

Basic Information and Husbandry Guidelines
for *Ptychochromis loisellei*,
Loiselle's Ptycho





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1. Characterisation

Scientific name: *Ptychochromis loisellei* (STIASSNY & SPARKS 2006)

Vernacular name: Loiselle's Ptycho (Englisch), Garaka (Madagassisch)

Total length: Males up to 20 cm

Citizen Conservation#Fish category: I

Threat status according to IUCN Red List: Endangered (EN)

Accommodation: Adult fish should be kept in group sizes of about 10 specimens, if possible with more females than males, in an aquarium at least 1.5 m long with at least 500 l water volume.

A group of 10-20 semi-adults can be kept in an aquarium with a base area of about 100–120 cm x 40–60 cm (about 160–360 l). Juvenile schools of up to 50 individuals can be raised in aquariums with an edge length of 70 cm or more and a water volume of about 200 l.

Equipment required: Aquarium, lighting, heater, filter, water thermometer, test kit for water parameters, mulm extractor, large stones and bogwood roots for structure and protection, planting, sand or gravel as substrate.

Feeding: Commercial flake food; frozen food (white, black and red mosquito larvae and brown shrimps); live food (artemia, white mosquito larvae)





2. Why is *Ptychochromis loisellei* a Citizen Conservation species?

Loiselle's Ptycho, *Ptychochromis loisellei*, was only described in 2006 and is already considered endangered. It is listed as „endangered“ in the IUCN Red List due to its small range and the causes of threat mentioned below. The population trend is estimated to be declining.

The species is endemic to Madagascar and is found only in a limited area in the northeast of the island. STIASSNY & SPARKS (2006) give the Mahanara River and its tributaries near the town of Antsirabe-North as occurrence. Another population in Lake Nosiarina and Lake Mahatsara is mentioned by RAVELOMANANA (unpubl.).

The main threats to *Ptychochromis loisellei* are habitat loss due to sediment input into the riverine environment as a result of deforestation, capture for human consumption, and invasive species that compete for habitat or act as predators (RAVELOMANANA et al. 2016).

The rather colorless Malagasy cichlids have a unique phylogenetic position as a sister group to the other more colorful cichlids. Therefore, this group is particularly interesting for research and conservation, because they help to understand the evolution and behavior of the other cichlids (ZIEGLER et al. 2020).

The species has only recently been found and only in a few zoological institutions. In 2019, Cologne Zoo became the first European institution to receive animals from Toronto Zoo. In order to protect the species' population ex situ, it is necessary to place it on several footholds. Disease outbreaks in individual ex situ populations or other unforeseeable incidents can only be buffered in this way. Especially in the case of smaller species, it therefore makes sense to integrate private keepers into the conservation breeding.



Some colorful specimens from the family of cichlids
| Andrej Jakubik/Shutterstock



3. Biology and Conservation

3.1 Taxonomy

Ptychochromis loisellei belongs to the species-rich cichlid family (Cichlidae) within the order Cichliformes. The species was scientifically described as *Ptychochromis loisellei* in 2006 by Melanie L. J. STIASSNY und John S. SPARKS.

Order: Cichliformes

Family: Cichlidae

Genus: *Ptychochromis* (STEINDACHER 1880)

Species: *Ptychochromis loisellei* (STIASSNY & SPARKS 2006)

The species is named after Paul V. Loiselle. He was a fish enthusiast, researcher and former curator of freshwater fishes at the New York Aquarium.



A young specimen of *Ptychochromis loisellei* | Thomas Ziegler



3.2 Description

The body shape is laterally flattened and, as is typical of many cichlids, high-backed. *Ptychochromis loisellei* can be distinguished from its conspecifics by a stripe or several spots of various sizes, which usually run vertically from below the lateral line to just before the origin of the anal fin or even beyond it (STIASSNY & SPARKS 2006). The body coloration of *Ptychochromis loisellei* is gray-green. During the mating season the basic coloration changes to an intense golden yellow (ZIEGLER et al. 2020). Males of the species reach lengths of up to 20 cm (LOISELLE, unpubl. in ZIEGLER et al. 2020).

3.3 Occurrence and Habitat

The total occurrence area of *Ptychochromis loisellei* is very small with about 5,000 km². The type locality is the Mahanara River near the city of Antsirabe. According to local fishermen the species is still relatively common there (STIASSNY & SPARKS 2006).

The species was also recorded in the lower reaches of the Bemarivo River and Lake Mahatsara. However, during a morning observation on Lake Mahatsara, only one fish of this species was caught. Local fishermen also report that *P. loisellei* occurs in the Fanambana River (RAVELOMANANA & SPARKS 2020; LOISELLE, unpubl. in ZIEGLER et al. 2020).

