

A. fallax killarnensis: total gillrakers 43 to 53; landlocked in Killarney lakes, Ireland (to 23 cm standard length only; feeds on Cladocera).

A. fallax lacustris: total gillrakers to 76; Lakes Como, Maggiore and Lugano, Italy (30 to 34 lower gillrakers vide Regan, 1916).

Regan's subspecies algeriensis and Roule's rhodanensis have both been placed in A. fallax nilotica (e.g. CLOFNAM, 1973:107, 108).

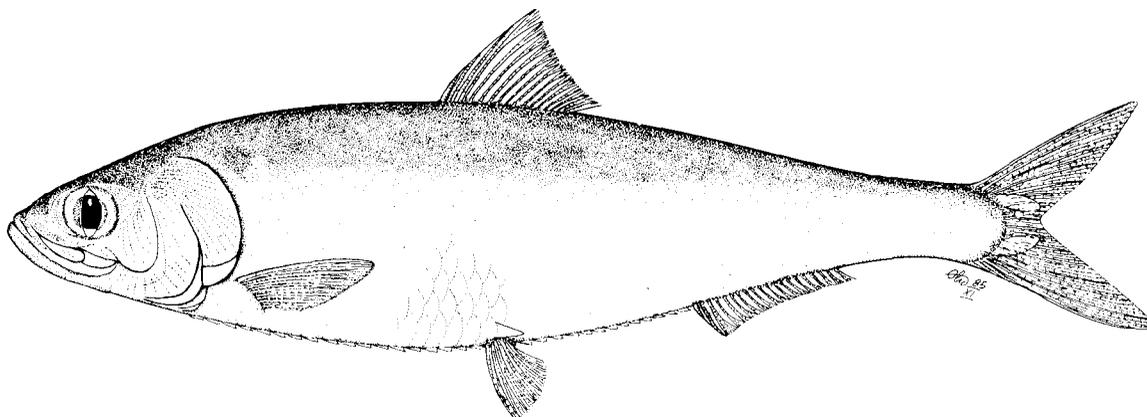
Alosa kessleri Grimm, 1887

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Clupea kessleri Grimm, 1887, Astrakhanskaya seledka, St. Petersburg:7, 16 (Volga River delta).

Synonyms : Clupeonella caspia volgensis Berg, 1913:34, pl. 5 (near mouth of Sulak River, west coast of central Caspian); Caspialosa volgensis bergi and imitans Tanasiichuk, 1938:33; Alosa kessleri:Svetovidov, 1952:280, pl. 21, fig. 2 and pls 22, 23 (synopsis, subspecies kessleri, volgensis and pontica, the latter here considered distinct); Idem, 1963:314, pl. 21, fig. 2 and pls 22, 23 (same).

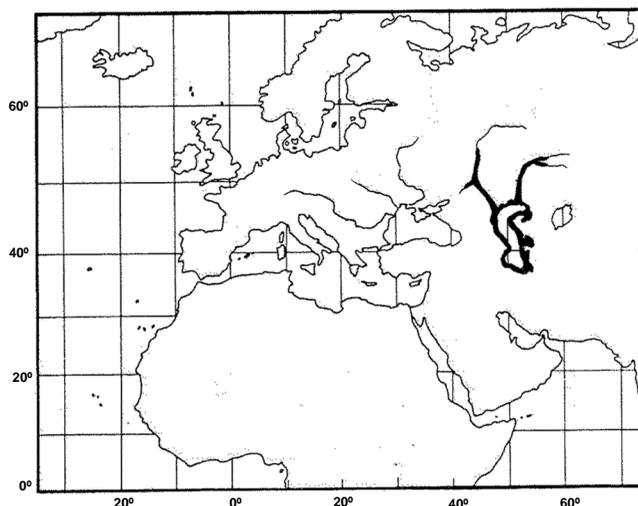
FAO Names : En - Caspian anadromous shad.



Diagnostic Features : Body fairly elongate, more 'herring-like' than 'shad-like'. Total gillrakers 59 to 155, thick, coarse and shorter than gill filaments in some, long, thin and equal to or longer than gill filaments in others (i.e. A. kessleri volgensis). Teeth well developed in both jaws. Resembles A. caspia in number of gillrakers, but that species is deep-bodied, more 'shad-like'; other Caspian shads have less than 50 gillrakers (A. brashnikovi, A. saposchnikovi, A. sphaerocephala).

Geographical Distribution : Caspian Sea (in sea and along both shores of central and northern parts, but in south and especially southeast in winter).

Habitat and Biology : Euryhaline, anadromous, from surface down to 85 m or more; northward migration in spring (March/April, but sometimes as early as February or even January), a little distance from the shore. Feeds chiefly on small fishes (Clupeonella, atherines, etc.), less frequently on crustaceans and insect larvae (but mainly on crustaceans in A. kessleri volgensis); no feeding by A. kessleri kessleri during migration up rivers. Spawns from mid-May to August in the Volga, Vyatka, Kama, Oka and other rivers, some entering with ripe gonads and spawning in the lower reaches or even delta (A. kessleri volgensis), others entering unripe and reaching as much as 500 km upstream; the young descend in late summer and autumn.



Size : To 52 cm standard length, usually 36 to 44 cm (or to 40 cm standard length, usually 27 to 29 cm in A. kessleri volgensis).

Interest to Fisheries : The Volga subspecies is the more abundant and occupies second place among the Caspian herrings. The total catch for all Caspian Alosa spp. (including A. kessleri) in 1983 was 3 561 tons. Coad (1980:70) claimed stocks depleted in Iranian freshwaters.

Local Names : USSR: Chernospinka (A. kessleri kessleri); Volzhskaya (Volga subspecies). Svetovidov (1952, 1963) gives further Russian names.

