

Science and Habitat Restoration Work Group Meeting

January 9, 2020

Meeting Materials:

Agenda

Minutes

Draft ScW/HR 2020 Work Plan [read-ahead, draft]

Goals for CEMs [read-ahead]

Draft MRGESCP RGSM CEM [read-ahead, draft]

RGSM Uncertainties Identified on 11/21/2019 [read-ahead]

SWFL and YBCU Life Cycle Model [read-ahead]

Draft SWFL CEM Life Stages [read-ahead, draft]

Draft Transition Matrices for RGSM [read-ahead, draft]

Draft YBCU CEM Life Stages [read-ahead, draft]



Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Science and Habitat Restoration Work Group (ScW/HR) Meeting Agenda

January 9, 2020
9:00 AM - 12:00 PM

U.S. Fish and Wildlife Service
2105 Osuna Rd NE, Albuquerque, NM

Meeting Agenda

9:00 - 9:15	Welcome, Introductions, and Agenda Review <ul style="list-style-type: none">➤ Decision: Approval of January 9, 2020 meeting agenda➤ Review meeting agenda	<i>Program Support Team (PST)</i>
9:15-9:30	2020 Work Plan <ul style="list-style-type: none">• Review Draft 2020 Work Plan (Read-Ahead)	<i>ScW/HR Discussion</i>
9:30 - 10:20	Conceptual Ecological Model Discussion <ul style="list-style-type: none">• Review progress made in model development for Rio Grande silvery minnow (RGSM), southwest willow flycatcher (SWFL), and yellow-billed cuckoo (YBCU)• Continue refining models	<i>Small Group Discussion</i>
10:20 - 10:30	Break	
10:30 - 11:00	Identification of 1-3 Critical Uncertainties per Species	<i>Small Group Discussion</i>
11:00 - 11:30	Project/SOW Brainstorming <ul style="list-style-type: none">• Discuss projects/SOWs that could be developed based on the identified critical uncertainties	<i>Small Group Discussion</i>
11:30 - 11:50	Presentation of Models <ul style="list-style-type: none">• RGSM• SWFL• YBCU	<i>ScW/HR Discussion</i>
11:50 - 12:00	Announcements	<i>All</i>
12:00	Adjourn	



Middle Rio Grande Endangered Species Collaborative Program

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Science and Habitat Restoration Work Group (ScW/HR) Meeting Minutes

January 9, 2020 9:00 AM – 12:30 PM

Location: U.S. Fish & Wildlife Service
2105 Osuna Rd NE, Albuquerque, NM

Decision Log:

- ✓ Approval of January 9, 2020 meeting agenda.

Action Items and Next Steps:

WHO	WHAT	BY WHEN
PST	Edit one transition probability schematic and send to the RGSM small group to review the design	January 15
PST	Revise bird CEM life stage charts to include new variables identified at meeting	January 15
PST	Distribute list of critical uncertainties identified at previous CEM meetings for all three species	January 15
RGSM small group	Send Ashley Tanner (PST) top three critical uncertainties for RGSM	January 24
RGSM small group	Send any comments on transition probability schematic design to Ashley T.	January 24
ScW/HR members	Provide the PST any edits to the work group membership roster	January 30
PST	Revise 2020 ScW/HR Work Plan for review at the February Executive Committee meeting, including the following edits: <ul style="list-style-type: none"> • Tasks 1 and 2: Add a purpose statement for the development of conceptual ecological models and critical uncertainties • Task 2: Include a subtask to present to the AMWG on how uncertainties are prioritized and progress to date • Task 3: Include a subtask to incorporate feedback from the AMWG in the development of possible projects and scopes of work 	February 3
ScW/HR members	Inform the PST of any potential field trip ideas, or offers to lead a field trip.	Ongoing

- **Next ScW/HR meeting:** January 28, 2020, 9:00 AM - 12:30 PM

Meeting Minutes

Welcome, Introduction, and Agenda Review

Ashley Tanner, Program Support Team (PST), opened the meeting and reviewed the meeting agenda.

- Decision: The January 9, 2020 ScW/HR meeting agenda was approved

2020 Work Plan

Ashley T. reminded ScW/HR members that at the December 18, 2019 meeting, the group had discussed tasks to include in the 2020 ScW/HR Work Plan. She presented the draft Work Plan, developed based on the December 18th conversation, and the group discussed the tasks as laid out. The group agreed to the following edits prior to presentation at the February 10, 2020 Executive Committee (EC) meeting:

- Fix the numbering on the Work Plan
 - Tasks 1 and 2: include a purpose statement for the development of conceptual ecological models (CEMs)
 - Task 2: include a subtask for the ScW/HR to get feedback from the Adaptive Management Work Group (AMWG) on the development of possible projects and scopes of work (SOWs)
 - Task 3: include a subtask for the ScW/HR to incorporate feedback from the AMWG on how uncertainties are prioritized and the progress to date
- **Action Item:** PST revise the 2020 Work Plan with the edits listed above, and present to the EC at the February 10 meeting.
 - **Action Item:** ScW/HR members provide the PST any edits to the membership roster.

The ScW/HR discussed options for future Science Symposia or alternatives. Ashley noted that in the feedback received, opinions were split about whether a Symposium should be held every year or every 2-3 years. One option was to have a Symposium biennially with another event on the off-years. These could include field events, a session at another conference, or smaller targeted workshops. During the conversation, the following suggestions were raised:

- Focus on different topics in different years (e.g., birds one year, fish another year). A few participants voiced support for this, with some others noting that one of the strengths of the 2019 Symposium was seeing work outside of an individual's focal area.
 - Field trips would fill the gaps in off years. Field trips could include multiple sites and could cover more than one topic area.
 - One participant cautioned about having large field trips far away from Albuquerque, as it might limit the ability of people to attend.
 - One participant requested that any field events happen in the spring and fall.
- **Action Item:** Convene the Symposium small planning group to discuss alternatives and options.

The ScW/HR also discussed potential field trip options in more detail. Ashley informed the group that having field trips requires ScW/HR members to take a more active role in suggesting locations, and even leading them. The following suggestions were made:

- Southwestern willow flycatcher (SWFL) habitat

- **Action Item:** ScW/HR members provide the PST with field trip suggestions, and/or offers to lead a field trip.

Conceptual Ecological Models (CEMS)

The ScW/HR broke into two groups: one to discuss the Rio Grande silvery minnow (RGSM) CEM, and a second to discuss the SWFL and yellow-billed cuckoo (YBCU) CEMs. Following the small group discussions, each presented to the full ScW/HR.

Birds

The birds group added two additional variables to the CEMs for both species: fire and an increase of large herbivores. Members agreed to develop a glossary of terms to explain the different variables that appear in the base model.

They identified the following key uncertainties for each species:

- SWFL:
 - What is the overall use of habitat restoration (HR) sites? Specifically, how to attract SWFL to HR sites? What is the plant species diversity that attracts SWFL?
 - How does soil health and composition impact the success of HR sites?
 - What is the edge effect for SWFL territories? What kinds of edges are better (i.e., edge-adjacent habitat composition)?
- YBCU:
 - What degree of habitat fragmentation impacts colonization and occupancy?
 - What is the optimal plant species composition for insect populations that are food sources for YBCU?
 - What habitat characteristics appeal to both SWFL and YBCU (including edge effects)?

The birds group also brainstormed the following potential project ideas based on the above uncertainties:

- A soil moisture holding capacity study
- A study looking at insect host plants and the relationship with YBCU foraging habitat
- An analysis of overbank flow and its relationship with territory selection in the successive year
- An evaluation of aerial imagery and occupied habitat in order to determine (1) overlap in habitat characteristics for the two species, and (2) edge effects

- **Action Item:** PST will revise the SWFL and YBCU CEMs to include the new variables.

Fish

The fish group completed the transition probability schematics for the RGSM CEM.

- **Action Item:** PST will complete one transition probability schematic for review by the fish group
- **Action Item:** The fish group will send the PST their top three critical uncertainties before January 28
- **Action Item:** The PST will distribute the list of uncertainties identified over the course of the CEM development

Announcements

- Ashley T. has moved to Texas but is still working with the Program. Please call her cell phone or email to get in touch with her.
- **Next meeting:** January 28, 2020, 9:00 AM – 12:30 PM, location TBD

Meeting Participants

Alison Hutson, N.M. Interstate Stream Commission
Amy Erickson, Audubon New Mexico
Andy Dean, U.S. Fish and Wildlife Service
Anne Marken, Middle Rio Grande Conservancy District
Ashley Tanner, Program Support Team
Brian Hobbs, U.S. Bureau of Reclamation
Dana Price, U.S. Army Corps of Engineers
Danielle Galloway, U.S. Army Corps of Engineers
Dave Campbell, U.S. Fish and Wildlife Service
Debbie Lee, Program Support Team
Eric Gonzales, U.S. Bureau of Reclamation
Kate Mendoza, Albuquerque-Bernalillo County Water Utility Authority
Mick Porter, U.S. Army Corps of Engineers
Mike Marcus, Assessment Payers Association
Mo Hobbs, Albuquerque-Bernalillo County Water Utility Authority
Nathan Schroeder, Pueblo of Santa Ana
Ondrea Hummel, Tetra Tech
Steve Ryan, U.S. Army Corps of Engineers
Thomas Archdeacon, U.S. Fish and Wildlife Service
Vicky Ryan, U.S. Fish and Wildlife Service

Science and Habitat Restoration Work Group 2020 Work Plan

PURPOSE:

Complete the Middle Rio Grande Endangered Species Collaborative Program (Program) Science and Habitat Restoration Work Group (ScW/HR) 2020 Work Plan as approved at the [DATE] ScW/HR meeting.

