# *Heterotis niloticus* (Cuvier, 1829)

Madagascar. © Jean-Francois Helias/Fishing Adventures Thailand.

**Synonyms**
*Sudis niloticus* Cuvier, 1829
*Sudis adansonii* Cuvier, 1829
*Sudis niloticus* Rüppell, 1829
*Heterotis adansoni* Valenciennes, 1847
*Heterotis ehrenbergii* Valenciennes, 1847

**FAO names**
African bonytongue

**Local names**
Akan (Twi): Trepake (Ghana)
Arabic: N'golô (Chad), Nauk (Sudan), Ngoll (Chad), Ngollo (Chad), Noag (Sudan), Nok (Sudan)
Bambara: Fana (Cote d'Ivoire, Mali)
Bata: Penge (Cameroon)
Bozo: Kodo (Mali), Kondo (Mali)
Buduma: N'gol (Chad)
Dama: Riki (Cameroon)
Dinka, Northeastern (Dinka): Lek (Sudan)
English: African bonytongue (official FAO and AFS name, Kenya), Bony tongue (Cameroon, Nigeria), No name (Gabon), Stoneside (Nigeria)
Ewa: Efa (Ghana), Fa (Ghana)
French: Poisson sans nom (Gabon)
Fulfulde, Pulaar: Lareo (Cameroon), Bala (Senegal)
Hausa: Bahli (Nigeria), Bali (Nigeria), Balli (Cameroon, Nigeria), Bargi (Cameroon), Begigi (Nigeria), Berigi (Nigeria), Dan shakata (Nigeria), Nakantala (Nigeria)
Igbo: Kpokpo (Nigeria), Okpo (Nigeria)
Ijo: Ekeu (Nigeria)
Ijo (Ijaw): Akau (Nigeria)
Jukun Takum (Djoukoun): Noussa (Cameroon)
Jula: Faanan (Burkina Faso)
Kanembu : Kawouro (Chad)
Kanuri : Kawi (Nigeria)
Kim: Paï (Chad), Poï (Chad), Pwon (Chad)
Mambai : Tou (Cameroon)
Mandinka (Mandingo): Fanntang (Gambia)

Mòoré : Rakako (Burkina Faso)
Language not specified: Congo ya sika (Congo Dem Rp)
Nuer: Lek (Sudan)
Nupe: Egogi (Nigeria)
Shilluk: Olak (Sudan)
Soninké: Bakkata (Senegal), Balde (Senegal), Dugande (Senegal), Sanqueleela (Senegal), Warsenali (Senegal)
Swahili: Muzalazala (Congo Dem Rp)
Turkana: Dese (Kenya)
Wolof: N'diaguel (Senegal)
Yoruba: Afo (Nigeria), Aika (Nigeria), Alapa (Nigeria), Kano (Nigeria)
Zande: Katakpi (Sudan)

**Geographical distribution**
Native in all basins of the Sahelo-Sudanese region, the Senegal, Gambia, Corubal, Volta, Ouémé, Niger, Bénoue, Chad and Nile basins and Lake Turkana (Daget & Durand 1981; Daget 1984; Paugy 1990). Successfully introduced in reservoirs in Côte d'Ivoire, in the Cross, Sanaga, Nyong and Ogowe rivers, and in the lower and middle Congo basin, including the Ubangui and the Kasaï (Paugy 1990); rapidly enlarged its distribution in the Lualaba (upper Congo basin), after extraordinary inundations in 1979 (Ankei 1989). Also introduced in Madagascar (Daget 1984; Stiassny & Raminosoa 1994). Several countries report adverse ecological impact after introduction.

**Habitat and Biology**
Young found in swampy places among aquatic vegetation (Moreau 1982; Dankwa & Teugels 1999), adults in open water of rivers and lakes, in the pelagic as well as the littoral zone (Moreau 1982). Able to survive in deoxygenated waters; the hardiness of this fish, together with its great growth rate make it a candidate for aquaculture in Africa and it has been transported to a number of countries for this purpose (Daget & d'Aubenton 1956; Welcomme 1988). Escapees from ponds resulted in established populations, which form the basis for fisheries (Welcomme 1988). Considered a mud-feeder (Hickley & Bailey 1987) and (phyto)plankton feeder (Reed et al 1967; Holden & Reed 1972; Olaosebikan & Raji 1998). Possesses a suprabranchial organ which has a sensory function, but also a mechanical function in concentrating small food particles (d'Aubenton 1955; Daget & Durand 1981). During breeding, mature adults create a circular nest in swamps (Budgett 1901; Reed et al 1967; Balon 1975). Young leave the nest after a few days and are guarded by the male (Balon 1975). IUCN red list status least concern (Diouf et al 2020).