Literature : Svetovidov (1952, 1963 - synopsis).

Remarks : This is the only anadromous Caspian shad. The differences in gillraker form and in spawning and feeding habits, as well as size, well justify Svetovidov's recognition of two subspecies:

A. kessleri kessleri: total gillrakers 59 to 92, thick, coarse and short; enters rivers unripe, spawns high and does not feed en route; usually 36 to 44 cm standard length.

A. kessleri volgensis: total gillrakers 99 to 155, long, thin; enters rivers ripe, spawns in lower parts, feeding en route; usually 27 to 29 cm standard length.

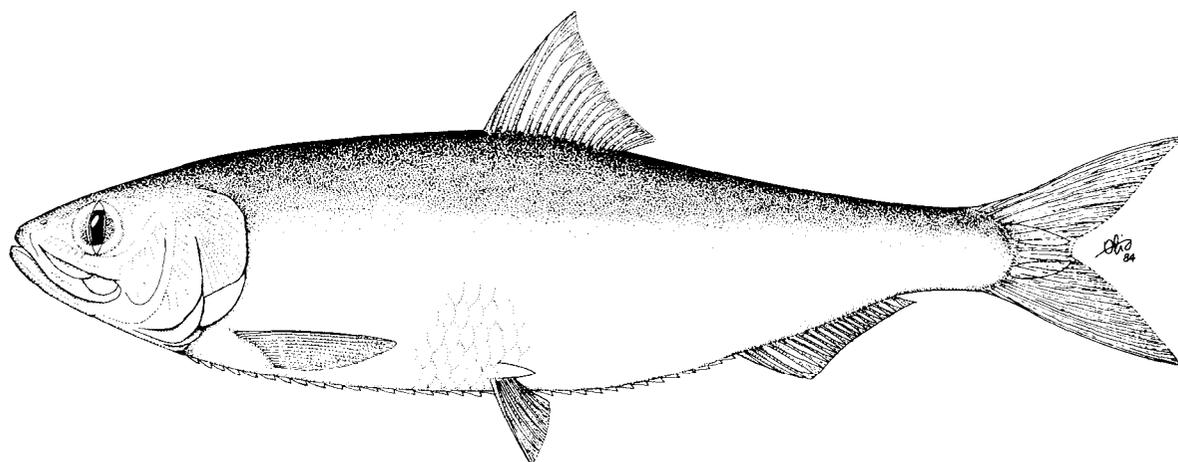
Alosa maeutica (Grimm, 1901)

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Clupea maeutica Grimm, 1901, Vestnik Rybopromyshlennosti, 16(2):67 (Black Sea, Sea of Azov).

Synonyms : Caspialosa brauneri Nikolski, 1923:5 (Dneister liman at Akkeman and Ovidiopol, Black Sea); Caspialosa brauneri morph elongata Isachenko, 1925:128 (Ochakov, Black Sea); Alosa brashnikovi maeutica: Svetovidov, 1952:254, pl. 15, fig. 2 (synopsis); Idem, 1963:284, pl. 15, fig. 2 (same); Alosa pontica pontica var. ? : CLOFNAM, 1973:108 (see Remarks); Alosa maeutica - Banarescu, 1964:244 (synopsis).

FAO Names : En - Black Sea shad.



Diagnostic Features : Body fairly elongate, more 'herring-like' than 'shad-like'. Total gillrakers 33 to 46, thin and straight, often closely packed and pointed, usually shorter than gill filaments. Teeth well developed in both jaws. Other Black Sea Alosa have more gillrakers (A. caspia 50 to 80 and A. pontica 47 to 66). Sardinella aurita is more slender, has many more gillrakers and 8 pelvic finrays (i 7 in A. maeutica) .

Geographical Distribution : Black Sea and Sea of Azov.

Habitat and Biology : Brackish- and saltwater, non-anadromous, entering limans and lower parts of river deltas, but only occasionally in freshwater; a cold-loving species, tolerating 3 or 4°C. Feeds mainly on small fishes (mainly sprats and anchovies) also on shrimps, gammarids and other large crustaceans. Spawns in spring and early summer.

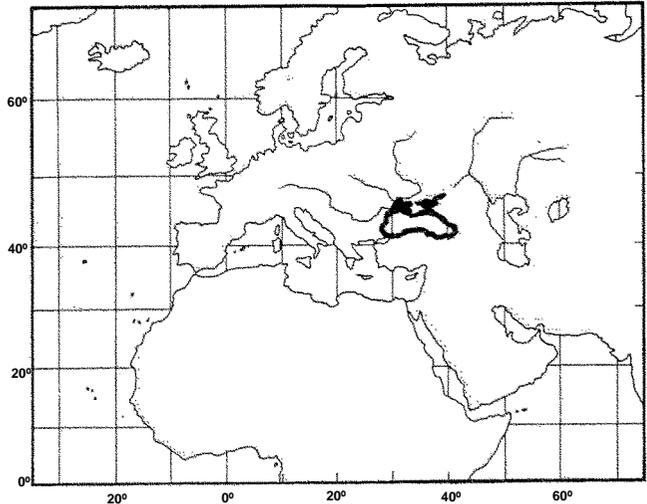
Size : To 31 cm standard length, usually 16 to 20 cm.

Interest to Fisheries : Of little importance; combined catches with *A. pontica* in the Black Sea in 1983 were 1 839 tons (Romania and Bulgaria).

Local Names : ROMANIA: Scrumbie de mare; USSR: Chernomorsko-azovskaya morskaya sel'd.

Literature : Svetovidov (1952, 1963 - synopsis); Banarescu (1964 - synopsis, Black Sea).

