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Appendix 3: Template for proposing a new EEP

TAGs can use this Template for proposing a new EEP to the EEP Committee. As per default these applications follow from the RCP publication process and the Species Assessment Sheet should be sent along with this template. In exceptional cases new EEPs may also be proposed in between RCP editions. A separate Species Assessment Sheet should be completed if an EEP is being applied for in between RCP editions. Note that not all sections below may be relevant to each programme. Also note that 'species' represents any taxonomic unit the TAG has chosen as the unit of management in an EEP.

EEP Proposal for

Common Family Name: Pupfishes

Scientific Family Name: Cyprinodontidae inc. Aphaniidae

Prepared by

Name(s): Freshwater Teleost TAG

Year: 2021

1. Contact information

Contact details of proposed EEP Coordinator

Name: Alex Cliffe

Institution: Zoological Society of London

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2. Taxonomy information

Taxonomy of the species

These two families include 137 species (103 in Cyprinodontidae + 34 in Aphaniidae)

3. Identified roles

Identified role(s) description

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Insurance: Several species are already extinct and three species in the genus *Cyprinodon* are extinct in the wild. For this reason, this direct conservation role contemplates the possibility to maintain long-term *ex situ* populations to preserve options for the future. The *ex situ* populations are a potential future source to build up (long-term) populations for reintroductions. In this case, the *Cyprinodontidae* and *Aphaniidae* families contain many threatened species several of which have IUCN *ex situ* mandates. Based on the threat category several species are likely to be lost in the wild and in need of an insurance population. Given the high feasibility and benefit, the next logical step would be to formalise the insurance populations.

Research: This role would focus on different types of research such as disease management, population management, and reproductive biology.

Programme decision statement

EEP. From the 78 species assessed (out of 137 *Cyprinodontidae* and *Aphaniidae* species), 47 are threatened (EW, CR, EN or VU). Among the most common threats to this family are natural system modifications, invasive species, and pollution. To avoid a critical loss of pupfish species, during the workshop, the TAG agreed that the logical action would be to actively manage the family as an EEP with a focus on population insurance.

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4. Programme participants and governance

EAZA institutional scope *(As a default, participation in EEPs is obligatory for EAZA Members. If you wish for an exemption, identify which institution(s) holding this species is/are not part of the EEP and explain the underlying reasons.)*

Non-EAZA holding institutional scope *Select one or more of the options below.*

- EAZA population/community is the dominating driver of the EEP and any non-EAZA Members will occasionally join and are not integral to the structure of the EEP.
- In addition to EAZA, there are other structural/equal drivers of the EEP (e.g., World Pheasant Association, ...). Please describe.
- A larger initiative exists and the EAZA population is a small part of this (e.g., GSMP, ...). Please describe.

Additional information:

Essential non-EAZA partners not holding animals *(List the organisations, define their role, and how they will work with the EEP).*

Several non-EAZA aquariums that are members of EUAC, (European Union of Aquarium Curators) which has a Memorandum of Understanding with EAZA, are likely to participate. Additionally, some hobbyists and research institutions hold the species in this family and they contribute to the overall total population size and provide valuable knowledge and research that benefits the programme. They are therefore important to the aims of the EEP. Furthermore, very few EAZA members hold the species in this family so there is insufficient participation from only EAZA zoos/aquariums to establish and maintain strong populations of the species represented in this EEP.

Members of the EEP core group (Species Committee + non-voting members)

- *By default, EEPs have a Species Committee (a democratically elected representation of the holders) as part of their EEP core group (information on the Species Committee and its associated default decision making process can be found in the Population Management Manual). If that will not be the case*

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for this EEP, explain why and define the composition, structure and decision-making process for the EEP core group. There are no immediate plans to have a Species (Family) Committee for Cyprinodontidae but members of the Freshwater TAG that hold the species will be part of the steering committee.

- *List the EEP core group members (names and institutions) (if already known): Species Committee members, Advisors, others. Toni Weissenbacher, Vienna Zoo, Brian Zimmerman, Bristol Zoological Society*

Collaboration with EAZA Working Groups and Committees *(Explain any current and/or future proposed links to existing EAZA groups and committees, such as the Animal Training Working Group, Biobanking Working Group, EAZA Group on Zoo Animal Contraception (EGZAC), EAZA Population Management Advisory Group (EPMAG), EAZA Education Committee, EAZA Nutrition Working Group, EAZA Research Committee, Reintroduction and Translocations Group, Transport Working Group, EAZA Veterinary Committee, EAZA Conservation Committee, Animal Welfare Working Group, Palm oil Working Group).*

There is or will be collaboration with: Biobanking WG, EPMAG, Reintroduction & Translocations Group, EAZA Conservation Committee.

5. Programme characteristics

The detailed programme characteristics, goals, objectives and management strategies to fulfil the roles and goals of the EEP will be developed at a later stage as part of a Long-Term Management Plan (LTMP). The questions below are intended to help paint a rough view of what is currently intended/expected for the general EEP programme characteristics.

- *If there is a recent/active Long-term Management Plan for this species, list the demographic, genetic and other goals determined (if they still apply post RCP workshop).*



There is a draft LTMP for this family being progressed with help from the EAZA Population biologist team and it will be the first LTMP developed for a freshwater teleost family in this TAG. The Plan will focus on ensuring sufficient holders of each species exist and continued integration with in-situ conservation efforts.