TASKS AND MANAGEMENT/SCIENCE IMPLICATIONS:

The following tasks are not listed in any specific order. The numbering is intended for conversational reference.

- 1) **Develop Conceptual Ecological Models for the New Mexico Meadow Jumping Mouse (NMMJM), Pecos Sunflower (PESU), Rio Grande Silvery Minnow (RGSM), Southwest Willow Flycatcher (SWFL), and Yellow-billed Cuckoo (YBCU).**

In the fall of 2019, the Adaptive Management Work Group (AMWG) tasked the ScW/HR with developing conceptual ecological models for the five species encompassed within the Program. Utilizing subject matter experts, the ScW/HR will develop conceptual ecological models for the RGSM, SWFL, and YBCU by February 2020. Development of models for the NMMJM and PESU will begin by July 2020. All models will be presented to the AMWG.

- 2) **Identify and Prioritize Uncertainties Developed during the Conceptual Ecological Model Building Process**

The ScW/HR will identify uncertainties during the conceptual ecological model building process, prioritize those uncertainties, and identify overlap in uncertainties between species. These uncertainties will drive project/scope of work (SOW) development each year. The ScW/HR will identify, assess, and prioritize uncertainties for the RGSM, SWFL, and YBCU starting in March 2020.

- 3) **Develop Fiscal Year (FY) 2021 Project/SOW Descriptions and Full SOWs for Executive Committee (EC) Consideration**

The ScW/HR will utilize uncertainties identified in the conceptual ecological model building process to develop project/SOW descriptions for EC review by April 2020. Approved project/SOW descriptions will be developed into full SOWs for EC consideration by August 2020.

- 4) **Determine Priorities for 2021**

The ScW/HR will discuss and identify which uncertainties will be a focus of project/SOW development for 2021 starting in September 2020. Project/SOW development for 2021 will begin immediately after this task is complete.

- 5) **Consult as Needed with the AMWG**

The ScW/HR will continue to consult with the AMWG as needed to assist with Program planning and adaptive management (AM) moving forward.

6) Continue Data Inventory and Consolidation Efforts

The Program signatories have collected a large amount of data, including, but not limited to, endangered species population numbers, hydrology, water quality, and habitat restoration.

There is a need to inventory these data, and to consolidate datasets where possible. This will inform the Program's science and AM activities, and minimize duplicate efforts. Data inventory and consolidation will be a targeted and objective-driven effort, concentrating on specific datasets of interest to better meet the needs of the end data users. The ScW/HR will work with the U.S. Geological Survey (USGS) and those working to develop the Program Portal (formerly the Program's database management system [DBMS]) to ensure that all data consolidation efforts result in a dataset that can be uploaded onto the Program Portal.

7) Continue Participation in Program Portal Maintenance and Updates

The USGS developed and launched a new Program Portal in December 2019 to replace the Program's prior database management system (DBMS). This Program Portal will need to be responsive to the needs of the Program, including its scientists and technical experts. The ScW/HR will provide input to the USGS as needed. Overall, a Program Portal will help the Program organize, store, share, and ultimately better utilize data collected and reports written by its multiple stakeholders. These services may inspire scientific studies, provide data for scientific research, and allow managers to interact with resources needed to inform decisions.

The ScW/HR will assist the PST in developing future content for the Program Portal; ensuring relevant reports, papers, and other documents are included in the document library; and supporting the development of other digital resources.

7) Participate in the Planning of the Science Symposium

The Program's Science Symposium aims to improve science communication, inform SOW development, and assist in long-term planning. The ScW/HR will assist as needed in the planning process.

8) Plan and Participate in Program Field Trips

Field trips will provide members of the ScW/HR with experience-based learning opportunities, such as field visits to restoration sites, float trips down the river, lab tours, hatchery tours, and more. These trips will provide members with the opportunity to learn more about the breadth of work underway in the Middle Rio Grande.

TASKS SCHEDULE:

Task	By Date
Complete CEMs for the RGSM, SWFL, and YBCU for presentation to the AMWG at the following meeting	February 2020
Assess and prioritizing critical uncertainties for the RGSM, SWFL, and YBCU	March 2020
Submit project/SOWs descriptions to the EC for review	End of March 2020
Begin developing conceptual ecological models for the NMMJM and PESU	July 2020
Submit finalized projects/SOWs to the EC for approval to move forward	August 2020
Discuss 2021 priorities and projects/SOW	September 2020
Plan field trip(s)	Duration of 2020
Consult with the AMWG to inform development of the Program's AM plan	As needed

MEMBER ROSTER:

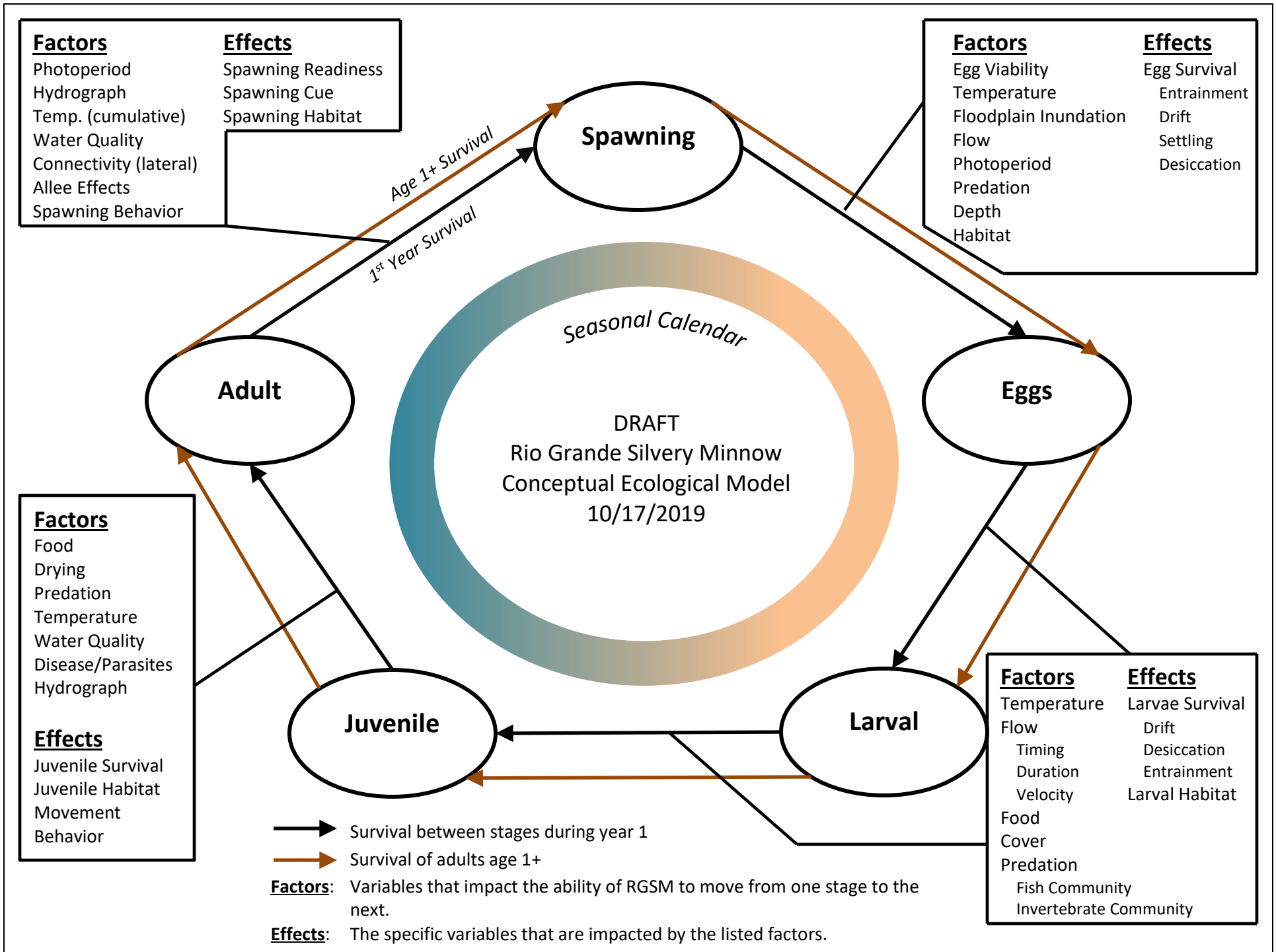
First Name	Last Name	Affiliation
Thomas	Archdeacon	U.S. Fish & Wildlife Service
Jonathan	AuBuchon	U.S. Army Corps of Engineers
Jennifer	Bachus	U.S. Bureau of Reclamation
Trevor	Birt	N.M. Interstate Stream Commission
Holly	Casman	City of Albuquerque, ABQ BioPark
Meaghan	Conway	New Mexico Department of Game and Fish
Katherine	Cordova	Bosque Ecosystem Monitoring Program
Clayton	Derby	Western Ecosystems Technology, Inc.
Julie	Dickey	Western Ecosystems Technology, Inc.
Kim	Eichhorst	Bosque Ecosystem Monitoring Program
Amy	Erickson	Audubon New Mexico
Kim	Fike	Bosque Ecosystem Monitoring Program
Danielle	Galloway	U.S. Army Corps of Engineers
Lynette	Giesen	U.S. Army Corps of Engineers
Eric	Gonzales	U.S. Bureau of Reclamation
Grace	Haggerty	New Mexico Interstate Stream Commission
Aubrey	Harris	U.S. Army Corps of Engineers
Chuck	Hayes	New Mexico Department of Game and Fish
Brian	Hobbs	U.S. Bureau of Reclamation
Monika (Mo)	Hobbs	Albuquerque Bernalillo County Water Utility Authority
Alison	Hutson	New Mexico Interstate Stream Commission
Kathy	Lang	City of Albuquerque
Debbie	Lee	Western Ecosystems Technology, Inc.
CW	Lujan	
Joel	Lusk	U.S. Bureau of Reclamation
Shannon	Mann	Pueblo of Sandia
Mike	Marcus	Assessment Payers Association of the MRGCD
Anne	Marken	Middle Rio Grande Conservancy District
Terry	McDill	N.M. Interstate Stream Commission
Yvette	McKenna	U.S. Bureau of Reclamation