Remarks : Svetovidov (1973:108, i.e. CLOFNAM), having earlier recognized *A. maeotica* as a subspecies of *A. brashnikovi*, eventually placed it as a 'var.' (unnamed) of *A. pontica*, in spite of the apparent difference in gillrakers counts (33 to 46, cf. 47 to 69 in *A. pontica*).



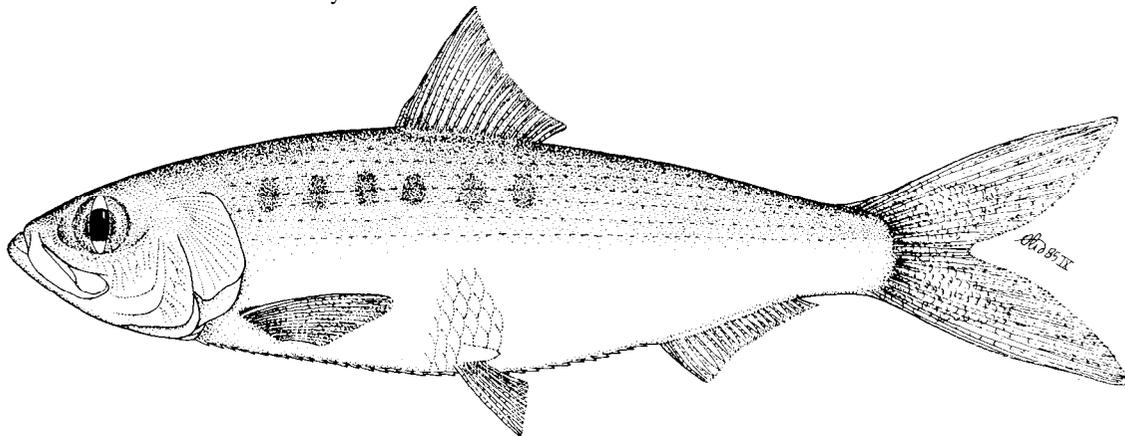
Alosa mediocris (Mitchill, 1814)

CLUP Alos 13

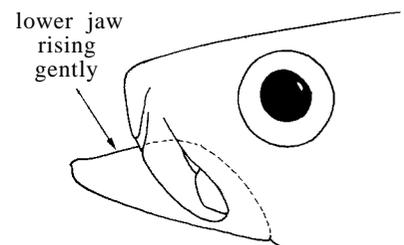
Clupea mediocris Mitchill, 1814, *Fishes New York*:20 (New York presumed).

Synonyms : ? *Clupea pusilla* Mitchill, 1814:20 (New York presumed); *Clupea mallowaca* Mitchill, 1815:451 (Long Island, New York); *Pomolobus mediocris*: FWNA, 1964:319, fig. 79 full. synon., descr., biol.); *Alosa mediocris* - Mansueti, 1962:173, figs 3 (eggs), 4 (embryos), 5-9 (larvae and juveniles) (Maryland; breeding, eggs, larvae).

FAO Names : En - Hickory shad.



Diagnostic Features : Body fusiform, moderately compressed, belly with a distinct keel of scutes. Lower jaw very prominent, but not rising steeply within mouth; teeth present in jaws, reduced or in upper jaw absent in larger fishes (over 23 cm standard length), none on vomer. Lower gillrakers 18 to 23. A dark spot on shoulder, several obscure dark spots along flank (missing sometimes). Closely resembles *A. chrysochloris* of the Gulf of Mexico, which has stronger jaw teeth, no shoulder spot and the body depth less than head length. *Alosa aestivalis*, *A. pseudoharengus* and *A. sapidissima* have more lower gillrakers (41 to 51, 38 to 44 and 59 to 73 respectively).



Geographical Distribution : North America (Atlantic coasts from Maine to the St John's River, Florida and in rivers).

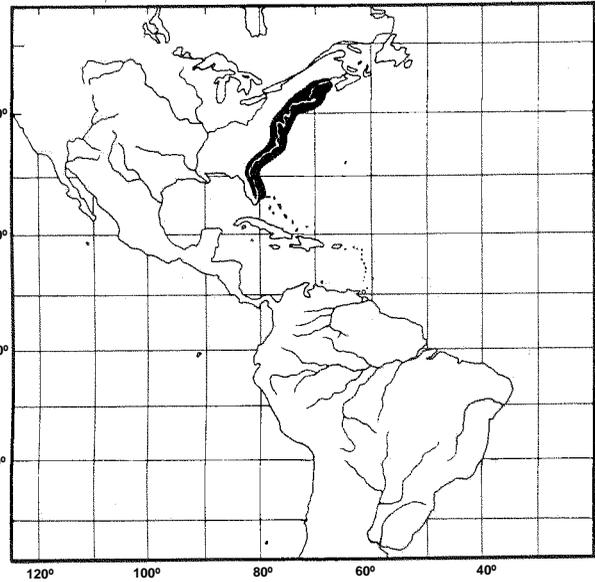
Habitat and Biology : Euryhaline, entering brackish- and freshwater, anadromous. Feeds on small fishes, also squid, small crabs and other crustaceans, as well as fish eggs. Spawns in tidal freshwater (Patuxent River, Chesapeake Bay in May *vide* Mansueti, 1962).

Size : To 60 cm standard length, usually 30 to 38 cm.

Interest to Fisheries : Of minor importance, the recorded catch for 1983 being only 34 tons. Caught with seine nets, pound nets, and in lesser quantities in gill and fyke nets.

Local Names : USA: Bonejack, Fall herring, Freshwater taylor, Hickory Jack, Shad herring.

Literature : Hildebrand (i.e. FWNA, 1964 - biol., etc.); Mansueti (1962 - spawning).