**Key features**
Body elongated and robust, its height 3.5-5 times in SL (Paugy 1990). Head relatively short, its length 3.5-5 times in SL (Moreau 1982; Paugy 1990). Dermal bones of the cranium deeply carved by large sensory pits (Boulenger 1909; Paugy 1990). Lips thick; border of gill cover with dermal flap (Reed et al 1967). Teeth conical (Moreau 1982). Dorsal and anal fins spineless, elongated and posteriorly positioned, ending close to the small, rounded caudal fin (Reed et al 1967; Lévêque & Paugy 1984; Bailey 1994; Dankwa & Teugels 1999). 33-37 dorsal fin rays, 34-38 anal fin rays; 66-69 vertebrae (Paugy 1990, 2003). Caudal peduncle very short (Pellegrin 1923; Daget 1954; Roman 1966). Scales strong, large (Bailey 1994; Dankwa & Teugels 1999), oval, with exposed portion thick and corrugated, with a more or less vermiform sculpture (Cockerelle 1910): 34-40 lateral-line scales, 2.5/6 scales on the lateral side of the body before the pelvic fin, 5-6 scales between dorsal and anal fin (Daget 1954; Blache 1964; Moreau 1982; Paugy 1990). Lateral line extending in a straight line from above operculum to middle of caudal peduncle (Boulenger 1909). Number of gill rakers increases with length: 33 (young) to 98 on lower part of gill arch and 21 (young) to 76 on upper part (Paugy 1990). Uniform gray, brown or bronze colored (Paugy 1990), darker during reproduction

(Blache 1964). Young specimens often marked with dark longitudinal bands and scales with an oval spot in posterior zone of anal and dorsal fin (Paugy 1990).

