



Floodplains Reimagined Managed Wetland/Waterfowl Hunting Impact Analysis

April 28, 2023

Agenda

Outline

- Floodplains Reimagined Overview
- Key Questions
- Field Management
- Potential Impact Types
- Metrics
- Recommendations
- Further Discussion/Next Steps

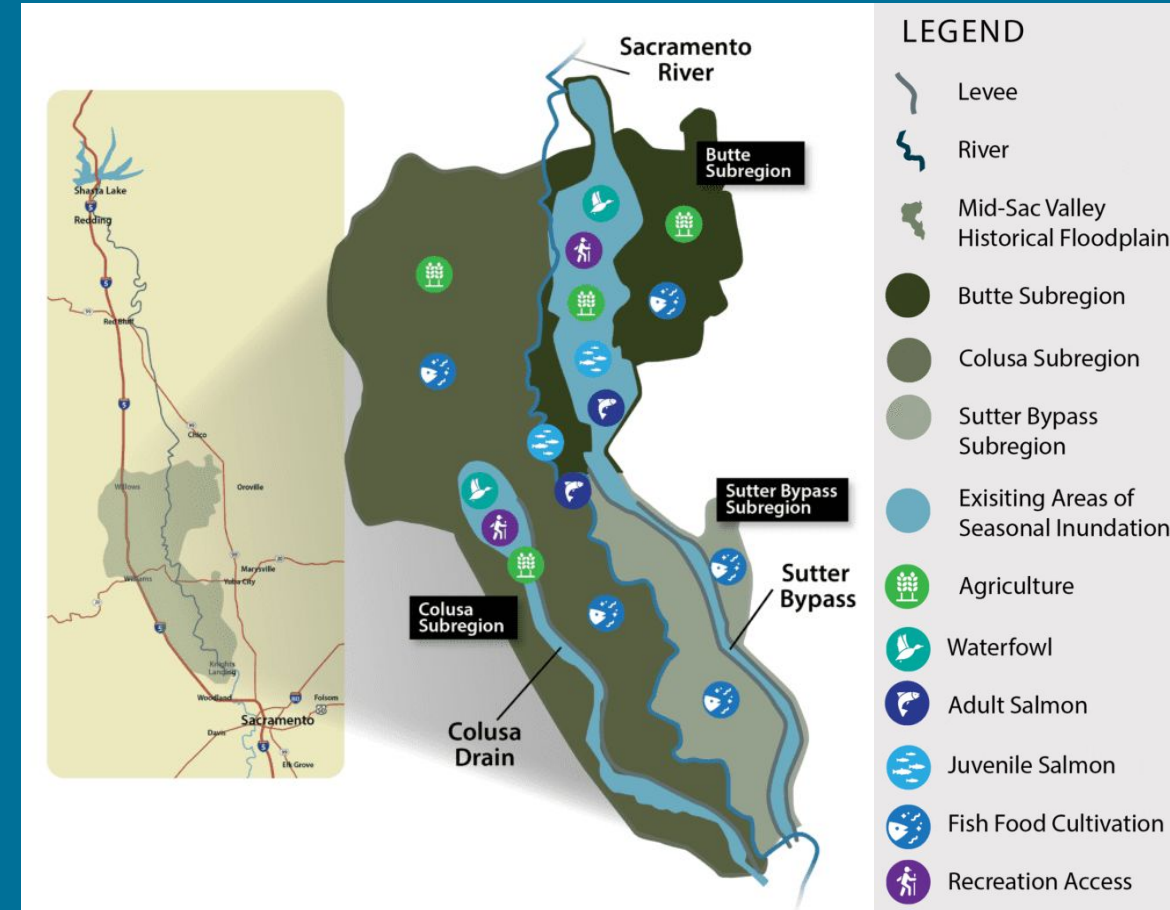
FLOODPLAINS REIMAGINED



Program Overview

Voluntarily increase the frequency and duration of shallow inundation in the winter months through increased connectivity with the Sacramento and Feather Rivers to:

1. Improve juvenile salmon migration and access to productive rearing habitat
2. Reduce adult fish passage impediments
3. Improve Pacific Flyway bird populations
4. Improve groundwater recharge
5. Respect flood management functions
6. Protect existing property and water rights



Questions to Address Today

What changes are important for evaluating impacts to managed wetlands?

- Winter/spring operations
- Post spring drawdown

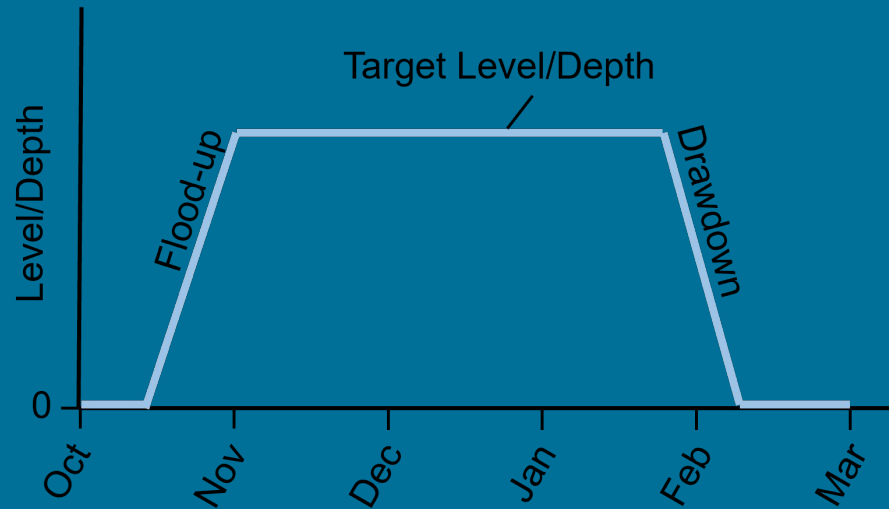
What changes are important for evaluating impacts to waterfowl hunting?

