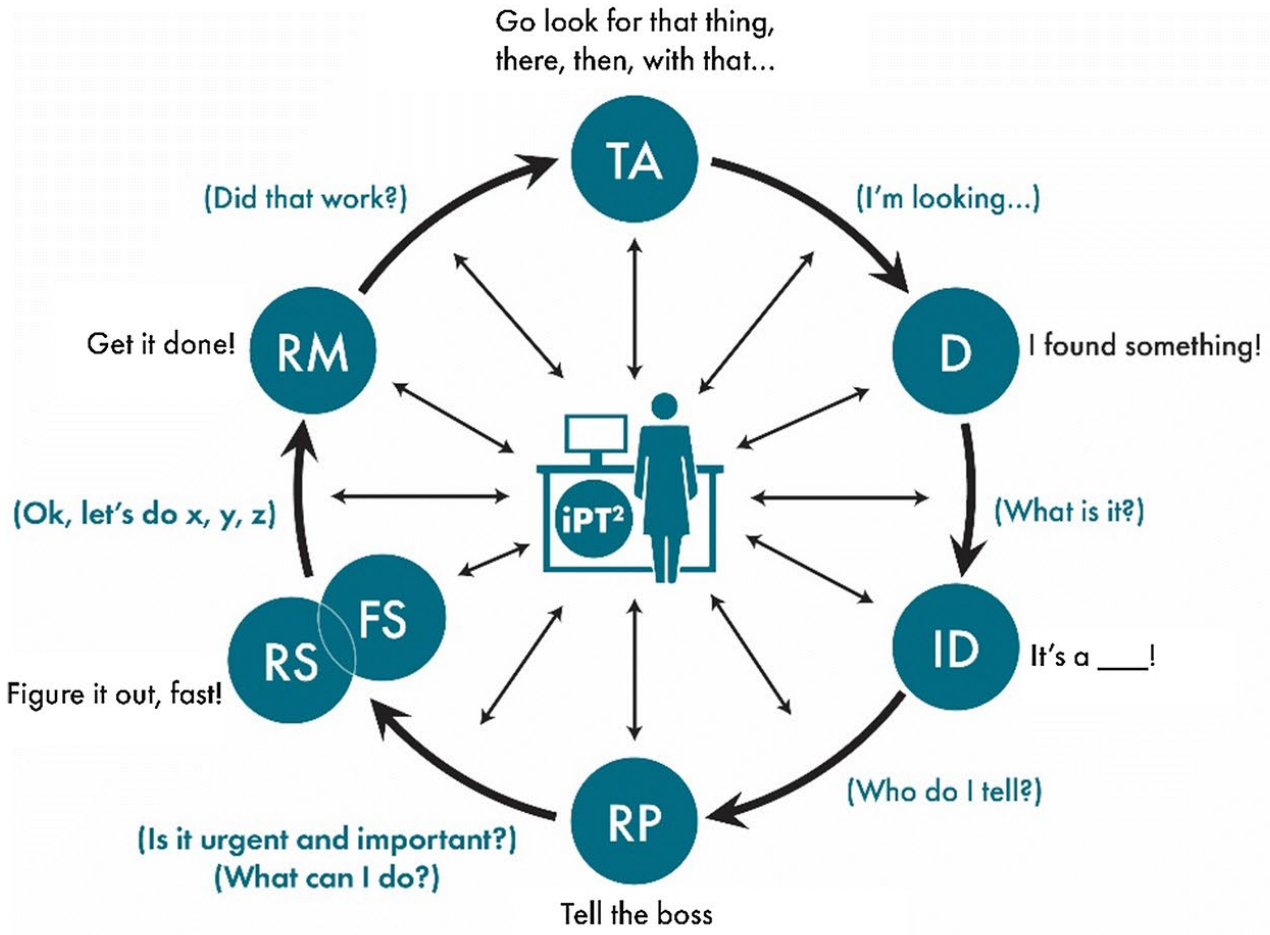
EDRR processes – identifying ideas

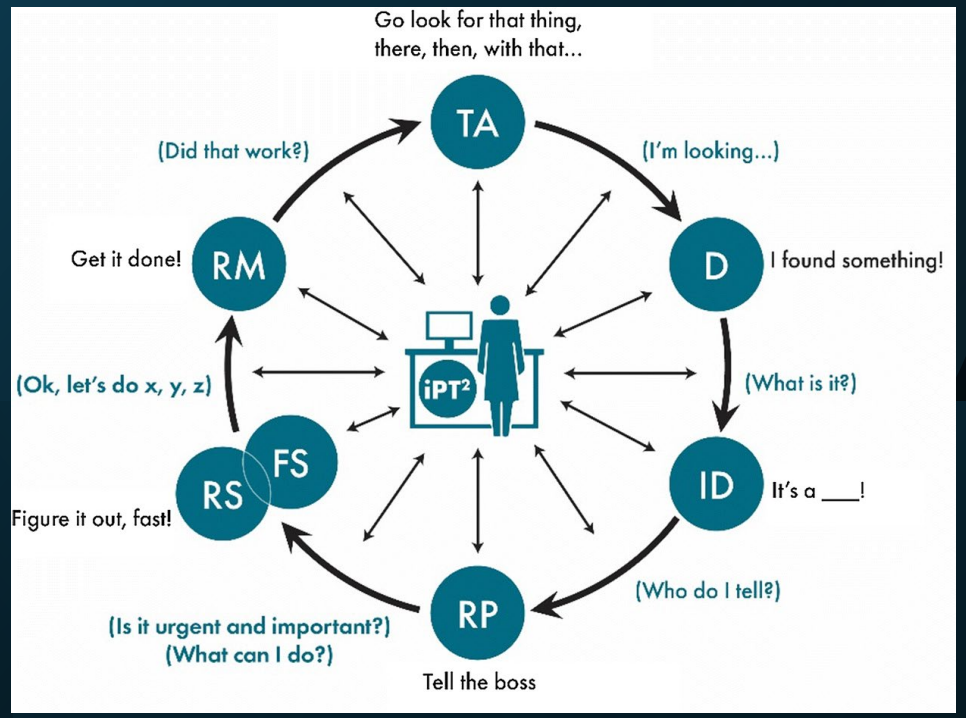


Legend

i:	Information
P:	Planning
T^2:	Technology & Training
TA:	Target Analysis
D:	Detection
ID:	Identification
RP:	Reporting
RS:	Risk Screening
FS:	Feasibility Screening
RM:	Response Measures

From Reaser, et al., 2020. EDRR: a comprehensive system.

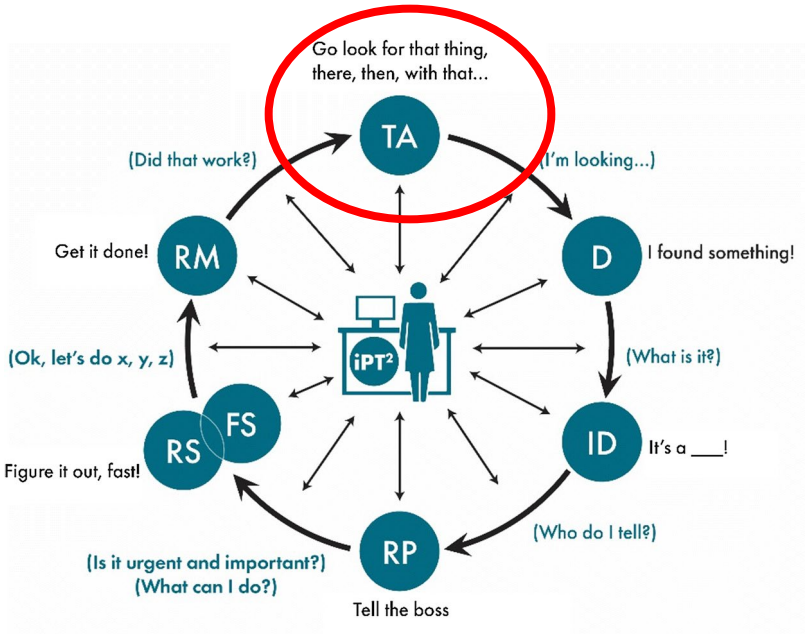
EDRR interview questions



- What is an “invasive” species?
- What is your background in invasive species work?
- What is your current position?
- What is your responsibility in regards to invasive species in your current position?
- How would you “see” (discover, etc.) invasive species?
- Once you know about the invasive species, what would you do?
- Who else should I talk with?

