Research question(s) package for the research topic: Amphibians

Purpose of this document

This document provides the following Adaptive Management Program elements from the Adaptive Management Program Committee (AMPC) regarding amphibians research:

  A. The preliminary research questions they developed; and,
  B. Contextual information for these questions, as required in rule[1]. This information clarifies the basis for these questions, and what additional information the AMPC would like to see from the Independent Research and Science Team (IRST).

These elements will guide the IRST in developing scoping proposal(s) to answer these preliminary research questions.

Dear Members of the IRST,

We are pleased that you have agreed to participate on the IRST.

The AMPC appreciates your using this document to guide your work in the next step of the Adaptive Management Program, which includes your completing the following items per rules:

  1. In consultation with the AMPC, refine these preliminary research questions into finalized research questions[2]. The intent is for these finalized research questions to be able to be addressed via studies. Additionally, the AMPC requests feedback from the IRST on the level of detail in this entire document so that subsequent preliminary research question packages are more helpful for the IRST.
  2. Develop scoping proposal(s) for how to address the finalized research questions. The proposal(s) need(s) to include[3]:
       a. A literature review that specifies the need for or the type of monitoring, research, commissioned studies, or other means of scientific inquiry necessary to answer the finalized research question mentioned in #1;
       b. A preliminary estimate of the budget for each year of the research, and a timeline to complete the research project with specific deliverables; and,
       c. A preliminary description of research project requirements, scope of work including an estimate of the timeline and key milestones, and an estimate of the degree to which knowledge may be improved if the research proposal is implemented.

  Additionally, please use the associated contextual information (detailed in section B, below) to guide your efforts.

  3. Within 45 days of receiving this document, please provide an estimate of the time you will need to complete #2[4].

Next steps after IRST scoping proposals: Research agenda, implementation, reporting
In summary, the next steps in the Adaptive Management Program process are:

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[1] Oregon Administrative Rule (OAR) 629-603-0200(3)(a)
[2] Per OAR 629-603-0200(4)(b)
[3] Per OAR 629-603-0200(4)(c and d)
[4] Per OAR 629-603-0200(4)(a)

I. The AMPC completes preliminary research questions for other AMPC priority research topics.

II. The IRST will complete similar scoping proposal(s) as outlined above for these questions.

III. The AMPC will consider all of these scoping proposals in developing a comprehensive research agenda[5].

IV. The IRST will implement the research agenda[6], then report this work to Oregon Board of Forestry (Board) and the AMPC. The AMPC will consider the IRST report, and report on it to the Board. The report will include alternative actions that can be taken to address findings in the IRST report.[8]

Closing

==We welcome your feedback on how to improve the framing of the information and associated communications.==

The AMPC looks forward to working with you, both in the long term, and on this particular scoping proposal. If you have any questions, please reach out to Oregon Department of Forestry's Adaptive Management Program Coordinator, W. Terry Frueh at Terry.Frueh@ODF.Oregon.gov or 503.871.2699.

Sincerely,
Members of the AMPC

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[5] OAR 629-603-0200(5)
[6] OAR 629-603-0200(6)
[8] OAR 629-603-0200(8)

A. Preliminary research questions

These preliminary research questions were approved by the AMPC as a substantial decision at their _____ meeting. Note that text in this orange font is AMPC input, and black text is quoted from another source.

The AMPC needs some help honing this set of questions and deciding where to focus the research. Thus, the AMPC would like additional communication with IRST regarding that help.

Question 1. Including a robust a literature review: What is the distribution (both within watersheds and between watersheds, and throughout the state) and its seasonal changes, and genetic demographics for each of the covered amphibian species (or, focus only on 2 torrent salamander species)? The question focuses on establishing a baseline for the species.

Question 2. This set of questions addresses the habitat and persistence of Columbia and Southern torrent salamanders over time and the landscape. Each question is connected to the associated goal and objective.