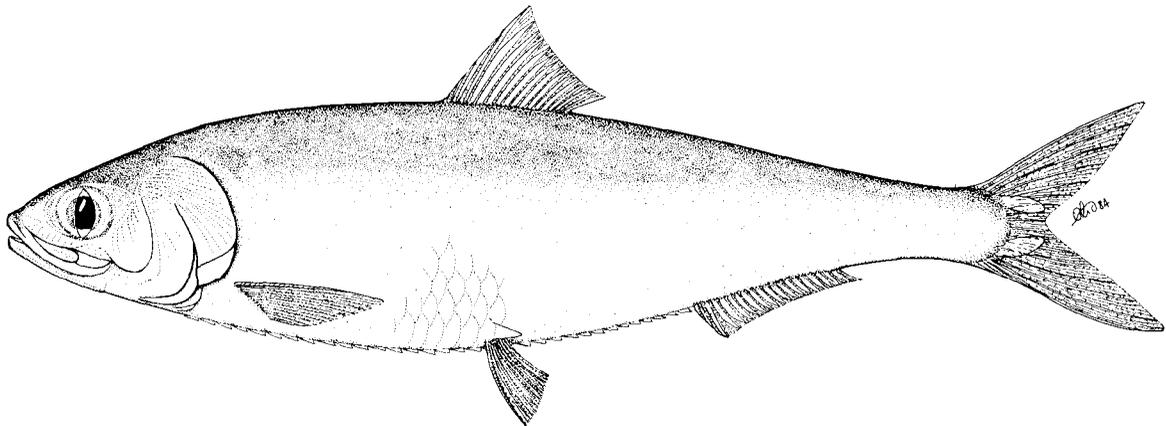
Alosa pontica (Eichwald, 1838)

CLUP Alos 10

Clupea pontica Eichwald, 1838, *Bull.Soc.Nat.Moscou*, 11(2):135 (Odessa, Black Sea).

Synonyms: ? *Alosa immaculata* Bennett, 1835 (Trabizon, Black Sea); *Clupea eichwaldi* Grimm, 1901:67 (Rostc on Don River); *Alosa pontica* var. *russae* Antipa, 1906:78:22, pl. 2, figs 1-5 (Danube delta) *Alosa pontica* var. *danubii* Antipa, 1906:17, pl. 1, figs 4-8 (Romanian coast, Danube to and above Braila); *Alosa pontica* var. *nigrescens* Antipa, 1906:21, pl. 1, figs 1-3 (Danube delta); *Alosa pontica* var. *moruae* Antipa 1909; *Caspialosa pontica* var. *chtamalocephala* Isachenko, 1925:110, pl. 2 (Dneiper delta at Ochakov); *Caspialosa pontica* var. *hypselocephala* Isachenko, 1925:112, pl. 3; *Alosa kessleri pontica*:Svetovidov, 1952:282, pl. 21, fig 1 (synopsis); *Idem*, 1963:316, pl. 21, fig. 1 (same); *Alosa (Caspialosa) pontica*:Banarescu, 1964:239, fig. 106 (synopsis); subspecies *borysthenis* and *issattschenkovi* designated for the north-central Black Sea, but not diagnosed; *Alosa pontica* - CLOFNAM, 1973:108 (full synonymy, but excluding *A. pontica pontica* var. ? - see Remarks; FNAM, 1984:272, fig. (synopsis, but included *A. maeotica* in error).

FAO Names : En - Pontic shad.



Diagnostic Features : Body fairly elongate, more 'herring-like' than 'shad-like'. Total gillrakers 47 to 69, rather thin, usually equal to or a little shorter than gill filaments. Teeth well developed in both jaws. Resembles *A. caspia*, which usually has more gillrakers (50 to 180, much longer than gill filaments), poorly developed teeth and a deeper, 'shad-like' body; *A. maeotica* has fewer gillrakers (33 to 36).

Geographical Distribution : Black Sea and Sea of Azov (in sea and in the Don, Danube and other rivers, as much as 567 km up the Don and as far as Kiev on the Dnieper before the dam was built).

Habitat and Biology : Euryhaline, anadromous, migratory, moving northward in the Black Sea in spring and early summer. Feeds mainly on small fishes (*Engraulis*, *Clupeonella*, *Sprattus*), but also crustaceans (*Crangon*, *Upogebia*, *Idothea*, gammarids). Spawns in rivers from mid-May to mid-August, as much as 500 km or more upstream, but also in lower reaches; the young descend quickly, but remain in or near the deltas or estuaries until winter.

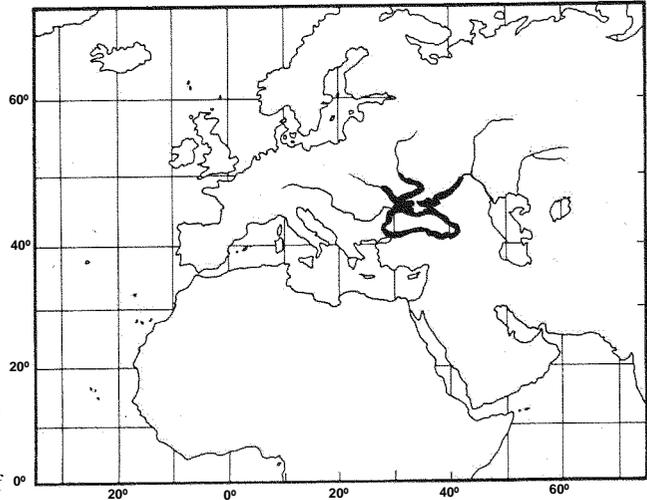
Size : To 39 cm standard length (Dnieper), or 30 cm, usually 14 to 18 cm (Don); a small form of this species reaches only 21 cm.

Interest to Fisheries : The main component of the Black Sea *Alosa* catches, the combined total (with some *A. maotica*) for 1983 being 1 839 tons (Romania and Bulgaria).