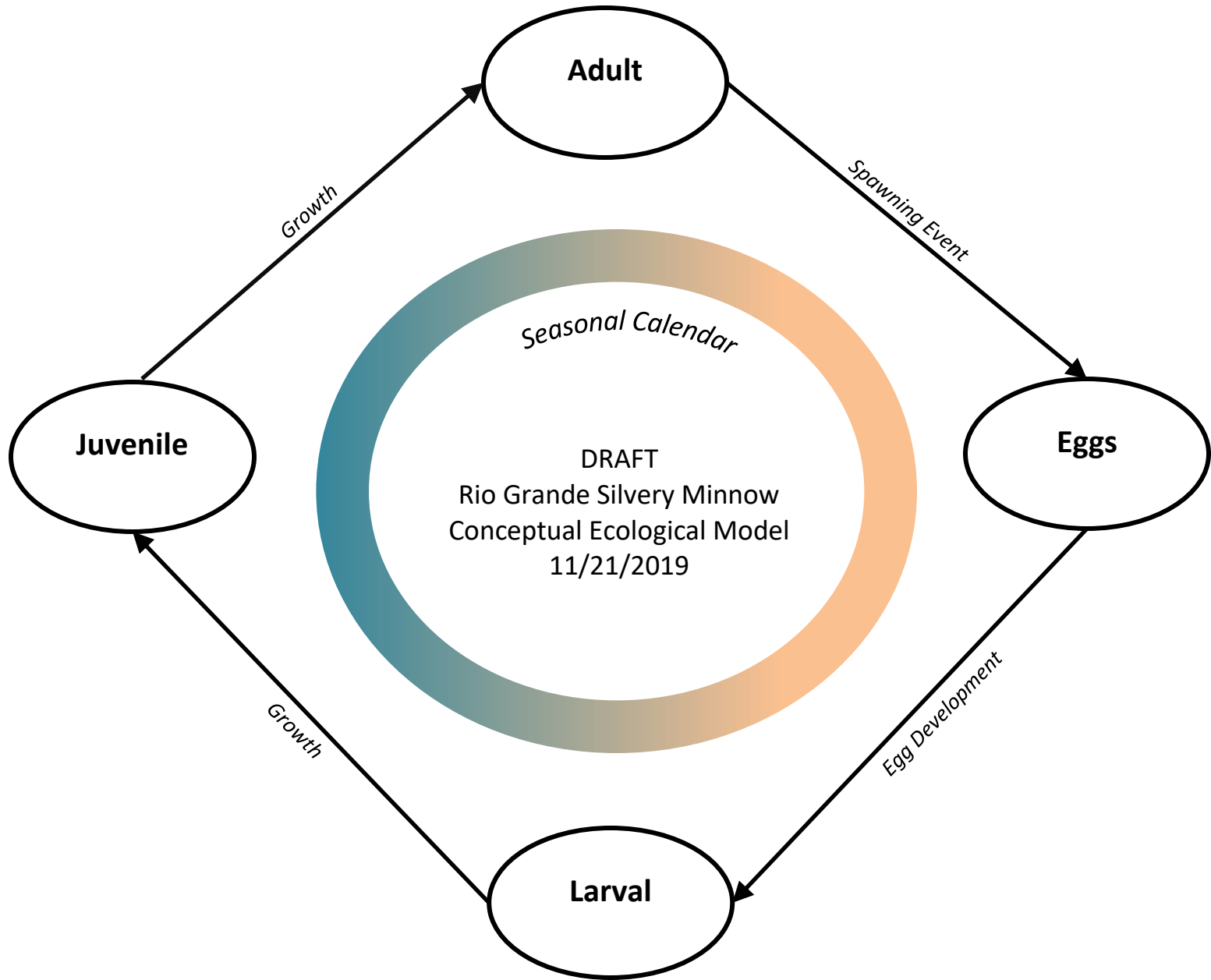
Kate	Mendoza	Albuquerque Bernalillo County Water Utility Authority
Yasmeen	Najmi	Middle Rio Grande Conservancy District
Megan	Osborne	University of New Mexico
Robert	Padilla	U.S. Bureau of Reclamation
Kirk	Patten	NM Department of Game & Fish
Page	Pegram	NM Interstate Stream Commission
Matthew	Peterson	City of Albuquerque Open Space
Michael (Mick)	Porter	U.S. Army Corps of Engineers
Dana	Price	U.S. Army Corps of Engineers
Justin	Reale	U.S. Army Corps of Engineers, CESP-DE
Ashlee	Rudolph	U.S. Bureau of Reclamation
Stephen	Ryan	U.S. Army Corps of Engineers
Vicky	Ryan	U.S. Fish & Wildlife Service
Jeff	Sanchez	U.S. Fish & Wildlife Service
Nathan	Schroeder	Pueblo of Santa Ana, DNR
Summer	Schulz	U.S. Army Corps of Engineers
Michael (Scial)	Scialdone	Pueblo of Sandia
Lauren	Sherson	U.S. Geological Survey
Clint	Smith	U.S. Fish & Wildlife Service
Dale	Strickland	Western Ecosystems Technology, Inc.
Kiara	Tackas	Western Ecosystems Technology, Inc.
Ashley	Tanner	Western Ecosystems Technology, Inc.
Douglas	Tave	Los Lunas Silvery Minnow Refugium
Cody	Walker	Pueblo of Isleta - Natural Resources Department, Water Resources Div.
Lori	Walton	U.S. Bureau of Reclamation
Kim	Ward	City of Albuquerque
Wade	Wilson	U.S. Fish & Wildlife Service, Southwestern Native Aquatic Resources and Recovery Center
Ara	Winter	Bosque Ecosystem Monitoring Program
Leann	Woodruff	U.S. Bureau of Reclamation

DRAFT

Conceptual Ecological Models will be used to:

1. Identify and reduce uncertainties
2. Identify management actions that impact the system and species
3. Help create projects/scopes of work that reduce uncertainties
4. Reduce complexity
5. Identify 'need to know' uncertainties versus 'nice to know' uncertainties
6. Generate and evaluate goals