Interviews

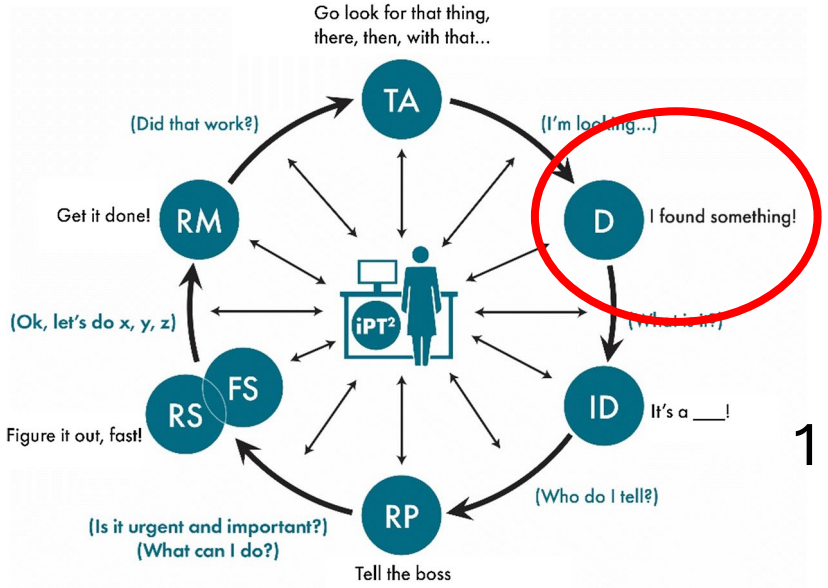
- Interviewed 13 + 2 more pending
- 2 more deferred to others
- 5 no replies



Pic: Rasmussen

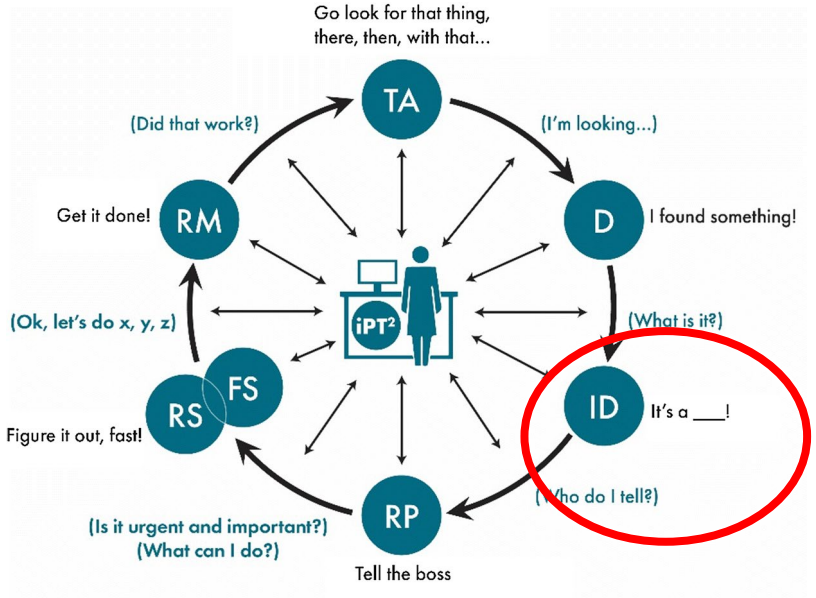
Go look….

1. Operationalize beyond passion of individuals
2. Fund monitoring!
   - For agency staff, academic and non-academic partners
3. Utilize technology (E.g. drone surveys)
4. Explore eDNA
5. Connect among stakeholders



I found something.....

