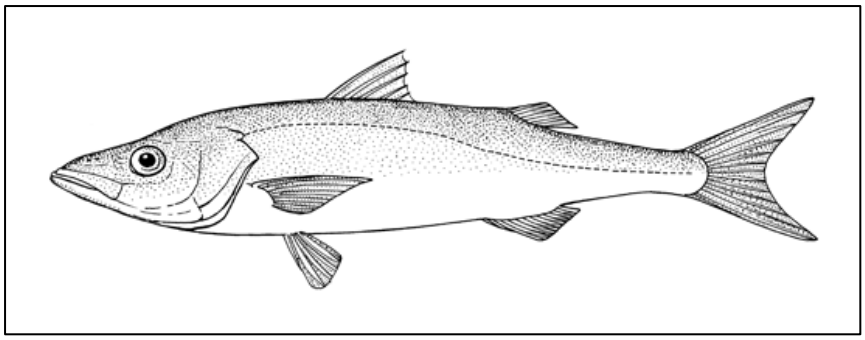
Lates stappersii (Boulenger, 1914)



Synonyms
Luciolates stappersii Boulenger, 1914
Luciolates brevior Boulenger, 1914

FAO names
Sleek lates

Local names
Bemba: Nvolo (Zambia)
Chilungu: Bukabuka (Zambia), Involo (Zambia), Nvolo (Zambia)
English: Sleek lates (official FAO name, official AFS name)
Language not specified: Nyamunyamu (DRC), Mvolo (Zambia), Mugébuka (Tanzania, Zambia)
Rundi: Mukeke (Burundi), Nyamunyamu (Burundi)
Swahili: Mikebuka (Tanzania), Mikeke (Congo Dem Rp), Mvolo (Congo Dem Rp, Tanzania), Nchebuka (Tanzania), Nionvi (Tanzania)

Geographical distribution
Endemic to Lake Tanganyika (Eccles 1992).

Habitat and Biology
Closely associated with sardines on which it depends (Eccles 1992). IUCN red list status least concern (Ntakimazi 2006).

Key features
Body depth 4.5-5.3 times in SL; head about 3 to 3.5 times in SL; snout length 2.2-2.8 times in head length; maxillary not reaching anterior border of eye; 23-26 gill rakers on lower part of first gill arch; scales ctenoid, about 80-94 in lateral line, 6-8 above lateral line and 18-20 below; first dorsal fin with 6+1+1+1 spines, longest spine 2-2.9 times in head length; second dorsal fin with 9-10 soft rays, its longest ray 2.9-4.2 times in head length (Poll 1953). Space between dorsal fins more or less equal to length of first dorsal fin (Eccles 1992). Anal fin with 3 spines and 9-10 soft rays, longest spine 6.6-11 times in head length; caudal fin deeply forked; caudal peduncle 2.9-3.7 times longer than deep; body greyish, sometimes slightly blueish, sometimes darker; anterior dorsal fin and caudal fin blackish (Poll 1953).

Interest to fisheries
During the last few decades, harvest records from Lake Tanganyika's fishery have indicated a general decline in population sizes (van Zwieten et al. 2002; Kimirei et al. 2008; Van der Knaap 2013; Van der

Knaap et al. 2014b; Rick et al 2022). However, efforts to document the total catch and Catch Per Unit Effort (CPUE) have been sporadic and inconsistent (Plisnier et al 2018), making assessment of catches and fisheries potential speculative (Kolding et al 2019).
The relative abundance of *L. stappersii* is much lower in the northern part of the lake than in the southern part. A comparison of catches at Kigoma (Tanzania) and Mpulungu (Zambia) in the period 2004-2006 showed that the relative abundance by weight of *L. stappersii* was 15.7% in the north, while in the south *L. stappersii* dominated in the catches (82.1%) (Plisnier et al 2009).
Also the catch composition of *L. stappersii* varies greatly. These differences in catch composition clearly indicate that the northernmost part of the lake and the Kigoma region serve as a nursery area for immatures and maturing specimens (Aro & Mannini 1995; Mannini et al 1999; Kimirei & Mgaya 2006). At least part of the immature stocks of *L. stappersi* inhabit these areas at any given time and immatures enter the fishery in the central and northern parts of the lake at a minimum length of 55 mm (Kigoma region) and about 265 mm in the south (Aro & Mannini 1995). *Lates stappersi* catches in the northern part of the lake are based entirely on immatures; mature specimens are only found sporadically (Aro & Mannini 1995; Mannini 1998; Kimirei & Mgaya 2006; Van der Knaap et al 2014a, 2014b). In the southern part of the Lake, catches are not dependent on recruitment and they are mainly based on a mature stock (Aro & Mannini 1995).