**Interest to fisheries**

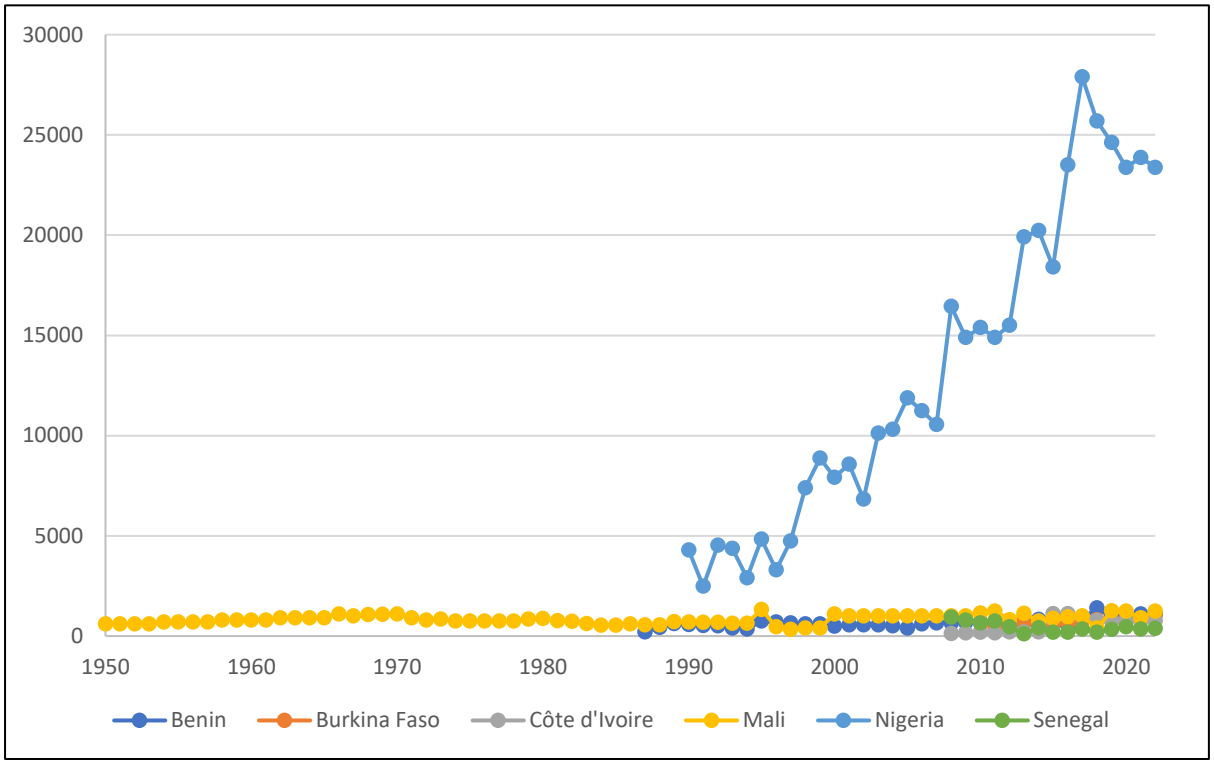


*Figure 1: Catches (in tonnes) of* Heterotis niloticus *as available from FAO (April 2024).*

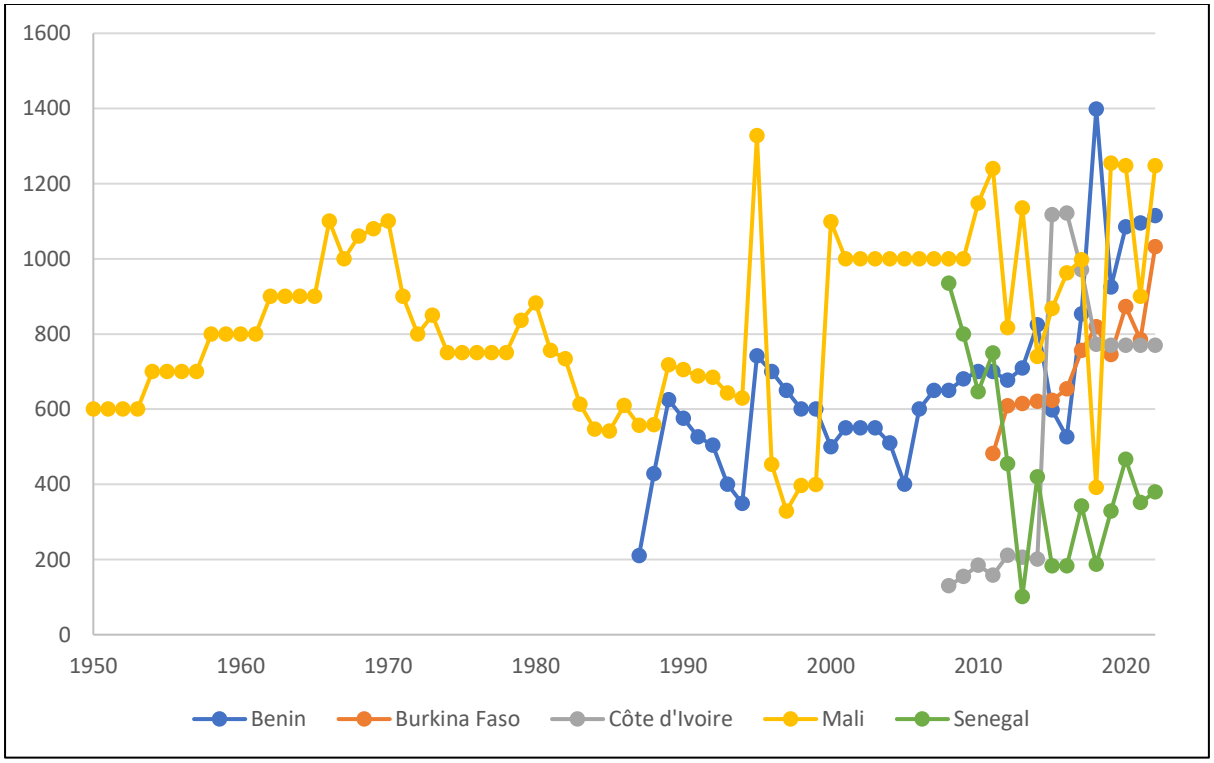


*Figure 2: Catches (in tonnes) of* Heterotis niloticus (excluding Nigeria) *as available from FAO (April 2024).*