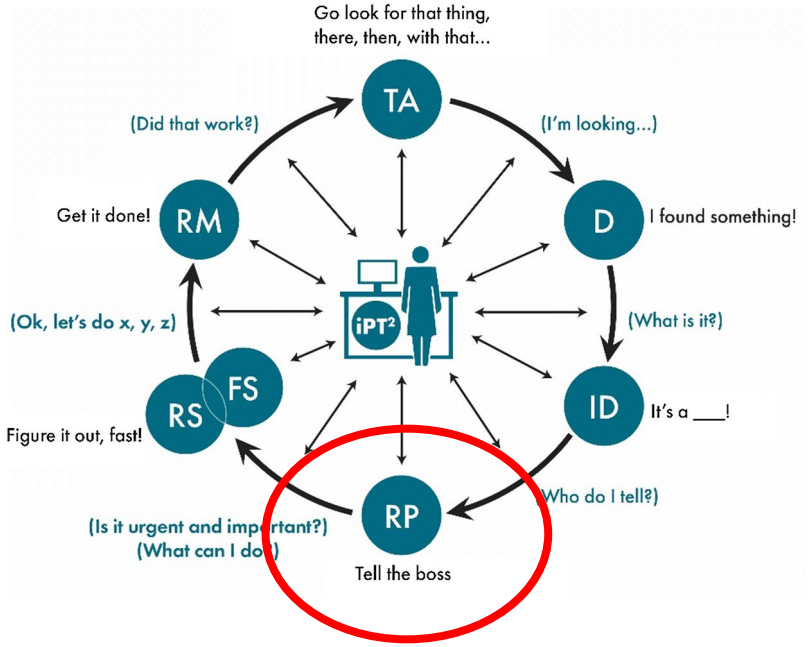
1. Coordinate among agencies to provide direction on reporting and data management
2. Work with regional stakeholders to build trust around reporting
3. Fund more research on effective public outreach
4. Increase communication capacity throughout the region
5. Build on or replicate CAL-IPC model



It's a.....

1. Use existing tools for prioritization
   - Risk assessment
2. Utilize existing expert boards or develop more robust "on call" expert boards for taxonomic ID
3. Maintain a regularly updated aquatic weed list

WHIPPET
BETA



Tell the boss

1. Integrate better across ecotones
   - Aquatic versus terrestrial
   - Delta versus reservoirs
2. Clarify the exact reporting structure – both in and out of agencies
   - Clarify plan with identified authorities
3. Replicate existing tools
   - CAL-IPC
   - WHIPPET

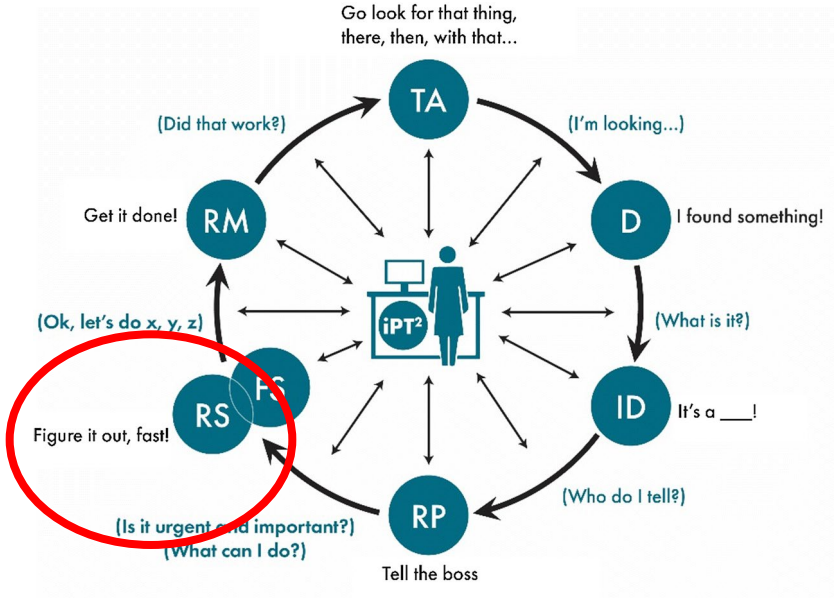
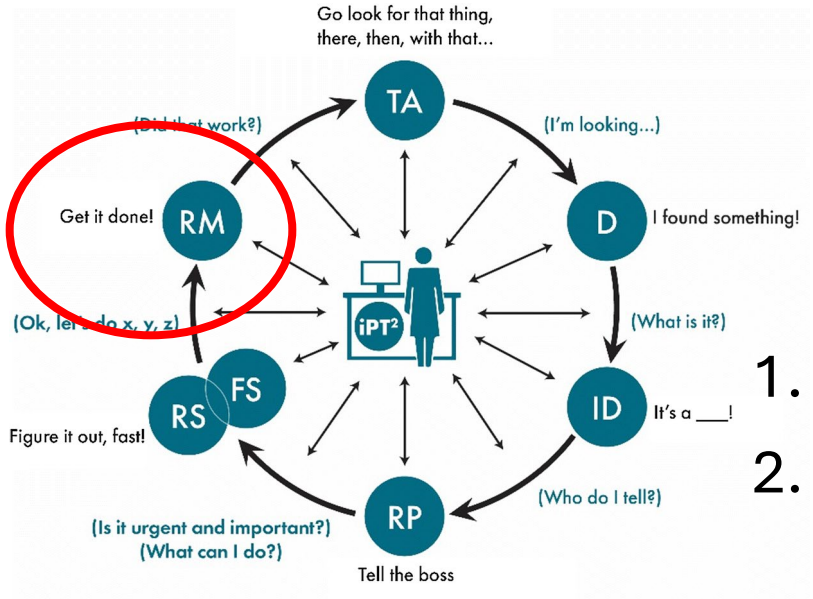


