

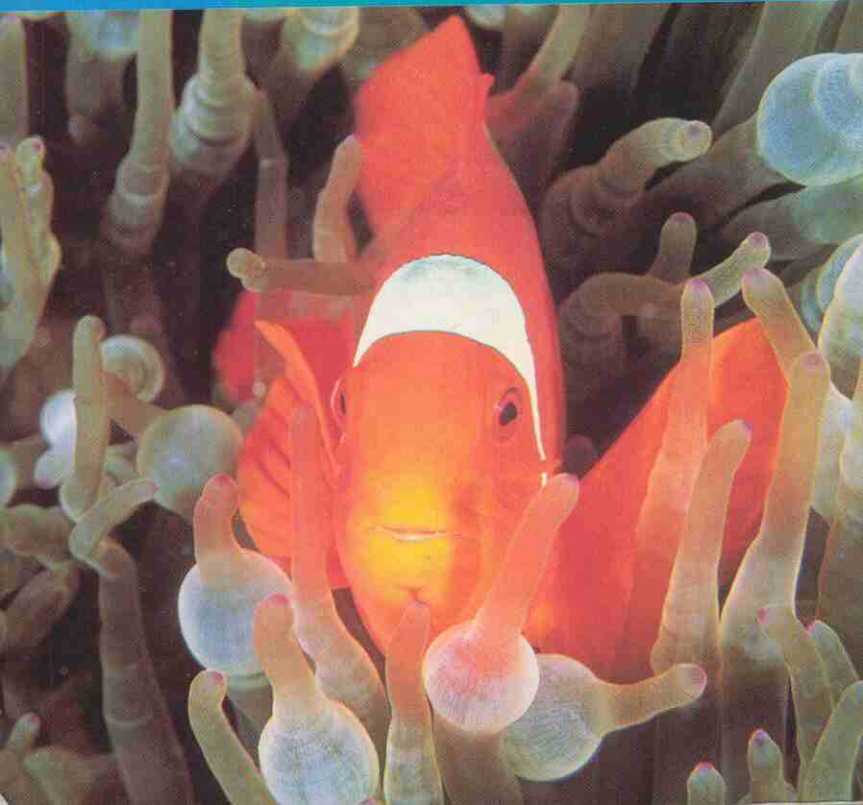
SIMON & SCHUSTER'S GUIDE TO

FRESHWATER AND MARINE AQUARIUM FISHES



**INCLUDING PLANTS, AMPHIBIA,
REPTILES & INVERTEBRATES**

WITH OVER 300 FULL-COLOR ILLUSTRATIONS



5 APONOGETON HENKELIANUS

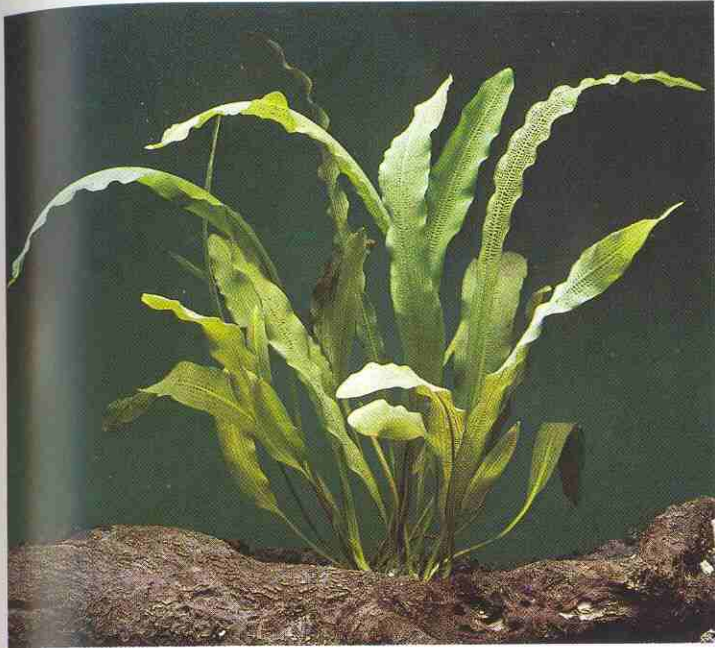
Family Aponogetonaceae.

Distribution Madagascar.

Description Similar in appearance and form to *Aponogeton fenestralis*. The oblong and variously sized leaves differ from those of *A. fenestralis* only in their color, which is brownish, while the stalks are reddish.

Propagation By division of the offshoots, rather more difficult by seed; when done by seed, water temperature should be 68–77 °F (20–25 °C).

Environment *Temperature*: Usually between 60 °F (16 °C) and 68 °F (20 °C), with possible extremes of 57 °F (14 °C) and 76 °F (24 °C). The water must be undisturbed and frequently renewed. *pH*: neutral or, at most, slightly acid. *Illumination*: normal, if possible diffuse. *Soil*: sandy, a mixture of coarse sand and a little mud.



6 APONOGETON ULVACEUS

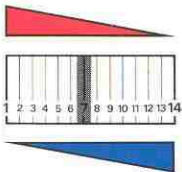
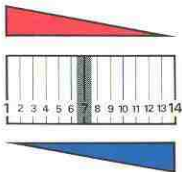
Family Aponogetonaceae.

Distribution Madagascar.

Description This is probably the *Aponogeton* species most suited to aquarium use; its leaves are approximately 10 in (25 cm) long with wavy, translucent pale green blades. In turbulent water *Aponogeton ulvaceus* may exhibit a certain variety of shapes, with longer and narrower or shorter and wider leaves, depending on the current.

Propagation By division of offshoots; propagation by seeding is more difficult and rarely succeeds.

Environment *Temperature*: 68–74 °F (20–23 °C) with frequent, if partial, renewal. *pH*: neutral. *Water hardness*: soft. *Illumination*: normal, diffuse if possible. *Soil*: sandy, a mixture of coarse sand and mud.





14 CRYPTOCORYNE spp.

Family Araceae. The name *Cryptocoryne* is derived from the Greek *kryptos* (hidden) and *koryne* (club), referring to the club-shaped arrangement of flowers on the stem enclosed in a sheath of leaves.

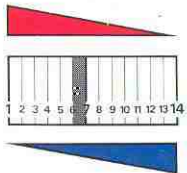
Distribution Tropical Asia.

Description Members of the genus *Cryptocoryne* are aquatic, perennial, stoloniferous plants (producing shoots and buds) with oblong or linear leaves sometimes chordal or oval. *Cryptocoryne beckettii* is a species that exists in several forms. Its leaves are 4 in (10 cm) or so long and $\frac{3}{4}$ in (2 cm) wide, with slightly wavy veins. One of its forms has reddish median and lateral edges.

Propagation By division of the rhizome (the underwater base of the stem).

Environment *Temperature*: 68–86 °F (20–30 °C), best around 77 °F (25 °C). *pH*: slightly acid. *Water hardness*: soft or very soft. *Illumination*: normal. *Soil*: sand may be sufficient, but one-third loam, one-third garden earth and one-third sand is recommended.

Note *Cryptocoryne* species are probably the best plants to use in warm aquaria.



15 CRYPTOCORYNE LINGUA

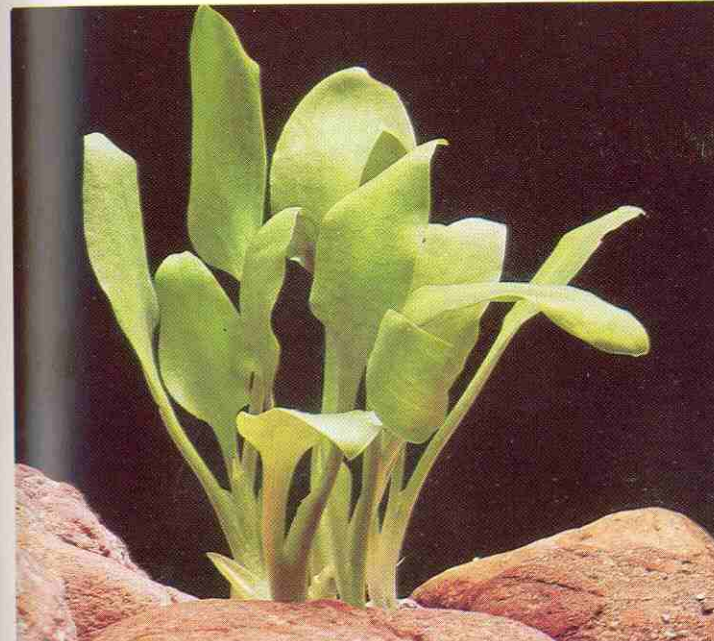
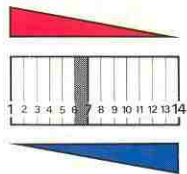
Family Araceae.

Distribution Borneo.

Description Beautiful small plant, at most 4 in (10 cm) high. The leaves, which resemble little spatulas, are oval, bright green and fleshy, with a round tip; the leaf base narrows into the stalk, which constitutes half to two-thirds of the length of the leaf.

Propagation Easy propagation by rhizome division. Note that aerial plants multiply more rapidly than submerged ones.

Environment *Temperature*: best around 77 °F (25 °C), but the plant will live well between 60 °F (16 °C) and 86 °F (30 °C). *pH*: slightly acid. *Water hardness*: very soft. *Illumination*: *C. lingua*, like all *Cryptocoryne* species, does not require too much light, and even shuns excessive light. *Soil*: the best soil would be composed of equal parts of sand, field earth and clay; however, the plant will grow in sand alone.



20 **WATER MOSS**
Fontinalis antipyretica

Family Fontinalaceae. *Fontinalis* is derived from the Latin *fons, fontis* (spring), referring to one of the preferred habitats of this moss; *antipyretica* is due to an old belief in its fever-reducing properties.

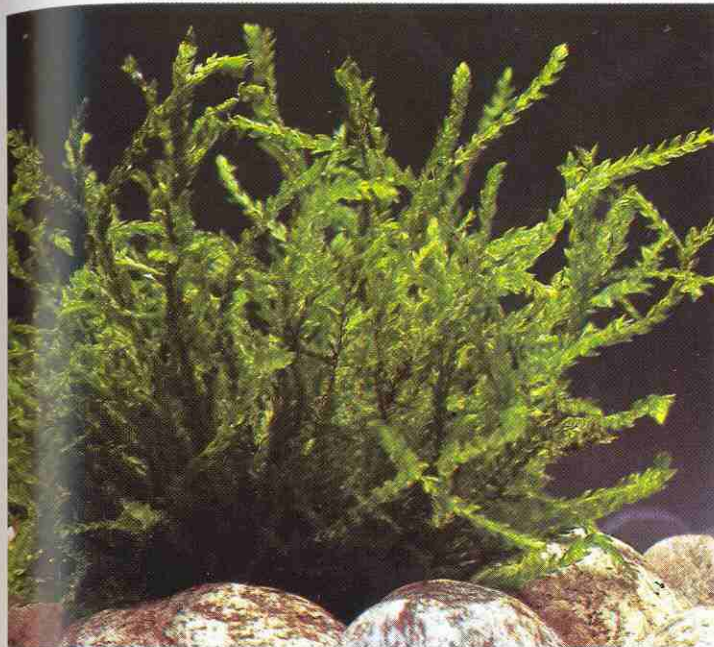
Distribution Northern hemisphere.