Little is known about the natural habitat, the species occurs in clear and fast flowing rivers as well as in clear and slightly turbid lakes (RAVELOMANANA & SPARKS 2020).



An adult pair of *Ptychochromis loisellei* at Cologne Zoo
| Thomas Ziegler



Range of *Ptychochromis loisellei* (Quelle IUCN redlist)
| Jonas Lieberknecht



Overfishing of stocks contributes to the decline of the species. | Amit Uikey/Unsplash

3.4 Threats



The major threat factors to the species are habitat loss caused by heavy inputs of suspended sediment due to widespread deforestation in Madagascar. | Artush/Shutterstock

The total range of *Ptychochromis loisellei* is only about 5,000 km². The total population of the species endemic to Madagascar is endangered in three localities due to various factors (RAVELOMANANA & SPARKS 2020). A major problem contributing to the disappearance of the species is deforestation. In hardly any country on earth is it as advanced as in Madagascar. The formerly green island has long become a red island, and over 90 percent of the original forest area has been destroyed. This leads to severe soil erosion and the input of suspended matter into rivers and lakes, which affects habitat parameters (BENSTEAD et al. 2003; RAVELOMANANA & SPARKS 2020).

The fish are caught locally for consumption, but introduced alien species are also a general problem for Madagascar's fish fauna, as they compete for habitat and food or act as predators of native species (BENSTEAD et al. 2003; RAVELOMANANA & SPARKS 2020).



Invasive species such as the blotched snakehead (*Channa maculata*) and the Nile tilapia (*Oreochromis niloticus*) compete for food and habitat or act as predators. | Snakehead: FormosanFish/Shutterstock; Tilapia: Piriya Gutsch/Shutterstock



3.5 Conservation Efforts

The husbandry and propagation of *P. loisellei* in human care has been successful at an aquaculture facility in Andapa, Madagascar, as well as in zoos outside Madagascar.

The Toronto Zoo in Canada was the first zoological institution to propagate the species outside Madagascar. The Cologne Zoo Aquarium was the first European zoological institution to adopt offspring of the animals from the Toronto Zoo. The breeding efforts of the team around aquarium director Thomas ZIEGLER were subsequently very successful, and offspring have already been passed on to various zoological institutions.

In 2021, the first animals were distributed to keepers within the Citizen Conservation Program in order to establish a stable reserve population of this endangered species in captivity in the long term with the involvement of private enthusiasts.



Ptychochromis loisellei kept in the Cologne Zoo | Kidan Patanant



4. Husbandry

The information on husbandry is based on the experience at the Cologne Zoo (contributed by Thomas ZIEGLER).

With the general conditions given here *Ptychochromis loisellei* can be kept and propagated successfully. Furthermore, procedures deviating from these husbandry conditions are possible. In case of major deviations, please discuss them with the CC office beforehand. Please also inform the CC office about additional experiences. In this way the knowledge about the keeping and breeding of this species shall always be supplemented and updated.

4.1 Documentation Requirements

Ptychochromis loisellei is not subject to species protection laws in Germany, there are no legal reporting requirements.

CC collects the current population figures twice a year in order to document the population development and to manage the population.

Keepers agree to submit their current population numbers to the CC office on 3/1 and 9/1 of each year. A population reporting form will be provided by the CC office. Beginning in September 2023, reporting will be done through the Wild at Home online portal. Generally, reporting of offspring to the CC Office can be done at approximately six months of age when the number of juveniles expected to reach adulthood becomes manageable. Spawn and very small juveniles do not yet need to be reported.

In general, however, knowledge generation is a stated goal of CC, and keepers are encouraged to informally (e.g., by email) submit husbandry data and observations of animals (such as spawning or hatching of juveniles) to the CC office so that such information can be centrally collected.

If an adult animal dies, please inform the CC office immediately and informally about the loss, so that in justified cases of suspicion a necropsy can be arranged if necessary (the commissioning may only take place in consultation with CC; in this case CC bears the costs). Information on handling and shipping dead fish is available from the CC office. Failures in spawning or juvenile fish do not have to be reported unless there is suspicion that, for example, a disease is the reason for unusually high mortality rates. In case of doubt, consult the CC office.



4.2 Transport

If a change of location is imminent, no more feeding should be done one to two days before transport. Catching and transferring is done with a standard aquarium landing net.