- Bird use
- Landowner/hunter access
- Infrastructure maintenance

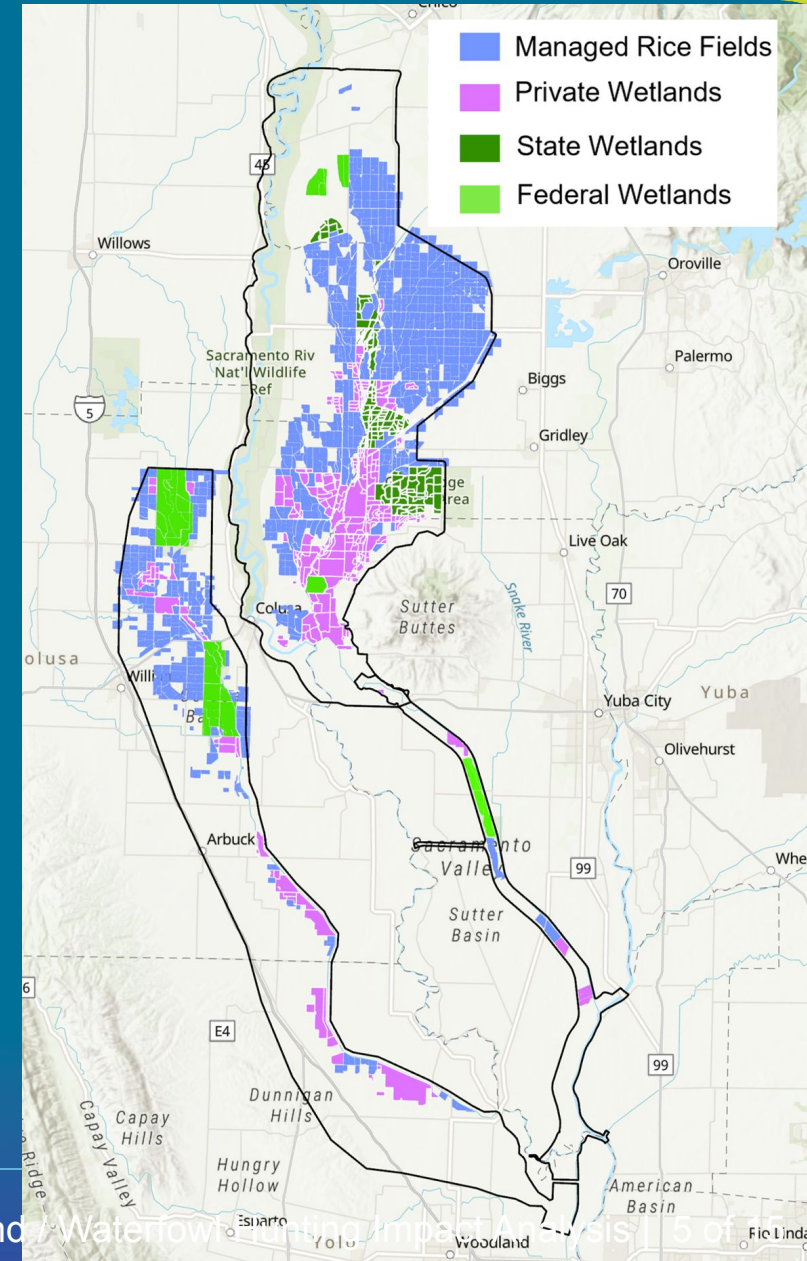
Field Management

Maintaining managed water levels on fields/wetlands during winter

- Winter Managed Rice fields
- Private Wetlands
- State and Federal Wetlands



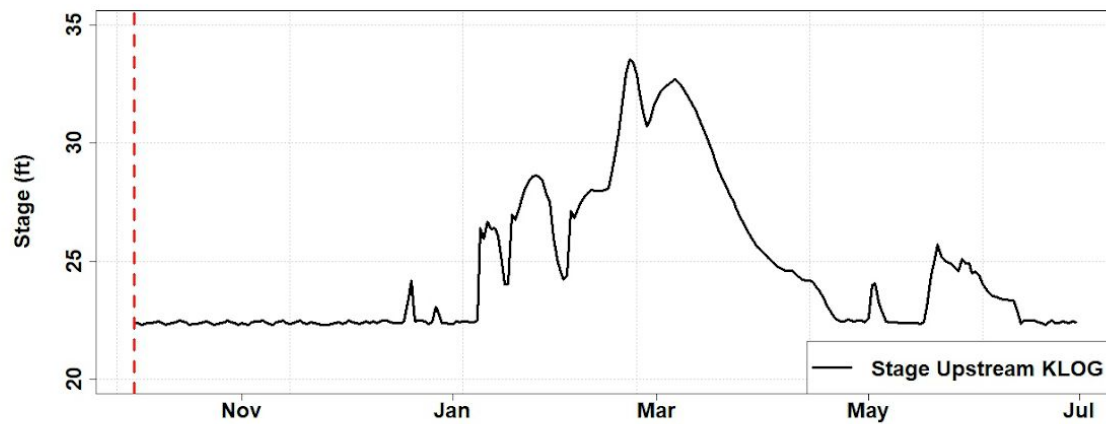
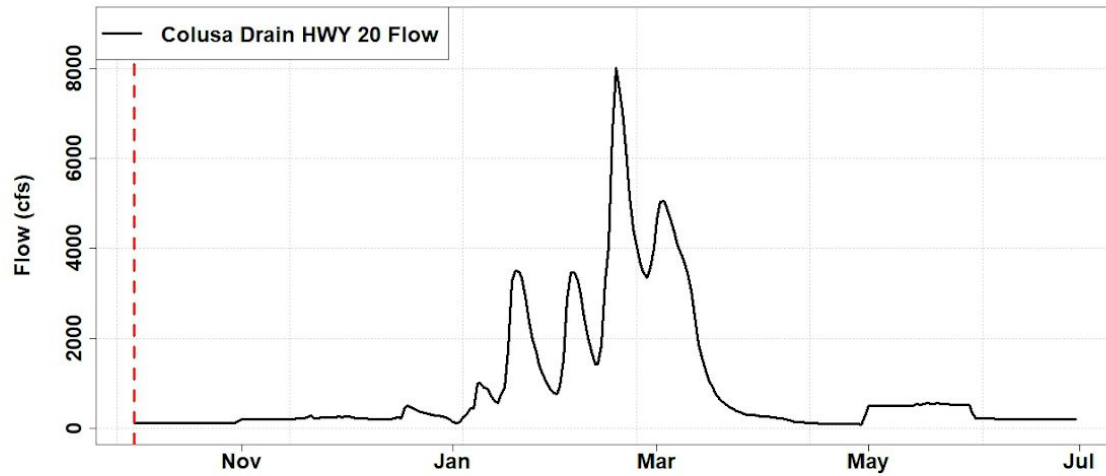
- Specify typical flood-up and drawdown schedules for each wetland type
- Specify target depths and/or water levels