Adult

Growth

Spawning Event

Juvenile

Seasonal Calendar

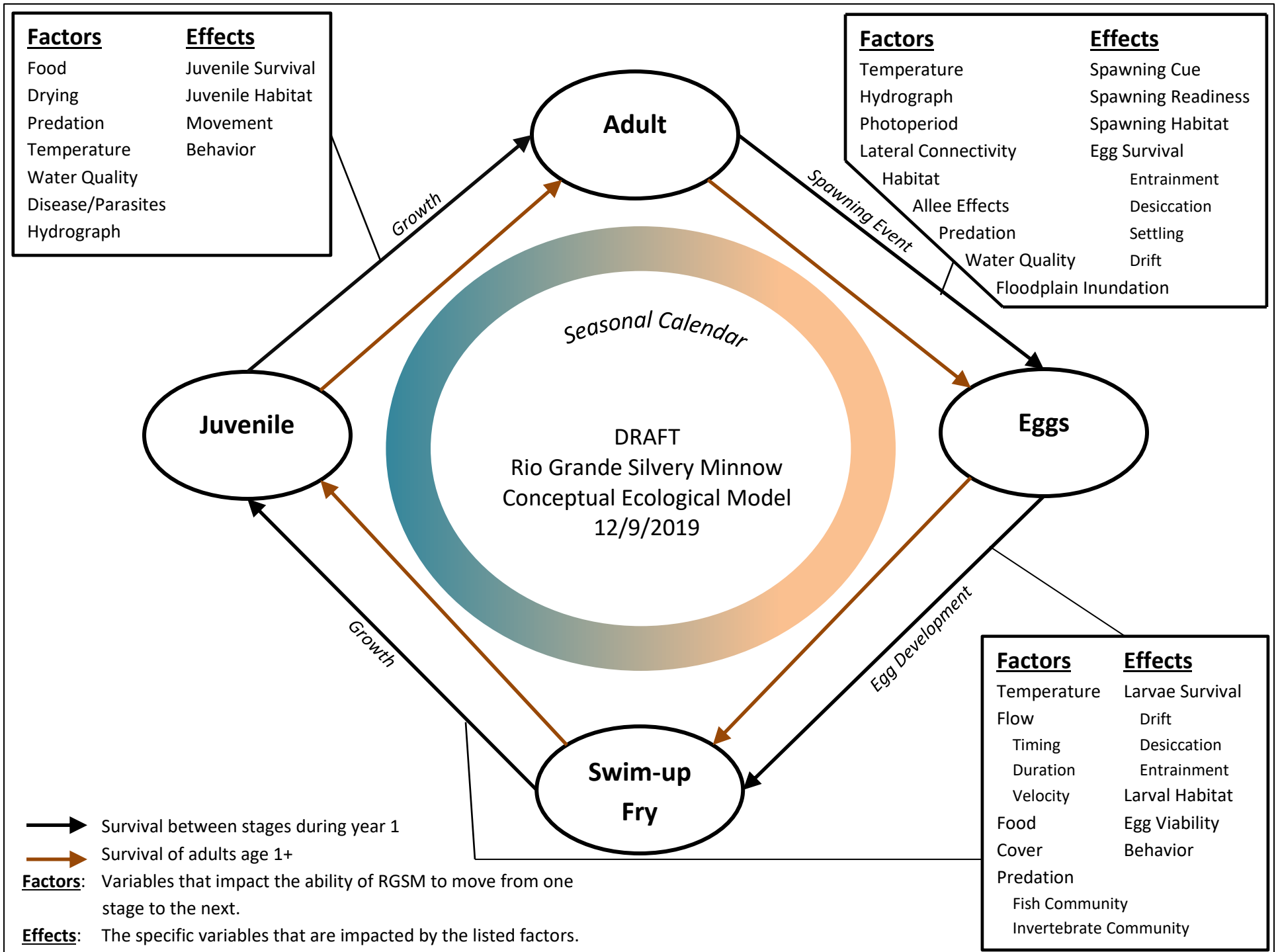
Eggs

DRAFT
Rio Grande Silvery Minnow
Conceptual Ecological Model
11/21/2019

Growth

Egg Development

Larval



RGSM Uncertainties Identified on 11/21/2019

No/minimal management implications

Questionable management implications

1. How often are temperature tolerances exceeded in the main channel and for how long?
2. Do RGSM establish territories/what is their home range size?
3. How does channel flow/shear stress affect RGSM food availability?

Has direct management implications

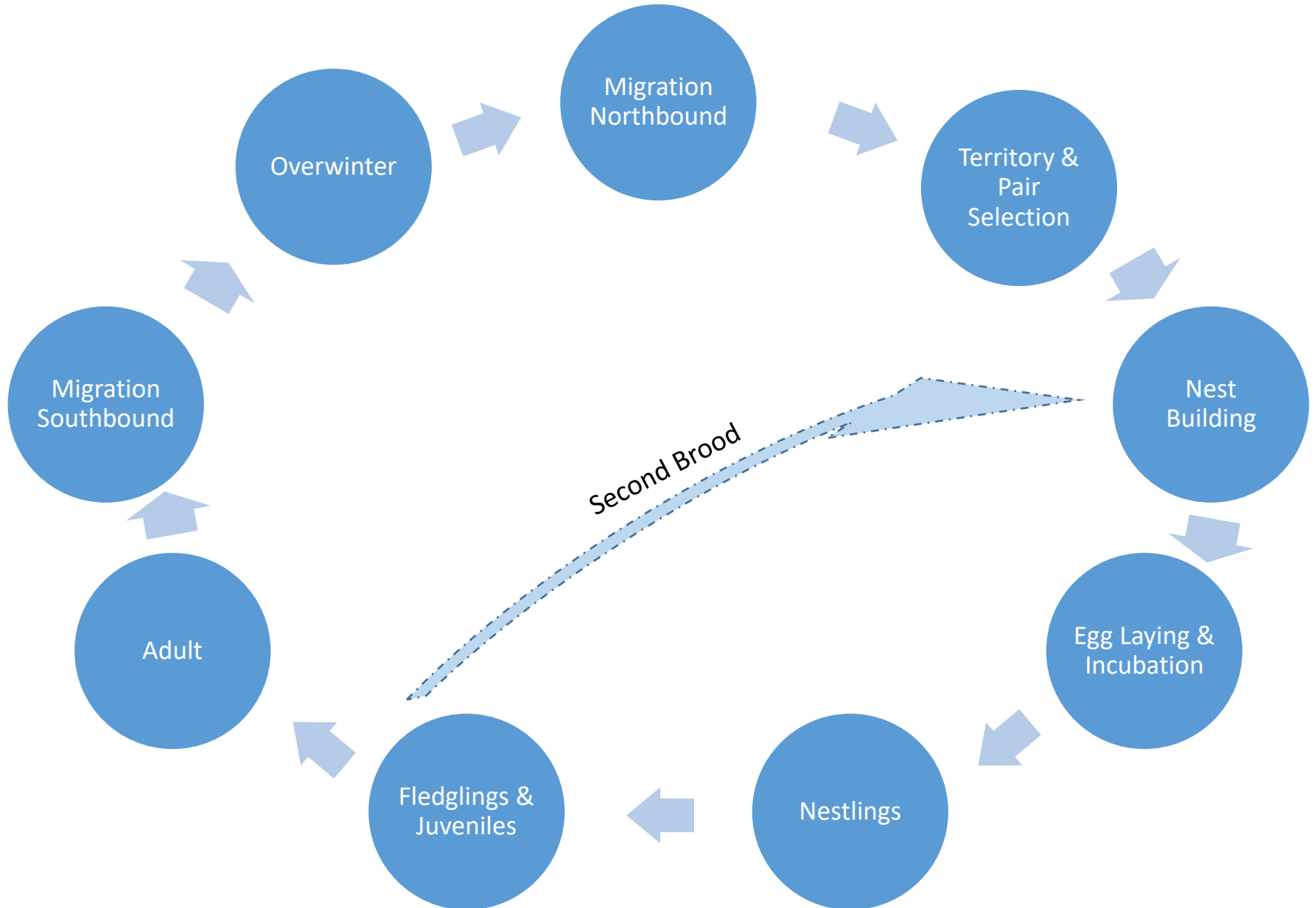
4. What are the stressors and their relative importance on RGSM survival leading up to and including drying?
5. How does RGSM habitat quality and quantity change at different flows?

