BALANCING ECOLOGICAL OUTCOMES IN EVERGLADES RESTORATION AND WATER MANAGEMENT

STEPHANIE S. ROMAÑACH[1], KEVIN J. SUIR[1], VINCENT T. SPAID[2], GINA PADUANO RALPH[3]

[1]United States Geological Survey
[2]Cherokee Nation System Solutions, contracted to United States Geological Survey
[3]United States Army Corps of Engineers

A NEW DECISION SUPPORT TOOL

The U.S. Geological Survey's Joint Ecosystem Modeling (JEM) team is collaborating with the U.S. Army Corps of Engineers to develop a web-based decision support tool that gives stakeholders the ability to evaluate anticipated ecological responses to water management and planned restoration in the Everglades. Ecological outcomes will be for key indicators such as wading birds, alligators, and vegetation. JEM routinely develops and applies ecological models and other decision support tools for Everglades restoration project planning.

**Goals** for the new tool are to provide users the ability:

- For integrated evaluation of multiple ecological responses to hydrology
- To compare landscape, individual species, and community responses to hydrologic change from near-term water management operations and longer-term restoration project implementation

ENGAGING USERS

At the July 2024 RECOVER (REstoration COordination & VERification) meeting of scientists, planners, and others, we showed draft visualizations from EverForecast, a near-term hydrologic and ecological forecasting tool – more details at the JEM QR code below.

To guide development of our new web-based decision support tool, we solicited feedback on what participants liked and what needed improvement in these categories:
- Hydrology
- Individual species modeled outputs
- Multi-species evaluations
- General feedback