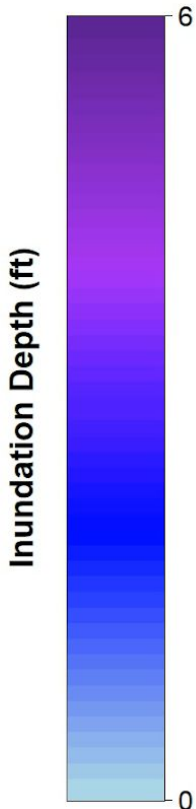
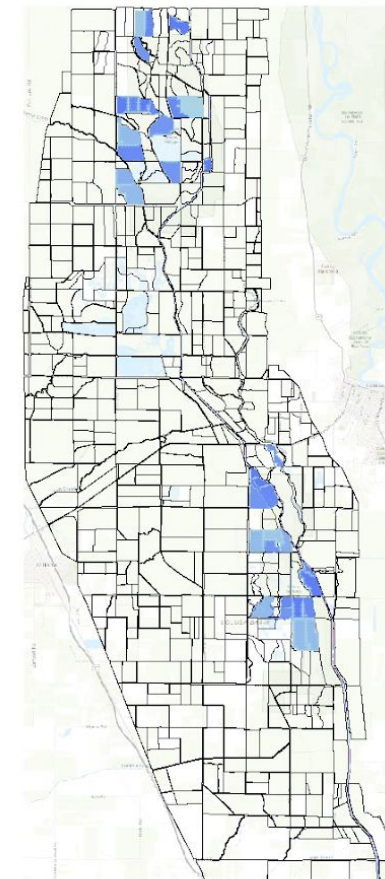
Field Management Water Schedules

Field Management Type Species	Rice Ducks	Clubs Ducks	SWA (1) Ducks	SWA (2) Ducks	NWR (D) Ducks	NWR (S) Shorebirds	NWR (GGS) Giant Garter Snake	NWR (G) Geese	WRP Ducks
Flood Up Start	15-Oct	15-Sep	15-Sep	15-Oct	Var	Var	15-Sep	Var	1-Oct
Flood Up Duration (weeks)	2	2	2	2	Var	Var	2	Var	4
Drawdown Start	1-Feb	1-Mar	1-Mar	1-Mar	Var	Var	N/A	Var	4
Drawdown Duration (weeks)	1	6	4	4	Var	Var	N/A	Var	4
Target Depth (in)	10	10	10	10	10	4	10	10	10
Freeboard (in)	4	12	12	12	12	12	12	12	12

