Wildlife Habitat

“Habitat is vegetation groups and environmental correlates seen through the eyes and lives of wildlife”
Life History
Wildlife Habitats
Habitat Structures
Wildlife Species
Salmonid-Wildlife Relationships
Fish Species
Key Ecological Functions (KEFs)
Key Environmental Correlates (KECs)
Management Activities
GIS Species Ranges Habitat Mapping

✓ Expert Panels
✓ Literature Cited
✓ Peer-Review
Key Environmental Correlates (KECs)

- Pools & Riffles
- Down Wood In Stream
- Flowers

Habitat elements:
Physical or Biological thought to most influence a species distribution, abundance, fitness, and viability...
Key Environmental Correlates (KECs)

- down wood in riparian areas
- beaver/muskrat activity (dams, lodges, ponds)
- burrows (aquatic or terrestrial)
- oxbows
- overhanging vegetation
- coarse woody debris in streams and rivers
- ephemeral pools

Example:
Northern River Otter
The principal way organisms influence the environment.

**Key Ecological Functions (KEFs)***

- **Primary Predator Prey**
- **Seed Dispersal**
- **Reduced Diversity**
- **Filters Water**

*Uses Structures Created by Others*
Example:
Northern River Otter

- piscivorous
- secondary burrow user
- creates runways
- eats aquatic macroinvertebrates
- eats terrestrial invertebrates

Key Ecological Functions (KEFs)
### Functional Redundancy Index

#### Valley Foothill Riparian (Species Associated)

<table>
<thead>
<tr>
<th>Species</th>
<th>Function 1</th>
<th>Function 2</th>
<th>Function 3</th>
<th>Function 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disperses Seeds/ Fruits (through ingestion or caching)</td>
<td>Breaks up Down Wood</td>
<td>Primary Burrow Excavator (underground)</td>
<td>Eats Terrestrial Invertebrates</td>
</tr>
<tr>
<td>Acorn Woodpecker</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Black Bear</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>California Newt</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Yellow Warbler</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
# Functional Redundancy Index

<table>
<thead>
<tr>
<th>Valley Foothill Riparian (Polygon #1 KECS)</th>
<th>Function 1 Creates Snags</th>
<th>Function 2 Breaks up Down Wood</th>
<th>Function 3 Primary Excavator</th>
<th>Function 4 Eats Fish</th>
<th>Function 5 Eats Terrestrial Insects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down Wood</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Snags</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Tree Cavities</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hollow Living Trees</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>In Stream Large Woody Debris</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
**Matrix 1**

Species-Functions by Habitat Type

Total # of 1s = 9

Total # of functions* = 4

Number of species performing functions

\[
\frac{9}{4} = 2.3
\]

Total number of potential functions

Number of species functions supported by habitat structure

\[
\frac{14}{5} = 2.8
\]

Per-Acre Habitat Value

\[
5.1
\]

*refer to the number of function columns in the matrix
Avoid Impacts
Comparison of Management Alternatives
- Elevation data from 2021 used
- Pond A12 breached
- Only pilot channels, outboard levee breaches, and ditch blocks displayed
- Intertidal channels added in pond A12 without complex channels included
- Alternative Alignment 1, Alviso South, WPCP Basic, no Ecotone
- Elevation data from 2026 used
- Pond A12 channel complexity evolves
- Only pilot channels, outboard levee breaches, and ditch blocks displayed
- Ponds A9-A11, A18 breached
- Intertidal channels added in ponds A9-A11, A18 without complex channels included
- No upland transitional fill
- Alternative Alignment 1, Alviso South, WPCP Basic, no Ecotone
San Francisco South Bay Restoration
Alternative Analysis Future Condition - 2030 - Alignment 1
Per Acre Habitat Value

- Elevation data from 2031 used
- Ponds A9-A11, A18 channel complexity evolves
- Only pilot channels, outboard levee breaches, and ditch blocks displayed
- Ponds A13-A15 breached
- Intertidal channels added in ponds A13-A14 without complex channels included
- No upland transitional fill
- Alternative Alignment 1, Alviso South, WPCP Basic, no Ecotone

Per Acre Habitat Value

US Army Corps of Engineers
Habitat data representing 2037 was used for ponds (simulations by NHI).
Ponds A13-A15 channel complexity evolves.
Only pilot channels, outboard levee breaches, and ditch blocks displayed.
No upland transitional fill.
Alternative Alignment 1, Alviso South, WPCP Basic, no Ecotone.
- Habitat data representing 2047 was used for ponds (simulations by NHI)
- In-pond channel complexity fully evolved for all ponds
- Only pilot channels, outboard levee breaches, and ditch blocks displayed
- No upland transitional fill
- Alternative Alignment 1, Alviso South, WPCP Basic, no Ecotone
Habitat data representing 2067 was used for ponds (simulations by NHI)
- Only pilot channels, outboard levee breaches, and ditch blocks displayed
- Tidal marsh pannes added in all ponds
- No upland transitional fill
- Alternative Alignment 1, Alviso South, WPCP Basic, no Ecotone
Habitat Type Changes for Alignment 3 over Six Time Periods
Riparian 16 Most Redundant Functions

- eats terrestrial invertebrates
- prey for secondary or tertiary consumer (primary or secondary predator)
- frugivore (fruit-eater)
- vertebrate eater (consumer or predator of herbivorous vertebrates)
- spermivore (seed-eater)
- disperses seeds/fruits (through ingestion or caching)
- uses burrows dug by other species (secondary burrow user)
- controls or depresses insect population peaks
- common interspecific host
- physically affects (improves) soil structure, aeration (typically by digging)
- eats aquatic macroinvertebrates
- ovivorous (egg eater)
- controls terrestrial vertebrate populations (through predation or...)
- secondary cavity user
- creates aerial structures
- carrion feeder

Number of Species Performing Function

- Amphibian
- Bird
- Mammal
- Reptile
Natural Resource Damage Assessment:
CHAP ~ Functional Redundancy Index

... by accounting for all species, habitats, and their functions in a transparent way so we can obtain a loss of ecological services so the public can understand the results.
SOUTHERN CALIFORNIA REGIONAL CONSERVATION STRATEGY

SCAG Per-Acre Habitat Value by Basin
CHAP Coarse-scale Evaluation

SUSTAINABILITY
NATURAL & FARM LANDS

Southern California Association of Governments
Donate to
The Habitat Fund

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