HYDROLOGY   INDIVIDUAL SPECIES   MULTI-SPECIES
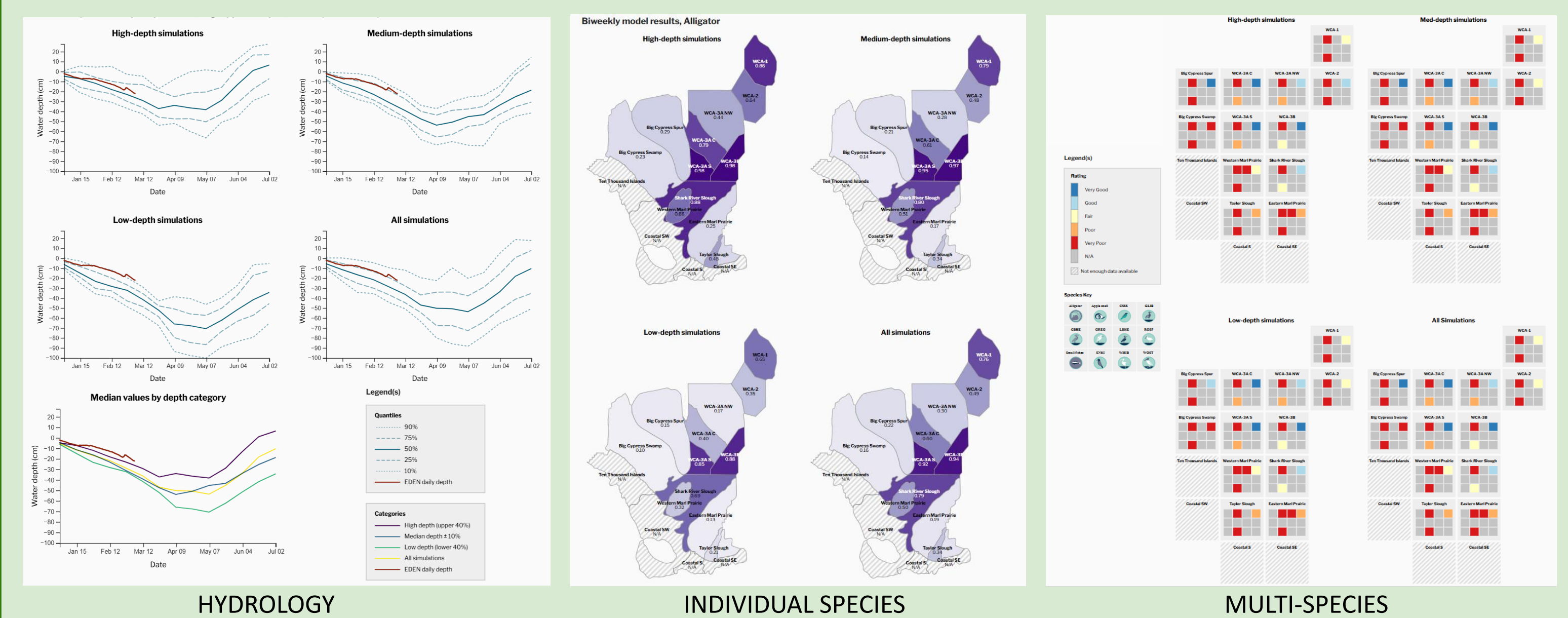
WHAT WE HEARD

We received 106 comments on decision support tool development:
- 12 were what participants <u>liked</u> about the drafts
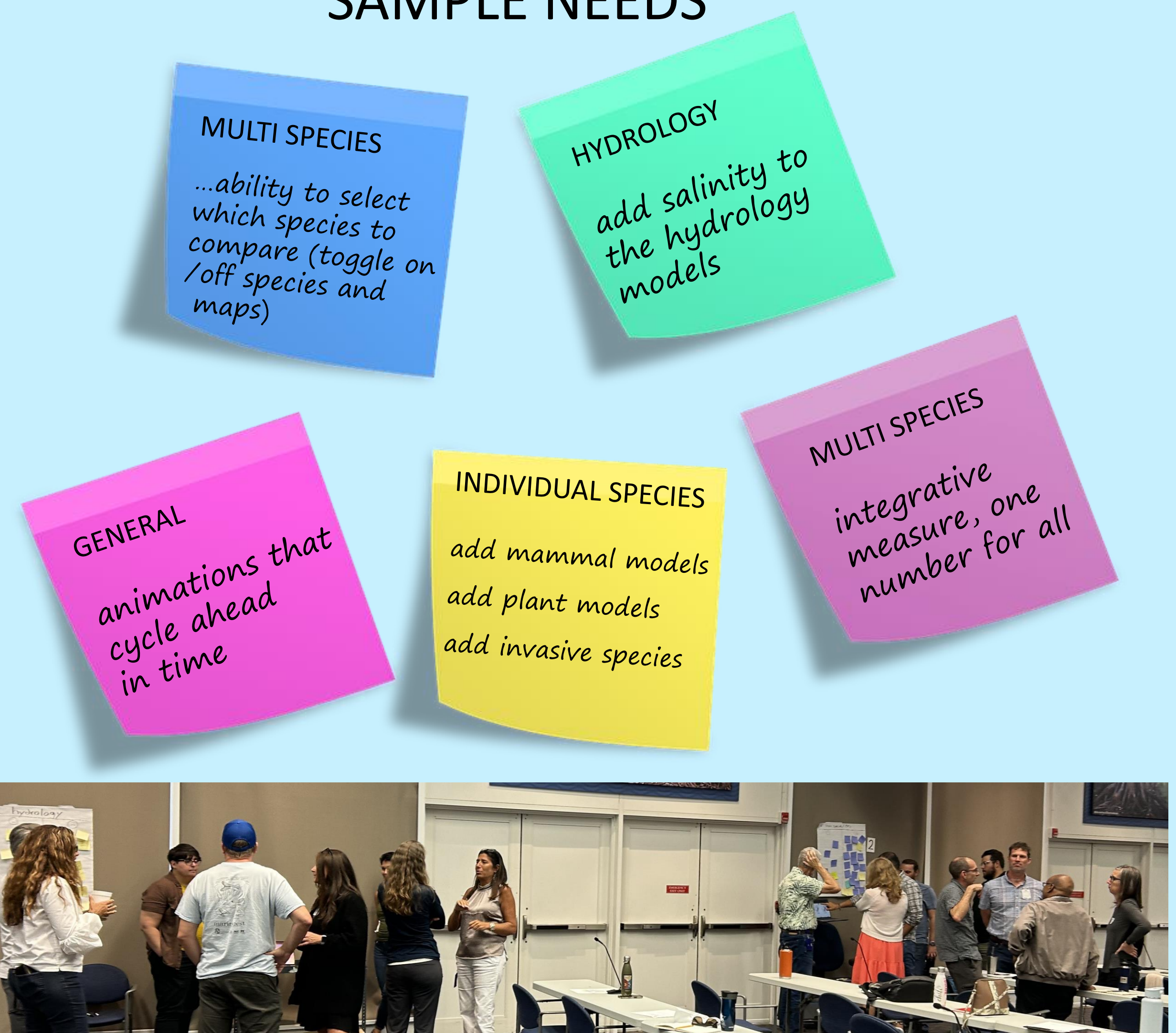- 94 were <u>needs</u> identified for tool development

All <u>likes</u> were about the presentation of information and visualizations

Most <u>needs</u> suggested additional visualizations, models, data, or explanations

SAMPLE NEEDS

MULTI SPECIES
...ability to select which species to compare (toggle on/off species and maps)

HYDROLOGY
add salinity to the hydrology models

GENERAL
animations that cycle ahead in time

INDIVIDUAL SPECIES
add mammal models
add plant models
add invasive species

MULTI SPECIES
integrative measure, one number for all

SAMPLE LIKES

HYDROLOGY
like low/high/all simulations

INDIVIDUAL SPECIES
single-color gradient/ramp, low/light -> high/dark

MULTI SPECIES
appreciate the colors, easy to see, not too similar

GENERAL
love the regions

HYDROLOGY
I like the quantile graphs as someone digging into the data

WHERE WE'RE GOING

- Display multiple types of hydro models
- Include JEM ecological model outputs
- Include existing performance measures
- Expand: Kissimmee Chain of Lakes to Florida Bay
- Interactive website: manipulate hydrology to see how ecosystem responds

JEM
www.jem.gov
or scan this QR code

US Army Corps of Engineers®