Floodplains Reimagined Bird Model Ad hoc Group Meeting

June 16, 2022, 1 pm – 3 pm

Virtual Meeting, Zoom platform

Meeting Objectives:

- Develop a shared understanding of the overall modeling approach.
- Develop a shared understanding of the various types of models and how they may be applied.

Action Items

- Schedule targeted follow-up discussion on tool applications.

Welcome and Introductions

Eric Nagy (Nagy), Larsen Wurzel Associates, welcomed all attendees. He reviewed the meeting agenda and objectives.

Modeling Approach

Kristy Dybala (Dybala), Point Blue, presented on the modeling approach.

Group members provided the following comments:

- Dybala - Requested recommendations for additional bird taxa or species for addition to the list identified for phase one.
    - Response: Virginia Getz (Getz), Ducks Unlimited – Observed that shorebirds were not present on the list shared by Dybala.
    - Response: Dybala – Clarified that shorebirds and waterfowl were implicitly grouped into waterbirds, but there are species that may not fall into the waterfowl and shorebirds categories.
    - Nagy – Clarified that not all participants on the call may be aware of the types of water birds which do not fit into the shorebird or waterfowl categories and requested examples.
    - Response: Getz – Herons and egrets.
    - Nagy – Would the additional bird/taxa species nest into the existing shorebird and waterfowl modeling approach?
    - Response: Dybala – Clarified that a separate approach would be required to address the newly proposed birds.
    - Response: Getz – Recommended that nonbreeding shorebirds and waterfowl be included with "other waterbirds" to encompass three categories and "other waterbirds" be included as a phase one priority with population discrepancies considered.
    - Julie Rentner, River Partners – (From meeting chat) A question for another time: If recovery is a priority, then why are bird groups with the largest populations being prioritized? The species with decreasing populations should be included as well.
    - Rodd Kelsey (Kelsey), The Nature Conservancy – (From meeting chat) Clarified that shorebird populations are declining while waterfowl populations appear stable.

- Dybala – Inquired if riparian birds should be considered a second priority?
    - Response: Amy Merrill (Merrill), American Rivers – Recommended riparian birds or Swainson's Hawks be considered for the secondary phase if the Bird Ad Hoc group considers habitat with trees and/or shrubs.
- Mark Petrie (Petrie), Ducks Unlimited – Recommended that project priorities be considerate of the relative population disparity between Central Valley waterfowl (Approx. 8,000,000 birds) and shorebirds (Approx. 400,000 birds).
    - Response: Dybala – Clarified that shorebirds and waterfowl are set as priorities for evaluation, but the types of birds do not guide how decisions are made.
    - Response: Matt Reiter (Reiter) – Clarified that 400,000 shorebirds is likely a low winter estimate and the actual number is closer to 1,000,000 birds.
- Dybala – Requested recommendations for additional models to incorporate into the overall approach beyond the spatial distribution and bioenergetics models.
    - Response: Bird Ad Hoc Group – None.
- Dybala – Requested input on additional details to round out and add nuance to modeling approach.
    - Response: Petrie – Recommended that the August 1st migratory season date be amended to August 15th for waterfowl while retaining the season end date of March 31st.
    - Khara Strum (Strum), Audubon – Observation that the four-inch depth criteria is an average applicable for most shorebirds, but many shorebird species inhabit depths up to six-inches.
    - Response: Merrill – Inquired if there is scientific basis for the varying depths that shorebirds inhabit.
    - Response: Khara – Clarified that the depths are well documented and appear to be reliable, but there needs to be a range of depths for shorebirds broader rather than the four-inch depth in place now.
    - Response: Kelsey – Clarified that managing for both waterfowl and shorebirds may sufficiently cover a broad range of depths for multiple species.
    - Lewis Bair, RD 108 – Inquired if the data is granular enough to support a model that will produce outputs on scales that operate in inches.
    - Response: Chris Campbell (Campbell), cbec – Clarified that the model will produce outputs in ranges of a few inches (0-4in, 4-8in, for example), but the results will not be on the same spatial scale as the LiDAR data. Over time the scale at the model output level and the LiDAR data level will be resolved on a daily timestep from October 1st to June 30th.
    - Getz – Observed that a depth of 18 inches is arguably too deep as at that point it becomes exceedingly difficult for birds to access food at the bottom of the water column. A depth of 12 inches or less would be more suitable.
    - Response: Petrie – Clarified that the depth of 18 inches likely came from outside the Central Valley, and such a value should not be used for the model yet.
    - Response: Craig Isola (Isola), NWRC – Clarified that 18 inches is likely too deep, and the more accurate value is 12 inches.
    - Kristen Sesser, Point Blue – Inquired if the waterfowl bioenergetics addresses diving ducks or if it's just dabblers.
    - Response: Project Team – Clarified that the analysis is likely driven by dabbling ducks and not diving ducks, thus 12 inches is most likely a better value.