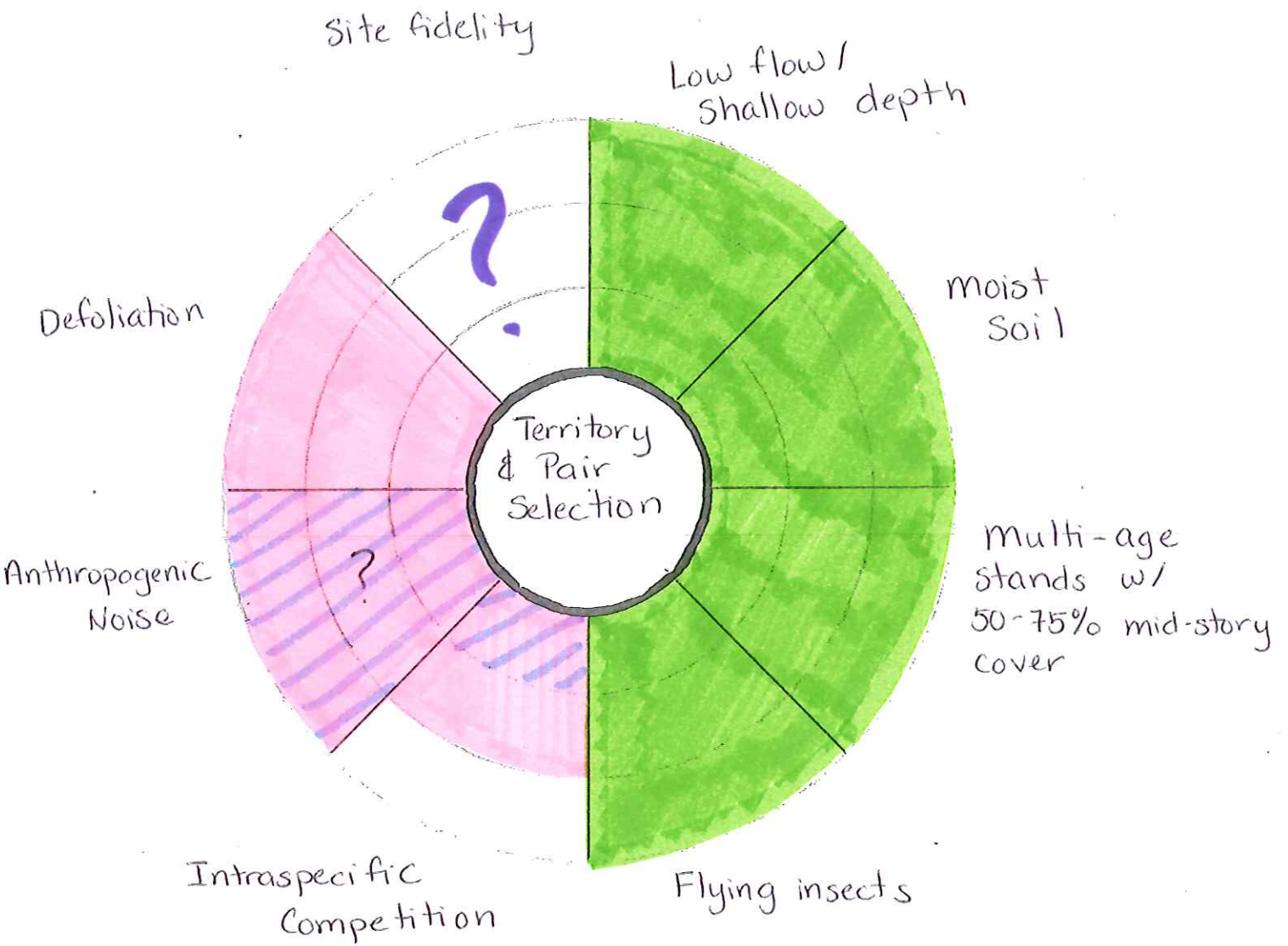
Uncategorized

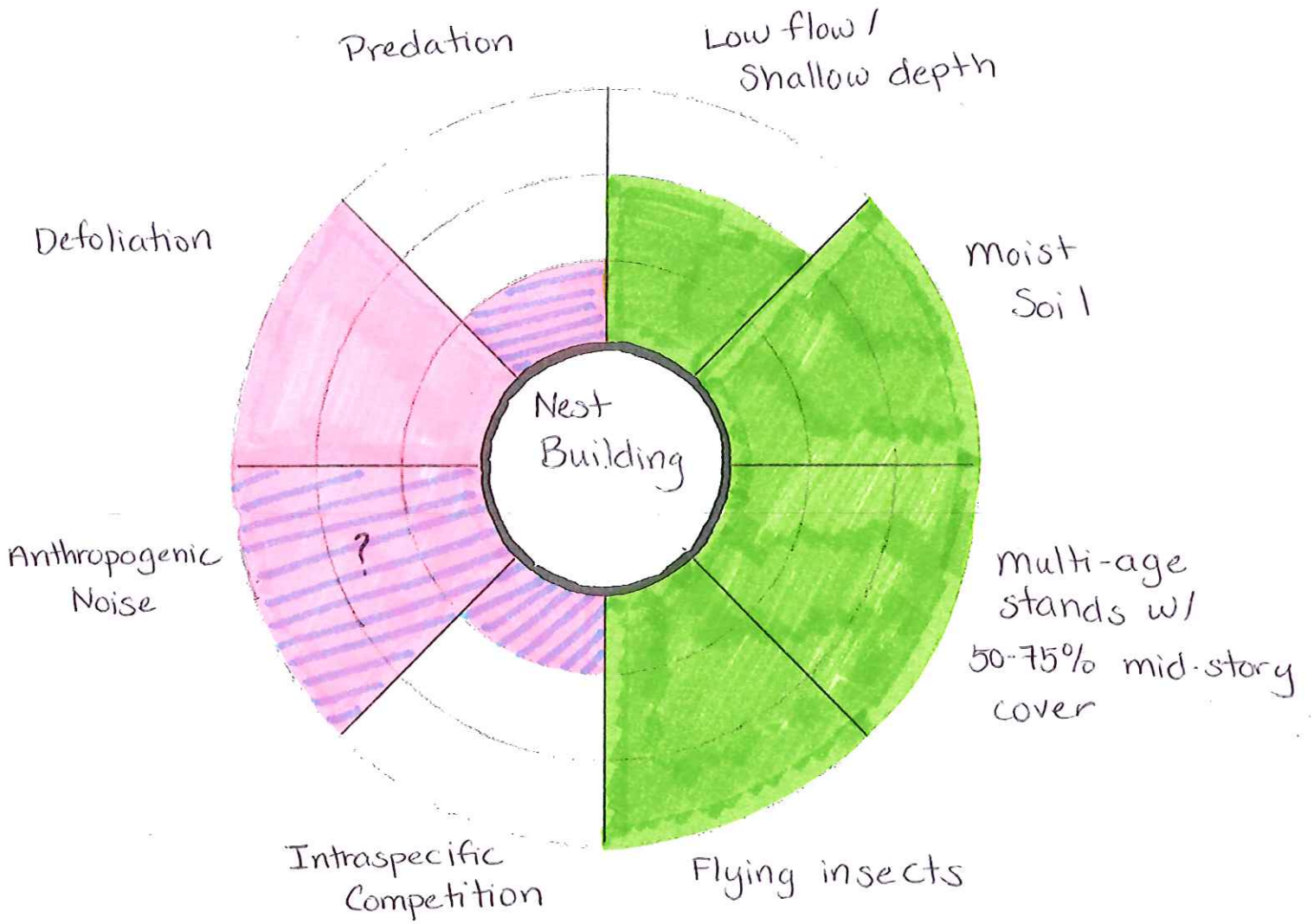
6. Are RGSM food limited?
7. When and how does water quality affect RGSM survival?
8. Is competition a factor in RGSM survival/persistence?
9. Are disease and parasites affecting RGSM survival?