Description Typical of cold and usually running waters; this species forms tufts of leafy stems 12–20 in (30–50 cm) long, anchored to the bottom or to a rock or stone. These carry numerous oval or pointed dark green leaves arranged on opposite sides of the stem, at most $\frac{3}{8}$ in (1 cm) long, $\frac{1}{4}$ in (.5 cm) wide and with a marked ridge on the back.

Propagation Vegetative.

Environment Clean water. *Temperature*: 50–59 °F (10–15 °C). *pH*: neutral. *Water hardness*: medium. *Illumination*: good, but not excessive. Too much light leads to excessive growth of algae, which enshroud the moss. *Soil*: mixture of sand and peat.

Note *Fontinalis antipyretica* is suited only to cold aquaria. High temperatures cause rapid wilting.



21 **HYGROPHILA spp.**
Hygrophila spp.

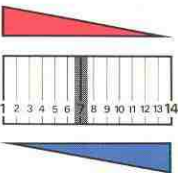
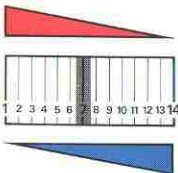
Family Acanthaceae. The generic name is derived from Greek words meaning "humidity-loving."

Distribution Tropical America, Asia.

Description This genus includes perennial plants both surface-living and submerged, with herbaceous or semiwoody stems. The leaves are arranged on opposite sides of the stem, oblong or lanceolate, often pointed, light green, slightly darker when growing in air. The genus contains some twenty species, a quarter of which are suitable for aquarium use.

Propagation By cuttings.

Environment *Temperature*: 59–77 °F (15–25 °C), but the extremes may vary by a few degrees. *pH*: neutral. *Water hardness*: medium. *Illumination*: normal to intense. *Soil*: sandy.



28 BANANA PLANT *Nymphoides aquatica*



Family Gentianaceae. *Nymphoides* means water lily-like, referring to the resemblance between these two plants.

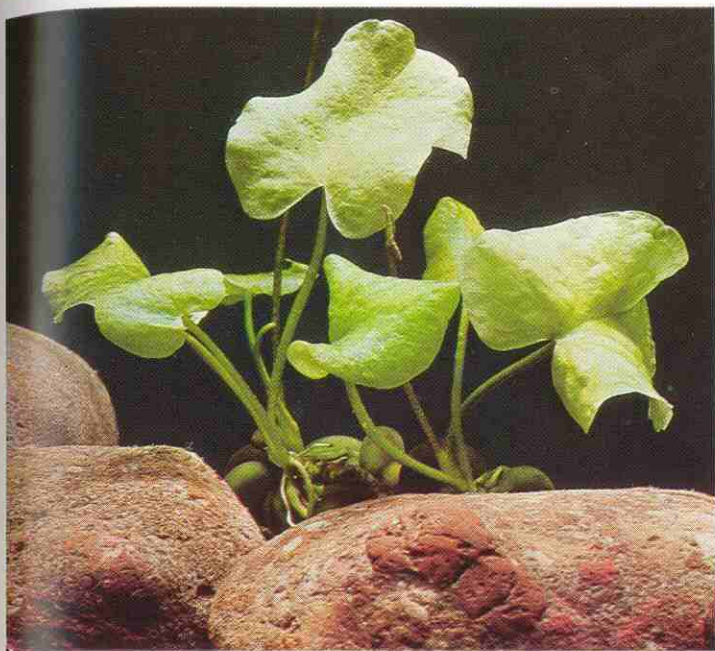
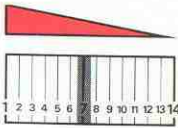
Distribution Atlantic coast of North America, particularly Florida.

Description Adult leaves varying from rounded to kidney-shaped, 3–4 in (8–10 cm) in diameter. Submerged leaves, light green with dark red netlike patterns; aerial leaves more intensely green, dark red on the reverse and heavily spotted. This plant is called the “banana plant” because the top part of the root is swollen and resembles a bunch of bananas. The plant will flower only if it is partly submerged. Its flowers are white and rather small.

Propagation By division of the shoots that grow on the leaf stalks. The shoots grow tufts of swollen young roots.

Environment *Temperature*: 50–77 °F (10–25 °C), best around 64–68 °F (18–20 °C). *pH*: neutral. *Water hardness*: medium. *Illumination*: bright, but not excessive. *Soil*: sandy.

Note This plant is suitable for temperate and warm aquaria.



29 POTAMOGETON DENSUS *Potamogeton densus*



Family Potamogetonaceae. The term is derived from two Greek words meaning “living near the river.”

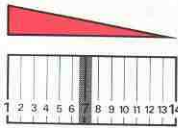
Distribution Europe, Asia, North Africa.

Description Perennial submerged plant with creeping rhizome; cylindrical stem; oval, lanceolate or nearly linear light green leaves, joined to the stem by a dilated base.

Propagation By cuttings. The tips are cut and embedded in the soil.

Environment *Temperature*: 50–59 °F (10–15 °C), but able to survive at lower temperatures; it has been a popular plant for cold aquaria. *pH*: neutral or slightly alkaline. *Water hardness*: medium. *Illumination*: intense. *Soil*: sand and mud.

Note *Potamogeton densus* is often used to oxygenate and purify the water of cold aquaria, where it grows well as long as the light level is sufficient. In general, species of the genus *Potamogeton* are not considered best for warm-water aquarium use.



38 **COOLIE LOACH**
Acanthopthalmus kuhlii

Family Cobitidae.

Distribution From the southern part of the Malayan peninsula to Sumatra, Java and Borneo.

Description *Shape*: eel-shaped, elongated, slightly compressed sides, very small fins. The dorsal fin starts behind the middle of the body, the anal fin well behind this. Eyes covered with transparent skin; a movable spine beneath them; four pairs of barbels; no lateral line. *Color*: fifteen to twenty dark brown to black vertical bars, the gaps between them salmon pink to yellowish. Underside light. *Size*: 3 in (8 cm). *Sexual differences*: unknown for nonbreeding fish; females often become monstrously fat before spawning.

Environment A bottom dweller which burrows into soft places. *Temperature*: 75–86 °F (24–30 °C). *pH*: slightly acid or neutral. *Water hardness*: soft water—below 10° general hardness. *Illumination*: subdued, at bottom of tank. *Substrate and furnishings*: a thick layer of soft sand, with additional cover in the form of stone cavities, flowerpots or coconut shells. Thick vegetation; some humus on the bottom.

Feeding Omnivorous.

Biology *Behavior*: very active at twilight and nighttime; often buried in the sand by day. *Reproduction*: in the wild, the fish spawn communally in very shallow water. *Social life*: little known. *Compatibility*: easily kept with other nonaggressive fishes.



39 **BLUE ACARA**
Aequidens pulcher

Family Cichlidae.

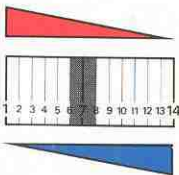
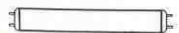
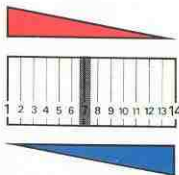
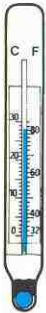
Distribution Trinidad, Panama, northern Venezuela, Colombia.

Description *Shape*: relatively deep body; compressed, particularly at the caudal peduncle. *Color*: at spawning time, takes on a magnificent iridescence, and six to eight gleaming greenish-gold horizontal lines of spots appear on the sides. *Size*: up to 6½ in (17 cm). Sexually mature from 3 in (7–8 cm). *Sexual differences*: difficult to distinguish: The males have elongated tips to dorsal and anal fins, which sometimes extend farther than the caudal fin itself.

Environment *Temperature*: 72–79 °F (22–26 °C); frequently replace about one-third of the water with fresh water. *pH and water hardness*: no special requirements. *Illumination, substrate, furnishings*: good lighting; deep bottom matter with thickly planted vegetation in places, stones and roots as hiding places, also plenty of free swimming space.

Feeding Many types of live food.

Biology *Behavior*: A very peaceful cichlid which causes no damage to plants. *Reproduction*: very easy. An open breeder which spawns many times a year; in other respects like other cichlids. *Social life*: territorial, but peaceable. *Compatibility*: good with other cichlids.



40 **LONG-FINNED CHARACIN**
Alestes longipinnis

Family Characidae.

Distribution Tropical West Africa, from Sierra Leone to Zaire.

Description *Shape*: elongated body, very compressed sides, dorsal fin approximately in the middle of the body, adipose fin present; very large eyes. *Color*: back olive green to yellow, sides muddy yellow with a beautiful silver sheen. Underside silvery white. *Size*: up to 6½ in (16 cm). *Sexual differences*: male high-backed, with dorsal-fin rays extending as far as the caudal fin. The female has a crooked line along the back and a similar one along the belly; the dorsal fin does not have extended rays.

Environment A schooling fish occupying the middle water levels. *Temperature*: 73–77 °F (23–25 °C). *pH*: value about 6.5. *Water hardness*: up to 10° general hardness. *Illumination*: strong lighting; some sun. *Substrate*: dark bottom, some floating plants. *Furnishings*: a large tank with about half its area planted.

Feeding Live food, plenty of insects and vegetation. **Biology** *Behavior*: lively, peaceful schooling fish. *Reproduction*: prepare a tank 3 ft (1 m) deep with water of pH 6–7 and 6–7° general hardness and some nylon netting held down with stones as a support for the eggs. The young fish eat rotifers. *Social life and compatibility*: good to keep with other African characins.



41 **BLIND CAVE-FISH**
Astyanax mexicanus

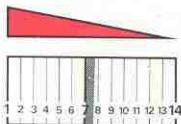
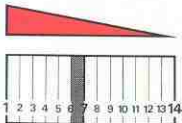
Family Characidae. Cave-dwelling variety once considered to be a separate species, *Anoptichthys jordani*.

Distribution Cave form in underground waters of Mexico; surface form widespread from Texas to Panama.

Description *Shape*: small, elongated, fairly flat-sided, with a profile curved equally above and below. Adipose fin present; anal fin with long base. *Color*: surface form: a silvery to light brassy sheen on sides, back olive. Cave form: monotone pink tint with a silver sheen; eyes minute, completely buried beneath skin. *Size*: up to 3½ in (9 cm). *Sexual differences*: females become thickset.

Environment *Temperature*: preferred temperature 64–75 °F (18–24 °C). The subterranean form is said to tolerate temperature range of 63–89 °F (17–29 °C). *pH*: 7.5. *Water hardness*: hard water is preferable. *Illumination*: full lighting for the surface form, subdued lighting for the cave one. *Substrate*: deep sandy bottom; the cave form can be given large caves made from stones. *Furnishings*: not too thick; shadow-loving plants.

Feeding Omnivorous; a voracious eater. **Biology** *Behavior*: lively, peaceable schooling fish. *Reproduction*: the surface and cave forms can be crossed with each other. *Social life and compatibility*: specimens of the surface form are good for a communal tank; the cave form are best kept in a species tank.



42 **STRIPED ANOSTOMUS**
Anostomus anostomus

Family Anostomidae.

