



## 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 Species Name: Madagascar Rainbowfishes**

**Scientific Species Name: Bedotiidae**

### Prepared by

Name(s): Freshwater Teleost TAG

Year: 2022

#### 1. Contact information

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#### Contact details of proposed EEP Coordinator

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#### 2. Taxonomy information

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#### Taxonomy of the species

The Bedotiidae family includes 2 genera (*Bedotia* and *Rheocles*) and 16 species. The degree of confidence in the taxonomic identification of the individuals in the captive population is unknown as recent genetic analyses have confirmed that several if not all captive groups of *Bedotia* previously designated as *B. geayi* are in fact *B. madagascariensis* (Ziegler et al. 2020).

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### 3. Identified roles

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#### **Identified role(s) description** Programme participants and governance

**Insurance:** 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.

**Exhibit:** Their colourful appearance and small space requirements make them suitable for this role.

**Research in situ:** There is need for research and supporting research in country with a focus on collecting background information such as habitat, biology and threats and developing Best Practice Guidelines to tackle any potential issues with breeding.

#### **Programme decision statement**

**EEP.** Proactive management and coordination along with a clear strategy among all the holders will be required to deliver the EAZA contributions to the identified actions and selected roles for Bedotiidae. Therefore, the TAG recommends to actively manage it as EEP.

### 4. Programme participants and governance

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**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.*

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In addition to EAZA, there are other structural/equal drivers of the EEP (e.g., World Pheasant Association, ...). Please describe. **Several non-EAZA aquariums that are members of EUAC, (European Union of Aquarium Curators)**

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 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 Bedotiidae. The core group can gather Aquarium curators, specialist keepers and researchers holding or working with species from the bedotiidae family.*

- *List the EEP core group members (names and institutions) (if already known): Species Committee members, Advisors, others. Thomas Ziegler, Köln Zoo;*

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Toni Weissenbacher, Vienna Zoo; Brian Zimmerman, Bristol Zoo; Alex Cliffe, Whipsnade Zoo.

**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*).

In the future there could be collaboration with the following groups: Biobanking Working Group, EAZA Population Management Advisory Group (EPMAG), Reintroduction and Translocations Group, EAZA Conservation Committee.

## 5. Programme characteristics

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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 no existing LTMP for this family. According to a survey conducted in 2020 the current bedotiidae European captive population is *Bedotia geayi* (176), *B. longianalis* (1), *B. madagascariensis* (277), *Rheocles vatosoa* (37). The goals will be to genetically confirm the species for each population, increase the number of populations and holding institutions to stabilise the current species, investigate how to get hold of more *B. longianalis*, start a population of *Bedotia marojejy* (only held in US) within European institutions. We will also



review the situation in the wild for each species and prioritise the need to start rescue/insurance populations.

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

The programme is based on maintaining insurance populations of all threatened species within the Bedotiidae family, to safeguard against their continued rapid decline in the wild due to a number of factors. At this time the downward trends for populations in the wild haven't been reversed and therefore the duration of the programme is unknown. Holders are expected to commit to long-term participation.

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

The primary goal of the EEP population is rescue/insurance population. The priority will be given to set up in-country managed captive population for reintroduction/reinforcement purposes. These in-country captive populations could be made of individuals from the EEP population if the species is extinct in the wild or if the wild population is too weak to extract brood stocks from it. The time scale is therefore medium to long given the threats in the wild and the status of the captive European populations.

- *Are some or all the individuals within this EEP intended to be held in specialist ex situ centres in the species' native range? Specify.*

It is not the case yet, but it is a preferred option that will be looked into if we want to increase our chances of success for future reintroduction.

- *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)*

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Yes, a certain portion of the population will be held off show. To insure good genetic diversity and improve safety it would be recommended to hold multiple groups per institution. However, the *Bedotia* are visually interesting to be displayed to showcase Malagasy fishes in public aquaria and raise awareness on environmental issue in Madagascar.

- *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 might be issue due to mycobacterium.

- *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, 300 individuals will be the target, across at least three institutions, per species.

- *Is this EEP intended to include rearing of wild eggs/young (i.e. head-starting)?*

Not at first but this option could be investigated

- *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.*

There is sufficient expertise as a few bedotiidae species have been held in captivity successfully for a long time which constitute a good base to start with. There are no best Practice Guidelines for these species.



- *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, each species from the family will be group managed. Transfer frequency will depend on breeding success. 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)?*

There will be planned addition of individuals/population from the wild for both genetic and demographic reasons. Despite 28 bedotiidae species included on the IUCN red list, 24 with a threatened status and 4 lacking data, only 4 are held within European zoological institutions. One species, *Bedotia marojejy*, could be sourced from US institutions.

- *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.

- *Do you anticipate, or proactively plan for, biobanking and/or assisted reproduction to be key components of this programme?*



Yes, will plan to contribute.

- *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.*

None of the Bedotiidae species are listed on the CITES. Nagoya protocol could slow down importation, but we have good in-country partners that can deal with the necessary paperwork for exportation towards Europe.

- *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 and husbandry of a significant proportion of the population, etc.)? If yes, explain.*

Yes, further research on captive population management is needed (group size, sex ratio, footprint, husbandry, diseases, ...) to produce a BPGs and inform a LTMP and produce populations fit for reintroduction.

- *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?*

No



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## 6. References (if any)

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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.

Ziegler, T., Frank-Klein, N., Ommer, S., Hürche, R. & Vences, M (2020). *Husbandry and captive breeding of imperiled endemic Malagasy freshwater fishes at Cologne Zoo: a contribution towards the advancement of a conservation breeding network*. *Der Zoologische Garten N.F.*, 88, 123–155.

*(Not yet published)* Leiss, L. Rauhaus, A. Rakotoarison, A. Fusari, C. Vences, M. Ziegler, T. (2021) *Review of threatened Malagasy freshwater fishes in zoos and aquaria: The necessity of an ex-situ conservation network – a call for action*.