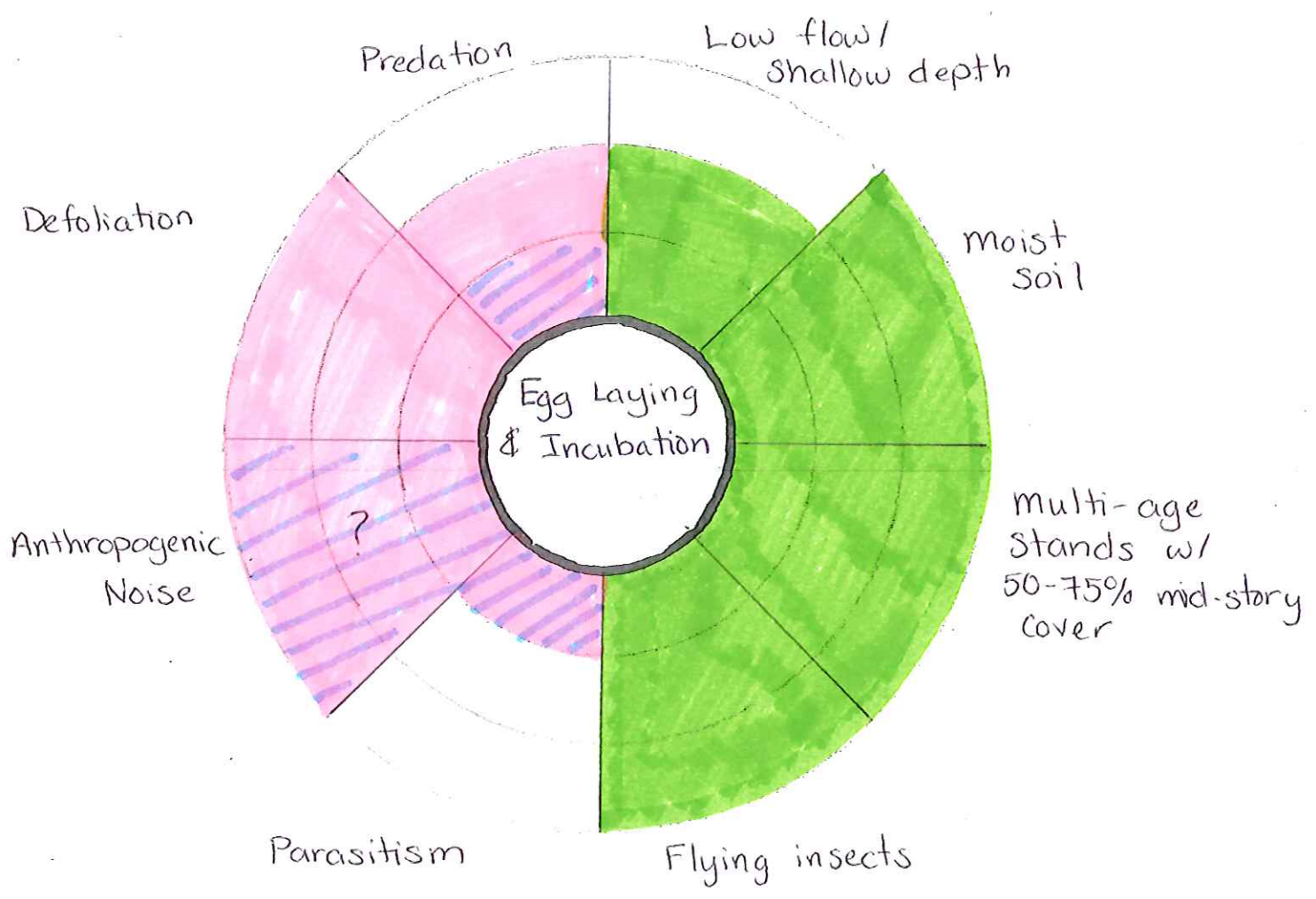
SWFL & YBCU Life Cycle Model

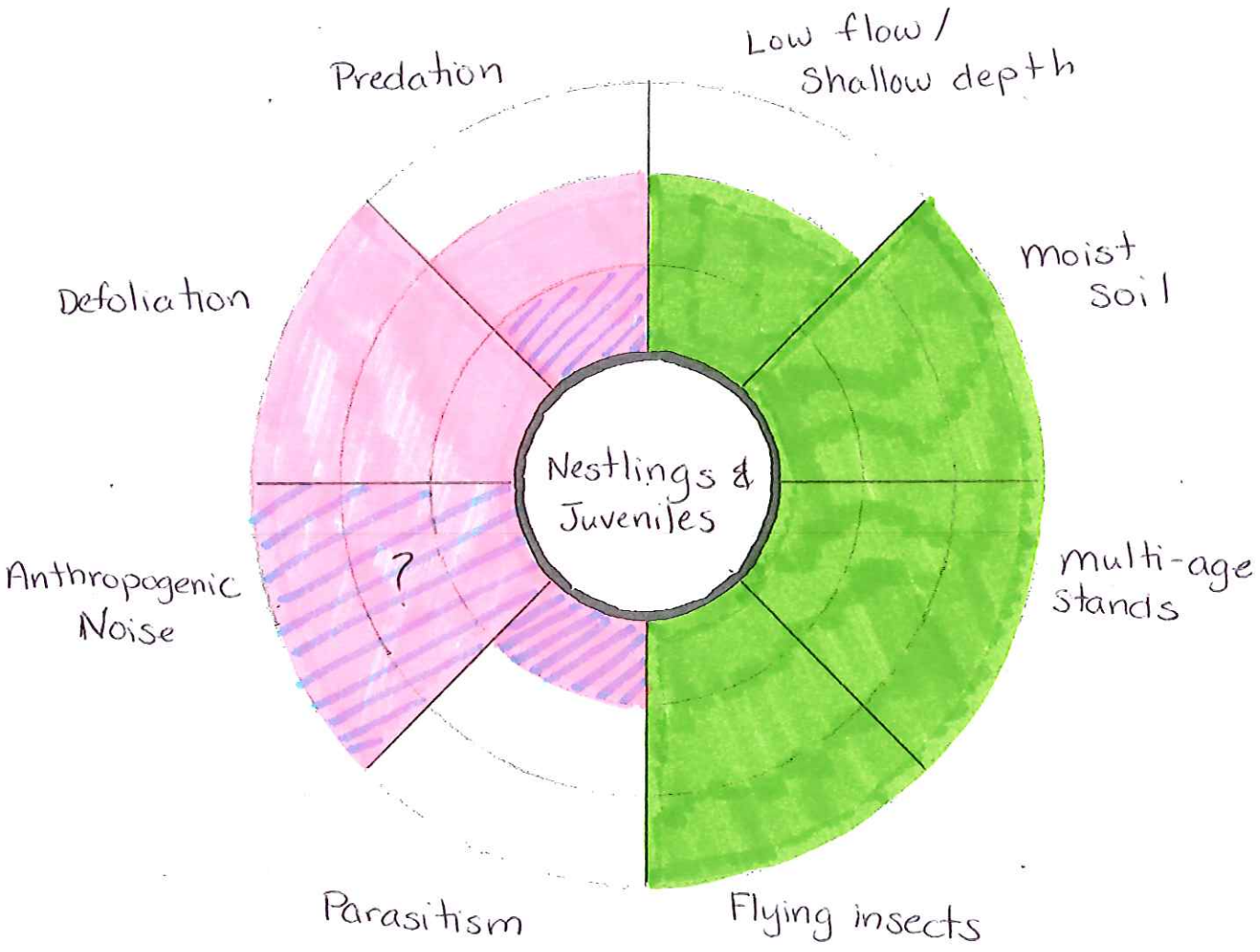
Developed by SwC/HR at October 2019 meeting