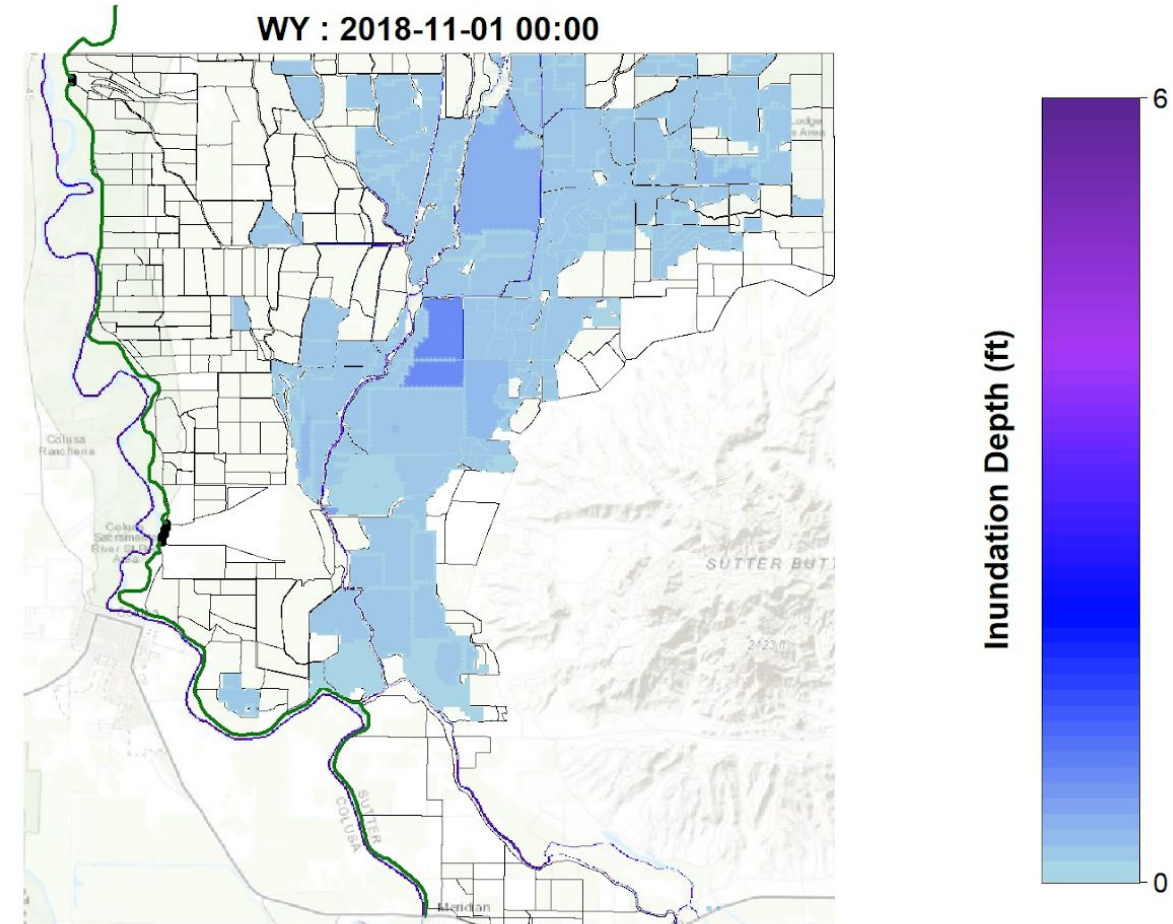
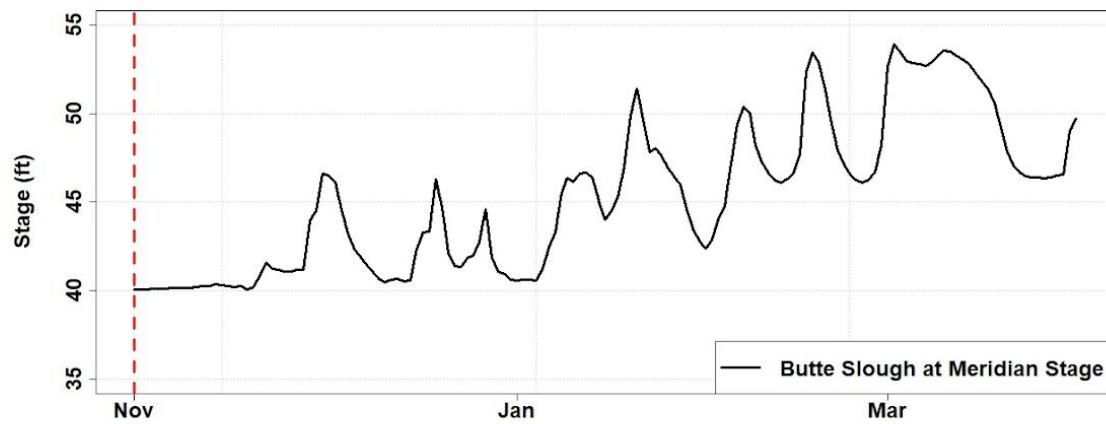
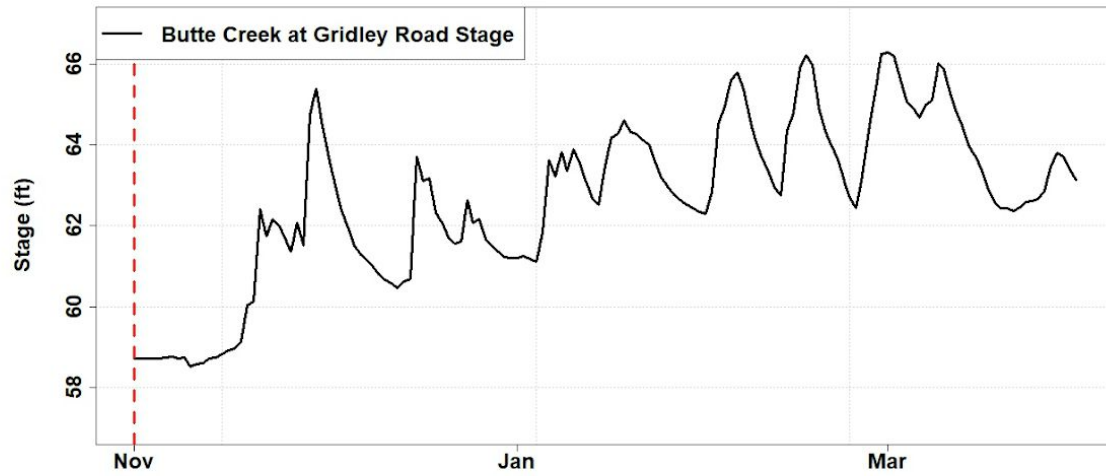
Baseline Model Results – Colusa Basin Upper Region



