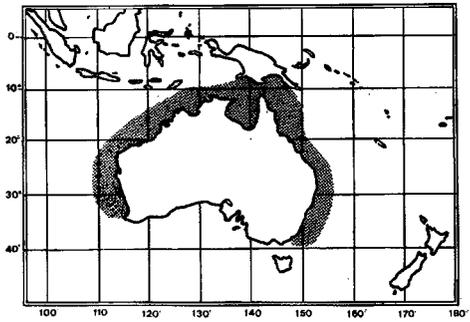


**Geographical Distribution :** Restricted to the northern three quarters of Australia (Collette & Chao, 1975:fig.69) plus the southern coast of Papua New Guinea.

**Habitat and Biology :** An epipelagic, neritic species forming schools of several hundred individuals. No information is available on its biology.

**Size :** Common fork length ranges between 35 and 45 cm with a weight of about 2 kg.

**Interest to Fisheries :** Leaping bonito lacks commercial importance in Queensland but is taken as bait for snappers by commercial fishermen, and for marlins and sharks by sports fishermen (Grant, 1982:641). The meat is white and dry; suitable for human consumption, particularly when smoked or served steamed with moderately flavoured white sauce.



particularily when smoked or served steamed with moderately flavoured white sauce.

**Local Names :** AUSTRALIA: Leaping bonito, Watson's bonito; USSR: Tsibiosarda.

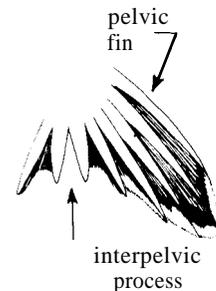
**Literature :** Whitley (1936); Collette & Chao (1975); Grant (1982).

**Euthynnus** Lütken, 1882

SCOMBR Euth

Genus with reference : Euthynnus Lütken in Jordan and Gilbert, 1882:429. Type-species Thynnus thunnina Cuvier, 1831 (= Scomber alletteratus Rafinesque, 1810), by original designation.

**Diagnostic Features :** A medium-sized fish with a robust, elongate and fusiform body. Teeth small and conical, in a single series; about 25 to 35 on each side of lower jaw; palatine teeth present; gillrakers 29 to 45 on first arch; gill teeth 28 to 32 on posterior surface of first gill arch. Two dorsal fins, the first with 10 to 15 spines; both fins separated by only a narrow interspace (not wider than eye), anterior spines of first much higher than those mid-way, giving the fin a strongly concave outline; second dorsal fin much lower than first and followed by 8 to 10 finlets; pectoral fins short: 25 to 29 rays; never reaching the interspace between the dorsal fins; interpelvic process small and bifid; anal fin with 11 to 15 rays, followed by 6 to 8 finlets. Body naked except for corselet and lateral line. A very slender caudal peduncle with a prominent lateral keel between 2 small keels at base of caudal fin. Swimbladder absent. Vertebrae 37 to 39. Colour: back dark blue or iridescent green in one species with a complicated striped pattern which does not extend forward beyond middle of first dorsal fin; lower sides and belly silvery white without dark longitudinal stripes; several characteristic dark spots between pelvic and pectoral fins (which, however, may not always be very conspicuous).



**Geographical Distribution :** Worldwide in tropical and subtropical, primarily coastal waters; the geographical distribution of the three species is complementary, with hardly any overlap.

**Habitat and Biology:** An epipelagic, primarily neritic genus, rarely encountered in waters where surface temperatures fall below 20° to 23° C. Spawning occurs in batches when the water is warmest. Schooling by size occurs primarily with other scombrid species, but this behaviour is less developed than in Auxis, and during certain periods of the year, there is a tendency to scatter.

Euthynnus species are highly opportunistic predators feeding on fish, crustaceans, squids, tunicates and other forage. They compete for food with other species they school with, but probably also with dolphins and cetaceans. They are preyed upon by large yellowfin tuna, marlins and sharks.

**Interest to Fisheries :** The world catch of Euthynnus fluctuated between about 66 000 metric tons in 1975 and 78 000 metric tons in 1981, hitting some 90 000 metric tons in 1977 (FAO, 1983). Most of this was E. affinis, with the Philippines, Malaysia taking the highest catches. Typically, fishing operations are not exclusively directed at this genus, but take Euthynnus together with other scombrids in drift (gill) nets, on hook-and-line, purse seines, with trolling lines and a number of artisanal gears such as beach seines, specialized traps, set nets, etc.