Distribution Amazon and Orinoco river systems; rivers of the Guyanas.

Description *Shape*: a long, slightly flat-sided fish with a high-set mouth. *Color*: mature fish have three horizontal stripes (brown to brownish black), with a dark green sheen. *Size*: up to 7 in (18 cm). *Sexual differences*: minimal.

Environment *Temperature*: 75–80 °F (24–27 °C). *pH and water hardness*: medium soft, neutral to slightly acid water. *Illumination, substrate, furnishings*: a large tank with large, sparsely planted vegetation and hiding places provided by stones, pieces of bog wood and flowerpots; dark bottom and medium lighting.

Feeding Omnivorous, feeding on both animal and vegetable matter (bryozoans and algae); they will take soft and decaying leaves, also swimming and crawling aquatic invertebrates.

Biology *Behavior*: a schooling fish, which spends most of its time "on its head" but streaks away horizontally when disturbed. *Reproduction*: breeding has been carried out successfully a number of times, but little reliable information is available. *Social life and compatibility*: best mixed only with members of its own species; generally peaceable, but often given to chasing other fishes.



43 **LYRETAILS; APHYOSEMIONS**
Aphyosemion spp.

Family Cyprinodontidae.

Distribution Tropical West Africa from Nigeria to Zaire, chiefly in slowly flowing or still waters.

Description *Color*: very varied. Species in photograph is possibly *A. christyi*. *Size*: from 1½ to 5 in (3 to 13 cm). *Sexual differences*: the females of most species are far less striking and colorful than the males.

Environment Most were originally inhabitants of the tropical forest; only *A. bualanum* is found exclusively in the savanna. *Temperature*: 64–72 °F (18–22 °C). *pH*: 6.5 is usually sufficient, but some species require pH down to 4.5. *Water hardness*: soft to medium-hard water; many species must have soft water. *Illumination*: subdued lighting. *Substrate*: peat, preferably sterilized. *Furnishings*: preferably feathery-leaved plants.

Feeding Generally eat insects in the wild, and these will be needed for their well-being in the tank; the female's capacity to produce eggs often depends on this.

Biology *Behavior*: a surface fish swimming about in schools just under the surface of their native shallow pools in search of food. *Reproduction*: according to species, they lay eggs on the bottom or on plants (the perennial varieties only). *Social life*: in large groups of two females to one male, according to species. *Compatibility*: unsuitable for a community tank.



44 AGASSIZ'S DWARF CICHLID

Apistogramma agassizi

Family Cichlidae.

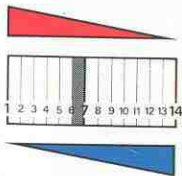
Distribution Amazon basin.

Description *Shape*: typical South American dwarf cichlid: elongated body, compressed sides. Very long dorsal fin. *Color*: back brownish yellow to greenish blue; orange sides, shading to greenish blue at the rear. Gill covers have brilliant blue lines and vermiculations. Numerous sparkling greenish-blue spots on back and sides. A brownish-black line extends from the mouth to the base of the caudal fin, without touching the eye. A similar line extends from the mouth steeply downward to the lower edge of the gill cover. The caudal fin is heart-shaped with color graduations similar to those of a gas flame—grayish green on the outside, then smoky gray, then a luminous ivory-colored or blue-green zone with a luminous orange-red center. *Size*: 3 in (7.5–8 cm); males often larger. *Sexual differences*: males larger, with pointed, elongated dorsal, caudal and anal fins.

Environment Similar to *A. ramirezi*, but less particular. *Temperature*: 66–77 °F (19–20 °C). *pH*: slightly acid. *Water hardness*: soft water. *Substrate and furnishings*: as for *A. ramirezi*.

Feeding Omnivorous, but prefers live food.

Biology *Behavior*: peaceable, territorial dwarf cichlid, similar to *A. ramirezi*. *Reproduction*: breeds in cavities; see *A. ramirezi*. *Social life*: similar to *A. ramirezi*.



45 RAMIREZ' DWARF CICHLID

Apistogramma ramirezi

Family Cichlidae.

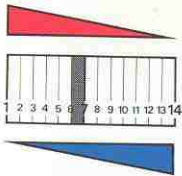
Distribution Venezuela and Bolivia.

Description *Shape*: typical dwarf cichlid. Characteristic deep, flat body and great compression. The dorsal fin is high, the first three spines black and the second, in males, elongated. *Color*: base color in fine specimens pale purplish red. A vertical bar through the eye; a black spot under the spiny part of the dorsal fin, surrounded by spots of blue (or some other metallic color). *Size*: 2 3/4 in (7 cm). *Sexual differences*: male more brightly colored, with elongated second ray on dorsal fin.

Environment *Temperature*: 73–77 °F (23–25 °C); 81–82 °F (27–28 °C) for breeding. *pH*: slightly acid; filter through peat. *Water hardness*: soft water. *Illumination, substrate, furnishings*: ample vegetation (three-fourths of tank area), medium lighting, numerous hiding places.

Feeding Preferably not too coarse or large live food.

Biology *Behavior*: territorial and living in pairs. *Reproduction*: not very easy. Breeds in cavities. A good spawning produces 150–200 eggs, which are laid on stones or in hollows in the bottom. Both partners look after the eggs; the young hatch out after 48 hours and swim free after 5–6 days. The shoal is cared for largely by the male. *Social life*: as with nearly all cichlids, the shoal of young fish is broken up by the formation of pairs.



46 **BLUE STARCH**
Aplocheilichthys panchax

Family Cyprinodontidae.

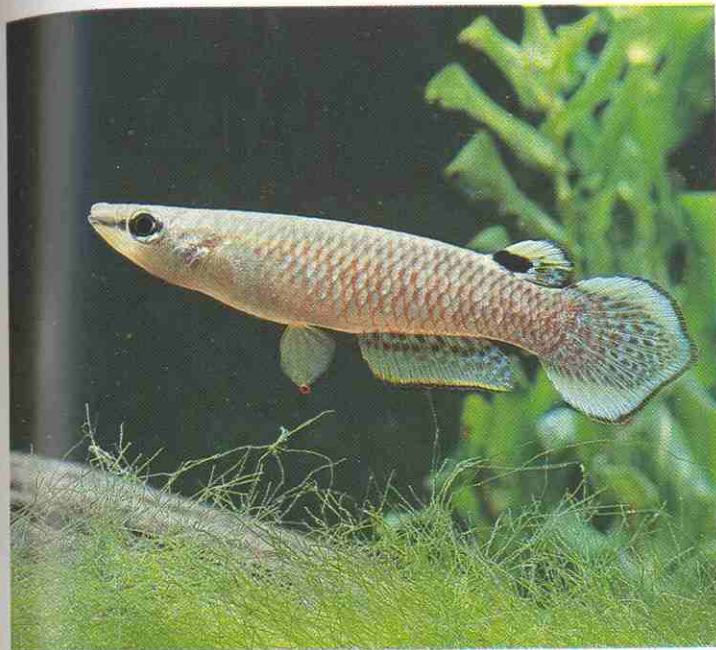
Distribution India, Indochina, Sri Lanka, Malaysia and Indonesia; several geographical forms.

Description *Shape*: flattened head and back, dorsal fin placed well along the back; smoothly rounded ventrally. Anal fin long-based and large; very long, large pectoral fins; pelvic fins small and somewhat elongated. The caudal fin is shaped like a spade. *Color*: generally a grayish yellow, with the back darker. Each scale has a bluish center with a dark border around the edge. *Size*: up to 3 in (8 cm). *Sexual differences*: females much paler, fins more orange.

Environment Above all a surface creature. *Temperature*: 68–77 °F (20–25 °C). *pH*: neutral. *Water hardness*: soft water. *Illumination*: intense lighting, shaded by floating plants. *Substrate*: dark. *Furnishings*: Lots of plants. Cover the top of the tank, as the fish are excellent jumpers.

Feeding All sorts of live food, also a little dried food.

Biology *Behavior*: a relatively peaceable schooling fish which lives in the uppermost water levels. *Reproduction*: very easy. Large eggs, $\frac{3}{32}$ in (1.6–1.8 mm) in diameter; the young fish quite large. *Social life and compatibility*: keeps in schools; good to keep with fishes of the middle and lower water levels, as long as these are as big or bigger.



47 **OSCAR or VELVET CICHLID**
Astronotus ocellatus

Family Cichlidae.

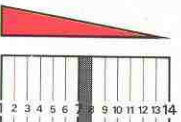
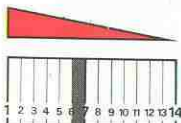
Distribution Amazon, Paraná, Rio Paraguay, Rio Negro.

Description *Shape*: fairly deep body, an elongated oval shape, moderately compressed. Upper and lower profiles similarly curved. *Color*: highly variable according to size, age, sex and above all mood. Most have brilliant, irregular black-edged stripes on an olive-green to chocolate-brown ground. There is a round, red-rimmed eyelike patch on the upper part of the caudal-fin base. *Size*: up to 1 ft 1 in (33 cm). *Sexual differences*: not apparent, examine sexual genital organs of spawning fish.

Environment *Temperature*: 68–77 °F (20–25 °C). *pH and water hardness*: no special requirements; dechlorinated water, a proportion of it changed regularly but not too suddenly. *Substrate and furnishings*: a large cichlid tank with stones and roots but without rooted plants. Good aeration and filtration. Deep gravel bottom.

Feeding Omnivorous.

Biology *Behavior*: typical large cichlid, but fairly peaceable. *Reproduction*: already sexually mature when 4 to 4½ in (10–12 cm) long. Eggs are whitish at first, becoming transparent after 24 hours. Forms long-lasting pairs. *Social life and compatibility*: they can be kept together with *Cichlasoma meeki*.



48 **BLACK RUBY BARB**
Barbus nigrofasciatus

Family Cyprinidae.

Distribution Southern Sri Lanka.

Description *Shape*: deep-bodied species with a pointed head; no barbels. *Color*: normally yellowish gray. In both sexes the head is a fine purple red. *Size*: up to 2¼ in (6 cm). *Sexual differences*: in the female, the basal part of all the vertical fins is black; in the male, the whole dorsal fin is a deep black, the anal fin blackish red, the pelvic fins reddish. At spawning time the male changes color as represented in the photograph.

Environment Quietly flowing, flat stretches of water; plenty of room needed in an aquarium. *Temperature*: 68–82 °F (20–28 °C); for breeding 77–82 °F (25–28 °C). *pH*: around 7. *Water hardness*: soft water; at best use old water, replacing part of it with fresh water regularly. *Illumination and substrate*: plenty of light; a shallow covering of floating plants and ample vegetation (half to two-thirds of tank area); a layer of humus should be left on the bottom.

Feeding Omnivorous, with a healthy appetite.

Biology *Behavior*: a lively fish, constantly active, found at any depth. *Reproduction*: breeding is very simple and productive; but the fish are egg-eaters. *Compatibility*: good for keeping with other barbs and similar fishes.