    - Campbell – Clarified that the Hydrodynamics Ad Hoc group identified limitations in the detail of the model, especially at the individual rice checks level. Hence, it may be better to keep 18 inches to accommodate a broader range of depths.
    - Response: Paul Buttner, California Rice Commission – Observed that it is unclear where the 18 inches came from, and that it is probably better to drop to 12 inches.
    - Response: Isola – Clarified that the Bird Ad Hoc group has to be mindful of recommendations made and values used for management so the program remains a multi-benefit project rather than a fish project with depths so deep that birds can't utilize the habitat.
- Nagy – Inquired if there are there any additional missing criteria?
    - Petrie – Inquired if the dabbling duck guild should be split into big and small groups or if combining them into a single group is best.
    - Response: Isola – Recommended that the ducks be combined given that the depth criteria of less than 12 inches is shallow enough for a management standard.
    - Roger Swanson, Wild Goose Club – Observed that the topography of the Butte Sink is heterogenous where 20% may register a depth of a foot and the remaining 80% could be two and a half feet deep. Setting the criteria at 12 inches for a variable landscape does not make sense.
    - Kelsey – Recommended adding criteria for the duration at which water remains at a specified depth for shorebirds on rice lands.
    - Campbell – Recommended investigating the connection between food resources and land cover classes.
    - Response: Dybala – Clarified that the bioenergetics presentation will address that topic.
    - Strum – Inquired if the shorebird timeframe should be reactive to habitat deficits.
    - Response: Dybala – Clarified that the project has not achieved levels of nuance where habitat can be added or subtracted given different scenarios.
    - Response: Strum – Recommended that further iterations of the project pursue nuance in assessing not only total available habitat, but also seasonality of available habitat.
    - Response: Dybala – Clarified that to achieve outputs with total available habitat the model would likely produce sum total of acre/days of suitable habitat for the entire season.
    - Response: Rodd – Clarified that depending on the timestep of the hydrodynamic model it could be possible to do acre/days per month.
    - Response: Campbell – Clarified that the hydrodynamic model operates on sub-daily timestep, but outputs can be rolled up into daily, monthly, seasonal outputs as well as varying spatial extents.
- Campbell – Clarified that small changes in the hydrodynamic model will not trigger new spatial outputs for habitat suitability in the bird model.
    - Response: Dybala – Agreed.
- Petrie – Inquired what value models have if they cannot project changes in depth accurately.
    - Response: Dybala – Clarified that the models predict changes in habitat extent, frequency of flooding, and duration of flooding. Average depth is an assumption.
- Nagy – Observed three themes identified by the Bird Ad Hoc group
    - 1) The waterfowl season may be shifting from August 1st to August 15th.

- 2) The shorebird depth criteria should be increased from less than four inches to less than six inches.
- 3) The waterfowl depth criteria should be decreased from less than 18 inches to less than 12 inches.

Modeling Details

Dybala and Reiter, Point Blue, presented on the modeling details.

Group members provided the following comments:

- Kelsey – (Due to internet connection large part of question was unintelligible) Inquired if the distribution model incorporates depth.
  - Response: Reiter – The hydrological data is spatially explicit. It may be possible to filter data so that the model only produces outputs for places of suitable depths, but the models are not built to operate in this manner.
- Nagy – Requested model feedback from the Bird Model Ad Hoc group.
  - Getz: Recommended running the bioenergetics model by basin to overcome its spatially explicit limitations and provide more detailed information. Outputs on the basin level may be valuable since birds are a highly mobile species, and preferences may lean towards basins with little hunting pressure where birds would reside longer.
  - Kelsey – Clarified that using different combinations of models for different bird groups could result in confounding results because assumptions were built into a model which may not reflect reality for the bird species that is being modeled.
  - Petrie – Clarified that he is an advocate for an approach that is tied closely to the Central Valley Joint Venture Plan. Such an approach provides a framework for evaluating environmental effects which can be tied back to the Joint Venture Plan. This builds credibility with policy makers and organizations because decisions reference a plan/policy that has been endorsed. There is nothing wrong with a spatially explicit approach but going away from a framework losses context.
  - Reiter – Agreed with Petrie and inquired if where the work is done matters as much as how the work is done. If more value is placed on where the work is done, then a spatially explicit model makes more sense. If more value is placed on the net gain of the work, then bioenergetics makes more sense.
  - Response: Dybala – Observed that both approaches have advantages and disadvantages, and consideration will be taken to determine which model is advanced or if both can be advanced.
- Nagy – Requested recommendations on what the next steps are.
  - Response: Dybala – Observed that there is interest in modifying depth and date criteria. Suggests having a separate tech team meeting to discuss details.
  - Getz – Recommended that additional effort be invested in developing a concrete conclusion for the modeling approaches as there appeared to be no actionable steps for the Steering Committee.

Adjourn

Nagy thanked attendees for their attendance and participation and adjourned the meeting.

Meeting Attendees

The following people were in attendance:

Participants

Name	Affiliation
Amy Merrill	American Rivers
Baker Holden	USFWS
Craig Isola	NWRC
David Martasian	DWR
Erin Conlisk	Point Blue
John Stofleth	cbec
Julie Rentner	River Partners
Kelsey Navarre	CDFW
Khara Strum	Audubon
Matt Reiter	Point Blue
Paul Buttner	California Rice Commission
Rodd Kelsey	The Nature Conservancy
Roger Swanson	Wild Goose Club

Program and Technical Team

Name	Affiliation	Team
Bethany Taylor	K&W	Project Team
Chris Campbell	cbec	Project Team
Eric Holmes	K&W	Project Team
Eric Nagy	Larsen Wurzel Associates	Project Team
Kelly Iknayan	SFEI	Tech Team
Kristen Sesser	Point Blue	Project Team & Tech Team
Kristy Dybala	Point Blue	Project Team & Tech Team
Lewis Bair	RD 108	Project Team
Mark Cowan	Larsen Wurzel Associates	Project Team
Mark Petrie	Ducks Unlimited	Tech Team
Virginia Getz	Ducks Unlimited	Tech Team