Figure it out, fast!

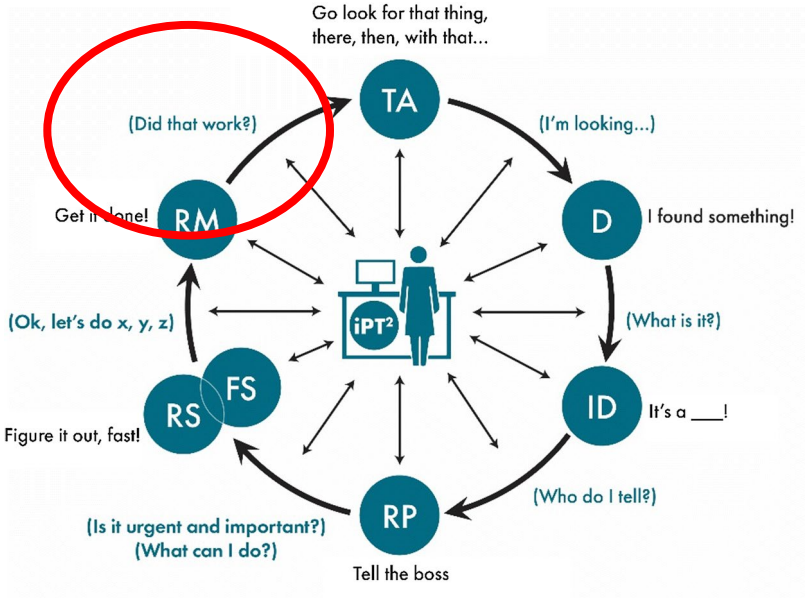
1. Support for agency staff that need to write Biological Opinions
   - Expert board on call?
2. Streamline permitting for treatment

3. Support funding and communication through Weed Management Areas
4. Use CISAC as rapid funding pass through
   - Create a fund based on user fees



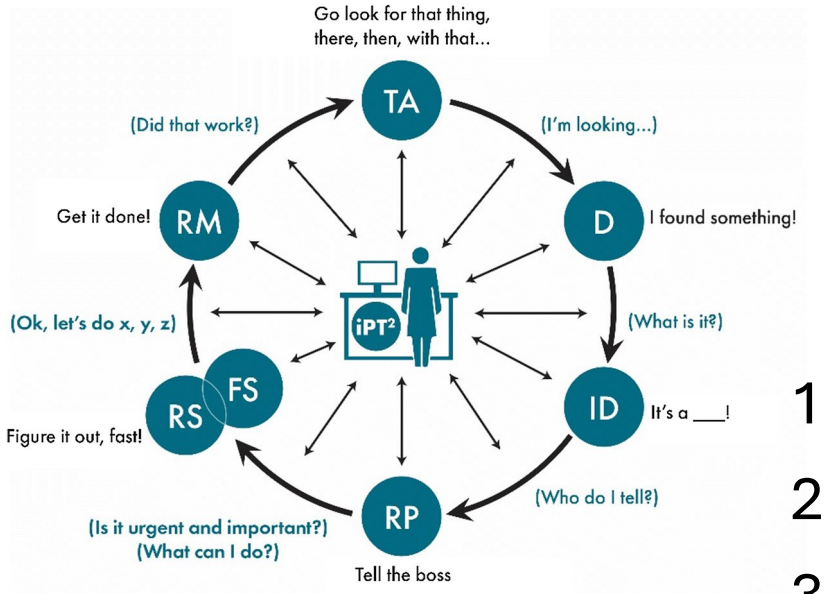
Get it done!

