First Record of Snakehead Gudgeon (*Ophiocaraporocephala)* in Sorong, West Papua, Indonesia

ABSTRACT

Aims: As reported this paper, the new record of O. *porocephala* has helped to improved the knowledge of the species as it extends the distribution range.
Study design: Short Comunication.
Place and Duration of Study: This research was conducted from September to November 2021. Sampling was carried out in the Tampa Garam mangrove forest swamp located in Tampa Garam Village, MaldumMesDistric, Sorong City.
Methodology: The morphology of fishes has been the primary source of information for taxonomic and evolutionary studies. There were numerous characters available for morphological study.
Results:*O. porocephala*had a horizontally and terminally wide mouth with a large enough distance from the posterior area of the eye. *O. porocephala* had ideal eye spacing with small eyelids and large corneas, two dorsal fins and an anal fin each with a distance of 1 and 2 2 mm between the dorsal fins, the anterior dorsal consists of spines fins, while the posterior was weak fins. Fish habitat was found in mangrove areas or in estuarine areas with a salinity of 11 ppt, small fish lived in shallow areas while larger fish lived in deeper areas. The brightness of the air when the fish were isolated was 100%. Oxygen levels at 4 mg/l. *O. Porocephala* obtained during the study, consisting of gender is 1 female and unidentificated. Meanwhile, the fish size in the class 10,9-225,39 cm and gonad weight is 2,62 of female fish with categorie gonad maturity is 3.
Conclusion: Based on the results of research, fish that live in mangrove areas are carnivorous, whot large fish having a total length of 18,4 cm and smal fish less than 10 cm, further research needs to be done regarding the feed habit and maturity of this fish.

Keywords: O. *porocephala*, Morphometric, Freshwater Fish, Native Fish

1. INTRODUCTION

Papua Island is one of the islands that has a very high level of diversity of 30-50% when compared to other islands in Indonesia. Even when compared to rivers in Asia and Africa, the diversity is still better. A total of 1,674 species of terrestrial vertebrates and freshwater vertebrates are found in Papua and Papua New Guinea and 1,130 are endemic species (Hyslop, 1999; Sriyani *et al.,* 2017). In Papua, fish is an important food source (Koinari*et al.,* 2013). Ironically, the contribution of the fisheries sector in Papua is minimal, for example, fish seekers and fish cultivators have low incomes. The destruction of the ecosystem also has a very serious impact on people's income (Paulangan*et al.,* 2020).
Uncontrolled development in Papua such as environmental pollution, overexploitation, contributes to the destruction of the habitat of fish. Thus biodiversity is decreasing and some species are threatened with extinction (Sriyani *et al.,* 2017; Zhang & Tan, 2010). One of the fish found in Papua is the Gobii fish from the Gobiiformes family. Manel *et al.* (2020), stated that due to the influence of changes or pressures, genetic diversity is estimated to be more easily lost than species diversity. To prevent species loss due to environmental changes, it is necessary to conduct research on Genetic Diversity (Gu *et al.,* 2019). Considering that freshwater fish are crucial in sensing changes and changing environmental pressures (Faulks *et al.,* 2011). As reported this paper, the new record of *O. porocephala*has helped to improved the knowledge of the species as it extends the distribution range.

2. MATERIAL AND METHODS

2. 1 Description of The Study Sites

This research was conducted from September to November 2021. Sampling was carried out in the Tampa Garam mangrove forest swamp located in Tampa Garam Village, MaldumMesDistric, Sorong City. Sampling used a seser, collected samples were documented under the name of the collection,