**Literature :** Fraser-Brunner (1949); Godsil (1954); Yoshida (1979).

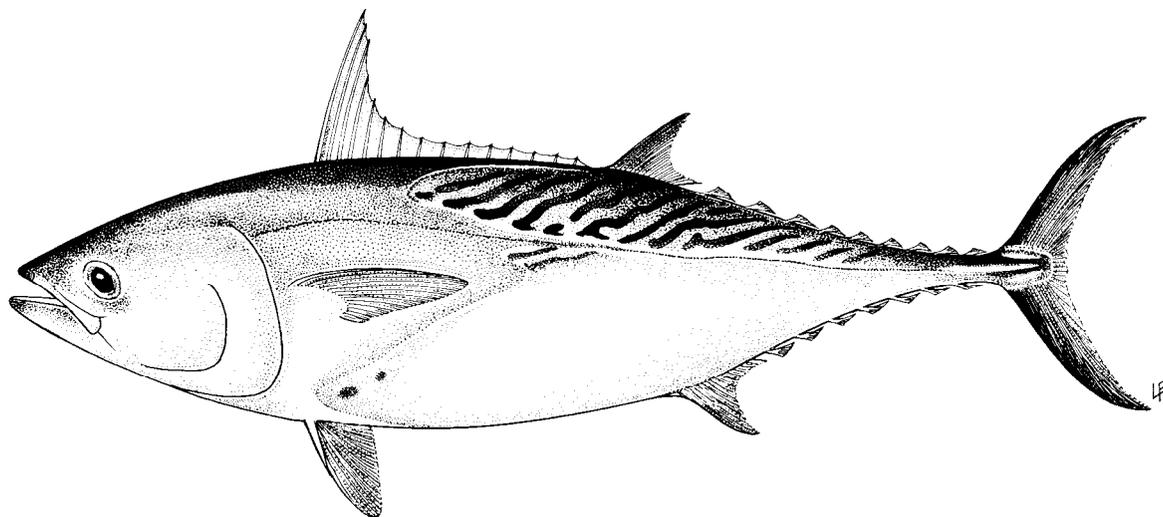
**Euthynnus affinis** (Cantor, 1849)

SCOMBR Euth 2

Thynnus affinis Cantor, 1849, J.Asian Soc.Bengal, 18(2):1088-1090 (Sea of Penang, Malaysia).

**Synonymy** : Euthunnus yaito Kishinouye, 1915; Wanderer wallisi Whitley, 1937; Euthunnus affinis affinis - Fraser-Brunner, 1949; Euthunnus affinis yaito - Fraser-Brunner, 1949; Euthunnus alletteratus affinis - Beaufort, 1951; Euthunnus wallisi - Whitley, 1964.

**FAO Names**: En - Kawakawa; Fr - Thonine orientale; Sp - Bacoreta oriental.



**Diagnostic Features** : Gillrakers 29 to 33 on first arch; gill teeth 28 or 29; vomerine teeth absent. Anal fin rays 13 or 14. Vertebrae 39; no trace of vertebral protuberances; bony caudal keels on 33rd and 34th vertebrae. Colour: dorsal markings composed of broken oblique stripes.

**Geographical Distribution** : Throughout the warm waters of the Indo-West Pacific, including oceanic islands and archipelagos. A few stray specimens have been collected in the eastern tropical Pacific.

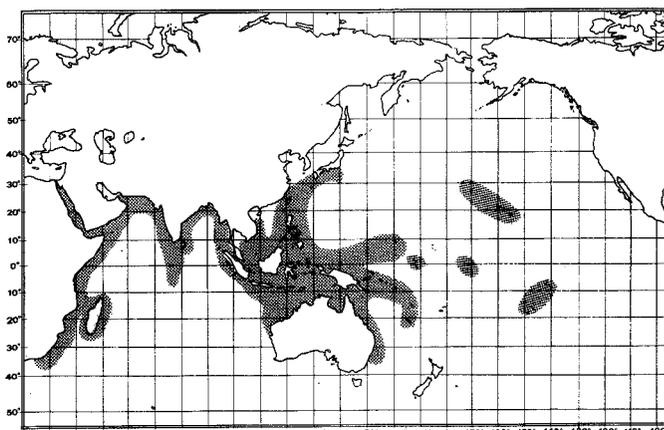
**Habitat and Biology** : An epipelagic, neritic species inhabiting waters temperatures ranging from 18° to 29°C.

Like other scombrids, E. affinis tend to form multispecies schools by size, i.e. with small Thunnus albacares, Katsuwonus pelamis, Auxis sp., and Megalaspis cordyla (a carangid), comprising from 100 to over 5 000 individuals.

Although sexually mature fish may be encountered throughout the year, there are seasonal spawning peaks varying according to regions: i.e. March to May in Philippine waters; during the period of the NW monsoon (October-November to April-May) around the Seychelles; from the middle of the NW monsoon period to the beginning of the SE monsoon (January to July) off East Africa; and probably from August to October off Indonesia. The only available information on fecundity applies to Indian Ocean material: a 1.4 kg female (ca 48 cm fork length) spawns approximately 0.21 million eggs per batch (corresponding to about 0.79 million per season), whereas a female weighing 4.6 kg (65 cm fork length) may spawn some 0.68 million eggs per batch (2.5 million per season). The sex ratio in immature fish is about 1:1, while males predominate in the adult stages.

E. affinis is a highly opportunistic predator feeding indiscriminately on fish, shrimps and cephalopods. In turn, it is preyed upon by marlins and sharks.

**Size** : Maximum fork length is about 100 cm and weight about 13.6 kg, common to 60 cm. The all-tackle angling record is a 11.80 kg fish from Merimbala, New South Wales, with a fork length of 96.5 cm taken in 1980. In Philippines waters, maturity is attained at about 40 cm fork length, while in the Indian Ocean it is reached between 50 and 65 cm in the 3rd year of age.



**Interest to Fisheries** : The reported world catch (eight countries) for the period between 1975 and 1981 fluctuated between about 44 000 and 65 000 metric tons per year. The 1977 catches were exceptionally high, almost 84 000 metric tons. About 67 500 metric tons were reported for 1981 (FAO, 1983). The countries with the largest landings were the Philippines, Malaysia and Pakistan. In India, E. affinis is an important species in local drift net (gillnet) and hook-and-line fisheries, even though this country has not supplied separate statistics for it during the above period. Typically these are multispecies fisheries also taking E. affinis. Besides gillnetting, trolling is the major fishing technique in use. Occasionally beach seines and longlines are also deployed. Some gear types are rather size-selective, i.e. trolling lines take smaller fish than gillnets. The meat is of good quality when fresh, but it deteriorates very fast if not treated adequately.