*Heterotis niloticus* is a large species with high commercial value (Micha 1973; Moreau 1982; Adite et al 2006; Adite 2007). Fishing for *H. niloticus* takes place in all African countries where the species occurs, native or introduced. It is a major fisheries species and food fish in the central Niger delta (Laë 1995; Laë et al 2004) and in the inland waters of Ivory Coast (Tito de Morais 2002; FAO 2010), Benin (Adite & Van Thielen 1995; Adite et al 2006), Nigeria (Abiodun & Miller 2007; Otogo & Enin 2020; Agbugui et al 2021) and Cameroon. In the latter country, it is one of the most important fishery species in the middle Nyong, where it was introduced; as it is highly invasive, it could represent a serious threat to indigenous biodiversity and is expected to displace indigenous species (Brummett et al 2010).
In Lake Chad it is the second most important species, with a mean of 22% of the catches based on a 2001 market monitoring (Neiland et al 2004). In the Ethiopian Alwero Reservoir it contributes 1.17% in numbers and 4.09% in weight (Olieng 2019; Anteneh et al 2023), in Lake Volta (Ghana) it constituted 1.5% of the catches in 1991-1998 (Béné 2007), in Lake Gerio (Nigeria) it is the second most important in terms of weight (Abiodun & Miller 2007) and in the Malian Lake Selingue it ranks 17th out of the 20 most important species, contributing 1.6% to catches (Kantoussan et al 2007).
Adite (2007) reported that about 682 tonnes of *H. niloticus* are caught annually in Benin, valued at US$500000. Gbaguidi & Pfeiffer (1996) estimated the harvest of *H. niloticus* in Benin at 742 tons. Both figures more or less agree with those for Benin in the FAO (2024b) database (Figure 1, Figure 2).
It is one of the most expensive fishes from Mare aux Hippopotames (Burkina Faso) (Ouedraogo et al 2021). Of this high-value target species in the Sudan (FAO 2024a), individuals > 85 cm contributed nearly 20% in weight and 10% in numbers in gillnet catch landings in the early 1980s in the southern Sudd (Bailey 1989). In the Dinder River (Blue Nile, Sudan) catches contributed some 23% but in some places up to 75% of the catches (Khalid et al 2016).

Some studies report declining catches. In case of the central Niger delta this was due to hydrological conditions, and recolonization is expected with the return of normal hydrological regimes because the species is still present in the area (Laë 1995; Laë et al 2004).
Exploitation rates in the Cross River in Nigeria indicate the species is being overfished (Otogo & Enin 2020).
In Lake Hlan (Ouémé basin, south Benin), cast netting is prohibited by local regulations, but *H. niloticus* is caught with fish traps placed at nest entrances. This practice increases mortality not only on adult stocks, but also on larval cohorts vulnerable to predators when parental brooders are removed from their nests. Nearly 90% of the active nests in Lake Hlan had fishing traps positioned at their entrances. This suggests that high fishing effort that targets brooding adults could jeopardise this critical source subpopulation (Adite et al 2006).
The decline of *H. niloticus* in the Kpong Dam area of Lake Volta was attributed to fishing pressure, the use of inappropriate fishing gears and destructive fishing practices such as the use of dynamite, beating of the water surface and inappropriate mesh sizes (Antwi & Ofori-Danson 1993; Nunoo & Asiedu 2013).
The low abundance and declining population density of the species in Oyun reservoir (Nigeria) are attributed to the reduced availability of food, overexploitation, low breeding rate, unfavorable habitat and presence of exotic species (Mustapha 2010).
Sanda et al (2017) reported a reduction in number and weight of specimens at Lake Oguta (Nigeria) between 1991 and 2002, a trend observed for many species.
Castello et al (2023) reported a decline in abundance of *H. niloticus* in the small mesh gillnet fishery (1959-2019) operated in the Congo mainstream, a little downstream from the Congo-Lomami confluence. In both the small mesh and large mesh gillnet fishery, seven of the eight most caught species, including *H. niloticus,* were caught below their lengths-at-maturity and optimal lengths in recent years.

*Heterotis niloticus* presents many favourable characteristics for aquaculture: a remarkably high growth rate, air-breathing, an omnivorous diet and a very good market potential (Agnèse et al 2017). Aquaculture-related research and farming of the species is ongoing in many African countries, including Côte d'Ivoire (Yao et al 2003), Cameroon (Nguenga & Brummett 2003), Nigeria (Olanyan & Zwilling 1963; Akegbejo-Samsons et al 2004) and Benin (Adite 2007).

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