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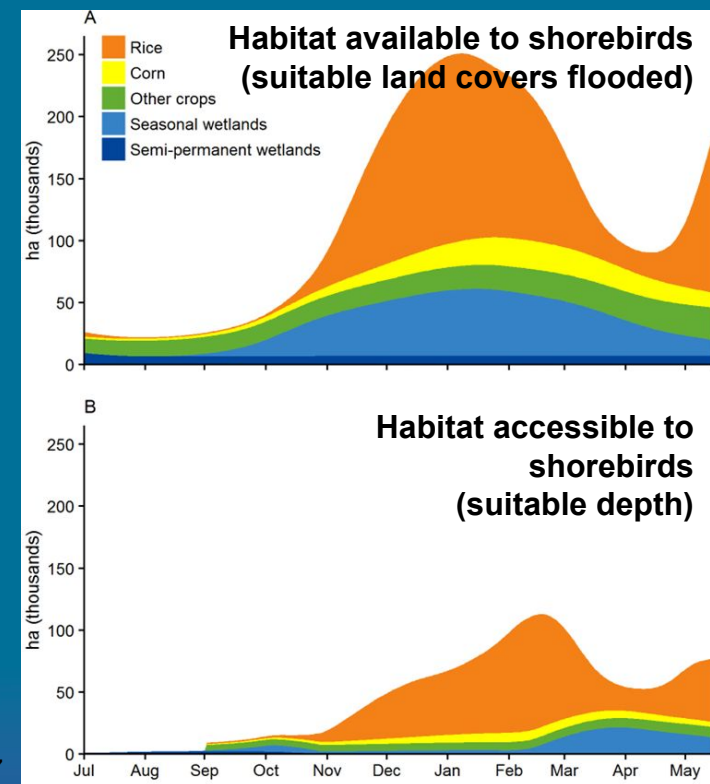
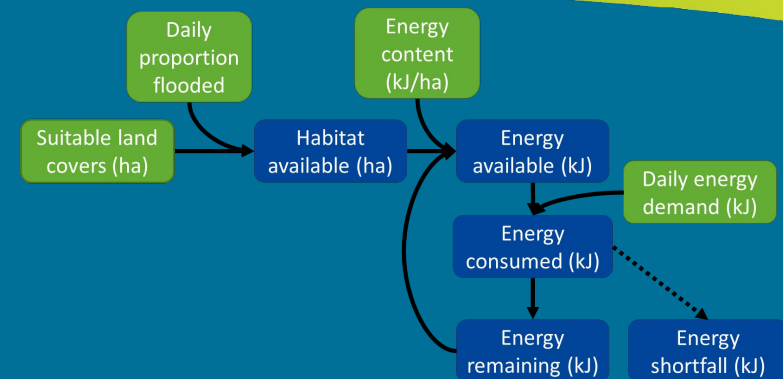
Baseline Model Results – Butte Basin Lower Region



Bird Habitat Suitability Criteria & Bioenergetics

Group	Land Cover Class	Flooding Status	Depth	Season
Shorebirds (non-breeding)	Managed wetlands, rice, grain corn, field & row crops	Must be flooded	< 4 inches (~10cm)	July 1 - May 15
Waterfowl* (non-breeding)	Managed seasonal wetlands, rice, grain corn	Managed wetlands and rice must be flooded	< 12 inches (~30 cm)	Aug 15 - Mar 31
Cranes (roosting)	Managed wetlands, rice, corn, wheat, pasture	Must be flooded	< 8 inches (~20 cm)	Oct 1 - Mar 15
Cranes (foraging)	Primarily rice, corn, wheat within 5km of known roost	Dry or very shallow (e.g. leading edge of flood-up)	< 2 inches (~5 cm)	Oct 1 - Mar 15

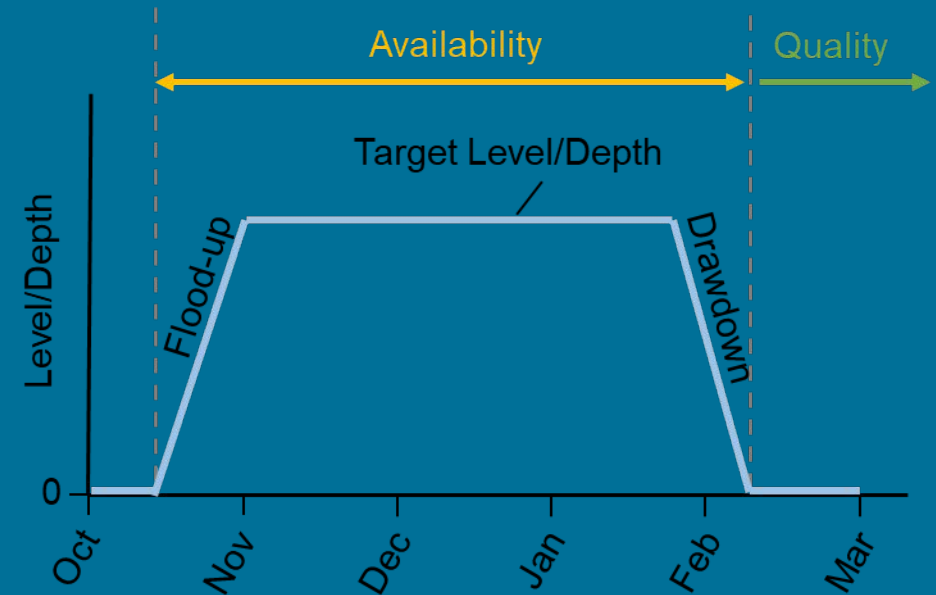
*emphasis on dabbling ducks (over geese, diving ducks)



Dybala et al. 2017

Potential Impact Types

- Managed wetland habitat availability/bird use
 - Between flood start and end of drawdown by field
- Managed wetland habitat quality
 - Post drawdown by field
- Waterfowl hunting
 - Bird use (no access to food, just loafing)
 - Access (shallow overtopping of berms)
 - Infrastructure maintenance (deeper overtopping)
 - All days not equal, do we weight based on timing?
 - Late October (x2)
 - November through 1st week December (x1)
 - 2nd week December through January (x2)
- Are there other potential impacts?