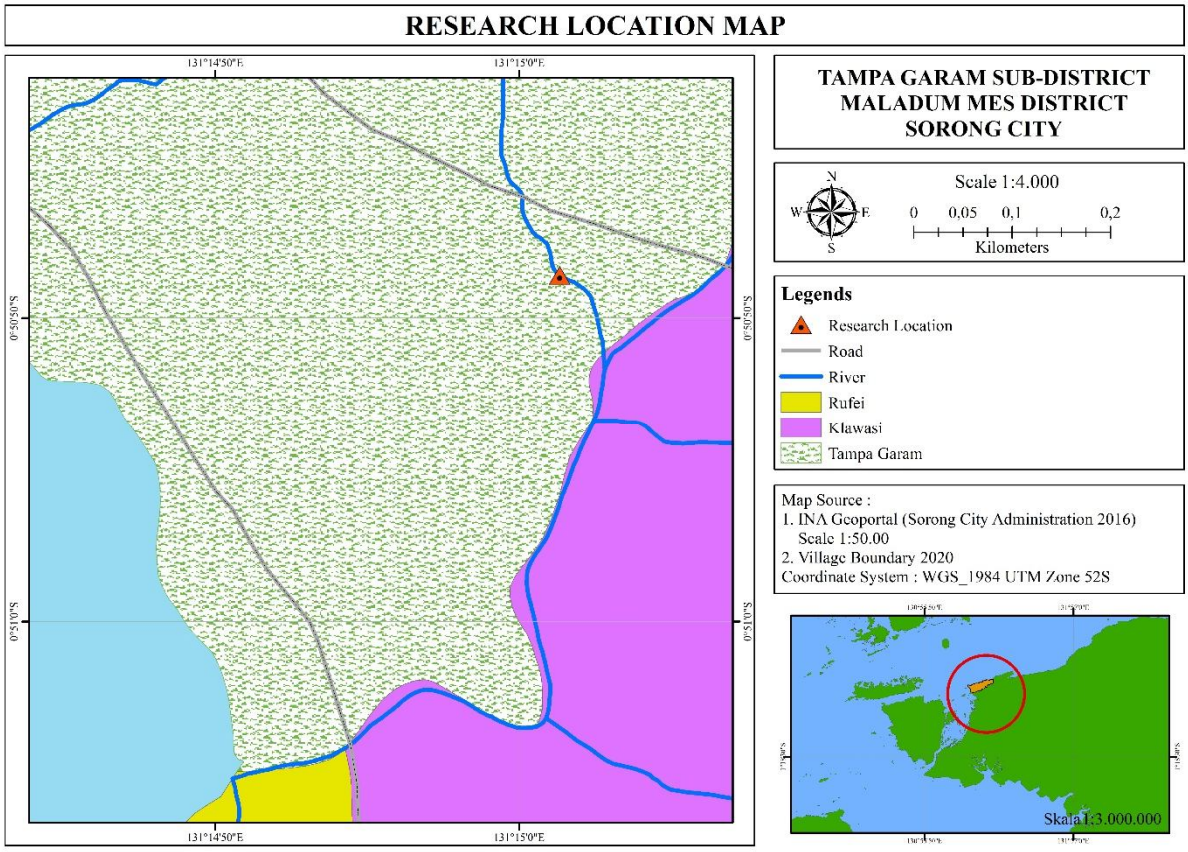

Fig 1. Sample Location *O. porocephala*

2.2 Fish Identification

The morphology of fishes has been the primary source of information for taxonomic and evolutionary studies. There were numerous characters available for morphological study. These characters were commonly divided into two categories (Makmur *et al.,* 2019): morphometric characters were to describe the body shape and refer to measure structures such as fin length, head length, eye diameter, or ratios between such measurements. Meristic characters include almost any countable structure occurring in series, including fin rays, scales, and gill rakers. Observations of meristic characteristic based on Weber dan Beaufort (1916).