Question 2.1. How do rules for road crossings on fish-bearing streams impact Columbia and Southern torrent salamanders' habitat?

Goal 3: *Stream network connectivity satisfies freshwater habitat needs for covered species.*
Objective 3.1 – *Road crossings on fish-bearing streams are passable by the covered fish species.*

Question 2.2 How do rules for no-harvest RMAs impact Columbia and Southern torrent salamanders' habitat?

Goal 2: *Shade and watershed processes controlling stream temperature provide cool water compatible with the needs of the covered species.*
Objective 2.2 – *No-harvest RMAs maintain stream shade sufficient to support desired cool water temperatures for covered amphibians.*

Question 2.3. How do rules for Type N streams impact Columbia and Southern torrent salamanders' habitat?

Goal 3: *Stream network connectivity satisfies freshwater habitat needs for covered species.*
Objective 3.3 – *Timber harvest maintains stream-associated connectivity in riparian areas along non-fish streams sufficient to support covered amphibians.*

Question 2.4. How do rules for stream-associated wetlands and stream-adjacent seeps and springs impact Columbia and Southern torrent salamanders' habitat?

Goal 4: *Riparian areas function to support complex habitats for the covered species.*
Objective 4.4 – *Forest practices maintain stream-associated wetlands and stream-adjacent seep and spring habitat for amphibians*

Question 2.5 How do rules for steep/unstable slope protections impact Columbia and Southern torrent salamanders' habitat?

Goal 4: *Riparian areas function to support complex habitats for the covered species.*

Objective 4.3 – Designated Debris Flow Traversal Areas function to deliver large wood to fish-bearing streams.

Objective 4.4 – Forest practices maintain stream-associated wetlands and stream-adjacent seep and spring habitat for amphibians.

Question 2.6. What is the persistence of the Columbia and Southern torrent salamanders over time and the landscape? This question may be addressed via a comprehensive monitoring program.

Overarching Goal: Forest practices that support the survival and recovery of the covered species by providing clean, cool, connected, and complex habitats.

B. Research Question Package

The remainder of this document provides contextual information for the preliminary research questions, as required by rule[9]. The following are organized per the elements in this rule.

B.1 The type of research[10]

AMPC response:

This research is of type OAR 629-603-0100(1)(a): *"Conduct effectiveness monitoring by assessing the degree to which the rules facilitating particular forest conditions and ecological processes achieve the biological goals and objectives. This assessment may include evaluation of cumulative effects."*

and OAR 629-603-0100(1)(b):

"Conduct research inquiry and validation monitoring to:

(A) Determine if additional scientific inquiry is needed to fill knowledge gaps related to biological goals and objectives;"

B.2 The rule, biological goals and objectives (BGOs), or other issue being studied[11]

AMPC response:

The BGOs[12] are listed below with those applicable to these questions highlighted:

"*Overarching Goal: Forest practices that support the survival and recovery of the covered species by providing clean, cool, connected, and complex habitats.*

Goal 1: Provide clean water and substrate for the covered species.

    o *Objective 1.1 - Forest practices near streams minimize sediment delivery.*

    o *Objective 1.2 – Slope Retention Areas reduce episodic sediment delivery to fish-bearing streams.*

    o *Objective 1.3 – Road runoff directly to streams is minimized.*

    o *Objective 1.4 – Roads are not a significant source of episodic sediment delivery to streams.*

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[9] OAR 629-603-0200 (3)(a)

[10] OAR 629-603-0200(3)(a)(A)

[11] OAR 629-603-0200(3)(a)(B)

[12] The most recent version of the BGOs is in the Dec. 2022 draft HCP. The BGOs will be finalized within the HCP due Dec. 31, 2027.

Goal 2: Shade and watershed processes controlling stream temperature provide cool water compatible with the needs of the covered species.