Analyze using depth above the field management depth

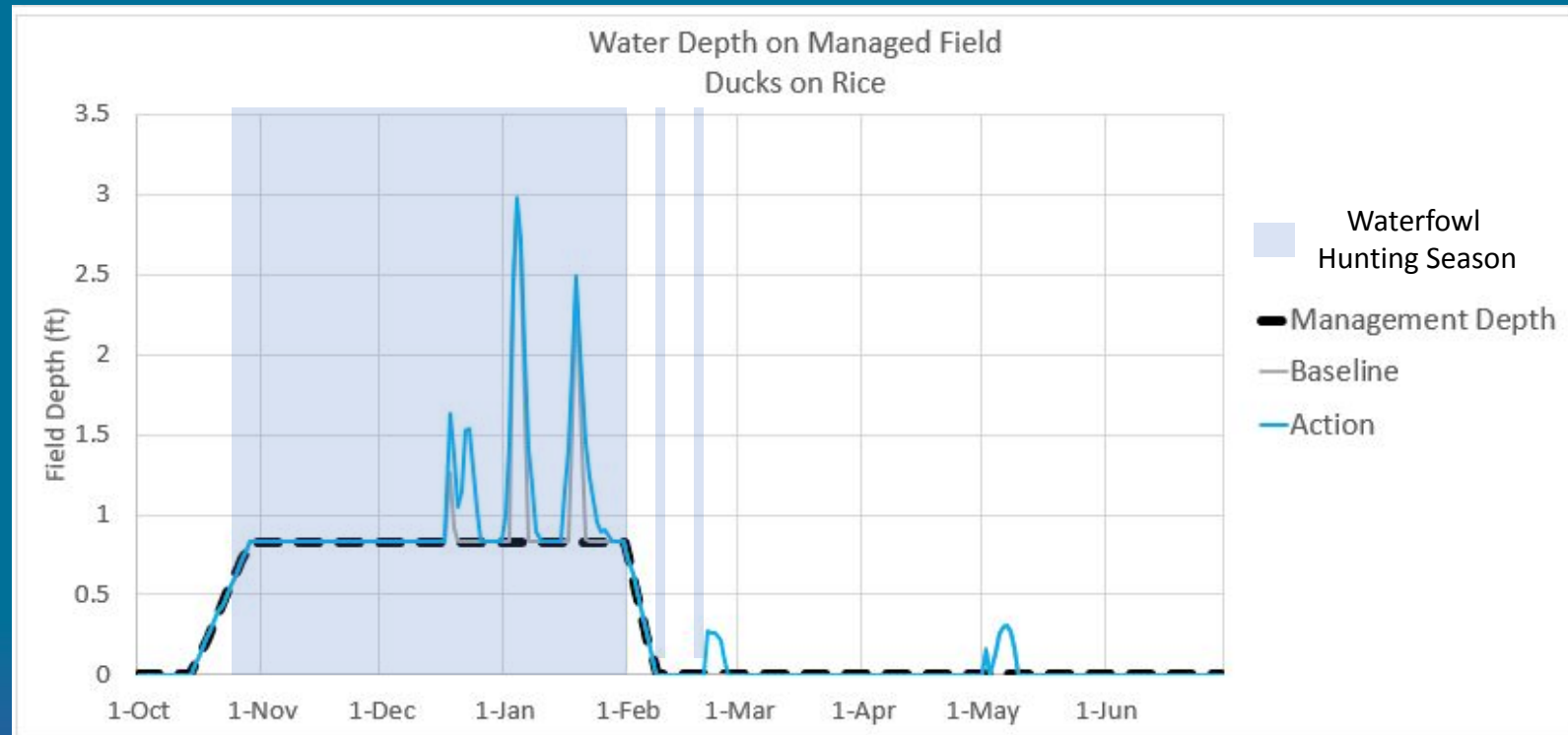
Metrics

Available Metrics

- Consecutive days exceeding management level
- Cumulative days exceeding management level
 - Or days exceeding management level thresholds?

Available Plots

- Field depths
 - Time series of water levels overlain by mgt schedules and hunting season
- Consecutive days
- Cumulative days