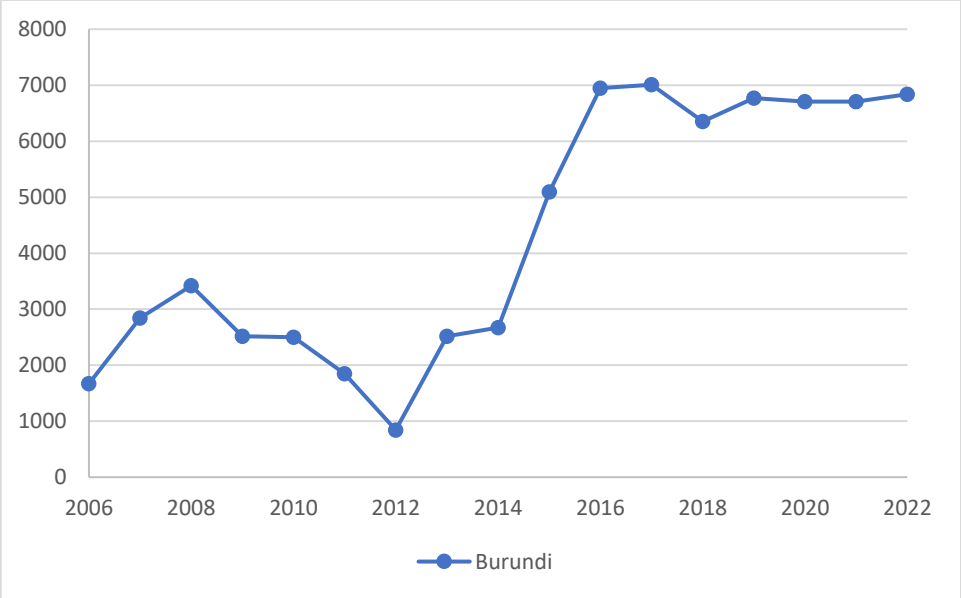


Figure 1: Catches (in tonnes) of Lates stappersii *as available from FAO (April 2024).*

Indications of declining stocks and excessive exploitation date back to the late 1990s. In southern waters, especially around the vicinity of Mpulungu, a significant decline in (industrial) CPUE and increased duration of fishing trips was observed (Plisnier 1995; Coenen et al 1998; Mannini 1998; Mölsä et al 1999), while in the north, where *L. stappersii* made up only around 20% of the commercial catch (Mannini 1998), successive waves of heavy industrial fishing and artisanal fishing (Mölsä et al 1999) and the heavy pressure on immature fish (Mannini 1998) may have posed a serious threat on the sustainability of the fishery. Lowe-McConnell (2003) noted that the *L. stappersi* populations are clearly overfished. The fishing capacity on Lake Tanganyika increased tremendously, at least since the 2000s, which might explain the reduced abundance of pelagic resources in the northern part of the lake and why certain varieties of fish are not for sale any longer in the northern part of the lake (Van der Knaap et al 2014a).

In the late 1950s the majority of purse-seine catches in Burundi consisted of approximately 50% of all four *Lates* perch species. From the early 1960s *L. stappersii* became the dominant perch whose annual production peaked in 1983 (approximately 3700 tons). From then onwards the annual

catches of *L. stappersii* decreased to a few hundred tons (Van der Knaap et al 2014b). A 2011 lake-wide fisheries frame survey revealed increasing fishing pressure and declining catch rates in Burundi but observed the lack of accurate fish production statistics in most countries (Van der Knaap et al 2014b; Plisnier et al 2018). These decreasing catches in Burundi are also visible in the *L. stappersii* statistics supplied to FAO (2024; Figure 1). Between 2008 and 2012 catches declined markedly, from around 3500 to 850 tons, but increased sharply afterwards and stabilized around 7000 tonnes annually since 2016. These reported record catches are remarkable in light of all previous reports of declining catches and problems in fisheries, not only in the north (see above) but also in the central and southern parts of the lake (see below). FAO (2024) does not hold statistics for this species from the other riparian countries of Lake Tanganyika. This is remarkable as for many decades international projects gathered lake-wide fisheries statistics, while trying to support transnational cooperation. This culminated in the creation of the Lake Tanganyika Authority in 2008.

Although accurate data from DRC are lacking, fishing capacity and the use of harmful fishing techniques (cheap monofilament gillnets, beach seines, small hooks targeting juvenile fish) have increased considerably (van der Knaap et al 2014a; Mushagalusha et al 2015). Fish catches from the DRC coast of Lake Tanganyika are estimated to have strongly declined since the late 1990s, despite a doubling of the fishing capacity. The numbers of fishing lines have increased by more than a factor of ten. Young *L. stappersii* are particularly vulnerable to the vertical unbaited longlines and large quantities of juvenile perch end up processed (smoked/dried) in many markets including Burundi and DRC (Van der Knaap et al 2014a, 2014b).