3. RESULTS AND DISCUSSION

Description:*O. porocephala*had a horizontally and terminally wide mouth with a large enough distance from the posterior area of the eye. *O. porocephala* had ideal eye spacing with small eyelids and large corneas, two dorsal fins and an anal fin each with a distance of 1 and 2 2 mm between the dorsal fins, the anterior dorsal consists of spines fins, while the posterior was weak fins. The number of fish anal fins which one elongated shape. The smaller fish has a slight yellow tinge to the anal fin and be bright yellow when they were larger. It had two white rings around the body. Larger fish has wider white rings and fewer white spots just on the underside of the abdomen near the caudal fin. The fish head was shaped like a snake with an average eye distance of 11.5 mm with black patterns with a few white spots, even though when compared to snakehead *Channa striata,* the shape of *O. porocephala*head was still thicker or not thinner. *O. porocephala*has a round caudal fin similar with the general snakehead, but there was white spots and a yellowish tint. With a pair of long and strong pectoral fins, made it easier to stay still waiting for prey. The body was elongated, slightly flattened or sagittiform and no barbels. *O. porocephala*female was found weight 184 grams and length 225 cm. Gonad

maturity was in development stage (3rd stage) which according to Kesteven (1968), becoming gonad maturity index was showed in 1,4%.

Habitat: In general, fish habitat was found in mangrove areas or in estuarine areas with a salinity of 11 ppt, small fish lived in shallow areas while larger fish lived in deeper areas. The brightness of the air when the fish were isolated was 100%. Oxygen levels at 4 mg/l, fish like to live under mangrove roots with a bit of a surprise. body shape and foraging analysis this fish was classified as a carnivorous fish.

Fig 2. Specimen of *O. porocephala*caught on October 2021

Table 1 :Fish morphometrics

Morphological Characteristic	Code	Mean±sd	Ikan 1	Ikan 2
Total Length	TL		109,9	225
Standard Length	SL		91,9	175
Head Length	HL		29,3	58,6
Head Width	HW		18,19	42,88
High Head (HD)			16,02	35,91
Eye Diameter	ED		5,8	9,2
Snout Length	SnL		9,79	18,89
Eye Distance (IW)			10,03	23,35
Posterior Anal Length	PAL		58,25	108,58
Body High (BD)			19,94	49,28

Body Width (BW)			42,02	39,6
Pelvic Length	PvL		14,3	33,45
Caudal Peduncle Depth	CPD		11,9	27
Caudal Peduncle length	CPL		17,18	44
Dorsal Basic Long Fin	DBL		D1 32,94 D2 42,90	D1 18,92 D2 31,20
Dorsal Fin High	DFH		D1 13,37 D2 23,66	D1 25,68 D2 49,85
Pectoral Long Fins	PCL		20,4	36,68
Pectoral Perior Long	PPL		29,75	54,57
Base Anal fin Lenght	ABL		20,4	55,34
Perior Dorsal Long	PDL		D1 137,11 D2 168,15	D1 75,40 D2 106,17
Lenght Upper Caudal	LUCL		12,05	23,54
Long Middle Caudal	LMCL		18,08	57,75
Long Caudal Lower	LCLL		11,96	16

D1 : 1st Dorsal fin
D2 : 2nd Dorsal fin

Table 2. Water Quality

Parameters	Values
Brightness (%)	100
Salinity (ppt)	11
pH	7
Dissolved Oxygen (mg/L)	4
NH_3/NH_4 (mg/L)	1
Nitrite (mg/L)	0
Phosphate (mg/L)	2
Nitrate (mg/L)	0

Table 3 : Gonadal Maturity of O. Porocephala

Sex	Body Weight (gr)	Tottal Length (cm)	Gonadal Maturity	Weight Gonad	Weight Liver
-	55	10,9			
Female	184	225,39	3	2,62	5,08

There were 2 *O. Porocephala* obtained during the study, consisting of gender is 1 female and unidentificated. Meanwhile, the fish size in the class 10,9-225,39 cm and gonad weight is 2,62 of female fish with categorie gonad maturity is 3. Carnivorous fish had a terminal mouth shape and have a dense tooth structure from front to back (Nayak *et al.,* 2021). The sex of the small fish has not been detected or the gonad tissue or organs had not yet emerged. The presence of gonads in fish as primary reproductive organs was strongly influenced by body cavity, fish weight and kidney or liver weight (Muchlisin, 2014).