Local Names : GERMANY: Donauhering; ROMANIA: Scrumbie de Dunare; USSR: Chernomorskaya sel'd (further Russian names in Svetovidov, 1952, 1963).

Literature : Svetovidov (1952, 1963 - synopsis; 1973:108, i.e. CLOFNAM - synonymy); Banarescu (1964 - synopsis, Black Sea).

Remarks : Svetovidov (1952, 1963) recognized a large and a small form (morphologically identical otherwise), but rejected distinction of the 'varieties' *russae*, *nigrescens*, *danubii*, *chtamalocephala* and *hypselocephala*; Banarescu (1964:239) added two more names, *borysthenis* and *issatschenkovi* from the northern-central part of the Black Sea, but did not diagnose them. In his earlier work Svetovidov placed the present species as merely a subspecies of *A. kessleri*, but finally he recognized it as distinct, although combining it with his earlier *A. brashnikovi maotica* (see Remarks under that species). There would appear to be much more work needed to clarify the taxonomy of this difficult genus.



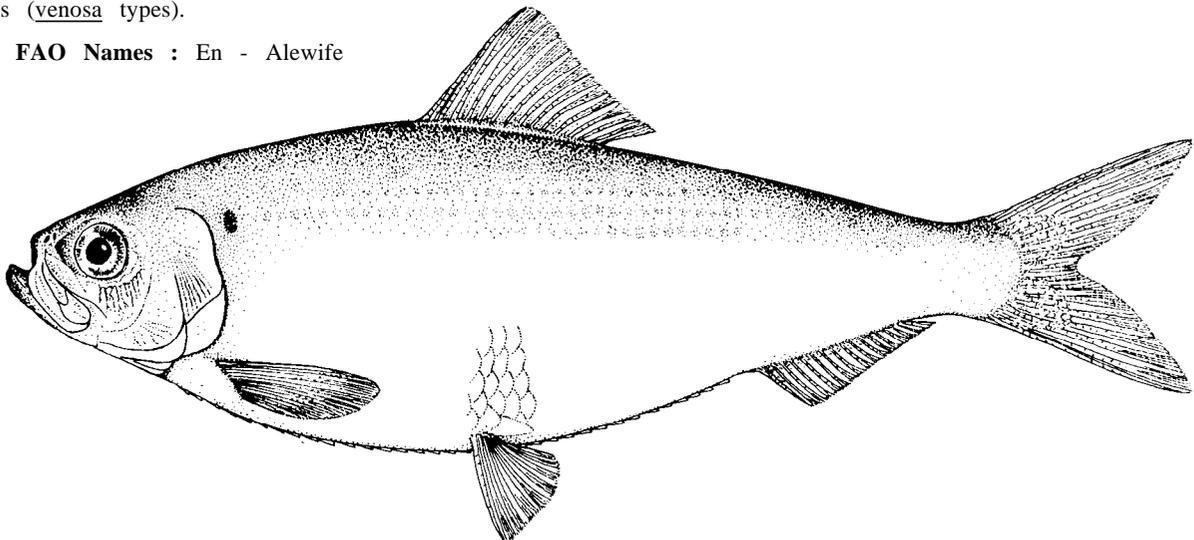
Alosa pseudoharengus (Wilson, 1811)

CLUP Alos 14

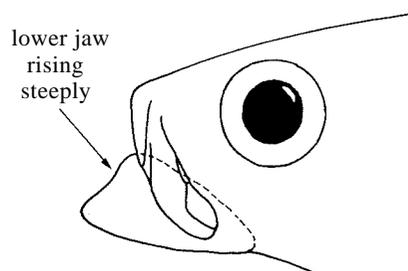
Clupea pseudoharengus Wilson, 1811, *Rees' New Cyclopaedia* (Art. *Clupea*), American ed. only, 9:unpaged (probably Philadelphia).

Synonyms : *Clupea parvula* Mitchill, 1814:21 (New York presumed); *Clupea vernalis* Mitchill, 1815:454 (New York); *Clupea megalops* Rafinesque, 1818:206 (Delaware River); *Clupea virescens* DeKay, 1842:252, pl. 13, fig. 37 (New York Bay); *Meletta venosa* Valenciennes, 1847:374 (New York *Pomolobus pseudoharengus*:FWNA, 1964:332, fig. 82 (full synonym., descr., biol.); *Alosa pseudoharengus* - Whitehead, 1967:82 (types of *Meletta venosa*); Leim & Scott, 1966:88, fig. (Canada, synopsis); Roy, 1968:16, figs (Canada, synopsis); Whitehead & Bauchot, in press (*venosa* types).

FAO Names : En - Alewife



Diagnostic Features : Body fusiform, moderately compressed, belly with a distinct keel of scutes. Lower jaw rising steeply within mouth; minute teeth present at front of jaws (disappearing with age), no teeth on vomer. Lower gillrakers 38 to 44, increasing with age. Back greyish green on capture; a dark spot on shoulder. Resembles A. aestivalis in number of gillrakers and steeply rising lower jaw, but that species has the eye not longer than snout, the peritoneum dark (cf. silvery) and the back blue on capture. Other shads have a gently rising lower jaw and more (59 to 73) or fewer (18 to 24) lower gillrakers, or occur only in the Gulf of Mexico (A. alabama).



Geographical Distribution : North America (Atlantic coasts from the Gulf of St. Lawrence and Nova Scotia to North Carolina and in streams and rivers; introduced into Lake Ontario, and now landlocked there and in Lakes Erie (1931), Huron (1933), Michigan (1949) and Superior (1954); also occurs in Lakes Seneca and Cayuga).