49 **TIGER BARB**
Barbus pentazona hexazona

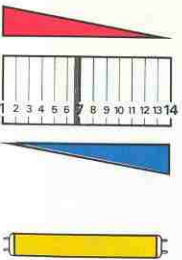
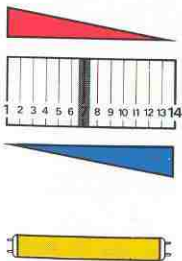
Family Cyprinidae.

Distribution Central Sumatra.

Description *Shape*: typical barb shape but somewhat longer. *Color*: silvery-golden body. The wide vertical black bands recall the related *Barbus tetrazona* (see No. 51). *Size*: 2¼ in (5.5 cm). *Sexual differences*: the female is much fuller in the belly and paler in color. The male is slimmer; its splendid coloring makes it one of the most beautiful barbs. *Temperature*: 68–77 °F (20–25 °C); for breeding 81–86 °F (27–30 °C). *pH*: 6.5–7. *Illumination, substrate, furnishings*: good lighting; a deep layer of sand on the bottom with a little humus and ample vegetation (two-thirds of tank space), the rest free swimming space.

Feeding Omnivorous; needs large quantities of food.

Biology *Behavior*: a lively, peaceable schooling fish. *Reproduction*: not simple; needs high temperatures. *Social life*: forms loose schools. *Compatibility*: easily kept with other nonaggressive fishes of similar size.



50 **CHINESE BARB**
Barbus semifasciatus

Family Cyprinidae.

Distribution Southeast China.

Description *Shape*: medium-long barb. Adult specimens have highly arched backs. A short pair of barbels on the upper jaw at the corners of the mouth. *Color*: back light to reddish brown. Sides metallic green or yellow-green, with brassy or golden sheen below. Whitish belly, turning orange-red in males at mating time. Numerous color variations. *Size*: 2½–3 in (7–8 cm). *Sexual differences*: females dully colored; become very bulky.

Environment Inhabit running water. *Temperature*: 68–75 °F (20–24 °C); 79 °F (26 °C) for breeding. *pH and water hardness*: of little importance; tap water will usually do. *Illumination and furnishings*: good lighting and oxygenation. Half to two-thirds thick vegetation; the rest for swimming.

Feeding Omnivorous.

Biology *Behavior*: a lively schooling fish, tending to frequent the upper water levels. *Reproduction*: mating is fairly violent. Eggs are medium-sized, yellowish; they hatch out after 25 hours. Very prolific. *Compatibility*: good to keep with other peaceable fishes.



51 **SUMATRA BARB**
Barbus tetrazona

Family Cyprinidae.

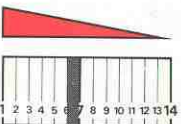
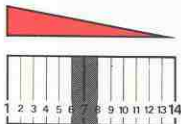
Distribution Sumatra, Borneo, Thailand, Cambodia.

Description *Shape*: deep-bodied "banded barb." Blunt snout. *Color*: brownish to olive on top; sides have a pale reddish sheen, edges of scales a rich gleaming gold. Four black vertical bars, the first passing through the eye. *Size*: up to 2¾ in (7 cm). Largest of the "banded barbs." *Sexual differences*: female recognizable only by its larger belly.

Environment *Temperature*: 68–77 °F (20–25 °C). *pH and water hardness*: old water with occasional replacement of part by fresh water; soft, slightly acid to neutral. *Illumination*: ample but not excessively strong lighting. *Substrate*: soft, deep bottom layer with some humus. *Furnishings*: plant edges and background of aquarium. Do not use feathery-leaved plants; the fish will gnaw them to pieces.

Feeding Omnivorous: live and dried food and additional plant food.

Biology *Behavior*: a lively, peaceable and active schooling fish; an active swimmer. *Reproduction*: not too difficult. *Social life*: single fish become very aggressive. *Compatibility*: good to mix with other fishes, but not with peaceable long-finned fishes, since this barb will snap at their fins.



52 CHERRY BARB

Barbus titteya

Family Cyprinidae.

Distribution Sri Lanka.

Description *Shape*: elongated, rather compressed body. One pair of barbels. *Color*: fawn-colored on top with a greenish sheen; sides and belly a gleaming silver, often reddish. A horizontal stripe (brownish black to deep bluish black) extends from the tip of the snout through the eye to the base of the caudal fin. Above it is an iridescent, metallic line, gold at the front turning to blue or sea green toward the tail. *Size*: up to 2 in (5 cm). *Sexual differences*: males a sumptuous red at breeding time. Females darker, with yellowish fins.

Environment *Temperature*: 75–79 °F (24–26 °C). *pH*: around 7. *Water hardness*: soft, old water. *Illumination*: subdued lighting. *Substrate*: dark bottom material, medium layer of sand. *Furnishings*: abundant vegetation, about two-thirds to three-quarters of the tank.

Feeding Omnivorous.

Biology *Behavior*: likes shade and will withdraw under cover of plants. *Reproduction*: breeding not too difficult. At 77–79 °F (25–26 °C) the eggs hatch after 24 hours. 150–250 young would be an excellent spawning. *Social life*: the younger males are often aggressive. *Compatibility*: good for keeping with *Rasbora* and similar peaceable fishes.



53 FIGHTING FISH

Betta splendens

Family Anabantidae.

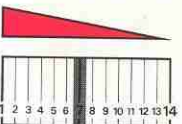
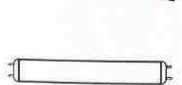
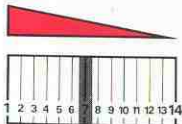
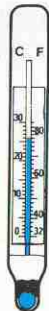
Distribution Malayan peninsula and Thailand.

Description *Shape*: slender-bodied with compressed sides. Long, broad anal fin; dorsal fin long and high. Rounded caudal fin. Pelvic fins narrow, pointed and elongated. *Color*: many beautiful color variations. *Size*: up to 2½ in (6 cm). *Sexual differences*: female much plainer than the male.

Environment *Temperature*: 77–86 °F (25–30 °C), the higher temperature only for breeding. *pH and water hardness*: not significant; it is best to use not-too-hard water. *Illumination, substrate, furnishings*: moderate or good lighting. Medium to thick vegetation, not too high a water level; soft bottom matter with a thin layer of humus; a sparse layer of floating plants and a well-covered tank to prevent the fish from jumping out.

Feeding Chiefly live, but also dried food.

Biology *Behavior*: the males are extraordinarily aggressive and indulge in vicious battles. *Reproduction*: builds bubble nests among water plants, the large air bubbles supporting the eggs. Remove the female after spawning, as the brood is looked after by the male. The eggs hatch after 24–30 hours; remove the male as well after about three days. *Compatibility*: do not keep males of the same species together. Best in a species tank.



54 **LOACH**
Botia macracantha

Family Cobitidae.

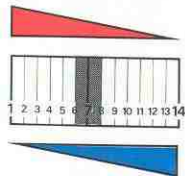
Distribution Sumatra and Borneo.

Description *Shape*: the body is thickset. The sides are somewhat compressed, the belly profile almost straight. The dorsal fin arises in front of the ventral fin; four pairs of barbels. *Color*: basic color a bright orange-red, marked with three wedge-shaped velvety-black vertical bars. Typically, all fins at least partly blood red. *Size*: up to 11½ in (30 cm). *Sexual differences*: unknown.

Environment In flowing and still waters; a bottom fish. *Temperature*: 75–86 °F (24–30 °C). *pH and water hardness*: no special requirements. *Illumination, substrate, furnishings*: subdued lighting. Deep, soft sandy bottom, with two-thirds to three-quarters of tank planted, the rest as swimming space. Provide plenty of cover. Regular addition of fresh water necessary.

Feeding Omnivorous.

Biology *Behavior*: a lively schooling fish, although older specimens in particular are often solitary; clicking noises are made as a territorial signal. *Reproduction*: unknown. *Compatibility*: easily kept with peaceable schooling fishes.



55 **ZEBRA DANIO**
Brachydanio rerio

Family Cyprinidae.

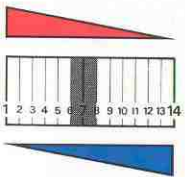
Distribution Northeastern India.

Description *Shape*: very slim, small, very compressed sides. Two pairs of barbels. *Color*: back brownish olive, belly yellowish white, the sides a luminous blue and marked with four splendid, gleaming gold horizontal lines, reaching from the gill cover to the caudal fin. Blue-gold markings also on the anal fin; dorsal fin yellow at base, then blue with a white tip. Colorless pectoral and pelvic fins. *Size*: 2–2½ in (5–6 cm). *Sexual differences*: female more silvery and growing larger.

Environment Surface swimmer, in shallow running water. Needs large, shallow, long tank, preferably exposed to the sun. *Temperature*: 64–75 °F (18–24 °C); 75 °F (24 °C) for breeding. Keep replacing part of the water with fresh water. *pH and water hardness*: no special requirements. *Illumination, substrate, furnishings*: good lighting. Ample vegetation (half to two-thirds of tank area), plenty of free swimming space, good aeration. Gravelly bottom, especially for spawning tank.

Feeding Omnivorous and easily satisfied.

Biology *Behavior*: lively, nonaggressive. *Reproduction*: very easy and prolific. Use a breeding tank with a gravelly bottom. *Compatibility*: good for mixing with other members of the genus *Brachydanio*.



56 **BUMBLEBEE GOBY**
Brachygnathus xanthurus

Family Gobiidae.

Distribution Rivers and estuaries in Sumatra, Java and Borneo.

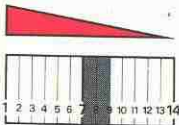
Description *Shape*: thickset, torpedo-shaped; rounded in cross section at the front, slightly compressed toward the tail. *Color*: distinguished by three vertical dark-brown bars. *Size*: up to 1 3/4 in (4.5 cm). *Sexual differences*: mature females are bulkier.

Environment *Temperature*: 75–86 °F (24–30 °C). *pH*: high; acid and normal fresh water lead to illness.

Water hardness: the addition of 1 to 2 spoonfuls of sea salt or cooking salt to every 2 gallons (10 liters) of water is highly recommended. (Remember the plants.) *Illumination and substrate*: lighting should be softened by floating plants or large single plants attached to the bottom. Provide a dark bottom.

Feeding Small live foods only.

Biology *Behavior*: generally a bottom fish, it is also given to clinging to plants by means of its pelvic fins, either in the normal position or upside down. *Reproduction*: lays 100–150 large eggs in protected positions. The male guards the eggs, which hatch in 2 1/2 to 5 days. The young feed on rotifers, and later on brine shrimp nauplii. *Social life and compatibility*: strong territorial sense; fishes often live in one place, which they leave only to feed or when disturbed. Difficult to keep with other fishes.



57 **BANJO CATFISH**
Bunocephalus spp.

Family Aspredinidae.

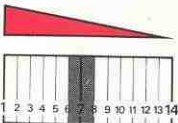
Distribution Tropical South America east of the Andes from Venezuela to Argentina.

Description *Shape*: low, very flat, something like a dragon kite in shape. Very long, compressed caudal peduncle. Caudal fin square-cut. Spine of pectoral fins thickened and barbed. A pair of barbels on the upper jaw, very long and reaching the pectoral fins. Two pairs of short barbels on the lower jaw. Rows of outgrowths of the skin along the sides of the body. *Color*: relatively uniform; according to mood, ranges from dark to light brown with dark spots and bands, also small light spots. Lighter underside, often with spots. *Size*: 4 1/2–6 in (12–15 cm), sometimes more. *Sexual differences*: unknown.