> o **Objective 2.1** – *Forest practices maintain stream shade sufficient to support desired cool water temperatures on fish-bearing streams.*
> o **Objective 2.2** – *No-harvest RMAs maintain stream shade sufficient to support desired cool water temperatures for covered amphibians.*
> o **Objective 2.3** – *Forest practices near non-fish-bearing perennial streams do not notably increase water temperatures in fish-bearing streams.*

Goal 3: Stream network connectivity satisfies freshwater habitat needs for covered species.

> o **Objective 3.1** – *Road crossings on fish-bearing streams are passable by the covered fish species.*
> o **Objective 3.2** – *Forest practices maintain the hydrologic continuity of stream-associated wetlands and stream-adjacent seeps and springs to stream habitats.*
> o **Objective 3.3** – *Timber harvest maintains stream-associated connectivity in riparian areas along non-fish streams sufficient to support covered amphibians.*

Goal 4: Riparian areas function to support complex habitats for the covered species.

> o **Objective 4.1** – *Mature, complex riparian forests are fostered in no-harvest zones of RMAs.*
> o **Objective 4.2** – *Forest practices within tree retention areas of RMAs promote delivery of large wood.*
> o **Objective 4.3** – *Designated Debris Flow Traversal Areas function to deliver large wood to fish-bearing streams.*
> o **Objective 4.4** – *Forest practices maintain stream-associated wetlands and stream-adjacent seep and spring habitat for amphibians."*

For additional information relating to the issue being studied, see the PFA Report excerpt (below, section B.4).

B.3 The objective of the research[13]

AMPC response:

The objectives of this research are to understand:

A. Where on the landscape the covered amphibians are located; and,
B. The impact of the FPA rules on the persistence of the covered species.

B.4 A brief description of the context of the research question[14]

AMPC response: The following information and direction was provided in the PFA Report, the content of which was enacted as statute by reference, and provides the foundation for these research questions:

"**CHAPTER 7. AMPHIBIAN CONSERVATION**

7.2 Goals

The goal of riparian management practices and other conservation measures described in this section is to protect and conserve stream and riparian habitats important for all

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[13] OAR 629-603-0200(3)(a)(C)
[14] OAR 629-603-0200(3)(a)(D)

life stages of Columbia (Rhyacotriton kezeri) and Southern (R. variegatus) torrent salamanders, Coastal (Dicamptodon tenebrosus) and Cope's (Dicamptodon copei) giant salamanders, and Coastal tailed frog (Ascaphus truei).

7.3.3 Conservation Measures to Support Protection of Stream-Dwelling Amphibians

Conservation measures to support the protection of stream-dwelling amphibians include riparian prescriptions that protect fish and non-fish-bearing streams as identified in Chapter 2 of this Report. That Chapter includes conservation measures for seasonal and perennial streams that provide important habitats for stream-dwelling amphibians. Additional protections for seeps, springs, and stream-associated wetlands are established in Chapter 2.

Additional conservation measures to conserve stream-dwelling amphibians include:
    a. The Slope Retention Areas, Designated Debris-Flow Traversal Areas, and Stream Adjacent Failure prescriptions which are identified in Chapter 3.
    b. The wetland protections, including the 2:1 replacement for filling or draining wetlands, identified in Chapter 4.
    c. The updated culvert design standards identified in Chapter 4.
    d. The reduction of fine sediment through the hydrologic disconnection of roadside conveyance systems from streams as identified in Chapter 4.

7.3.4 Adaptive Management

Uncertainty exists around amphibian population characteristics, distribution, productivity, survival, and abundance. A robust effectiveness monitoring plan as part of an adaptive management program will be used to better understand the relationship between forest management and covered amphibian species. To support this program, it is recommended that $1.5 million be initially applied to research through the first funding cycle of the adaptive management program to better understand how riparian and unstable slope protections of at least the current and proposed rules for private forestland impact persistence of populations. The Authors agree that the $1.5 million will be used to fund an initial study and that ongoing research over appropriate intervals of time beyond this initial study will be necessary to understand research outcomes over long periods of time. The priority species for monitoring will be the Columbia and Southern torrent salamanders. With consideration to funding constraints and other priorities, this research could also include other species covered by the HCP. Additionally, it could include Cascade torrent salamanders, which are not covered by the HCP."