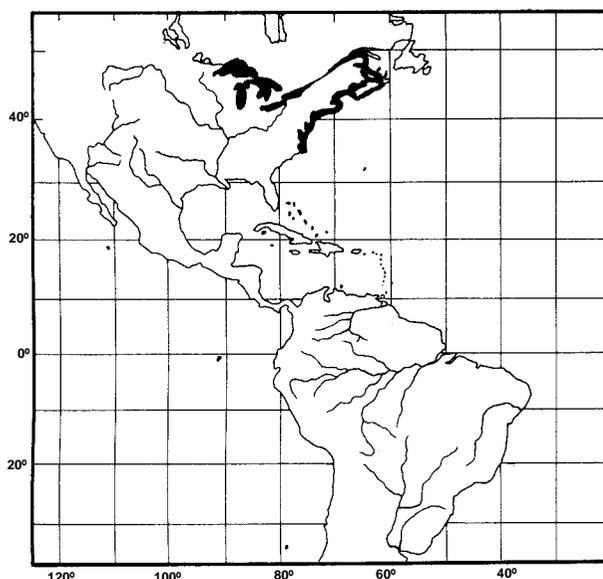
Habitat and Biology : Euryhaline, entering brackish- and freshwaters, anadromous. Feeds on shrimps and small fishes, the young on diatoms, copepods and ostracods while in the rivers (see especially Janssen, 1976, 1978). Spawns in March in Chesapeake Bay area, late April or May in Maine and in Canada, the adults migrating up rivers and even small streams, spawning in lakes and quiet stretches of rivers; landlocked populations also ascend affluent rivers and streams; the fry descend in summer and autumn or even as late as November or December.

Size : To about 38 cm standard length, usually about 25 to 30 cm.

Interest to Fisheries : Probably not always distinguished from A. aestivalis; the recorded catch of A. pseudoharengus in 1983 was 18 385 tons, being the highest for a North American shad.

Local Names : CANADA: Gaspereau, Gasperot; USA: Bigeye herring, Branch herring, Freshwater herring, Gray herring, Grayback, Kyak, Sawbelly, White herring.

Literature : Hildebrand (i.e. FWNA, 1964 - USA, biol., etc.); Leim & Scott (1966 - Canada, biol., etc.); Roy (1968 - Canada, biol., etc.).



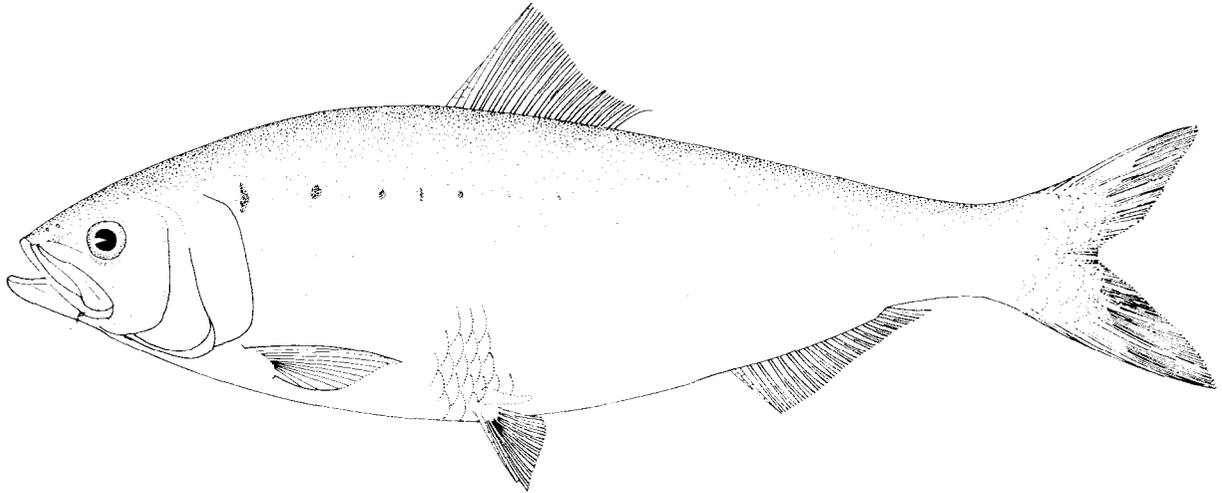
Alosa sapidissima (Wilson, 1811)

CLUP Alos 4

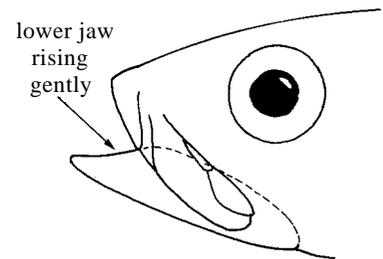
Clupea sapidissima Wilson, 1811, Rees' New Cyclopaedia (Art.Clupea), American ed. only, 9:unpaged (probably Philadelphia).

Synonyms : ? Clupea indigena Mitchill, 1814:22 (New York presumed); Alosa praestabilis DeKay, 1842:255, pl. 15, fig. 41 (New York); Mansueti, 1955:1, figs (Maryland, summary of biol.) FWNA, 1964:295, fig. 71 and figs 72-74 (devel.) (full synon., descr., biol.); Liem & Scott, 1966 (Canada, synopsis); Roy, 1968:3, figs (Canada, synopsis).