Environment *Temperature*: 68–77 °F (20–25 °C). *pH and water hardness*: no special requirements. *Substrate*: open surfaces of medium-grade sand.

Feeding Omnivorous.

Biology *Behavior*: during the day burrows in the sand. Becomes active at dusk. Swims mostly on the water-jet principle, ejecting water with great force through the gill openings. *Reproduction*: digs hollows for spawning and lays very large numbers of eggs. *Social life*: unknown. *Compatibility*: can be kept with all schooling fishes.



60 **MARBLED HATCHETFISH**
Carnegiella strigata

Family Gasteropelecidae.

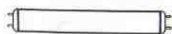
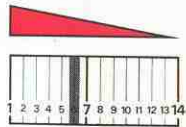
Distribution Amazon basin, the Guyanas.

Description *Shape*: unmistakable shape; straight, horizontal back. From under the slightly high-set mouth, the "keel" runs in a semicircular curve. From the anal fin the underside continues almost in a straight line up to the caudal peduncle. Most notable are the very long, winglike pectoral fins. *Color*: basic color yellowish or greenish, often pale purple with a marked silvery sheen in places. *Size*: up to 1½ in (4.5 cm). *Sexual differences*: unrecognizable, except that the eggs are visible in the female.

Environment Said to originate in woodland streams. *Temperature*: 77–86 °F (25–30 °C). *pH*: 5.5–6.5. *Water hardness*: soft water. *Illumination, substrate, furnishings*: subdued lighting; surface should be covered with floating plants; dark bottom matter and fairly thick vegetation (up to half of bottom area of tank).

Feeding Live food, small flies; occasionally a little dried food.

Biology *Behavior*: schooling fish, always resting near the surface of the water, also able to leap distances of 3–5 yds (3–5 m). *Reproduction*: no reliable reports are available. *Social life*: a peaceable schooling fish. *Compatibility*: keep with fishes that occupy the lower levels of the water.



61 **INDIAN GLASSFISH; GLASS PERCH**
Chanda ranga

Family Centropomidae.

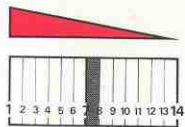
Distribution India, Burma, Thailand.

Description *Shape*: rhomboid body shape, deep profile, flattish sides; large eyes; two separate dorsal fins set very close together, the second rounded. The spine and swim bladder can be recognized through the muscles, together with the gut, pigmented with particles of guanine. *Sexual differences*: the mature male is much more brightly colored, and the fins bigger. The male's swim bladder is pointed at the rear; the female's is rounded.

Environment All types of water, even brackish. *Temperature*: 64–77 °F (18–25 °C). *pH*: 7–8. *Water hardness and density*: medium to extremely hard water. The fish's condition will be enhanced by a small addition of salt (preferably sea salt), 3–6 teaspoons to 2 gallons (10 liters) of water. *Substrate and furnishings*: ample vegetation, dark bottom material.

Feeding Only small, well-chopped-up live food will be taken. Plenty of small crabs and enchytraeids.

Biology *Behavior*: strictly territorial. *Reproduction*: breeding is relatively simple. One pair of fish can produce about 200 young. They should be fed on rotifers and *Artemia nauplii* three times a day. *Compatibility*: unsuitable company for lively schooling fishes.



62 SNAKEHEADS *Channa* spp.

Family Channidae.

Distribution Many Asiatic species from eastern Afghanistan to Southeast Asia; others from the White Nile to West Africa.

Description *Shape*: large, broad head with wide extendable mouth, anterior nostrils elongated into tubes. The caudal peduncle slightly flattened. The pelvic fins are absent in certain species. Lateral line present. *Size*: from 8 in (20 cm) to over 3 ft. $3\frac{1}{2}$ in (1 m), according to species. *Sexual differences*: in certain species the females become very swollen when ripe.

Environment mostly warm waters, rich in vegetation. *Temperature*: 75–82 °F (24–28 °C). *pH and water hardness*: no special requirements. *Illumination and furnishings*: subdued lighting; thick vegetation and fairly robust plants. Plenty of cavities and plant cover.

Feeding Eat only fish.

Biology *Behavior*: young fish are in almost constant motion, always on the look-out for prey. They possess a supplementary breathing organ, which is capable of absorbing atmospheric air. Excellent jumpers, so cover the tank carefully. *Reproduction*: the eggs are cared for by the male. *Social life*: the young fish form loose schools, then tend toward cannibalism. Finally they are strictly territorial. *Compatibility*: to be kept only with fishes larger than they are.



63 CARDINAL TETRA *Cheirodon axelrodi*

Family Characidae.

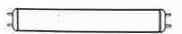
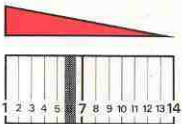
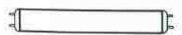
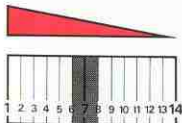
Distribution Tributaries of the Rio Negro and the Orinoco.

Description *Shape*: long and thin. *Color*: brilliant red lateral stripe begins at the tip of the snout and reaches to the base of the tail fin, extending over the belly and throat. Luminous green lateral stripe. Back reddish brown, belly silvery. *Size*: $1\frac{1}{2}$ in (4 cm). *Sexual differences*: the female is a heavier fish, with a fuller belly.

Environment *Temperature*: 73–75 °F (23–24 °C); 79–82 °F (26–28 °C) for breeding. *pH*: 5.5–6.5. *Illumination, substrate, furnishings*: medium lighting with plenty of space for free swimming; background of alternate light and dark water plants; black tank bottom.

Feeding Omnivorous; small live food, especially fruit flies (*Drosophila*), necessary when conditioning for breeding.

Biology *Behavior*: a lively, active, sociable fish from the "black-water region." *Reproduction*: difficult in captivity. The adult fish should be removed after the eggs have been laid. Soft, slightly acid water is best for breeding. *Social life and compatibility*: lives peaceably in schools and can be readily mixed with other species of similar habits.



64 **PEACOCK CICHLID**
Cichla ocellaris

Family Cichlidae.

Distribution Widely distributed over the entire tropical region of South America, chiefly in still waters.

Description *Shape*: relatively elongated for a cichlid. Very compressed; typical shape for a predator. Dorsal fin notched between spiny and rayed portions. *Color*: juveniles gray-green; mature fish silvery on the sides, leaf green on the back. Young specimens usually have a lengthwise stripe; after a middle phase marked by vertical bars, mature fish show none of these markings. On the upper part of the caudal-fin base is a solid black patch edged with gold. *Size*: up to 2 ft (60 cm). *Sexual differences*: unknown.

Environment *Temperature*: over 68 °F (20 °C). *pH and water hardness*: no special requirements. *Illumination and furnishings*: can be kept in well-planted tank for some time, but needs a great deal of oxygen. Does not dig in the substrate. Medium lighting.

Feeding Exclusively a predator.

Biology *Behavior*: only young fish can adapt to small private aquaria; mature specimens are only for large public aquaria. *Reproduction*: Unknown. *Compatibility*: should be kept only with fishes of the same size.



65 **JACK DEMPSEY**
Cichlasoma octofasciatum

Family Cichlidae.

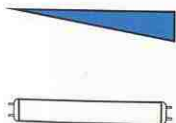
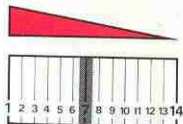
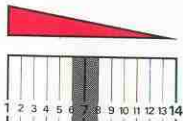
Distribution Central Amazon basin, Rio Negro.

Description *Shape*: typical cichlid shape, perchlike with relatively straight belly profile, large dorsal and anal fins. *Color*: basic color gray-brown to brilliant red-brown, clearest on the back. Seven or eight clearly marked vertical bars, disappearing completely in old age. A black lateral stripe begins on the gill cover, ending in a black patch edged with yellow in the middle of the body. *Size*: up to 7 in (18 cm); sexually mature at 3–4 in (8–10 cm). *Sexual differences*: female paler, the male a brilliant deep blue at spawning time. Female's dorsal fin is rounded at the tip, male's extended into a point.

Environment *Temperature*: 72–75 °F (22–24 °C) for normal upkeep; 77–82 °F (25–28 °C) for breeding. *pH and water hardness*: medium values. *Illumination, substrate, furnishings*: medium lighting. Large, un-planted tank; coarse sand or fine gravel with stones and coconut shells, etc., on the bottom.

Feeding Plenty of coarse live food, little dried food.

Biology *Behavior*: territorial, forming schools only when young. *Reproduction*: open spawners; form strongly united pairs. *Social life and compatibility*: highly aggressive and excitable, especially during the spawning period. Must be kept in a species tank.



66 FIRE-MOUTH CICHLID
Cichlasoma meeki

Family Cichlidae.

Distribution Guatemala and Yucatán (Mexico).

Description *Shape*: typical cichlid shape with large head. Upper profile much more arched than the lower one. *Color*: basic color a bluish gray with purple sheen. The back is darker, the belly a yellowish olive, the throat and lower jaw a magnificent brick red. All scales, especially on the sides of the body, have a red stripe, so that the body has a netlike appearance. A black line extends from the top edge of the gill cover to the tail base, often divided into individual spots. There is a large, round gray-edged patch in the middle of the body. *Size*: up to 6 in (15 cm); sexually mature from approximately 3 in (8 cm). *Sexual differences*: female has duller coloring, and the spines of the anal and dorsal fins are less pronounced.

Environment Even in springs and underground waters. *Temperature*: 68–73 °F (20–23 °C); 75–79 °F (24–26 °C) for breeding. *pH and water hardness*: not important; middle values the best. *Furnishings*: can be kept easily in well-planted tanks.

Feeding Live food, plus a small amount of plant food. **Biology** *Behavior*: for the most part relatively peaceable. *Reproduction*: forms stable pairs. *Social life and compatibility*: territorial; should be kept only with other cichlids.



67 BANDED CICHLID
Cichlasoma severum

Family Cichlidae.

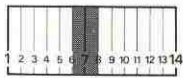
Distribution Northern Amazon basin and the Guianas. Naturalized in southern Nevada (U.S.A.).

Description *Shape*: very deep body, almost oval; compressed profile. *Color*: very variable according to provenance, age and mood. Ground color ranges from brassy yellow to dark brown, the belly always lighter; head and nape often greenish, with reddish-brown or greenish spots and small stripes. *Size*: up to 8 in (20 cm). *Sexual differences*: males already recognizable at 2 in (5 cm) by bright red-brown flecks on the head.

Environment *Temperature*: 72–81 °F (22–27 °C). *pH and water hardness*: no special requirements. *Furnishings*: during mating period keep in species tank, without vegetation.

Feeding Omnivorous; give plenty of large live food (earthworms, fish), but dried food also.

Biology *Behavior*: territorial and aggressive when mating. *Reproduction*: suitable partners can produce 1,000 or more eggs. *Social life*: young fish are peaceable and form schools, as do adults outside the mating period; very territorial in summer. *Compatibility*: may be kept with other nonaggressive species.