B.5 Other information the AMPC deems necessary for the IRST's work[15]

The purpose of this section is to provide additional contextual information to guide the IRST's work.

AMPC Response:

1. It is essential to maintain the role of the regulatory framework (the OFPA) throughout the design and implementation of studies. Specifically, there are two stratum classifications:
    A. The West and East Oregon FPA regions.

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[15] OAR 629-603-0200(3)(a)(E)

B. Landowner classifications in the FPA of which there are two, each with a different regulatory framework.
2. The intention of this monitoring is NOT to compare conditions or rules with the previous rules.
3. In any studies assessing species population trends, it's important to differentiate impacts of forest practices from those outside the FPA framework (e.g., climate change, non-forest land uses).
4. What are the similarities and differences between impacts of e.g., sediment, stream temperature on fish vs. those impacts on amphibians?
5. The overarching goal of the draft HCP BGOs is:

"Forest practices that support the survival and recovery of the covered species by providing clean, cool, connected, and complex habitats."

Are there other aspects of the covered amphibian populations' persistence related to this overarching goal that warrant further study? This question is based on an understanding that these species' populations may depend on dispersal through uplands. This question could be addressed via a literature review. The AMPC would like a response that informs AMPC's critical thinking. Addressing this question is not designed to lead directly to a scoping proposal per OAR 629-603-0200(4)(c), and thus it was not included above under preliminary research questions.

Below are notes from the Dec. 9th AMPC meeting

Q1

- Need baseline data before trends can be identified. *
- These initial AMPC questions are broad. Could be challenging to translate into specific research questions. Balance between gathering useful, broad baseline data vs. focused study.
  - Consider asking IRST how they would address these questions for one species (e.g., torrent salamander). Then expand to include additional species. Alternatively, could start by studying covered species and later including additional species.
  - Consider narrowing/prioritizing research scope by focusing on key stream types, geographic regions, etc. HCP doesn't currently focus on ridgetops.
  - E.g., consider focusing on torrent salamanders in non-fish bearing streams.
- Consider climate/temperature impacts on amphibian species. Control for changing temperatures, etc. A regression analysis could tease apart the impact of environmental variables.
- Option for balancing broad baseline study with focused research question:
  - Answer Question 1 for multiple amphibian species, then focus on fewer key species for Question 2.
- Consider also investigating migration/movement patterns in response to environmental stressors. How rapidly do they recolonize former habitat after conditions improve?
  - Genetic work could indicate gene flow.

Interspecific interactions could influence habitat suitability.

Q2

- Consider BGOs related to roads (included in the context below), downed wood (Objective 4.2)
- Consider goals/objectives related to habitat connectivity (cool, moist, safe places to traverse

ridges). See overarching goal at the bottom of this document.
- Persistence of a species may be tied to movement across watersheds. "Kitchen sink" approach can be useful.
- After baseline is established, how do you continue monitoring population trends?
- Identify reference conditions. *
    o Consider monitoring populations under different management regimes.
- Keep in mind that amphibian population changes might not be the result of new FPA rules.
- New FPA rules will be implemented over time; the effects of rule implementation won't be evident for some time.
- Consider a pilot study for Question 2
    o An initial study focusing on torrent salamanders and a few key outcomes (e.g., sediment, shade) could serve as a pilot study. *
    o There is some guidance in PFA report that could help narrow study focus: "…understand how riparian and unstable slope protections … impact persistence of populations." (p 121)
- Consider expanding Question 2: How does the implementation of FPA rules affect the persistence of amphibian species and the quality of their habitats?

Appendix 1. Amphibian-related rules

This appendix lists the rules relevant to each of the research questions and associated biological goals and objectives.