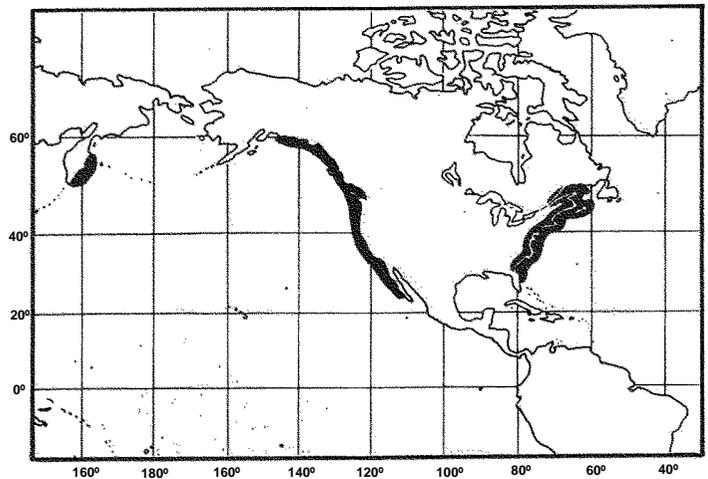
FAO Names : En - American shad.



Diagnostic Features : Body fusiform, moderately compressed, belly with a distinct keel. Lower jaw not rising steeply within mouth; teeth absent in jaws (minute in juveniles to 15 cm standard length), no teeth on vomer. Lower gillrakers 59 to 73, long and slender (fewer in young). A dark spot on shoulder, sometimes followed by several more, or even a second row. Resembles *A. pseudoharengus*, which has the lower jaw rising steeply within mouth and fewer lower gillrakers (38 to 43), as also *A. aestivalis* and *A. mediocris* (41 to 51 and 18 to 23 respectively). In addition, *A. pseudoharengus* has a larger eye (about equal to snout), but shorter jaws not reaching behind hind margin of eye. See CLUP Alos 4, Fishing Area 31.



Geographical Distribution : North America (Atlantic coasts from the St. Lawrence River and Nova Scotia southward to central Florida and in streams and rivers). Introductions in the Gulf of Mexico apparently failed, but those off Pacific coasts of North America and USSR succeeded, the species now being found from Kamchatka and British Columbia to Baja California.



Habitat and Biology : Euryhaline, entering brackish- and freshwaters, anadromous; in the sea, down to about 100 m, strongly migratory (individuals have been caught up to 3 000 km from where they were tagged), in rivers migrating up as far as Montreal, but usually not ascending as far upstream as *A. pseudoharengus*. Feeds mainly on plankton, mainly copepods and mysids, occasionally on small fishes (smelt, sand-lance); no feeding during migration up rivers; the young feed on copepods and insect larvae in the rivers. Spawns at five years, sometimes at four, apparently in their home river, on sandy or pebbly ground in the evening; enters rivers as early as November in Florida and as late as May or June in the north, depending on water temperature (peak runs at about 18.5°C), descending again shortly after spawning; the young descend in the autumn.

Size : To 60 cm standard length, common to 50 cm.

Interest to Fisheries : Nowadays of moderate importance, chiefly in rivers of the USA; the total catch for 1983 was 2 712 tons (Canada and USA; Pacific coast catches very small).

Local Names : USA: Atlantic shad, Common shad, White shad.

Literature : Mansueti (1955 - Maryland, biol., etc.); Hildebrand (i.e. FWNA, 1964 - USA, biol., etc.); Liem & Scott (1966 - Canada, biol., etc.); Clemens & Wilby (1967 - Canada, Pacific, synopsis); Roy (1968 - Canada, biol., etc.); Leggett & Whitney (1972 - temperature and migrations, Atlantic and Pacific coasts); Dodson & Leggett (1974 - homing).

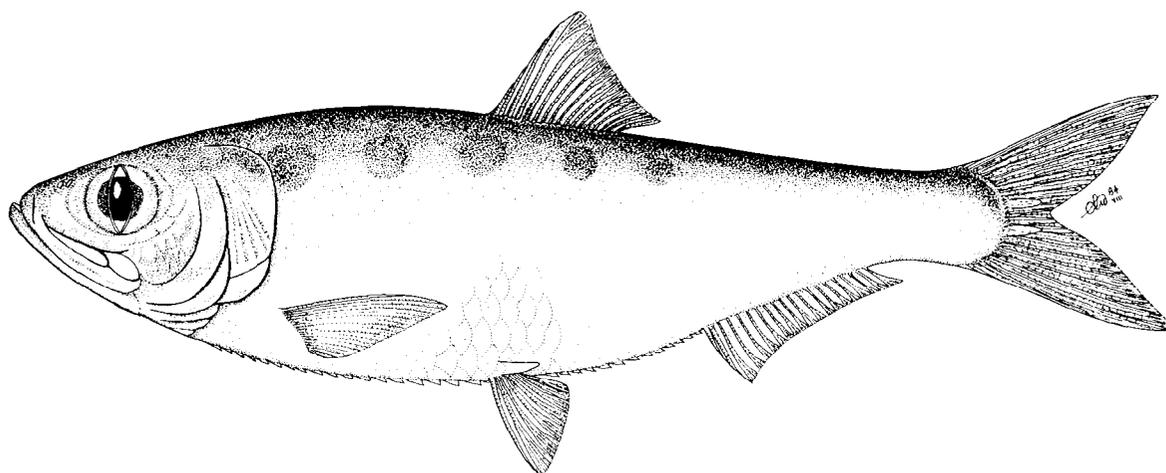
Alosa saposhnikovi (Grimm, 1887)

CLUP Alos 11

Clupea saposhnikovi Grimm, 1887, Astrakanskaya seledkha, St. Petersburg:7, 16 (Volga delta).

Synonyms: Alosa saposhnikovi-Svetovidov, 1952:223, pl.9, fig.1(synopsis); Idem,1963:247, pl.9 fig.1 (same).

FAO Names : En - Saposhnikovi shad.



Diagnostic Features : Body 'shad-like', rather deep and compressed; upper and lower head profiles straight. Total gillrakers 25 to 41, moderately thick and short, tips pointed, usually shorter than gill filaments. Teeth well developed in both jaws. Resembles A. sphaerocephala, which has a blunter head, with round upper and lower head profiles; A. caspia has more gillrakers (50 to 180) and A. brashnikovi is more slender and 'herring-like'.