68 **GIANT GOURAMI**
Colisa fasciata

Family Belontiidae.

Distribution Bengal, Burma, Thailand, Malayan peninsula.

Description *Shape*: elongated body, very compressed; long dorsal and anal fins. Pelvic fins elongated like threads. Thickened upper lip, especially on the male. *Color*: highly variable according to provenance and breeding strain. Brown with a greenish sheen, and with several narrow orange-red to red stripes slanting diagonally backward. Back fairly dark brown, chest and belly blue-green, often with a purple sheen. A brilliant blue-green spot on the gill cover. *Size*: up to 4½ in (12 cm). *Sexual differences*: female less strongly colored, with the dorsal and anal fins rounded; these are elongated into a point in the male.

Environment *Temperature*: 75–82 °F (24–28 °C). *pH and water hardness*: no special requirements. *Substrate and furnishings*: well-planted tank including feathery-leaved plants (two-thirds to three-quarters of tank area); plenty of floating plants to provide cover; the remainder free swimming space. Some humus to be left on the bottom.

Feeding Omnivorous.

Biology *Behavior*: a lively fish, somewhat timid before becoming acclimatized to the tank. *Reproduction*: bubble-nest builder, very productive. *Compatibility*: peaceable, easily kept with other fishes.



69 **DWARF GOURAMI**
Colisa lalia

Family Belontiidae.

Distribution Indian subcontinent.

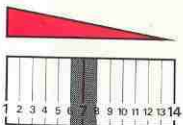
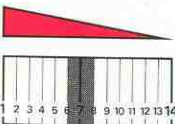
Description *Shape*: body an elongated ovoid, very compressed. Dorsal and anal fins reach almost to caudal fin; pelvic fins extend into long threads. *Color*: bright red basic color; males have a slanting double row of luminous light blue-green to emerald spots which also extend onto the fins. Head-and-shoulder region and belly brilliant blue-green. Caudal fin and rear end of anal fin red; pelvic fins orange. *Size*: 2 in (5 cm). *Sexual differences*: body color of females is much paler. The anal and dorsal fins are rounded.

Environment *Temperature*: needs warmth—75–82 °F (24–28 °C). *pH and water hardness*: no special requirements. *Illumination and furnishings*: thickly planted tank with medium lighting and a covering of small floating plants.

Feeding Live and dry food.

Biology *Behavior*: territorial, but extremely peaceable and harmless. *Reproduction*: bubble-nest builder. Algae, floating leaves and plant stems, etc., are incorporated into the nest. Multiple acts of spawning. The eggs are looked after by the male. *Compatibility*: suitable for coexistence with other territorial species.

Caution A good jumper.



70

SPRAYING CHARACIN Copella sp.

Family Lebiasinidae.

Distribution Amazon and Rio Pará.

Description *Shape*: small, very elongated, slightly flattened profile. Large, protruding horizontal mouth. Upper lobe of caudal fin particularly elongated in the male. *Color*: back a dark brownish yellow; sides and belly yellowish or greenish with a rust-brown sheen; large dark-edged scales, producing a netlike pattern. Gill cover has a greenish-gold spot. A narrow dark line runs from the mouth to the eye. *Size*: males up to 3½ in (8 cm), females up to 2½ in (6 cm). *Sexual differences*: fins on the male are all longer and more pointed.

Environment Primarily inhabit the upper water levels; floating plants desirable. *Temperature*: 72–82 °F (22–28 °C), the higher value only for breeding. *pH*: 6.5–7. *Illumination*: good lighting, some sunlight. *Furnishings*: broad-leaved plants, not too thick. Cover tank, as the fish are excellent jumpers.

Feeding Plenty of live food, especially insects of all kinds when breeding.

Biology *Behavior*: lively, peaceable fish. *Reproduction*: from 50 to 200 eggs are laid above the surface of the water. The young fish are fed with very fine food. *Social life*: schooling fish. *Compatibility*: best kept in species tanks, or with quiet, nonaggressive fishes of about the same size.



71

MAILED CATFISHES Corydoras spp.

Family Callichthyidae.

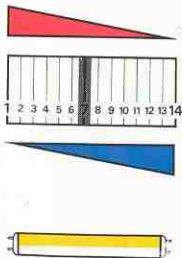
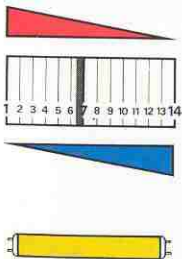
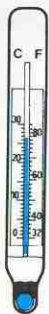
Distribution Tropical South America; about 70 species occurring from Colombia to the Rio de la Plata.

Description *Shape*: short and thickset with an arched back and flat belly, more or less compressed in cross section. The adipose fin lies in an unarmored area, and the snout is unarmored also. *Size*: 1¼–4¼ in (3–12 cm). *Sexual differences*: female larger with rounder belly.

Environment Shallow spots in slowly moving, almost still waters. They find a stretch of sandy bottom and remain there chewing plant matter. *Temperature*: 59–86 °F (15–30 °C); many species can withstand this wide variation, others not. 75–77 °F (24–25 °C) is usually adequate for good maintenance and breeding. *pH*: around 7. *Water hardness*: 5–10° general hardness. *Substrate and furnishings*: a large tank with an extensive floor area and not too high a water level is recommended. Also water plants or some other form of cover.

Feeding Omnivorous.

Biology *Behavior*: schooling fish. *Reproduction*: the fertilized eggs are caught up by the female in a kind of pocket formed by her pelvic fins folded together. The young are best kept in a glass tank with no bottom covering and should be liberally fed. *Compatibility*: very peaceable; can be kept with other aquarium creatures.



72 GIANT DANIO

Danio malabaricus

Family Cyprinidae.

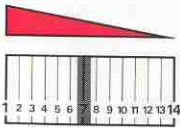
Distribution West coast of India, Sri Lanka.

Description *Shape*: elongated, laterally very compressed, deep-bodied for a danio. Profile of underside more strongly convex than the back; pointed head, high-set mouth, one pair of barbels on lower jaw. *Size*: 4½ in (12 cm); sexually mature at 2½–2¾ in (6–7 cm). *Sexual differences*: the male brilliantly colored, the central blue line on the caudal peduncle is straight.

Environment Running waters. *Temperature*: 68–70 °F (20–21 °C) in winter, 72–75 °F (22–24 °C) in summer; 77–82 °F (25–28 °C) for breeding. *pH*: around 7. *Water hardness*: medium-soft to medium-hard water. *Illumination and furnishings*: large and above all elongated tank with plenty of swimming space (at least two-thirds of tank) and thick background vegetation. Good lighting; for breeding, morning sun and fine-leaved feathery plants.

Feeding Eats dried and live food. Give lots of insects during breeding.

Biology *Behavior*: lively, peaceable, undemanding schooling fish. Leaps energetically, so make sure the tank is properly covered. *Reproduction*: breed easily, but eat their own eggs. The young should be given very small live and dried food. *Compatibility*: good to keep with other schooling fishes.



73 TIGER FISH

Datnioides microlepis

Family Lobotidae.

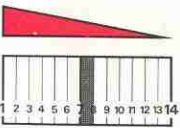
Distribution Central Thailand, Cambodia, Sumatra, Borneo.

Description *Shape*: thickset, compressed and high-backed. Long, spiny and soft-rayed joined dorsal fins. Short anal fin and caudal peduncle; caudal fin rounded. Straight underside and back. *Color*: a number of black vertical bars (usually six) of varying distinctness. *Size*: in the wild up to 1 ft 3½ in (40 cm); in aquaria up to 11¼ in (30 cm). *Sexual differences*: unknown.

Environment Chiefly brackish water, but also in clean fresh water, where they are said to breed. *Temperature*: 72–82 °F (22–28 °C). *pH and water hardness*: relatively unimportant. Avoid rapid changes of conditions. Neutral to slightly alkaline water of medium hardness makes the best combination. *Furnishings*: build hiding places of wood or flowerpots in the corners of a roomy tank; at least two-thirds should be planted with vegetation.

Feeding Exclusively a predator. Quite large fishes are consumed headfirst.

Biology *Behavior*: territorial; intolerant of intruders in its territory. Often swims holding itself at an angle. *Reproduction*: not yet achieved in an aquarium. *Compatibility*: in tanks can be kept only with members of the same species.



74 FRESHWATER HALFBEAK
Dermogenys pusillus

Family Hemiramphidae.

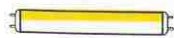
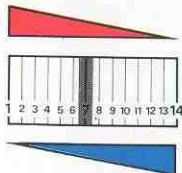
Distribution Malaysia, Indonesia, Thailand.

Description *Shape*: elongated body with narrow caudal peduncle; dorsal and anal fins opposite each other and set very close to the tail. The elongated, immovable lower jaw is typical, forming a kind of "flytrap" with the movable upper jaw. *Color*: upper surface dark; sides of body gleaming silver with a mother-of-pearl sheen; sides of belly creamy-white to yellow. Some populations have a black and a red lateral stripe on the lower jaw. *Size*: males up to $2\frac{1}{2}$ in (6 cm), females up to $2\frac{3}{4}$ in (7 cm). *Sexual differences*: in the male the foremost ray of the anal fin is shortened and formed into a sexual organ.

Environment Fresh or brackish waters (river estuaries), always near the surface. *Temperature*: 64–72 °F (18–22 °C); avoid high temperatures. *Water hardness and density*: neutral, hard water; additional salt recommended—2–3 teaspoons per 2 gallons (10 liters) water. *Furnishings*: wide, shallow tank with spongy plants floating on the surface.

Feeding Live food only. The diet should be varied.

Biology *Behavior*: schooling fish, living near the surface. The males are very aggressive. *Reproduction*: live-bearers. *Compatibility*: can be kept with schooling fishes occupying the middle and lower strata of the tank.



75 MOSQUITO FISH
Gambusia affinis

Family Poeciliidae.

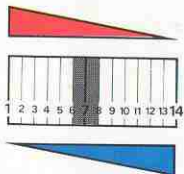
Distribution From New Jersey to Florida, from Alabama to East Texas (U.S.A.).

Description *Shape*: females resemble the guppy (*Poecilia reticulata*); males somewhat more robust. *Color*: male is transparent gray with a bluish shimmer on the sides, olive-brownish back, silvery belly. A black vertical bar through the eye. The original form has numerous loosely distributed black spots. *Size*: male up to $1\frac{3}{8}$ in (3.5 cm), female up to $2\frac{3}{8}$ in (6 cm). *Sexual differences*: size, shape and male gonopodium.

Environment Medium-fast-flowing and still waters; brackish water also tolerated. *Temperature*: room temperature. In the wild, survives temperatures from 37 °F (3 °C) to 86 °F (30 °C). *pH and water hardness*: not important. *Furnishings*: ample vegetation and a certain amount of swimming space.

Feeding A hearty eater, consuming up to its own body weight of foodstuff per day. Mosquito larvae are particularly popular.

Biology *Behavior*: lively, somewhat quarrelsome schooling fish. *Reproduction*: very simple, as long as they are well fed. Will eat their own young. *Social life*: best kept in single-species schools, in a large, shallow tank. *Compatibility*: unsuitable for community aquaria.