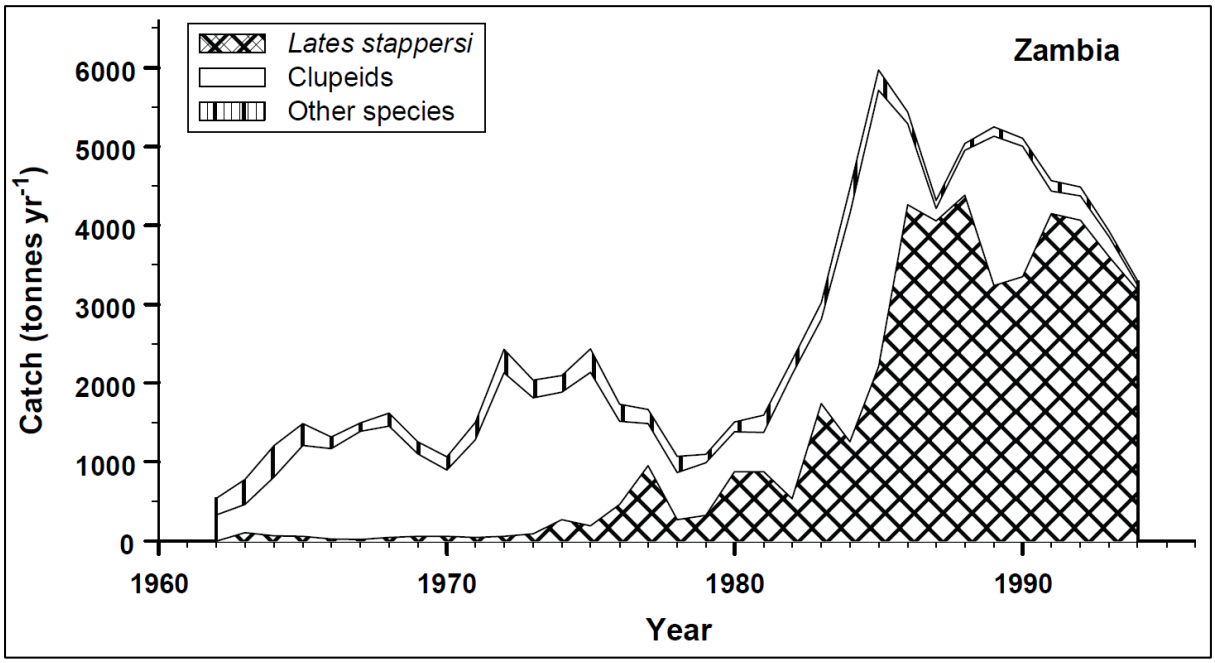


Figure 2: Development of industrial fish catch by species in Zambia (image from Mölsä et al. 2002; based on data from the Lake Tanganyika Research Scientific Sampling Programme Data Archives).

The catches of commercially important species/groups (*Stolothrissa tanganicae*, *Lates stappersii*, big *Lates* spp.) in the pelagic purse seine fishery of Kigoma (Tanzania) in the mid 1970s, are fluctuating throughout the year, with every group contributing over 40% at one time or another, but *L. stappersii* contributing slightly more. Five years later, the contribution of the big *Lates* spp. had already started to diminish while that of *S. tanganicae* remained low; hence the catches were generally strongly dominated by *L. stappersii* (Chitamwebwa & Kimirei 2005). By the early 2000s the dominant species in the lift-net pelagic fishery had become *S. tanganicae*. The previously substantial

contribution of *L. stappersii* had become occasional, showing a reverse of abundance between *S. tanganicae* and *L. stappersii* in the basin (Chitamwebwa & Kimirei 2005). Clupeids are the dominant group in artisanal fisheries data from 1984-1996 collected by the Tanzanian Fisheries Division-Kigoma (Kimirei et al 2008). *Lates stappersii* catches decreased strongly after October 2004 at Kigoma (Plisnier et al 2009). Data collected at selected landings sites by the Fisheries Department of Tanzania (2021) show that *L. stappersii* contributed 32%, or about 33000 metric tons, to the landings, compared to over 50% for the clupeids (mainly *S. tanganicae*). With the intensity of the lift-net fishing and its efficiency experienced today, sometimes using codends of <6 mm stretched mesh size, it is likely that both recruitment and growth overfishing of *L. stappersii* might have occurred resulting in the current overall dominance of the clupeid, *S. tanganicae*, in the catches. If fishing effort is not monitored/controlled, the end result will be a total collapse of the *L. stappersii* fishery in the Kigoma area and possibly the whole lake, as this is probably an important spawning and nursery ground (Kimirei & Mgaya 2006).

Plisnier (1995) reported that the catch from the industrial fishery based in Mpulungu (Zambia) is almost monospecific, mainly targeting *L. stappersii* (3176 tonnes or 96% of the total). Other species and the large *Lates* species (*L. angustifrons*, *L. mariae* and *L. microlepis*) contributed less than 1% each. Over a period of about 15 years, Mölsä et al (1999) reported a sevenfold growth in purse seining effort in Zambian waters, almost exclusively harvesting *L. stappersii* (Figure 2), but also resulting in a substantial reduction in the harvest of other *Lates* species, all of which seem to be particularly vulnerable to localised overfishing (Coulter 1970; Mölsä et al 1999). FAO (2006) reported that commercial fishing activities in Zambia continue to be based on pelagic species, namely *Limnothrissa miodon*, *Stolothrissa tanganicae* and *Lates stappersi*, but that the pelagic fish stocks have shown a decline in abundance since the 2003 CIFA Sub-Committee session.

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