Geographical Distribution : Caspian Sea (through-out, including lower parts of Volga River; more common in north).

Habitat and Biology : Euryhaline, migratory but non-anadromous; one of the most cold-loving Alosa of the Caspian, being one of the first to begin its spring migration to the north. Feeds on large crustaceans and small fishes. Spawns in northern Caspian, from end of April, with a peak in mid-May, moving into shallow water and spawning at depths of 1 to 6 m and salinities of 0.07 to 11‰, the young later migrating southward (apparently down both coasts), but some perhaps remaining in the northern parts of the Caspian.

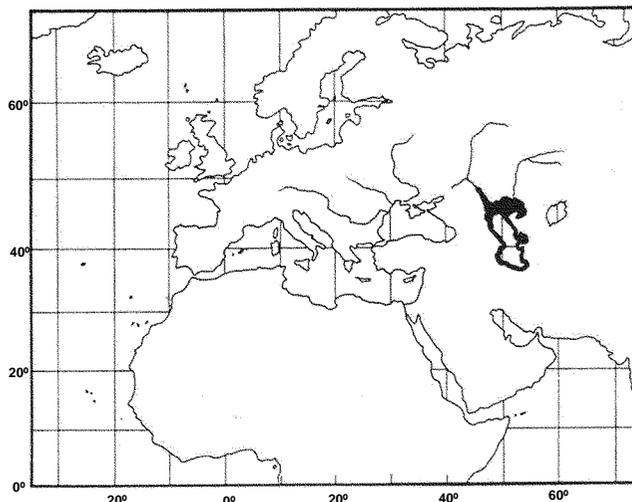
Size : To 35 cm standard length, usually 14 to 28 cm.

Interest to Fisheries : Moderately large catches reported by Svetovidov (1963:252); the total catch for Caspialosa spp. (including A. saposhnikovi) in 1983 was 3 561 tons. Coad (1980:70) claimed stocks depleted in Iranian freshwaters.

Local Names : USSR: Bol'sheglazyi ili saposhnikovskii puzanok.

Literature : Svetovidov (1952, 1963 - synopsis).

Remarks : Specimens of A. saposhnikovi (No. 15938, ZI Leningrad) apparently contributed to the description of Caspialosa caspia nigra Kisselevitch = Alosa brashnikovi (fide Svetovidov, 1963:242).



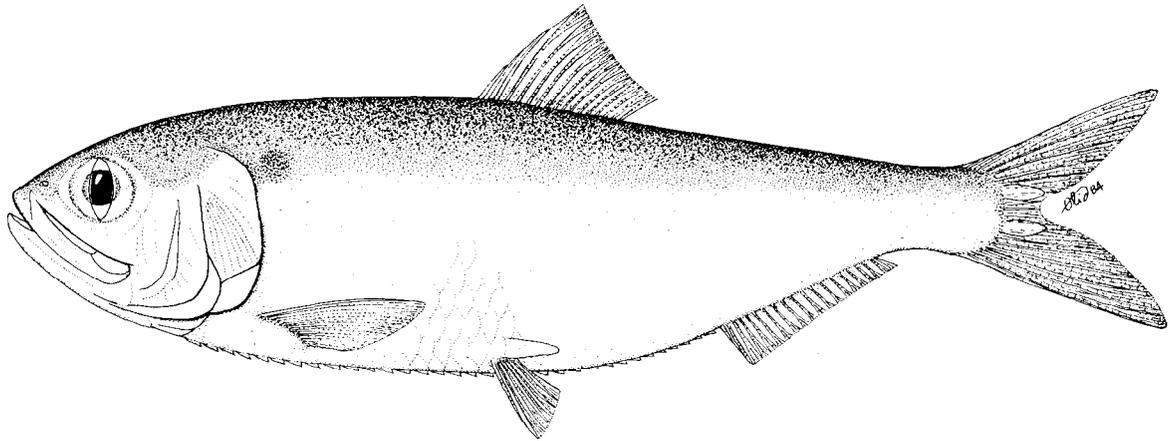
Alosa sphaerocephala (Berg, 1913)

CLUP Alos 12

Clupeonella sphaerocephala Berg, 1913, Mater.pozn.russ.rybol., 2(3):20, pl. 12, figs 1, 1a (Agrakhan Bay, at Tyulenii Island, Turali, Caspian Sea).

Synonyms: *Alosa sphaerocephala* - Svetovidov, 1952:227, pl. 9, fig.2(synopsis); Idem,1963:252,pl. 9,fig.2 (same).

FAO Names : En - Agrakhan shad.



Diagnostic Features : Body shape 'shad-like', rather deep and compressed; upper and lower head profiles strongly rounded. Total gillrakers 26 to 42, rather long and thin, equal to or usually longer than gill filaments. Teeth well developed in both jaws. Resembles *A. saposhnikovii*, which has a more pointed head, the upper and lower profiles straight; *A. caspia* has more gillrakers (50 to 180) and *A. brashnikovi* is more slender and 'herring-like'.

Geographical Distribution : Caspian Sea (more common in the northern and central parts).

Habitat and Biology : Confined to semi-saline waters; non-anadromous, not entering freshwaters. Food not recorded by Svetovidov (1963:254). Spawns in eastern part at north end of Caspian, from mid-May to end of June, mostly when temperatures are 18 to 20°C, salinities 8 to 10‰ and at depths of around 3 m; young depart southward later than any other clupeids, late in autumn.

Size : To 25 cm standard length, usually 16 to 18 cm.

Interest to Fisheries : Caught in small quantities only.

Local Names : USSR: Kruglogolovyi ili Agrakhanskii puzanok.

Literature : Svetovidov (1952, 1963 - synopsis).