For transport, juveniles can be packed in small groups, for adults it is recommended to pack them individually. Fish bags of appropriate size are used for this purpose. These are filled one-third with water and two-thirds with ambient air or pure oxygen (do not „inflate“ the bag with your mouth) and tightly closed with a rubber band. Water must be used from the aquarium in which the animals were previously kept so that water values and temperature remain stable.

The bags are packed in a thermostable box (Styrofoam or similar) and, if the bags do not fill the interior, fixed with filling material (e.g. newspaper) so that they cannot slip around. In appropriate weather conditions, a heat or cool pack should also be inserted. Caution, direct contact of such heating or cooling elements with the fish bags must be prevented (e.g. by wrapping the pack in a cloth) to prevent overheating or undercooling of the water.



An adult Loiselle's Ptycho with juvenile fish | Thomas Ziegler



4.3 The Aquarium

For the furnishing of an aquarium for *Ptychochromis loisellei* large stones are suitable, which provide structure, privacy and hiding places and are used for egg laying.

Roots and aquatic plants (e.g. of the *Vallisneria* genus) can be used to supplement the furnishings and, depending on personal taste, set accents. Sand substrate is suitable as substrate.

Lighting of the aquarium can be done with standard LED lights of medium brightness, *P. loisellei* does not make special demands on lighting.

The filter equipment of the aquarium should be lush and ensured with external or mat filters.

All aquarium water should pass through the filter at least four times per hour to ensure good water quality on a permanent basis.



Loiselle's cichlid is also kept behind the scenes at Vienna Zoo Schönbrunn. | Tina Nagorzanski



The Cologne Zoo informs its visitors about the endangered species and the protection of habitats on Madagascar.

| Thomas Ziegler

4.4 Water Chemistry and Temperatures

Loiselle's *Ptycho* has proven to be tolerant of various water values. However, before stocking fish, the aquarium should be „run-in“ long enough so that stable water values and natural bacteria cultures could develop.

Good experiences in keeping and breeding have been made so far with the following water values:

Temperature: 24–25 °C
Carbonate hardness: 3° dH (KH)
Hydrotimetric concentration 5
230 Microsiemens
7,5 pH

A water change of 30-50% should be done once a week.



4.5 Feeding

Ptychochromis loisellei is not very choosy when it comes to food, the diet is trouble-free.

Depending on the size, the animals can be fed with commercial flake food, frozen food (white, black and red mosquito larvae, *artemia* and brown shrimps) as well as with live food (*artemia*, *artemia nauplii*, white mosquito larvae).

The amount of food should be adapted to the stocking of the aquarium. Juveniles can be fed several times a day. Adult animals are also fed daily, with a fasting day once a week.



Ptychochromis loisellei is an open brooder. Both males and females may be involved in brood care and will defend the clutch against intruders. | Miguel Vences

4.6 Propagation and Raising Juveniles

The species is an open breeder, in which the females and the males can be involved in the brood care.

In Cologne Zoo, in different clutches sometimes only the male was involved, which during this time also defended the brood against the female, in subsequent clutches both parents were involved in brood care at the same time or first the male and then the female.

The clutches comprise up to 400 eggs and are preferentially deposited on stones.

In the Cologne Zoo developed taken clutches, but also those that were left in the parent aquarium.

An interesting observation could be made during brood care: Fungal eggs were not removed by the parents, but instead the remaining healthy eggs and larvae were moved to another location in the aquarium where they successfully developed. Fry reared with the parents were left in the aquarium until the next clutch was weaned and then reared separately from the parents.

A few days pass before the larvae hatch. Four days after hatching, the larvae began to swim freely. The hatched larvae and juveniles are maintained in identical water conditions as the adults. Juvenile schools of several dozen individuals are possible. Further rearing usually proceeds without problems.



In Cologne Zoo, the animals laid eggs on stones ...
| Thomas Ziegler



... or on the ground
| Thomas Ziegler



If there are fungal eggs in the clutch, the healthy eggs are moved to another location by the parents. | Miguel Vences



Pair of *Ptychochromis loisellei* with a school of fry
| Thomas Ziegler



4.7 Husbandry Challenges

Ptychochromis loisellei is a moderately shy species. However, during the rearing of the fry, especially the young larvae, the parents seem to be very sensitive to disturbances. At Cologne Zoo, a pair of parents showed aggressive behavior towards a keeper who stayed too long in front of the window.

Disturbances like a short power failure, moving the parents together with the clutch or moving a root in the aquarium for only a few seconds caused the parents to stop caring for the brood and thus to lose the clutch. For this reason, the animals should not be disturbed, especially during the early phase of larval rearing.



Caution! During the rearing of the brood, the species is sensitive to disturbances. | Thomas Ziegler



5. Further Reading

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