1. Transfer knowledge from other EDRR efforts
2. Utilize existing expert boards or develop more robust expert boards for taxonomic ID
3. Develop a constituency or co-lab around aquatic weeds
4. Leverage unique initiatives



Did that work?

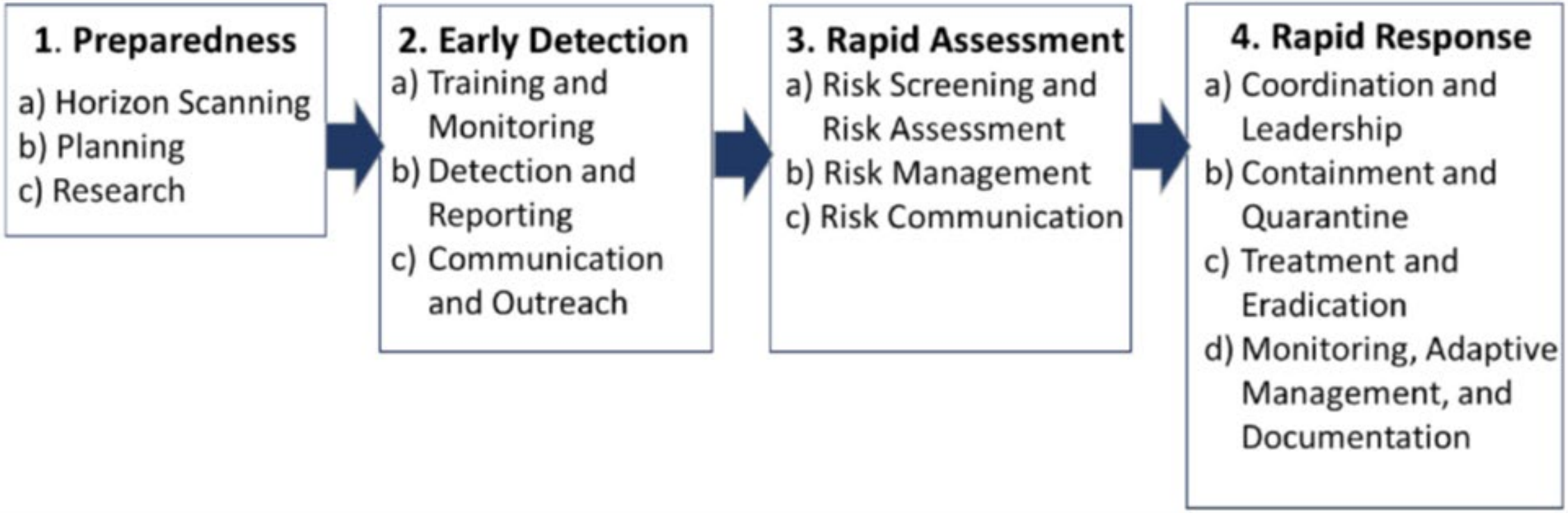
1. Fund monitoring!
   - agency staff, academic and non-academic partners
2. Analyze the effectiveness of messaging and delivery methods
3. Compare to other states and countries



Extras

1. Spend more effort on vectors or likely vector sites
2. Seek out collaborative capacity grants
3. Define terminology for communication and for policy
    - CDFA pest rating process (more impacts to economy or agriculture)
    - Non-native, invasive, noxious

Draft Delta EDRR Framework



First step actions include

Consistent messaging from partners that state-funded grantees must enter data in database that is spatially based, QA/QC'ed and queryable

Add a standing agenda item to CISAC for DPIIC restoration subcommittee to discuss species or identification

Find synergy with existing state mandates to consistently message

Combine with agricultural constituencies for messaging that invasive aquatic weeds are an agricultural challenge

Create (recreate) and maintain species occurrence list (both present and of concern species)

Add invasive tasks to existing job descriptions to allow time allocation

Next steps…

- Seek feedback from stakeholders and interviewees
- Conduct further comparison of existing EDRR plans
- Continue to compare field samples and salinity of occurrence
- Finalize remaining interviews and literature review