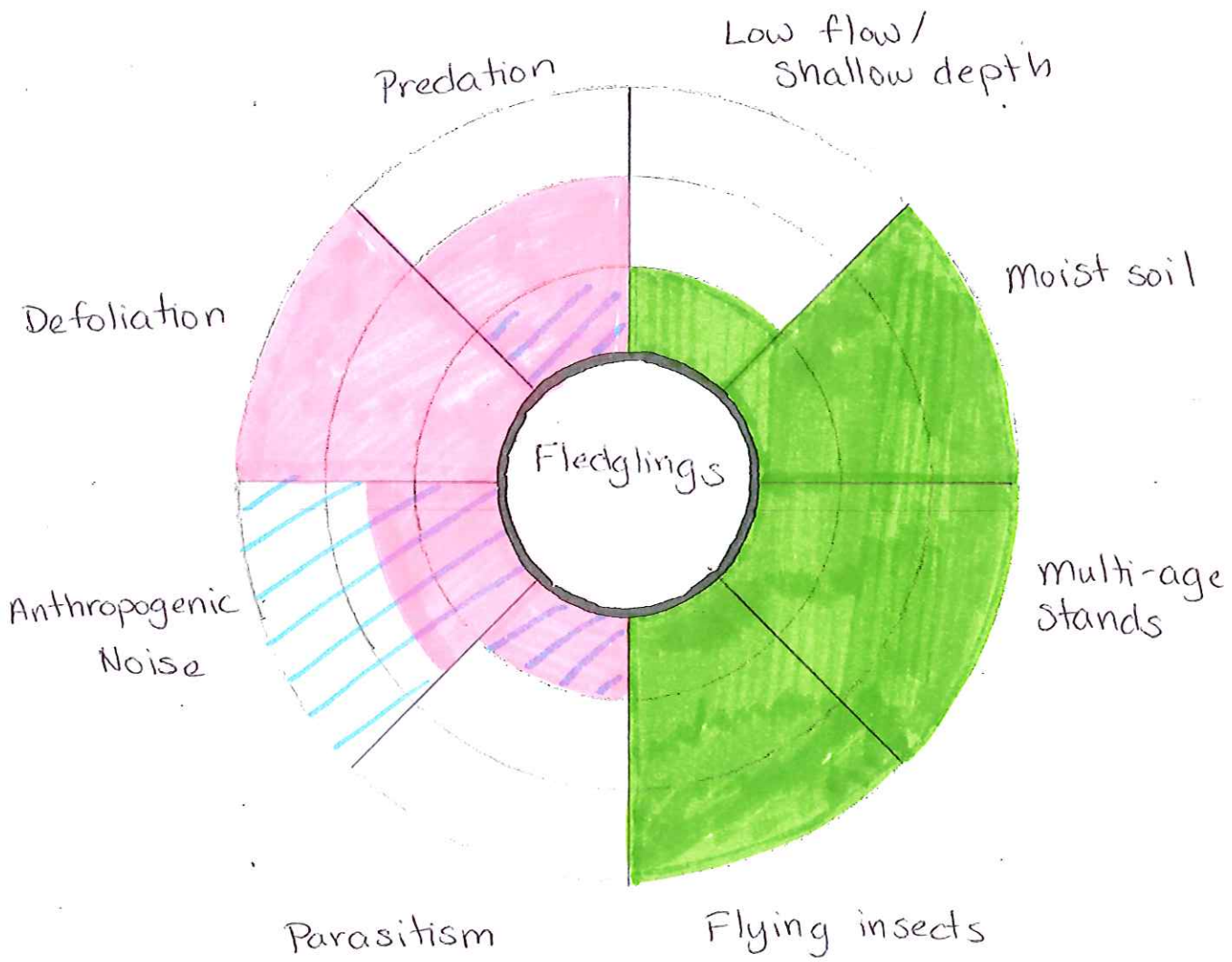


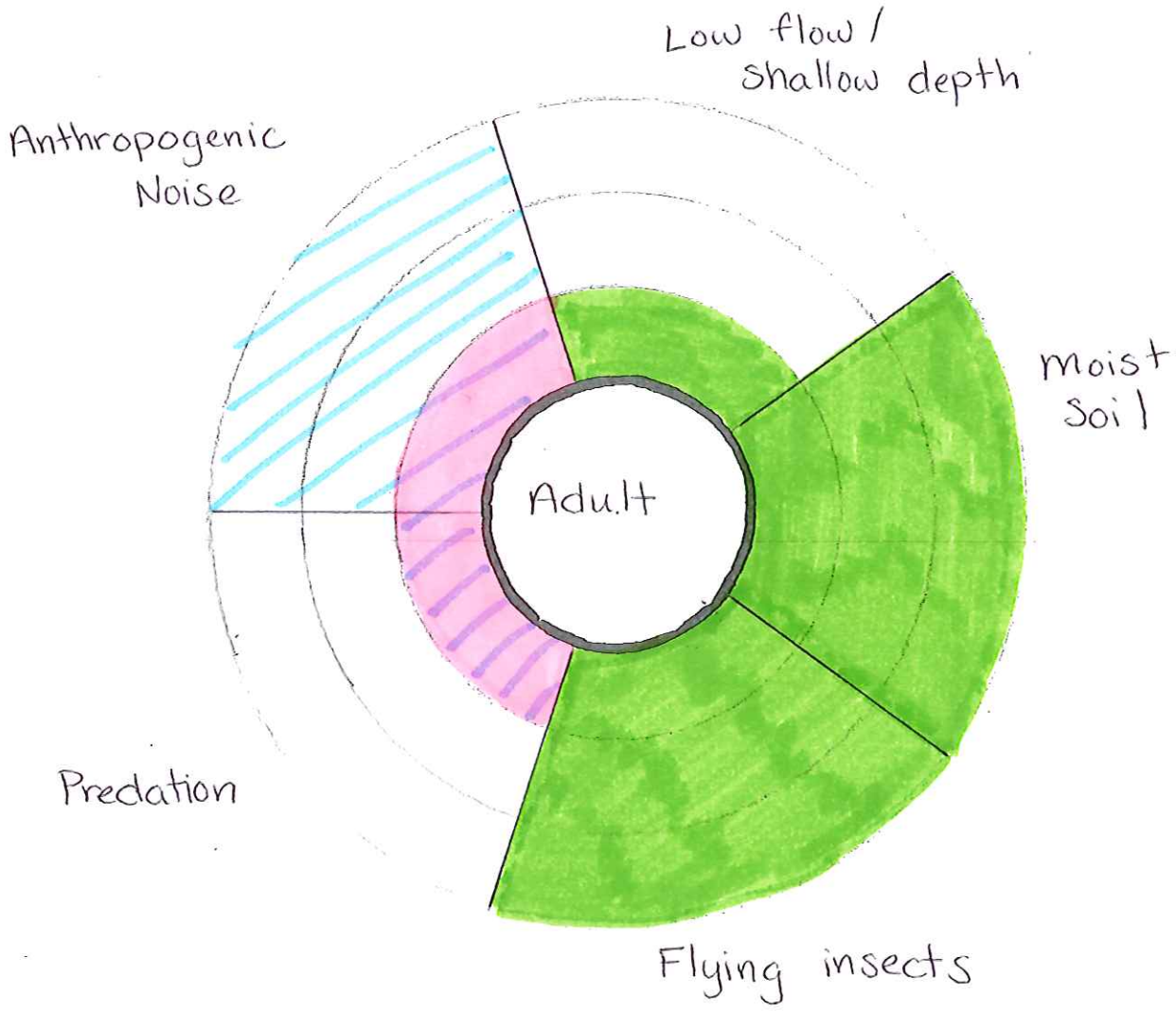






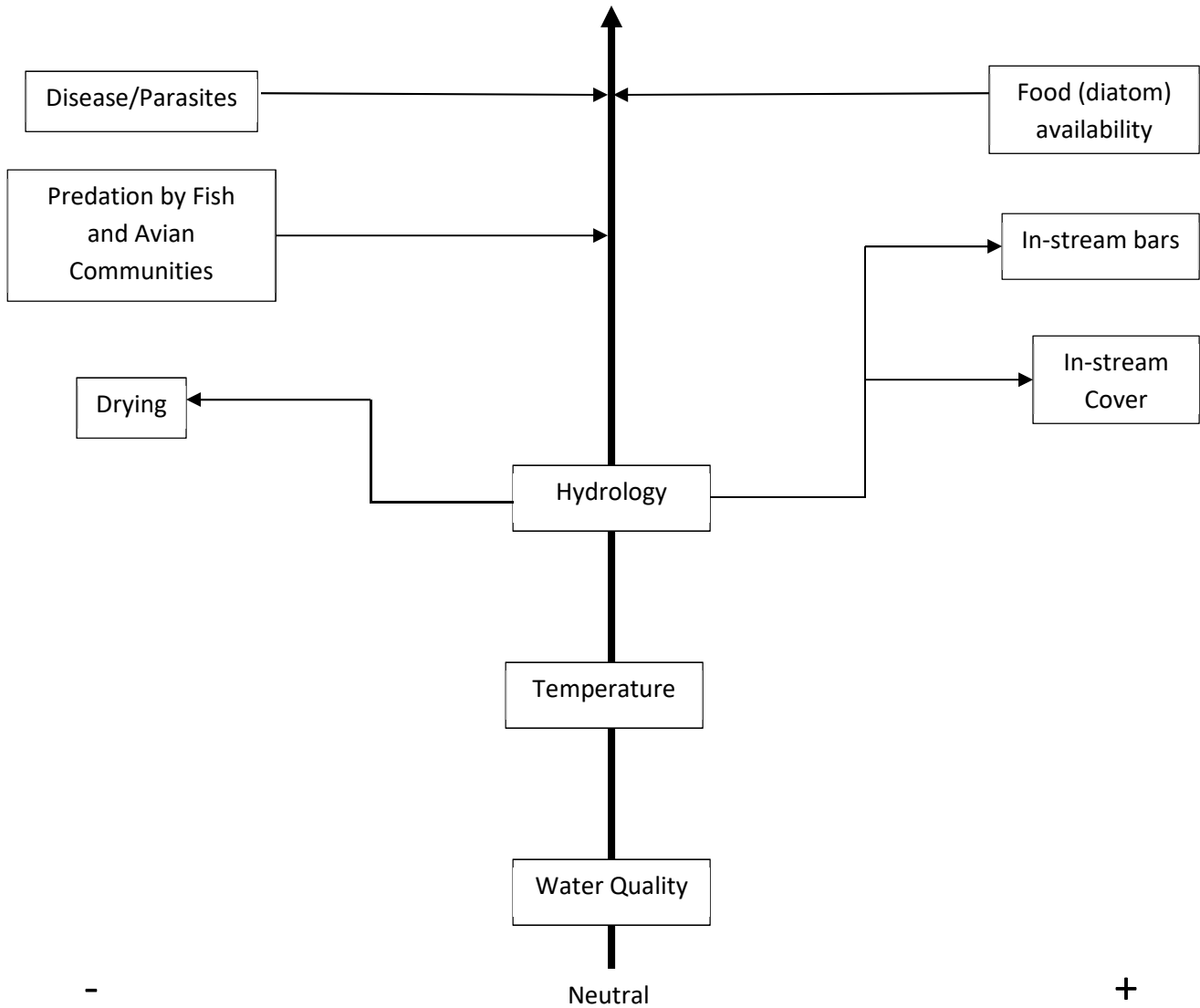












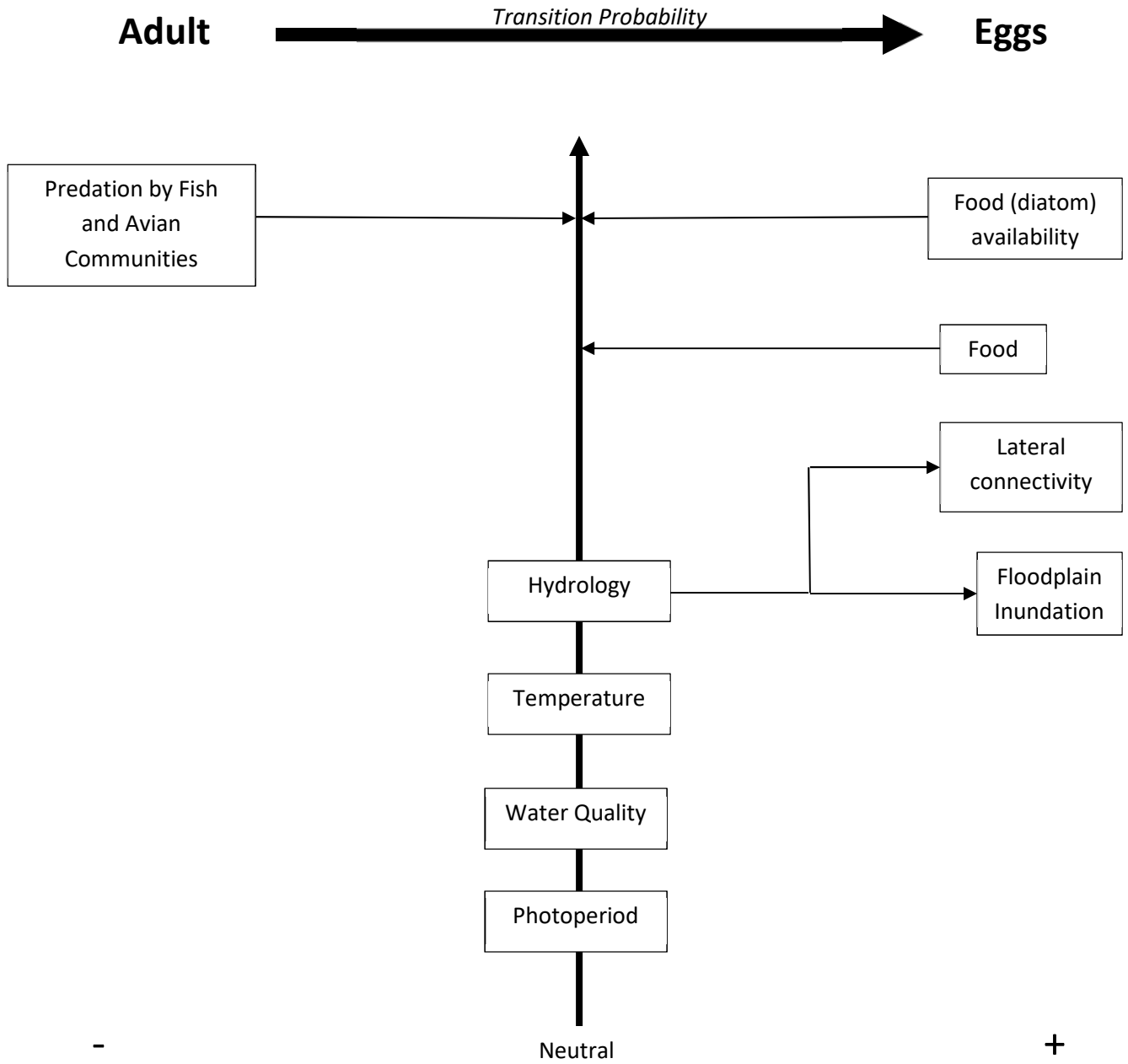
Fish Responses: Juvenile Survival, Juvenile Habitat, Movement, Behavior, Population Size







