# California Rapid Assessment Method for Wetlands

# (CRAM)

# Stressor Checklist

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- *Anthropogenic perturbations within the wetland or in the surrounding landscape with negative impact on condition and function*

# Pressure-State-Response Model (PSR)

- Natural processes (disturbance) and human operations (stressors) put *pressure* on wetlands

- Pressure affects wetland *state* (condition)

- Degraded states trigger management *responses* to reduce pressure by adjusting stressors

# Background

- Physical and biological processes connect wetlands to their environmental settings, thus help shape wetland conditions

- Land use practices influence these processes (Frisell et al. 1986, Roth et al. 1996, Scott et al. 2002)

- Wetland conditions can be affected by internal stressors as well, but are less abundant than landscape stressors

# Stressor Checklist

- Four assumptions:
  - Stressor(s) can lead to deviation from best attainable condition
  - More stressors can cause a decline in condition
    - Linear, multiplicative, other non-linear model
  - Increase in intensity/proximity increases decline in condition
  - Continuous/chronic stress increases decline in condition

# Stressor Checklist

- Identify stressors within an AA or immediate vicinity that might account or low condition scores

- A single stressor might be the primary cause, but it is usually due to interactions among multiple stressors (USEPA 2002)

- Can be "present" or "significant negative effect"

# Stressor Checklist

| HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA) | Present | Significant negative effect on AA |
|---|---|---|
| Point Source (PS) discharges (POTW, other non-stormwater discharge) | | |
| Non-point Source (Non-PS) discharges (urban runoff, farm drainage) | | |
| Flow diversions or unnatural inflows | | |
| Dams (reservoirs, detention basins, recharge basins) | | |
| Flow obstructions (culverts, paved stream crossings) | | |
| Weir/drop structure, tide gates | | |
| Dredged inlet/channel | | |
| Engineered channel (riprap, armored channel bank, bed) | | |
| Dike/levees | | |
| Groundwater extraction | | |
| Ditches (borrow, agricultural drainage, mosquito control, etc.) | | |
| Actively managed hydrology | | |
| Comments | | |
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Important to record nature and degree of stressors for future module evaluation and development

# Stressor Checklist - Next Steps

- Overall stress on a wetland can be assessed as the <u>number</u> of evident stressors and their <u>extent</u>

- A stressor index, along side the condition index will give better context to CRAM scores, and assist in determining what remediation/ rehabilitation measures are warranted

- USA-RAM developed a version for EPA's National Wetland Condition Assessment

Thank You