

Some aquatic vertebrates from the Namib Desert, South West Africa

by

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(Received 1971.)

ABSTRACT

The occurrence of the bream *Tilapia mossambica* Peters from pools in the Namib Desert is documented. The aquatic vertebrates *Cyprinus carpio*, *Barbus anoplus*, *Hepsetia breviceps* and *Pyxicephalus delalandei* are also listed. The origin and dispersal of *T. mossambica* stock in South West Africa is discussed. Amongst established freshwater fish populations many individuals show signs of malnutrition.

INTRODUCTION

During recent years a great deal of scientific activity has been undertaken in the coastal Namib Desert of South West Africa. While groups such as the reptiles, mammals and birds have all received varying attention the aquatic animals of the freshwater biome have been neglected. This is not surprising as this habitat is generally rare in desert areas. Perennial pools do, however, occur in some localities, where they form oases for a host of freshwater creatures.

From May 1968 to May 1969 the authors had the opportunity of visiting many localities in the central and northern Namib. Collection of study material was made in most localities and specimens have been deposited with both the division of Nature Conservation in South West Africa and the Albany Museum in Grahamstown.

OBSERVATIONS

During 1968 the fish *Tilapia mossambica* was collected and recorded from six localities in the central Namib. Only the Swakop River was not examined by us and it is probable that further investigation will show the occurrence of this species along its course as well. The Chubby-headed Minnow *Barbus anoplus* was found in pools along the Gaub river, a tributary of the Kuiseb.

After widespread rains in early 1969 the coastal rivers of the northern Namib were visited. Time did not permit an extensive search and only one site on the Hoarsib River produced aquatic vertebrates. Tadpoles of the frog *Pyxicephalus delalandei* and specimens of the estuarine fish *Hepsetia breviceps* were obtained at this site. There was no evidence of freshwater fish from the Haub, Unjab or Hoanib Rivers.

There are some large reed fringed pools near the mouth of the Hoanib that may well reward further investigation.

DISCUSSION

The unexpected occurrence of the euryhaline species *Tilapia mossambica* from over a wide area of western South West Africa poses the interesting question of origin. So far as we are aware there are no records of Mozambique bream from the north of the territory although the closely related Three-spot bream, *Tilapia andersoni* is found in the Kunene and Okavango Rivers. (Jubb, pers. comm.). *T. andersoni* has also been collected from the Etosha National Park. (Tinley, pers. comm.). In the Kuiseb, Omaruru and Ugab *T. mossambica* was obtained from perennial pools fed by underground water seepage. A series of pools all connected by surface water flow in the Gaub River was found to support a large population of Chubbyhead minnows during 1968.

While we found no *T. mossambica* in the Gaub pools those of the Kuiseb produced no *B. anoplus*. Being a tributary of the Kuiseb the Gaub pools are however, during times of flooding connected with those of the Kuiseb. Although we did not examine the Kuiseb pools again after flooding in 1969 both *Cyprinus carpio* and *B. anoplus* have recently been obtained from the Kuiseb canyon region. (Penrith & Joubert, pers. comm.). It is of interest to note that many individuals of the *Tilapia* and *Barbus* populations show signs of malnutrition (Penrith, pers. comm.).

Fed also by underground water seepage the pool near the mouth of the Hoarusib river was found to harbour tadpoles of the frog *Pyxicephalus delalandei* and a small population of the estuarine fish *Hepsetia breviceps*.

Attempts to trace the origin of the isolate populations of both *T. mossambica* and *C. carpio* in South West Africa have to date, met with limited success. Although no definite dates or localities have been traced all the presently available evidence indicates that both these fishes were introduced into the territory by human agency. It is probable that in the recent past these fish were placed in dams or perennial pools, along the river courses or their relict tributaries. Although rare, periodic and heavy rain storms do occur over the central highlands of South West Africa. Run-off and resultant flooding penetrates deep into the western desert strip and at times even reaches the sea along the river-beds.

These rare aquatic links between pools have enabled the species to establish themselves well within the Namib Desert. Both the fish *T. mossambica* and *C. carpio* can be considered permanent inhabitants of the Namib desert, even during periods of prolonged drought.

In addition to our record of *B. anoplus* from the Gaub, Jubb (1967) records it from the Kuiseb. These are the most northerly known distribution records of this minnow as it is not known from the Etosha — Kunene — Okavango area.

We have to date been unable to trace the origin of the Gaub isolates of *B. anoplus*. It is however probable that these small fish were introduced into the Gaub pools by local farmers. Original stock would probably have come from the Orange or Olifants River in the Cape. Any die-off of Kuiseb populations would in times of flood be re-stocked from the perennial pools of the Gaub. The Chubby-head minnow is an interesting addition to the aquatic fauna of the Namib Desert Park and the Kuiseb river system.

ACKNOWLEDGEMENTS

We are grateful to Mr. B. de la Bat, Director of Nature Conservation and Tourism in South West Africa for encouraging these investigations. To Dr. R. A. Jubb our thanks for the identification of our first *Tilapia* samples. To both Drs. J. E. Poynton and D. E. van Dijk our thanks for the identification of the frog tadpoles. To Messes. R. Crass, K. Tinley and G. van Wyk our appreciation for help rendered. Mr. M. Penrith of the State Museum in Windhoek kindly read our draft and offered much valued advice.

REFERENCES

- Joubert, E., 1973. *Personal Communication*.
 Jubb, R. A., 1967. *Freshwater Fishes of Southern Africa*.
 Cape Town.
 — 1969. *Personal Communication*.
 Penrith, M., 1973. *Personal Communication*.
 Tinley, K. L., 1969. *Personal Communication*.