Juvenile $\xrightarrow{\text{Transition Probability}}$ **Adult**



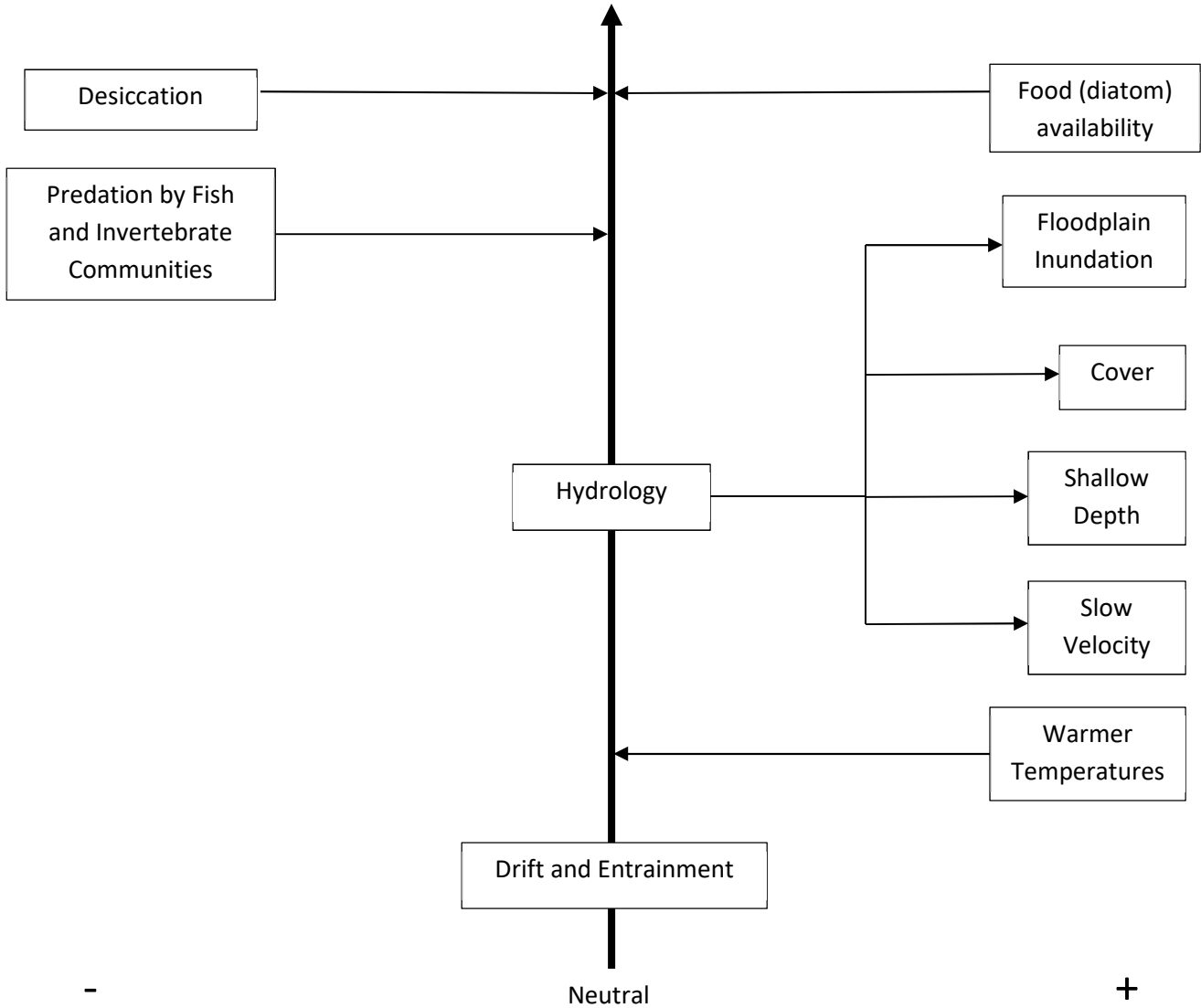
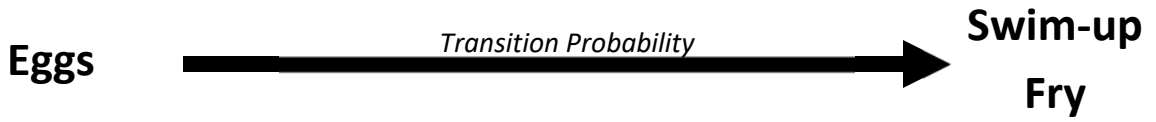
Legend		
	Importance	Understanding
High		
Medium		
Low		

Fish Responses: Population Size, Behavior, Spawning, Genetics



Legend	Importance	Understanding
High		
Medium		
Low		

Fish Responses: Egg viability, Behavior

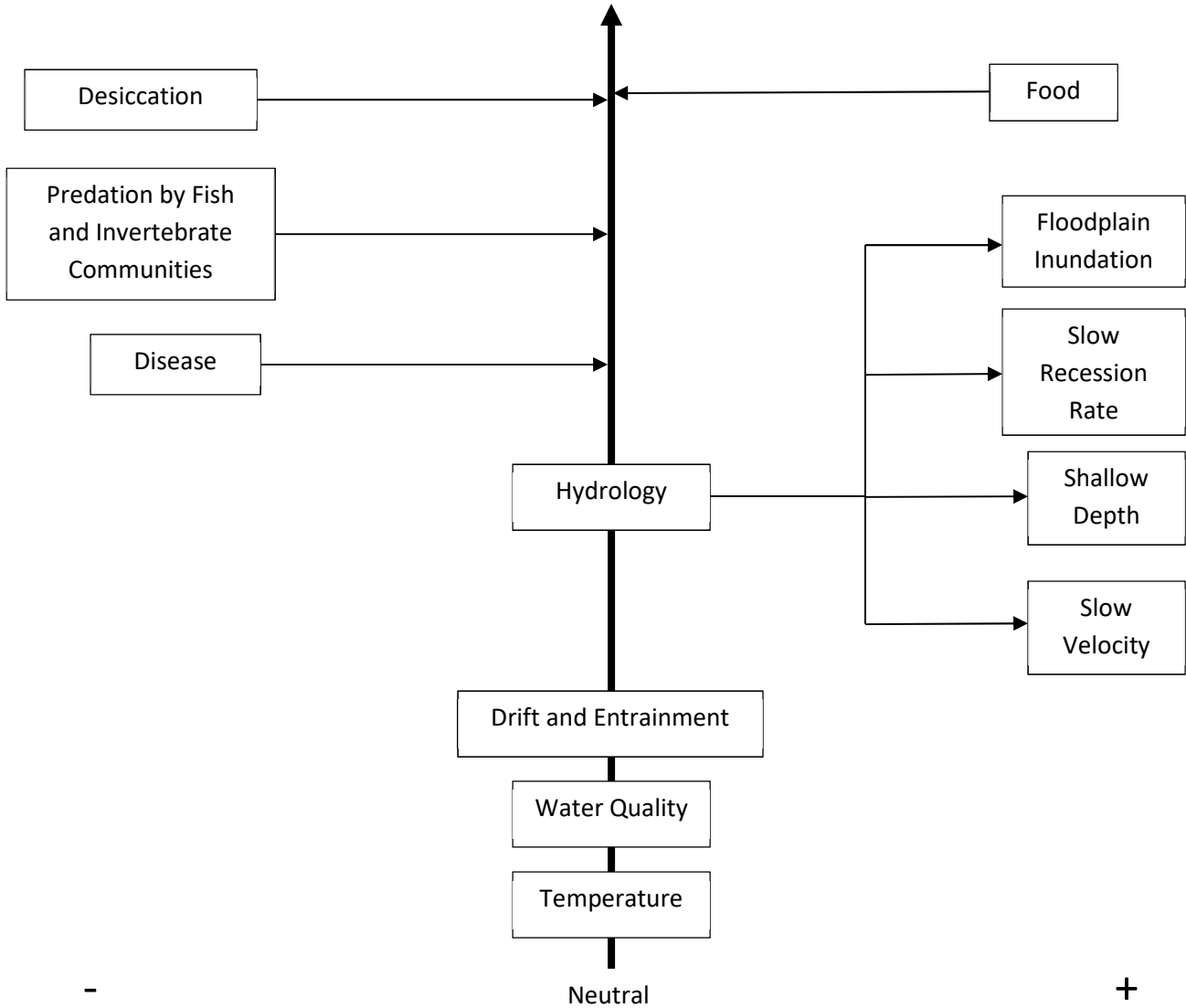
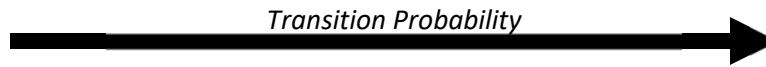


Legend		
	Importance	Understanding
High		
Medium		
Low		

Fish Responses: Behavior, Viability

Swim-up Fry

Juvenile



Legend		
	Importance	Understanding
High		
Medium		
Low		