Environmental factors play a very important role in the evolution of fish body and organ formation, environmental degradation would directly affect the behavior and populations of fish in nature (Mylonas *et al.,* 2010). According to Muhtadi *et al* (2021) *O. porocephala* is included in the carnivore group with the type of food that have been found in digestion are shrimp, crab or shellfish, the highest gonadosomatic index was 0,75% with the first size of first gonad maturity 18,4 cm total length and small fish <10 cm. Base on their size, the *O. porocephalaI* found in Porong River can be categorized as medium size because adult fish can reach a size of 30 cm (Fu'adil Amin *et al*, 2021).

4. CONCLUSION

Based on the results of research, fish that live in mangrove areas are carnivorous, whot large fish having a total length of 18,4 cm and smal fish less than 10 cm, further research needs to be done regarding the feed habit and maturity of this fish

REFERENCES

Faulks, L. K., Gilligan, D. M., & Beheregaray, L. B. (2011). The Role Of Anthropogenic vs. Natural In-Stream Structures In Determining Connectivity And Genetic Diversity In An Endangered Freshwater Fish, Macquarie Perch (*Macquariaaustralasica*). Evolutionary Applications, 4(4), 589–601.

Fu'adil Amin, M.H., Lee, S.R., Irawan, B., Andriyono, S., &Kim, H.W. (2021). Characterization Of The Complete Mitochondrial Genome Of The Northern Mud Gudgeon, *Ophiocaraporocephala* (Perciformes: eleotridae) With Phylogenetic Implications. Mitochondrial Dna. 6 (3), 953–955.

Gu, S., Wang, R., Li, C., Li, J., & Shen, Y. (2019). Genetic Diversity And Population Structure Of The Chinese Lake Gudgeon (*Sarcocheilichthyssinensis*) Using Microsatellite Markers. Aquaculture And Fisheries, November 2018, 0–1.

Hyslop, E. J. (1999). Longitudinal Variation In Fish Species Composition In The Angabanga River, Papua New Guinea Whit Observations On The Trophic Status Of Certain Fish Species. Ecology Of Fresh Water Fish, 8, 102–107.

Koinari, M., Karl, S., Elliot, A., Ryan, U., &Lymbery, A. J. (2013). Veterinary Parasitology Identification Of Anisakis Species (Nematoda :Anisakidae) In Marine Fish Hosts From Papua New Guinea. Veterinary Parasitology, 193(1-3), 126–133.

Makmur, S., Muthmainnah, D. &Subagja. Biological Characters Of Snakehead Gudgeon (*Giurismargaritacea* Valenciennes, 1837) In Tondano Lake, Minahasa, North Sulawesi, Indonesia. 5 (2) : 1-9.

Manel, S., Guerin, P. E., Mouillot, D., Blanchet, S., Velez, L., Albouy, C., & Pellissier, L. (2020). Global Determinants Of Freshwater And Marine Fish Genetic Diversity. Nature Communications, 11(1), 1–9.

Muhtadi, A., Suryanti, A., Leidonald, R And Lesmana, I. 2021. Biological Aspects Of Lontok Fish (*Ophiocaraporocephala*) In An Indonesian Tidal Lake. Bioflux. 14 (6) 3416-3422.

Paulangan, Y. P., Rumbiak, K., &Barapadang, B. (2020). Fishing Season And Participatory Mapping Of The Fishing Ground Of Target Fish In Depapre Bay, Jayapura Regency, Papua Indonesia. Iop Conference Series: Earth And Environmental Science, 584, 1–9.

Sriyani, E. D., Abinawanto, &Bowolaksono, A. (2017). The Total Body Length And Body Weight Examination Among Gabus Sentani Fish Population, *Oxyeleotrisheterodon*, Weber 1907 (Pisces :Eleotridae) Of Sentani Lake, Papua, Indonesia. Aip Conference Proceedings, 1862, 1–4.

Zhang, F., & Tan, D. (2010). Genetic Diversity In Population Of Largemouth Bronze Gudgeon (*Coreiusguichenoti* Sauvage Et Dabry) From Yangtze River Determined By Microsatellite Dna Analysis. Genes Genet. Syst, 85, 351–357.