**Local Names** : AUSTRALIA: Bonito, Little tuna, Mackerel tuna; CHINA: Tow chung; COMOROS: Bonito, Mibassi, Mpassi; INDIA: Choori-min, Suraly (Tamil); Chuki, Ohaman (Marathi); INDONESIA: Diverg-bonito, Poetilai, Tongkol, Tongkol komo; JAPAN: Hiragatsuo, Obosogatsuo, Segatsuo, Suma, Sumagatsuo, Watanabe, Yaito; KENYA: Bonito, Little tuna, Sehewa (Swahili); MADAGASCAR: Bonite Thonnine; MALAYSIA: Choreng, Ikanayer, Kembel-mas, Sembak, Tombal-mas (Malay); TONGKOL: MAURITIUS: Bonite, Bonito; PACIFIC ISLANDS TRUST TERRITORIES: Micronesia: Chesodm; Polynesia: Otava; PAPUA NEW GUINEA: Kababida; PAKISTAN: Chooki, Dawan, Dwarf bonito, Jukko; PHILIPPINES: Katsarita, Oceanic bonito, Tulingan, Yaito bonito; SEYCHELLES: Bonite, Bonito, Little tunny; SOMALIA: Jeidha, Maba'di (Somali); SOUTH AFRICA: Eastern little tuna, Oostelike kleintuna; SRI LANKA: Atavalla, Lesser bonito, Mackerel tuna, Ragodura, Sureya (Sinhalese), Shurai (Tamil); TANZANIA: Bonito, Little tuna, Sehewa (Swahili); USA: Bonito, Kawakawa, Little tuna; USSR: Malyj tunets, Pyatinstyj indo-tikhookeanskyj tunets; VIET NAM: Cá ngừ, Dài-loan.

**Literature** : Kishinouye (1923); Kikawa et al. (1963); Williams (1963); Fischer & Whitehead, eds (1974, Species Identification Sheets, Eastern Indian Ocean/western Central Pacific); Yoshida (1979).

**Remarks** : The East African Swahili vernacular name "Sehewa" is also in use for skipjack (Katsuwonus pelamis) and Auxis species; the Somalian name "Jeidha" likewise refers to small yellowfin tuna (Thunnus albacares) and hardtail scad (Megalaspis cordyla). Names like 'Little tuna', 'Little tunny', 'Black skipjack', and 'Mackerel tuna' are used indiscriminately for this as well as other species of the genus Euthynnus in some countries.

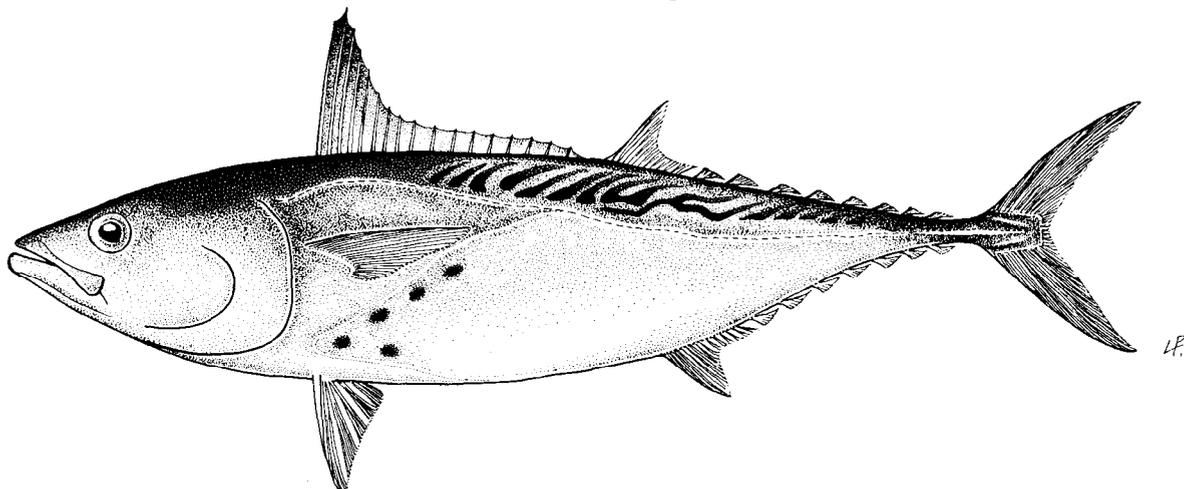
**Euthynnus alletteratus** (Rafinesque, 1810)

SCOMBR Euth 1

Scomber alletteratus Rafinesque, 1810, Caratteri Generi Specie Sicilia:46, pl. 2 (fig. 3) (Sicily).