- *What is the anticipated duration of the programme?*

Long-term.

- *What is the anticipated likelihood and time scale of the use of the EEP population for restoration in the wild (reintroduction, reinforcement, etc.)?*

The *ex situ* populations are a potential future source to build up (long-term) populations for reintroductions.

- *Are some or all the individuals within this EEP intended to be held in specialist ex situ centres in the species' native range? Specify.* Yes. There are several Cyprinodon species located in North America and one species of Aphanis in Turkey.

- *Is it expected to be necessary that the whole population, or a certain proportion thereof, will need to be held off exhibit in order to fulfil the roles of the programme? If yes, please explain. (this question does not refer to the temporary housing of individuals off exhibit for space reasons)* Yes. To comply with recommended husbandry guidelines, having multiple groups of each species is advised. This family does well in an on-show aquariums and in some cases outdoor ponds.

- *Does a part or the whole of the EEP population need to be held in bio-secure facilities? And/or are there known diseases that have an above average effect on fulfilling the roles of the EEP?* No. There are issues with mycobacterium in some populations and the families Cyprinodontidae and Aphanisidae are susceptible to this disease if kept in unsatisfactory conditions (overcrowded, incorrect temperature). Due to the aquarium and its life support systems being easily isolated, they provide the necessary barrier management without the need for bio-secure facilities.

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- *What is the expected estimated number of individuals and institutions required to fulfil the selected roles? (this question will be answered in detail during the LTMP session for the taxon, but if some indication of scale is clear already, this should be stated here)* Based on early group management estimates, 200 individuals will be the target, across at least three institutions, per species. There are 39 species of Cyprinodontidae/Aphaniidae across 47 institutions according to ZIMS.
- *Is this EEP intended to include rearing of wild eggs/young (i.e. head-starting)?* Not at this time.
- *Is this EEP intended to include ex situ breeding?* Yes
- *Is there likely sufficient expertise for this, or a model, taxon to achieve the roles of the programme and provide conditions for good welfare? Please indicate if Best Practice Guidelines already exist and if yes, include publication date.* The current holders have experience with keeping and breeding this family. BPG development is an aim of the EEP.
- *Will (non-)breeding and transfer recommendations be issued? If yes, with what frequency? (naturally problems will need to be solved throughout the year, but with what frequency will recommendations be issued for the whole population at once)* Yes. As the species in this family will be group managed, the frequency will be determined by the new guidelines being created for this type of management by the Group Management study group and the EAZA population biologists, in cooperation with the TAG.
- *Do you anticipate that the EEP population will be (largely) closed or will there be regular planned additions of individuals? In case of the latter, will this be for genetic and/or demographic reasons and what will be the source (other ex situ sources and/or from the wild)?* It is anticipated that some planned additions will be needed due to the small number of current holders. The species in this family are held by hobbyists and research facilities that



could contribute valuable genetic inputs to strengthen these populations. Wild acquisition is a possibility if the correct permits are received but this is not planned for the immediate future.

- *Do you expect genetic and demographic management in this EEP to be individual and/or group-based?* **Group-based.**
- *Do you expect genetic management in this EEP to be based on pedigree analysis, group history analysis, and/or molecular genetics?* **Some group history analysis and perhaps molecular genetics on a periodic basis to determine the level of inbreeding (refer to the LTMP for these families).**
- *Do you anticipate, or proactively plan for, biobanking and/or assisted reproduction to be key components of this programme?* **Biobanking of specimens.**
- *Do you anticipate certain national or international legislation to form a particular hindrance (more than average) to achieving the roles of your EEP (e.g., CITES, BALAI, governmental ownership, etc.). If so, explain how.* **No, most of the populations of the species in these two families are multi-generation captive held. Any wild caught inputs to improve demographic or genetic management of species still extant would require the necessary authorisation and licensing. Any hobbyist involvement would require assurances that fish are not illegally sourced from range states. The species in this family are not listed under CITES legislation or other international transfer restrictions but European national legislation is in place in some countries (UK) to prevent the spread of contagious diseases associated with native fish species (this is largely watershed based).**
- *Are there any other issues/plans related to in situ conservation support that you feel should be mentioned and are not evident from the role description of the EEP?* **No**
- *Is there a research component/aspect to the EEP that is expected to have important consequences for the design of the EEP programme (e.g. housing*

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and husbandry of a significant proportion of the population, etc.)?

If yes, explain. A plan to research optimum population/group size together with enclosure footprint and water depth is desired, and will continue to inform the LTMP and BPGs.

- *Do you anticipate there to be any sizeable political, social, or public conflicts of interest related to the EEP programme and how do you plan to deal with them? No*
- *Any important additional programme characteristics that you would like to mention? This is a family-based EEP and is being used as a model for future freshwater teleost EEPs, as identified and set out in the recently produced Regional Collection Plan for this group.*

6. References (if any)

Weissenbacher, A., Zimmerman, B., Aparici Plaza, D., Fienieg, E., Hausen, N. (eds.) 2020. *Regional Collection Plan –EAZA Freshwater Teleost Taxon Advisory Group– Edition One*. EAZA Executive Office: Amsterdam.