76 GYMNOCHANDA FILAMENTOSA

Gymnochanda filamentosa

Family Centropomidae.

Distribution Malayan peninsula.

Description *Shape*: similar to the ordinary glass perch (cf. *Chanda ranga*). Moderately long, very compressed in profile. Large eyes (one-third of head length). No scales. *Color*: transparent. Male, when in good color, honey yellow to delicate yellowish brown. Body cavity covered with a silvery membrane. Six to ten delicate vertical bars. Reddish mouth. Yellowish, transparent fins. Dark rays to dorsal and anal fins. Female much less brightly colored. *Size*: up to 2 in (5 cm). *Sexual differences*: males have blackish membrane between the extremely elongated rays of the second dorsal and anal fins.

Environment In shallow, brackish waters. The fish is very similar to *Chanda ranga*, but even more sensitive to conditions.

Feeding Only small living food.

Biology Comparable to the ordinary glass perch, and has even been bred in the same way, though the young fish never grow the splendidly elongated fin rays.



77 STRIPED SUCKERMOUTH CATFISH

Hemiancistrus vittatus

Family Loricariidae.

Distribution Tropical South America.

Description *Shape*: characteristic for a bottom-living fish: low-set sucking mouth, surrounded by fleshy lips; pectoral and pelvic fins broad and flat. Dorsal fin long, high and bannerlike. The adipose fin and caudal fin have an elongated lower lobe. Nasal openings have pipelike extensions; mouth has barbels. *Color*: see illustration; variable as with all Loricariidae. *Size*: about 4 in (10 cm). *Sexual differences*: the males probably have whiskerlike appendages on the head.

Environment *Temperature*: 70–77 °F (21–25 °C). *pH*: neutral to slightly acid. *Water hardness*: soft to medium-hard water. *Illumination*: medium to strong lighting. *Substrate*: sandy bottom with hiding places made from roots, etc. *Furnishings*: thick vegetation, but plants not too feathery.

Feeding Eats algae and other vegetable matter in its native habitat. Easily accustomed to commercial food-stuffs, but must have plenty of plant matter and food with bulk.

Biology *Behavior*: lives on the bottom, in running water; territorial. *Reproduction*: unknown. *Social life*: aggressive toward members of its own species. *Compatibility*: very peaceable and harmless toward other species, even the smallest fishes.



78 **RED CICHLID ; JEWEL FISH**
Hemichromis bimaculatus

Family Cichlidae.

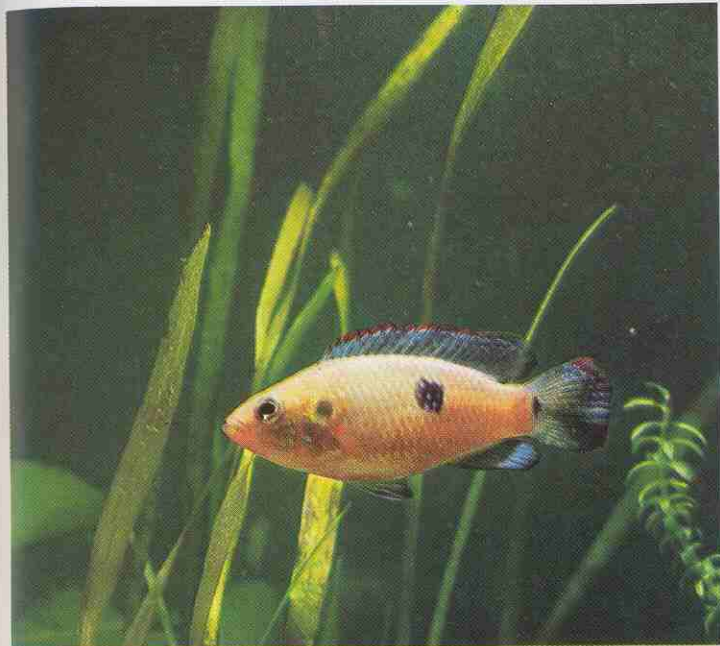
Distribution The river systems of the Nile, Niger and Zaire.

Description *Shape*: elongated, compressed silhouette. *Color*: brown back with a greenish sheen; sides of body greenish yellow; yellowish underside. A dark horizontal band extending along side may break up into five or six large patches. At spawning time almost the whole body is red (brighter in the female), the forehead and back being olive green with a reddish sheen; bluish-black patches, accompanied by six or seven rows of sky-blue spots. *Size*: up to 6 in (15 cm). *Sexual differences*: apart from the color changes at the time of sexual activity, the spawning tube is pointed in the male, rounded in the female.

Environment *Temperature*: 72–82 °F (22–28 °C) (the higher value for breeding). *pH*: around 7. *Water hardness*: medium to medium hard. *Substrate and furnishings*: large tank with coarse sand or gravel. Single large plants.

Feeding Abundant, not-too-small live food.

Biology *Behavior*: only young fish can be kept in schools. Mature fish can be kept only in pairs. *Reproduction*: pairs must form from the same group. Excellent parents. *Social life and compatibility*: fairly aggressive. Can be kept only with equally powerful species—e.g., two or three different species of cichlids.



79 **BLEEDING-HEART TETRA**
Hyphessobrycon rubrostrigata

Family Characidae.

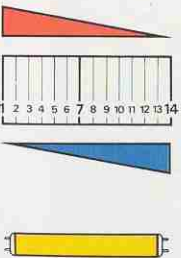
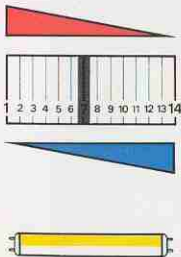
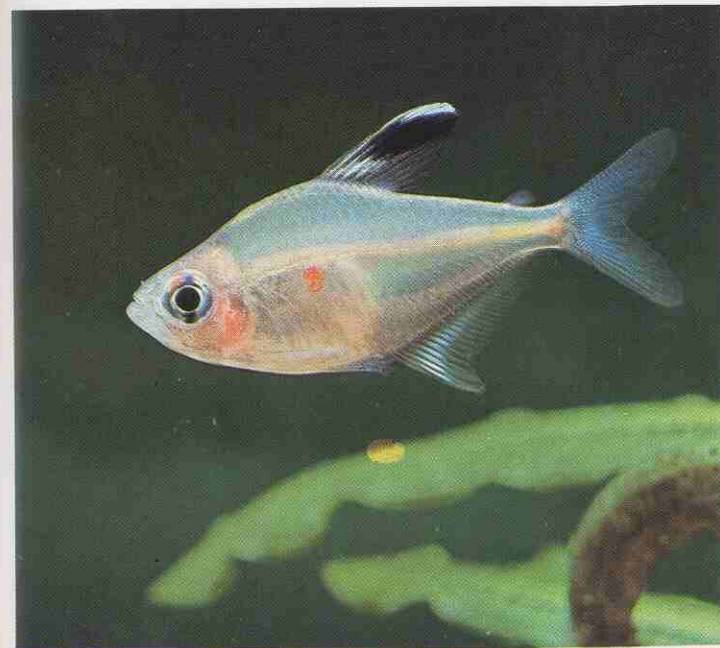
Distribution Colombia.

Description *Shape*: deep-bodied. *Color*: upper part of body grayish green to brown, with light-red sheen; the lower part of the body shows a reddish silver color. Throat and belly orange, with mother-of-pearl highlights. Red dorsal fin with broad, white-edged black stripes. A vertical black bar through the eye. *Size*: 2½ in (6 cm). *Sexual differences*: female bulkier; male has pointed, elongated and enlarged dorsal fin.

Environment *Temperature*: around 77 °F (25 °C). *pH and water hardness*: no reliable information. *Illumination and furnishings*: plenty of free swimming space, ample vegetation and good lighting.

Feeding Varied live food, occasional dried food.

Biology *Behavior*: lively, peaceable schooling fish; a good swimmer. *Reproduction*: seldom bred. *Compatibility*: easily maintained in mixed schools.



80 **LEMON TETRA**
Hyphessobrycon pulchripinnis

Family Characidae.

Distribution South America.

Description *Shape*: fairly elongated body with narrowish cross section; has an adipose fin. *Color*: glassily transparent; light lemon yellow in tone; sides of body silvery with an ill-defined shiny horizontal stripe on a level with the spine. The first rays of the anal fin are brilliant yellow and sharply divided from the succeeding rays, which are black. The dorsal fin is similarly colored. Large eyes, the upper half of the iris a brilliant red. *Size*: up to 2 in (5 cm). *Sexual differences*: the anal fin of males has a broad black fringe which is relatively narrow or missing completely in females.

Environment *Temperature*: 72–79 °F (22–26 °C). *pH and water hardness*: soft, slightly acid water. *Illumination and furnishings*: strong lighting; plenty of background vegetation and ample free swimming space.

Feeding Both live and dried food.

Biology *Behavior*: schooling fish which should not be kept isolated. Exhibits characteristic mating display. *Reproduction*: difficult to breed, since the female reputedly often has difficulty in starting to spawn. *Compatibility*: peaceable and good to keep with other schooling fishes of similar size.



81 **BLACK-LINE TETRA**
Hyphessobrycon scholzei

Family Characidae.

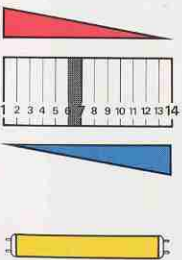
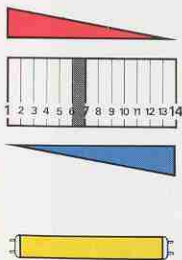
Distribution Pará region, Brazil.

Description *Shape*: very elongated. *Color*: back greenish or brownish; sides silver, with a bluish or brassy sheen; belly silvery. A broad black band runs from the gill cover to the base of the caudal fin, forming a large diamond-shaped patch at the end. The black band is topped by a thin gleaming metallic line. Colorless pelvic fins; all others pale reddish; anal fin edged with black at the front. *Size*: up to 2 in (5 cm). *Sexual differences*: male slimmer, with more deeply cleft caudal fin.

Environment *Temperature*: 72–77 °F (22–25 °C). *pH and water hardness*: use old water, not too hard and neutral to slightly acid. The species is generally undemanding. *Illumination and furnishings*: as for other *Hyphessobrycon* species (cf. *H. pulchripinnis*).

Feeding Live and dried food; also some additional vegetable food (e.g. lettuce).

Biology *Behavior*: a lively, peaceable schooling fish. *Compatibility*: good for community tanks.