**Synonymy** : Scomber quadripunctatus E. Geoffrey St. Hilaire, 1817; Thynnus leachianus Risso, 1826; Thynnus tunina Cuvier, 1829; Thynnus thunnina - Cuvier in Cuvier & Valenciennes, 1831; Thynnus brasiliensis Cuvier in Cuvier & Valenciennes, 1831; Thynnus brevipinnis Cuvier in Cuvier & Valenciennes, 1831; Orcynus thunnina - Poey, 1875; Thynnichthys thunnina - Giglioli, 1880; Thynnichthys brevipinnis - Giglioli, 1880; Euthynnus alliteratus - Jordan & Gilbert, 1882; Gymnosarda alletterata - Dresslar & Fesler, 1889; Euthynnus thunnina - Carus, 1893; Pelamys alleterata - Fowler, 1905; Euthynnus allitteratus - Ehrenbaum, 1924; Euthynnus alleteratus - Chabanaud, 1925; Gymnosarda alleterata - Chabanaud & Monod, 1927; Euthynnus alletteratus - De Buen, 1930; Euthynnus alletteratus alletteratus - Fraser-Brunner, 1949; Euthynnus alletteratus auro-litoralis Fraser-Brunner, 1949; Euthynnus quadripunctatus Postel, 1973.

**FAO Names**: En - Little tunny; Fr - Thonine commune; Sp - Bacoreta.

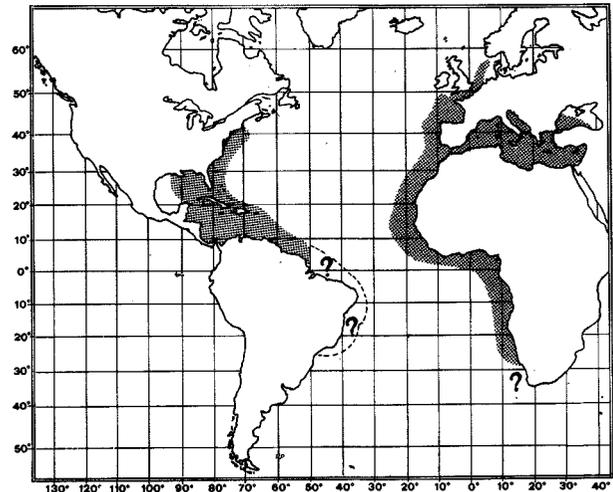


**Diagnostic Features** : Gillrakers 37 to 45 on first arch; gill teeth 31 or 32; vomerine teeth absent. Anal fin rays 11 to 15. Vertebrae 39; incipient protuberances on 33rd and 34th vertebrae; bony caudal keels on 33rd and 34th vertebrae. Colour: dorsal markings composed of broken horizontal stripes or bars.

**Geographical Distribution :** Tropical and sub-tropical waters of the Atlantic Ocean including the Mediterranean, Black Sea, Caribbean Sea, and Gulf of Mexico.

**Habitat and Biology :** An epipelagic, neritic species, typically occurring in inshore waters. *E. alletteratus* school by size together with other scombrid species, but have a tendency to scatter during certain periods of the year.

In the Mediterranean, spawning occurs from late spring through summer, whereas it extends from about April to November in the eastern and western Atlantic. Eggs are shed in several batches when the water is warmest. Little is known about fecundity, but examination of a single, 75 cm long female off Senegal yielded about 1.75 million eggs. In the juvenile stages, the sex ratio is approximately 1:1, whereas in the mature phase males predominate in the catches.



Little tunny is an opportunistic predator feeding on virtually everything within its range, i.e. crustaceans, fishes, squids, heteropods and tunicates. Clupeoid fishes are particularly important food components (Etchevers, 1976; Menezes & Aragao, 1980). It competes for food with the species it schools with, but probably also with dolphins and other cetaceans. It is in turn preyed upon, among others, by sharks, large yellowfin tuna and billfishes. Growth estimates off Senegal suggest that little tunny in that area grow to almost 30 cm length in their first year, and that fish exceeding 75 cm fork length are older than 4 years.

**Size :** Maximum size in the Mediterranean is about 100 cm fork length and about 12 kg weight; in the tropical eastern Atlantic, little tunny grow to around 90 cm; the all-tackle angling record is a 12.2 kg fish taken off Key Largo, Florida, with a fork length of 92.7 cm. Maturity is reached at a length of about 57 cm off southern Spain, 40 cm off Senegal, 45 cm in the Gulf of Guinea, and 35 cm off Florida. Size of little tunny in commercial catches ranges roughly from 30 to 80 cm fork length.

**Interest to Fisheries :** *E. alletteratus* is taken in multispecies fisheries along with other species of tunas and bonitos. Specialized traps (madragues) are used in Tunisia and Morocco, and beach seines in Senegal, Ivory Coast, Ghana and Angola (Yoshida, 1979). In the period between 1975 and 1981, catches of little tunny were recorded from 18 countries in 5 fishing areas. World catches fluctuated between 3 103 (in 1977) and 10 731 metric tons (in 1981) (FAO, 1983). The largest reported landings of this species were made by Venezuela (289 to 797 metric tons per year) in Fishing Area 31; by Ghana (54 to 6 049 metric tons, stabilizing between 5 000 and 6 000 metric tons in recent years), Ivory Coast (38 to 860 tons, but recently reporting low catches between 50 and 200 tons) and Mauritania (estimated by FAO at about 1 000 metric tons) in Fishing Area 34; Spain (781 to 1 222 tons) in Fishing Area 37; and Angola (10 to 1 328 tons) in Fishing Area 47. The present catch could probably be increased if the species were in higher demand.