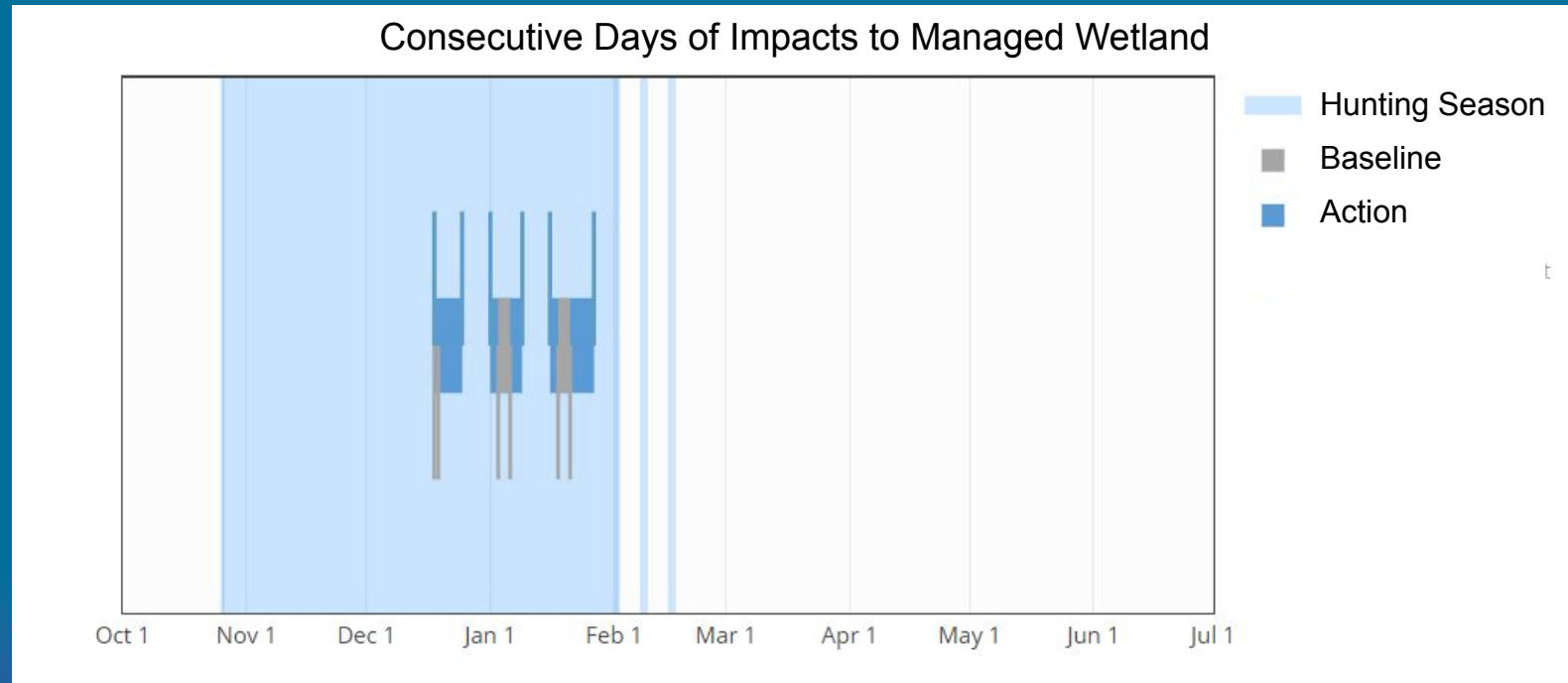
Metrics

Available Metrics

- Consecutive days exceeding management level
- Cumulative days exceeding management level
 - Days exceeding management level thresholds?

Available Plots

- Field depths
- Consecutive days
 - Periods of impact
- Cumulative days



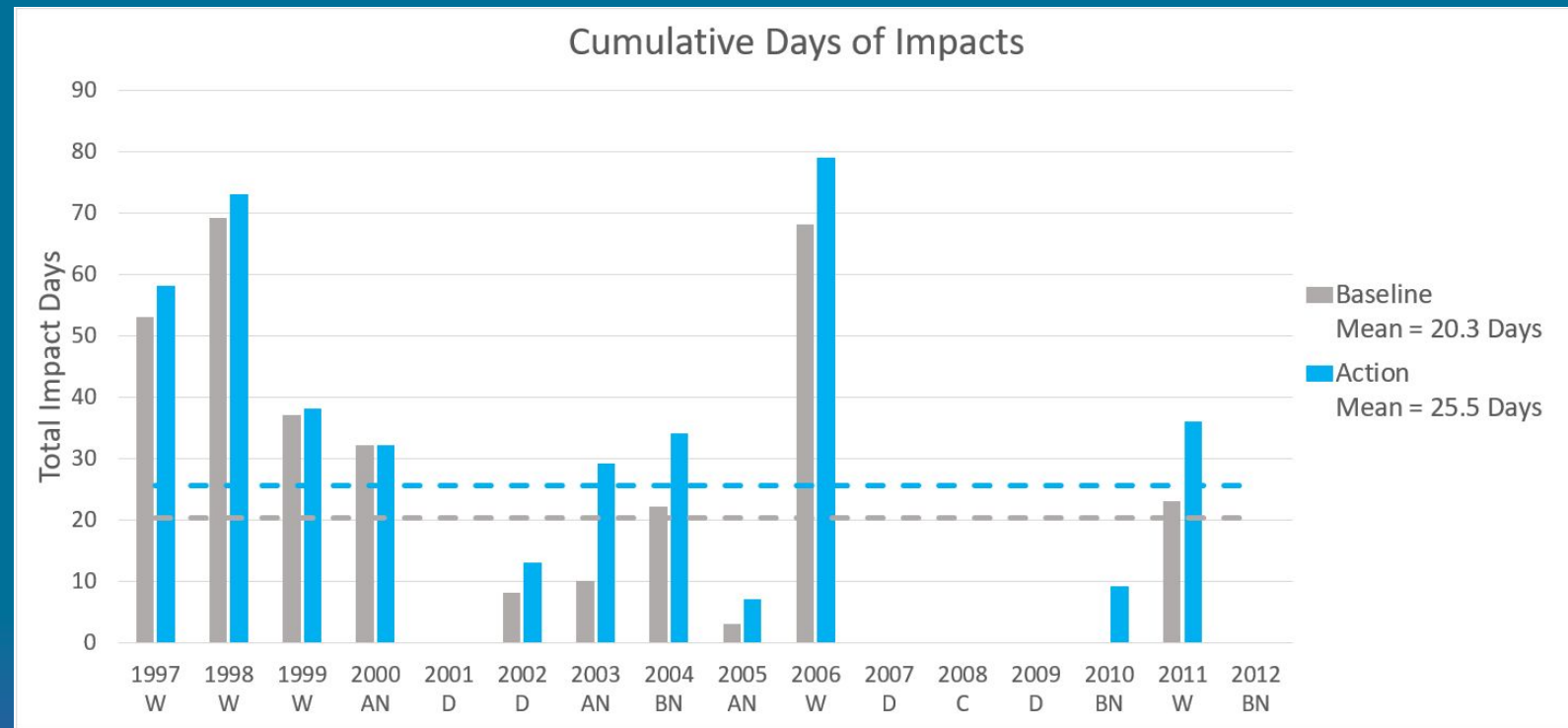
Metrics

Available Metrics

- Consecutive days exceeding management level
- Cumulative days exceeding management level
 - Days exceeding management level thresholds?

