

Update – Pond-IT Project

The Pond-IT project is the second phase of our hydroperiod water balance model project. During the first phase, through funding and in-kind services provided by CDFW, Santa Clara Valley Habitat Agency (SCVHA) and Santa Clara County Parks, Balance Hydrologics developed a flexible, robust, and cost-effective hydroperiod (defined as a period of ponded water or inundation) water balance model to improve understanding of the hydrologic drivers of hydroperiod in ponds which have the potential to serve as valuable habitat for native frogs, salamanders, and turtles, an understanding that is particularly relevant for climate change adaptation and strategy development. The goal of Phase 1 was to develop a pond hydroperiod tool that could be used across a variety of scales and environments by planners, land use managers and scientists with a variety of skillsets. Phase 2, funded by CDFW and SCVHA, provides for open-sourcing of the model and training on its use.

As part of the project, we built in limited third-party beta-testing and review by local and regional agency staff who might be interested in using the model once the project is complete. So far, we've had two of the four agency staff members who received our invitation accept.

The text of the Invitation was as follows:

GCRCD is looking for beta-testers and reviewers for the open-source water balance model for management of ponds and wetland habitat that was developed by Balance Hydrologics through a CDFW grant awarded to GCRCD. The model is called Pond-IT, which stands for Pond Inundation and Timing model. The goal of the Pond-IT model platform is to provide land managers with the tools to evaluate existing pond resources, explore climate change impacts, and simulate possible low-cost habitat enhancement scenarios.

The model is available as both an Excel workbook and Python notebooks, and we are welcoming feedback on either platform. Pond-IT was originally developed as a tool to easily model pond inundation period (or hydroperiod) of existing stock pond habitats and help land managers adapt hydroperiod to support target species (e.g. California Red-legged Frog, Western Pond Turtle and California Tiger Salamander) and to manage for invasive bullfrog populations which thrive in perennially-wetted habitats. As a summary, the model has the following features:

- Pond-IT creates a monthly calibrated pond inundation model (or hydroperiod) under existing conditions.
- Pond-IT utilizes publicly available datasets and requires only one field survey of pond capacity.
- In most cases, POND-IT calibration is performed using publicly available historical aerial imagery (i.e. Google Earth) where wetted area is visible
- Pond-IT can quickly and efficiently model design alternatives, e.g. spillway elevation changes, regrading, etc.
- Pond-IT uses publicly available climate projections to quantify changes to inundation periods as a result of climate change.

Conducting the beta-test and reviews:

Balance Hydrologics has posted the guidebook as well as downloads for both the Excel- and Python-based versions of the model on their website, and the reviewers have been provided with the link and password.

The intent is that the package of the guidebook and model, in combination with the planned recorded webinars, will be sufficient for a new user to be able to learn and run the model. As beta testers, however, the reviewers will not have the benefit of the recorded webinars, so they have been encouraged to reach out with questions to the project lead, who will answer or route the questions to the appropriate personnel. We're hoping the reviewers will be able to provide feedback on both the Excel or Python models and tutorials, but given time constraints, we would also be grateful if they are only able to review one or the other; either way, the reviews will be very helpful toward the end goal of making this tool as easy to use and functional as possible.

To provide feedback on the guidebook, they've been asked to consider using the comment function in adobe acrobat, or to generate a comment table with page and paragraph or figure references.