**Local Names :** ANGOLA: Merma; CUBA: Bonito, Comeviveres; DOMINICAN REPUBLIC: Bonito; EGYPT: Tunna; FRANCE: Thonine; GHANA: El'la (Apollonien), Poponkou (Keta); GREECE: Karvouni; GUINEA: Makreni; ISRAEL: Tunnit atlantit; ITALY: Tonnetto; IVORY COAST: Bokou-bokou (Alladian), Bonita, Klewe (Kru); MALTA: Kubrita; MARTINIQUE: Bonite queue raide, Thonine; MAURITANIA: Corrinelo (Vermeulen); MEXICO: Bonito; MONACO: Tunina; MOROCCO: Lbakoura; PORTUGAL: Atún, Fule-fule; PUERTO RICO: Bonito; SENEGAL: Thonine (French); Walas (Lebou); SOUTH AFRICA: Atlantic little tuna, Atlantiese kleintuna, Merma; SPAIN: Bacoreta; TUNISIA: R'zem, Toun-sghir; TURKEY: Yaziliorkinos; USA: False albacore, Little tunny; USSR: Atlanticheskij malyj tunets, Malyj tunets, Tsyatnystyj atlanticheskij tunets; VENEZUELA: Atuncito, Bonito, Cabaña pintada, Carachana; YUGOSLAVIA: Luc.

**Literature :** Postel (1955, eastern Atlantic); De Sylva & Rathjen (1961, southeastern USA); Marchal (1963a, eastern Atlantic); Fischer, ed. (1973, Species Identification Sheets, Mediterranean and Black Sea); Collette (1978, Species Identification Sheets, Western Central Atlantic; 1981, Species Identification Sheets, Eastern Central Atlantic); Yoshida (1979); Menezes & Aragao (1980, Brazil).

**Remarks :** Vernacular names like 'Little tuna', 'Little tunny', and 'Black skipjack' may also be in use for other Euthynnus species in some countries.

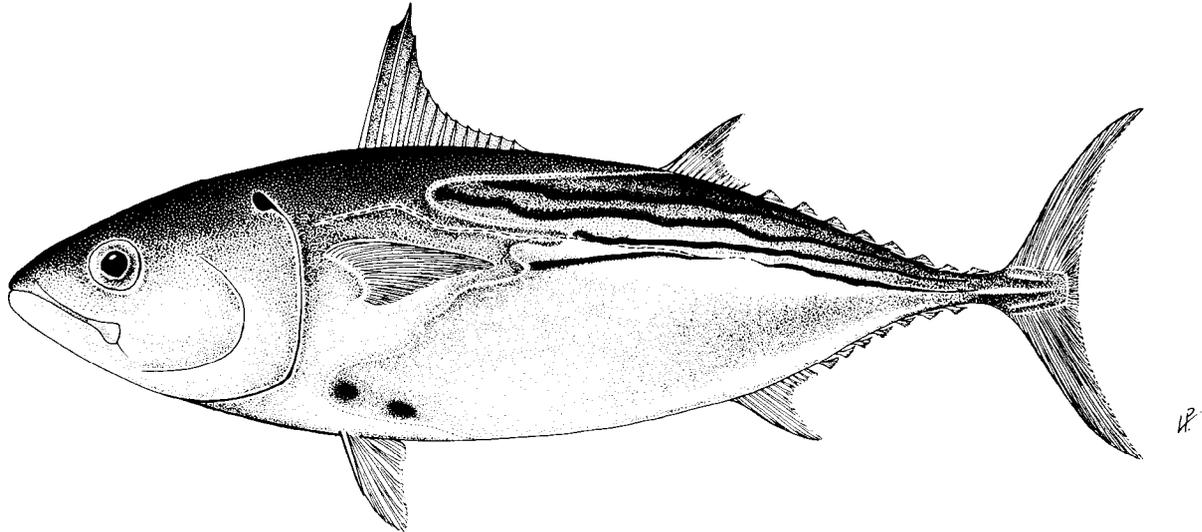
**Euthynnus lineatus** Kishinouye, 1920

SCOMBR Euth 3

Euthynnus lineatus Kishinouye, 1920, Suisan Gakkai Ho 3(2):113 (Mexico).

**Synonymy** : Euthynnus affinis lineatus - Fraser-Brunner, 1949.

**FAO Names** : En - Black skipjack; Fr - Thonine noire; Sp - Barrilete negro.



**Diagnostic Features** : Gillrakers on first gill arch 33 to 39, gill teeth 29 to 31; vomerine teeth (on roof of mouth) present. Anal fin rays 11 or 12. Vertebrae 37; 4 large rounded protuberances on 31st and 32nd vertebrae; bony caudal kells on 31st and 32nd vertebrae. Colour: iridescent blue with black dorsal markings composed of 3 to 5 continuous horizontal stripes; variable black or dark grey spots above pelvic fins; occasionally extensive longitudinal stripes of light grey on belly; some individuals have few or no belly markings.

**Geographical Distribution** : Waters of the eastern tropical Pacific from off San Simeon, California (35°20'N, 121°40'W) southwards to the Galapagos Islands and northern Peru (Calkins & Klawe, 1963:fig. 2). Also, two stray specimens have been collected in the Hawaiian Islands.

**Habitat and Biology** : An epipelagic, neritic as well as oceanic species rarely occurring where surface temperatures are below 23°C. Larvae are more frequently encountered at temperatures above 26°C and are practically confined to waters within about 240 miles off the mainland.