Available Plots

- Field depths
- Consecutive days
- Cumulative days
 - Relative changes
 - Bar plot and heat map



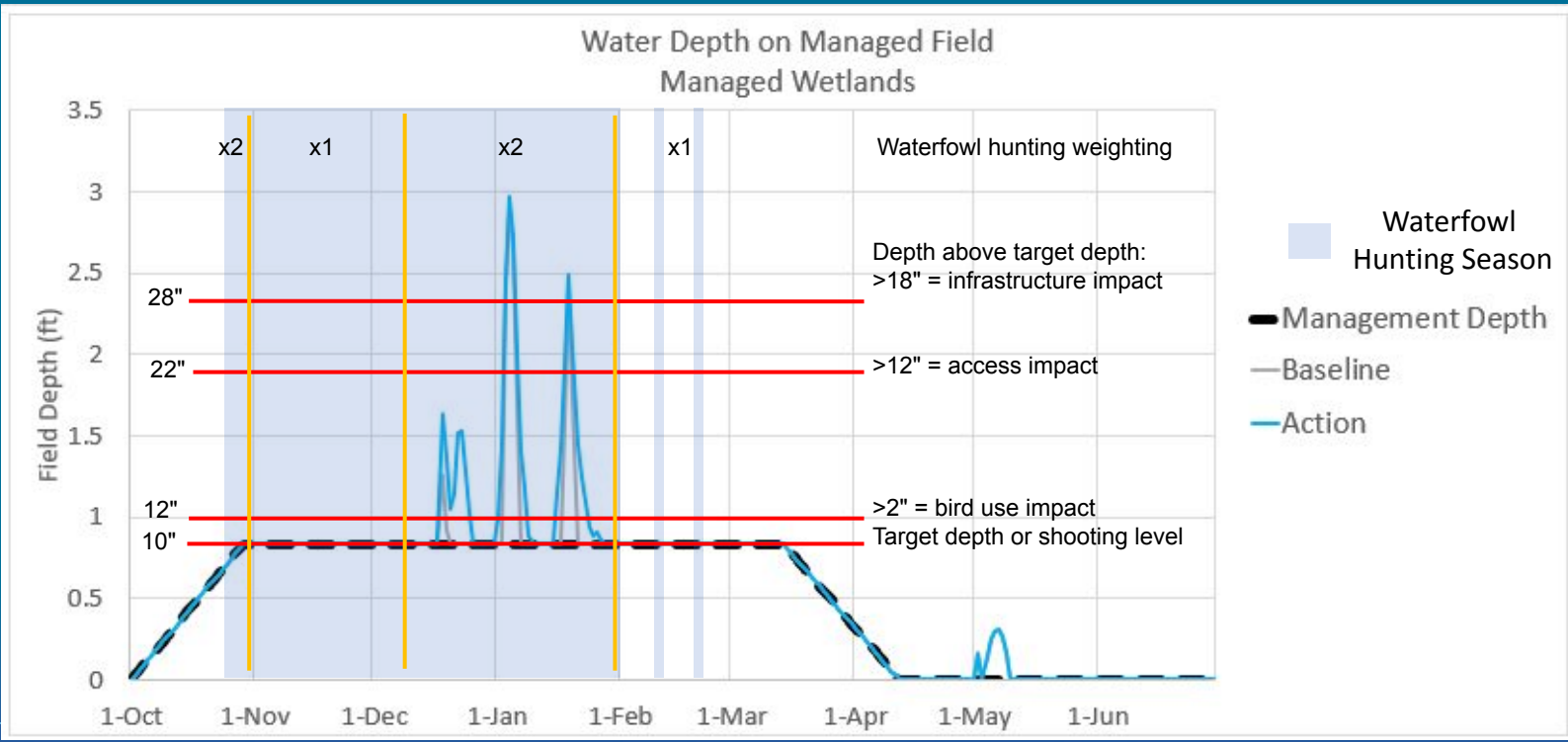
Recommended Management Thresholds – Managed Wetlands

Water Level	Depth Abv Mgt Level	Waterfowl Hunting Impact*	Wetland Mgt Impact**
10"-12"	< 2" (above shoot level)	No impact (within suitable depths)	No impact (within suitable depths)
12"-22"	2"-12" (within freeboard)	Bird use (i.e., no access to food, just loafing)	Bird use (addressed with bird tools)***
22"-28"	12"-18" (above top of berms)	Access	Access (after drawdown begins)
> 28"	> 18"	Infrastructure	Infrastructure (outside hunting season)

*Further weighted based on timing

**Further binned by habitat availability (flood up thru drawdown) vs quality (post drawdown)

***Bird use addressed across all depths for all time



Recommended Management Thresholds – Rice Fields

Water Level	Depth Abv Mgt Level	Waterfowl Hunting Impact*	Rice Farming Impact**
10"-12"	< 2" (above shoot level)	No impact (within suitable depths)	No impact (within suitable depths)
12"-14"	2"-4" (within freeboard)	Bird use (i.e., no access to food, just loafing)	Bird use (addressed with bird tools)***
14"-20"	4"-10" (above top of berms)	Access	Access (after drawdown begins)
> 20"	> 10"	Infrastructure	Infrastructure (outside hunting season)

*Further weighted based on timing

**Any inundation after 3/1 is considered impactful on ag

***Bird use addressed across all depths for all time