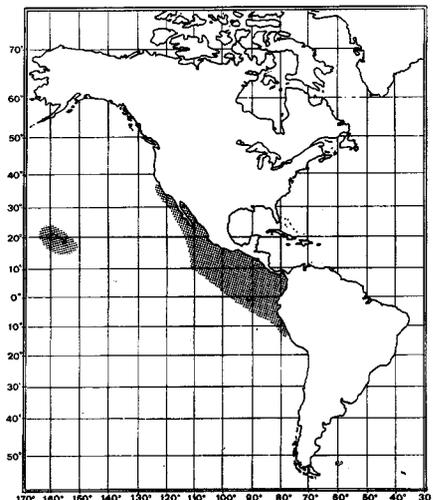
Like other tuna, black skipjack tend to school by size; they frequently form multispecies schools with Thunnus albacares and Katsuwonus pelamis.

Differential abundance of this species by seasons and area suggests a pattern of north-south migrations, which are not yet fully understood. In the first quarter of the year black skipjack are often encountered off Central America and northwards to the tip of Baja California. In the second quarter they are more abundant in the northern part of this range; in the third quarter the majority of records come from western Baja California; in the fourth quarter, catch records scatter from Baja California to northern Peru.

Spawning off western Baja California is limited to the summer months, while in the mouth of the Gulf of California it peaks from October to December. Larvae are encountered off Costa Rica throughout the year but the peak of spawning appears to occur from March to April. No fecundity estimate is available.

E. lineatus share the opportunistic feeding pattern with other tunas and probably compete for food with other specie such as yellowfin tuna, skipjack tuna, oriental bonito, and common dolphinfish (Coryphaena hippurus). Its most important predators include yellowfin tuna, striped marlin (Tetrapturus audax), Atlantic blue marlin (Makaira nigricans), sailfish (Istiophorus platypterus) and sharks .

**Size** : Maximum size in commercial catches is at least 65 cm fork length (range 30 to 65 cm) and 4.9 kg (range 0.5 to 4.9 kg). The all-tackle angling record is a 9.12 kg fish taken off Clarion Island, Mexico, in 1982. Its fork length was 84 cm.



Baja California; in the fourth quarter,

**Interest to Fisheries** : There is no specific fishery for *E. lineatus*, but the species is taken incidentally by tuna purse seines, live-bait pole-and-line gear, trolling, and sports fishing gear (Calkins & Klawe, 1963:145). In Ecuador and Peru it is also taken by canoe and raft fishermen. Most fish landed are sold fresh in Latin American local markets. Yearly catches in the eastern Pacific totalled around 1 500 metric tons during the seventies; the minimum catch was recorded in 1975 (531 tons), the maximum in 1974 (3 742 tons) (I-ATTC, 1980). The flesh of this species is very dark as compared to other scombrids.

**Local Names** : COLOMBIA: Bonito, Patiseca; ECUADOR: Bonito negro, Negra, Pata seca; MEXICO: Barrilete negro, Negra; PANAMA: Barrilete negro; PERU: Barrilete negro, Macarela; USA: Black skipjack.

**Literature** : Calkins & Klawe (1963); Godsil (1954); Yoshida (1979); Muhlia-Melo (1980).

**Gasterochisma** Richardson, 1845

SCOMBR Gast

**Genus with reference** : Gasterochisma Richardson, 1845. Type-species Gasterochisma melampus Richardson, 1845, by monotypy.

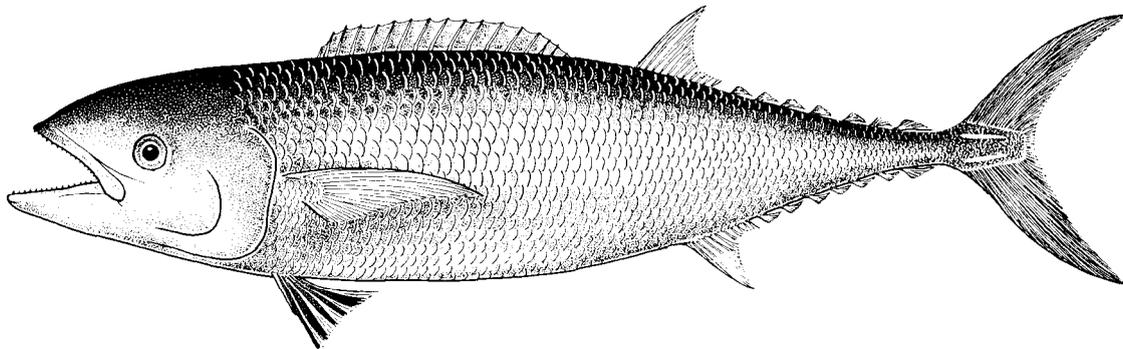
**Gasterochisma melampus** Richardson, 1845

SCOMBR Gast 1

Gasterochisma melampus Richardson, 1845, Ann.Mag.Nat.Hist., 15:346 (Port Nicholson, New Zealand).

**Synonymy** : Lepidothynnus huttoni Günther, 1889; Chenogaster holmbergi Lahille, 1903.

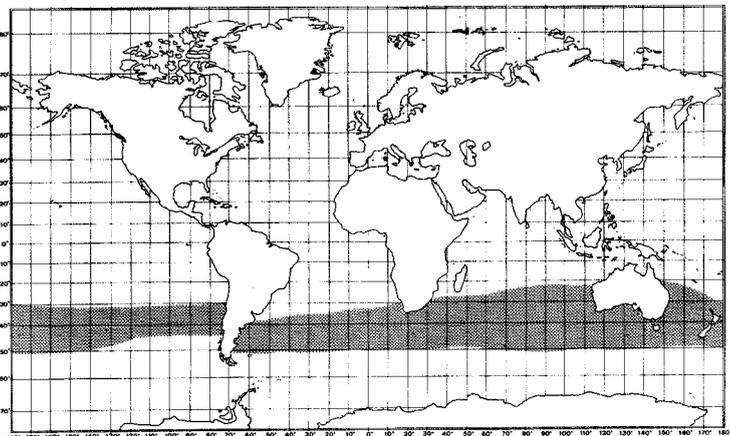
**FAO Names** : En - Butterfly kingfish; Fr - Thon papillon; Sp - Atún chauchera.



**Diagnostic Features** : Body compressed, its depth about 3.5 times in fork length. Teeth small and conical, in a single series; gillrakers 25 on first gill arch. Two dorsal fins separated by a wide interspace in adults, the first with 17 spines, the second with 10 or 11 rays followed by 6 or 7 finlets; anal fin with about 12 rays, also followed by 6 or 7 finlets; pectoral fins short, with 19 to 22 rays; pelvic fins enormous in juveniles, longer than head length, becoming of more normal proportions for scombrids in adults; pelvic fins fitting into a deep ventral groove at all sizes; interpelvic process tiny and bifid. Body covered with large, cycloid scales; no anterior corselet; caudal peduncle with only two small keels on each side, no lateral keel present. Swimbladder present, with 2 anterior projections that extend into the back of the skull. Vertebrae 21 precaudal plus 23 caudal, total 44. Colour: deep bluish above, silvery below, without spots, stripes or other prominent markings.

**Geographical Distribution** : Circum-global in southern temperate waters, mostly between 35° to 50°S.

**Habitat and Biology** : An epipelagic, oceanic species, sharing the geographical distribution with the southern bluefin tuna. Butterfly kingfish are most abundant in waters of 8° to 10°C. North of the southern polar front or antarctic divergence (that is, at surface temperatures of about 11.5° and above in the southern winter, and 14.5°C in the southern summer), abundance at least of adult butterfly kingfish decreases sharply.



There seems to be a pattern of seasonal north-south migrations similar to that of southern bluefin tuna. The biology of the species is poorly known.

**Size** : Maximum fork length is at least 164 cm. Sizes in the Japanese longline fishery range between 74 and 164 cm. Large-sized fish over 110 cm dominate on the fishing grounds in the western parts of the Atlantic, Pacific and Indian oceans, while smaller fish are more abundant on the eastern fishing grounds.

**Interest to Fisheries** : This species is not of high commercial significance but taken as bycatch by Japanese longliners fishing for Thunnus maccoyii. It occurs on all fishing grounds south of 35°S and in the southeastern Indian Ocean as far north as 26°S. The average catch in terms of number of fish per operation is higher from March to May as compared with other times of the year (Warashina & Hisada, 1972).

**Local Names** : AUSTRALIA: Big-scaled mackerel, Butterfly mackerel; CHILE: Pez chauchera; JAPAN: Urokomaguro; NEW ZEALAND: Scaled tunny; SOUTH AFRICA: Bigscale mackerel, Grootskub-makriel; USSR: Gasterochisma.

**Literature** : Lahille (1905); Warashina & Hisada (1972).

Grammatorcynus Gill, 1862

SCOMBR Gram

**Genus with reference** : Grammatorcynus Gill, 1862:125. Type-species Thynnus bilineatus Rüppell, 1836, by original designation.

**Diagnostic Features** : Body elongate, slightly compressed. Mouth relatively small, upper jaw reaching about to middle of eye; about 20 to 30 slender conical teeth in upper and lower jaws; patches of fine teeth on palatines and vomer; a rectangular patch of small, sharp teeth on tongue; 14 to 24 gillrakers on first gill arch. Dorsal fins close together, the first with 11 to 13 spines, usually 12, its margin almost straight; the second with 10 to 12 rays followed by 6 or 7 finlets; anal fin with 11 to 13 rays followed by 6 or 7 finlets; pectoral fins stout, with 22 to 26 rays; interpelvic process short and single. Two lateral lines, the first extending from the opercle to the lateral caudal keel, in the usual position for scombrid lateral lines; the second branches off from the first under the third spine of the first dorsal fin, descends below the level of the pectoral fin and runs posteriorly to join with the first at about the level of the last dorsal finlet. Body covered with moderately small scales; no prominent anterior corselet present; caudal peduncle slender, with a well developed lateral keel between the two smaller ones on each side. Swimbladder present. Vertebrae 14 precaudal plus 17 caudal, total 31 as in the mackerels (Scomber and Rastrelliger). Colour: back and upper sides metallic blue-green, belly silvery white with a golden tinge.

**Habitat and Biology** : The two species of Grammatorcynus are epipelagic fishes found mostly in shallow reef waters. Food includes fishes and crustaceans.

**Interest to Fisheries** : No major fishery exist for either species.

**Literature** : Silas (1963, species synopsis); Collette (in press, two species of Grammatorcynus recognized).

**Remarks**: The genus has usually been considered monotypic but Collette (in press) has shown that there are two species.

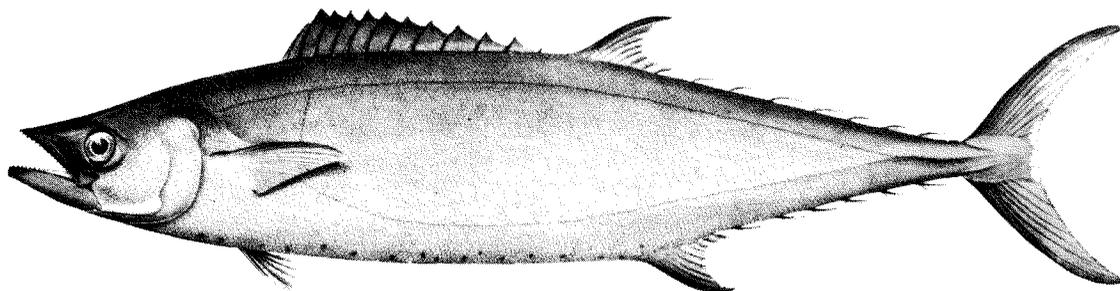
Grammatorcynus bicarinatus (Quoy & Gaimard, 1824)

SCOMBR Gram 1

Thynnus bicarinatus Quoy & Gaimard, 1824, Voyage autour du Monde, 3, Zoologie:357, pl. 61 (fig. 1) (Baie des Chiens-Marins = Shark Bay, Western Australia).

**Synonymy** : Grammatorcynus bicarinatus - McCulloch, 1915.

FAO Names :En - Shark mackerel; Fr - Thazard requin; Sp - Carite cazón.

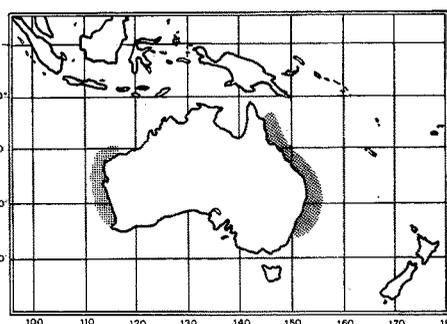


**Diagnostic Features :** Eye small (3 to 4% of fork length); few gillrakers, 14 or 15 on first gill arch. Colour: frequently has small dark spots along the ventral surface of the body.

**Geographical Distribution :** Positively known only from the northern coasts of Australia, south to Shark Bay in Western Australia, along the east coast of Queensland south to northern New South Wales. May also occur in southern Papua New Guinean waters.

**Habitat and Biology:** Shark mackerels form dense concentrations near individual bays and reefs in Barrier Reef waters. With the rising tide, they move into shallow water over the reef flats, feeding on schools of clupeoid fishes that concentrate there (Grant, 1982).

**Size:** Maximum size is 110 cm fork length and 13.5 kg weight (Lewis, 1981).



**Interest to Fisheries:** The only fishery directed at this species is based in Queensland where it is a high-ranking tablefish (Grant, 1982).

**Local Names :** AUSTRALIA: Large-scaled tunny, Salmon mackerel, Shark mackerel.

**Literature :** Grant (1982, Queensland).

**Remarks :** The name shark mackerel comes from the ammonia-like smell noticed upon cleaning them. This odour can be masked by brushing the fillets with lemon juice prior to cooking (Grant, 1982).

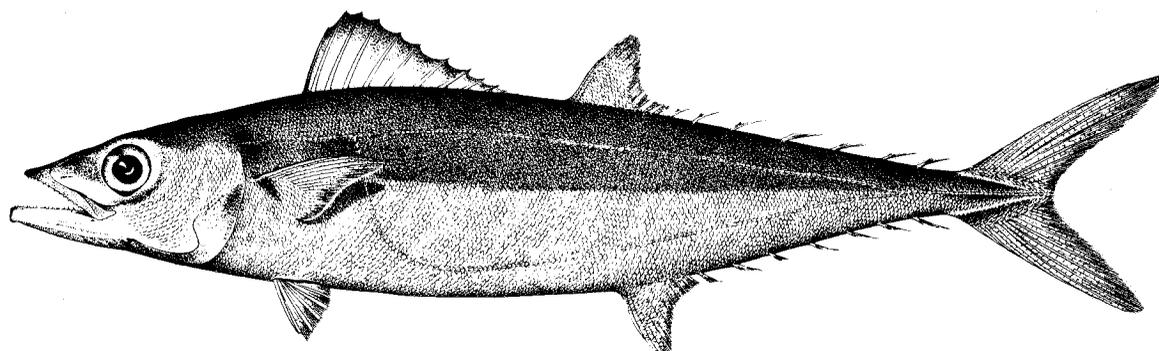
**Grammatorcynus bilineatus** (Rüppell, 1836)

SCOMBR Gram 2

Thynnus bilineatus Rüppell, 1836, Fische des Rothen Meeres: 39-40, pl. 12, fig. 2 (Red Sea).

**Synonymy :** Grammatorcynus bilineatus - Gill, 1862; Nesogrammus piersoni Evermann & Seale, 1907.

**FAO Names:** En - Double-lined mackerel; Fr - Thazard-kusara; Sp - Carite cazón pintado.



**Diagnostic Features :** Eye large (7 to 9% of fork length); many gillrakers, 19 to 24 on first gill arch. Colour: usually lacks any spots along the ventral surface of the body.