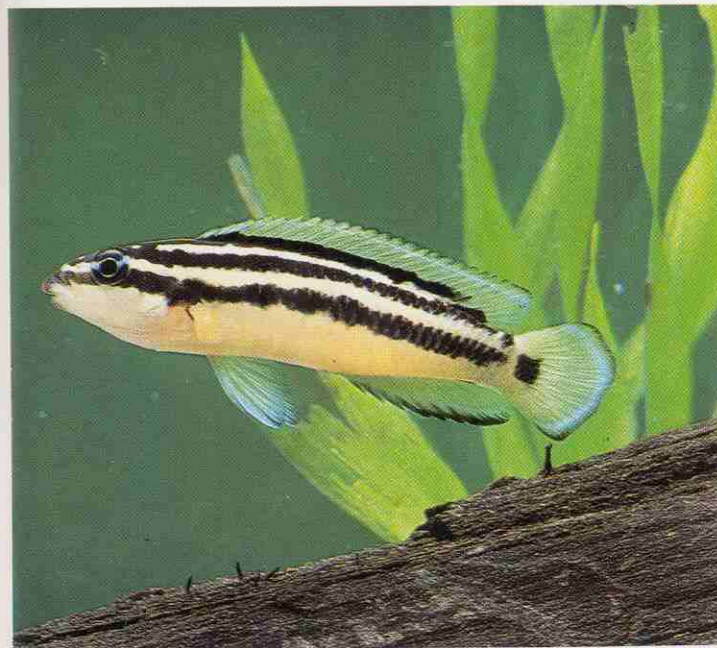
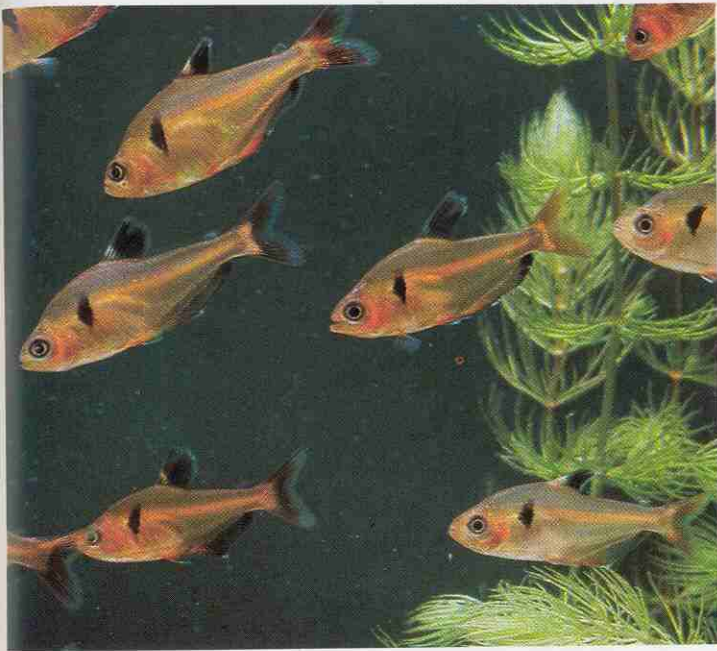
82 SERPA TETRA*Hyphessobrycon serpae*

Family Characidae.

Distribution Amazon basin and Rio Guaporé.

Description *Shape*: elongated. *Color*: very variable. Back dark olive; sides gray-green; belly yellowish with an iridescent sheen. When the fish is excited or in a state of well-being, the whole of the rear part of the body is brown red. Clearly marked dark patch on the shoulder. An indistinct lateral stripe, broadening toward the tail. *Size*: up to 1½ in (4.5 cm). *Sexual differences*: males mostly a brighter red.

Environment No special needs. *Temperature*: 73–77 °F (23–25 °C). *pH*: slightly acid. *Water hardness*: medium soft. *Illumination, substrate, furnishings*: good but not-too-glaring lighting; not-too-light bottom material; about two-thirds of tank space thickly planted.

Feeding Omnivorous.**Biology** *Behavior*: lively, peaceable, lives in schools.*Reproduction*: fairly easy. *Compatibility*: good to keep with other, not too closely related fishes.**83 JULIE***Julidochromis ornatus*

Family Cichlidae.

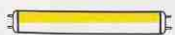
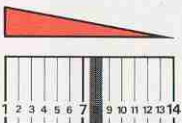
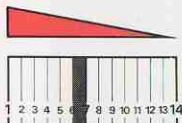
Distribution Lake Tanganyika, in rocky areas.

Description *Shape*: slender body, almost completely cylindrical, with prominent pointed snout. Small mouth set low. *Color*: basic color white to gold. Three clearly marked brownish-black lines along the back, the uppermost passing through the base of the dorsal fin, the lowest extending from the snout through the eye and the middle of the side to middle of the tail-fin base. *Size*: male 2½–2¾ in (6–7 cm); female somewhat smaller. *Sexual differences*: only in size.

Environment *Temperature*: 72–77 °F (22–25 °C). *pH*: around 8. *Water hardness*: hard water. *Furnishings*: reasonably large tanks with hiding places (stone prominences with recesses, flowerpots, pipe sections, etc.).

Feeding Both live and a little dried food.

Biology *Behavior*: territorial, but easy to keep with other Tanganyikan cichlids. *Reproduction*: propagate freely. The young are tended by the male or by both parents.



84 **GLASS CATFISH**
Kryptopterus bicirrhis

Family Siluridae.

Distribution Indochina and Indonesia.

Description *Shape*: very compressed sides, short body cavity, long caudal peduncle. Dorsal fin consists of a single ray; anal fin very long, but separated from the deeply cleft caudal fin, whose lower lobe is longer than the upper. One pair of very long barbels on the upper jaw. *Color*: transparent, even when mature, sometimes with a rainbow-colored metallic sheen. *Size*: up to 4 in (10cm). *Sexual differences*: unknown.

Environment *Temperature*: 68–77 °F (20–25 °C). *pH*: 6.5–7.5. *Water hardness*: medium hard for preference, but not important. *Furnishings*: roomy, not-too-deep tank, about half planted.

Feeding Live food should not be too large. Cereals are taken only occasionally.

Biology *Behavior*: schooling fish which swims constantly but rather slowly and needs water plants for rest. *Reproduction*: unknown. *Social life*: single specimens do not live long. *Compatibility*: do not keep with fast swimmers.



85 **RED-TAILED BLACK SHARK**
Labeo bicolor

Family Cyprinidae.

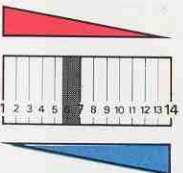
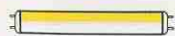
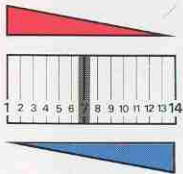
Distribution Thailand, mainly in streams.

Description *Shape*: elongated body, laterally compressed; somewhat deeper body than *L. erythrurus*. *Color*: sharply divided into two colors: body black with caudal fin in strongly contrasting orange to blood red. *Size*: up to 4¾ in (12 cm). *Sexual differences*: female is significantly bulkier.

Environment Turbid streams. *Temperature*: 73–81 °F (23–27 °C). *pH*: 5.5–7; light peat content. *Water hardness*: soft water. *Illumination and furnishings*: large tank, with moderate lighting and plenty of cover.

Feeding As for *L. erythrurus*.

Biology *Behavior*: as for *L. erythrurus*; territorial adults even more aggressive. *Reproduction*: optimum temperature 79 °F (26 °C). Spawning tube appears some two weeks beforehand; 30–40 eggs are laid at a time. The young hatch in 48–72 hours and can immediately take nauplii; upkeep is simple. Males make violent thrusting motions during mating. *Social life and compatibility*: can be kept with other fishes in general aquarium. Antagonistic toward members of its own species.



86 **REDFIN SHARK**
Labeo erythrurus

Family Cyprinidae.

Distribution Thailand: the Mekong River at Komarat.
Description *Shape*: an elongated carp, torpedo-shaped, with an almost straight belly line and slightly arched back. Slimmer than many species of the same genus, with well-developed organs for sucking and chewing and grinding up vegetation in the low-set mouth. Two pairs of barbels. *Color*: back ranging from light brown to blue-black, lighter toward the underside, and spotted. A dark spot or vertical bar on the caudal peduncle. All the fins are red. *Size*: 4 $\frac{3}{4}$ in (12 cm). *Sexual differences*: unknown.

Environment *Temperature*: 70–75 (max. 81) °F (21–24, max. 27 °C). *pH and water hardness*: undemanding; best to provide soft, neutral to slightly acid water. *Furnishings*: large tank with ample vegetation (two-thirds to three-quarters of area) and many hiding places.

Feeding Live food of all kinds, algae, lettuce. Keep the diet varied.

Biology *Behavior*: the young live in schools; adults territorial. *Reproduction*: not yet achieved in the aquarium. *Compatibility*: easily maintained in a community tank.



87 **BANDED LEPORINUS**
Leporinus fasciatus

Family Anostomidae.

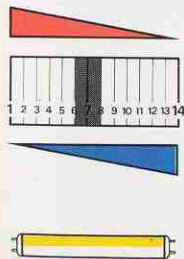
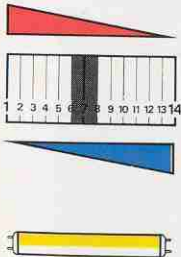
Distribution South America.

Description *Shape*: elongated, torpedo-shaped body, flattened very slightly along the sides. The head is conical with a small snout. A few, powerful teeth. *Color*: ten vertical bars on a yellow background, darker on adults. *Size*: up to 12 in (30 cm).

Environment Native habitat is slow-flowing, gravelly brooks. *Temperature*: 72–77 °F (22–25 °C). *pH and water hardness*: not important. *Substrate and furnishings*: as the fish are plant-eaters, do not plant feathery vegetation. Sand or gravel bottom with frequent replacement of part of the water with fresh.

Feeding Vegetable foods (lettuce, etc.) and worms.

Biology *Behavior*: a schooling fish which swims and leaps very quickly. Keep top firmly closed. *Reproduction*: not yet successful in the aquarium. *Social life*: a companionable fish. Very long-lived, if well fed and kept well supplied with fresh water. *Compatibility*: keep with other head-standers.



88

SPINY EEL

Macrognathus aculeatus

Family Mastacembelidae.

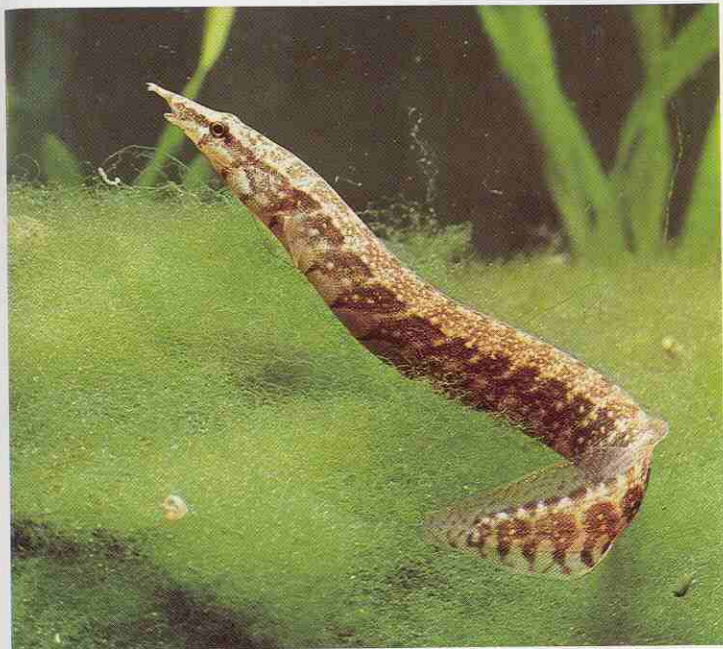
Distribution Southeast Asia to the Moluccas.

Description *Shape*: characteristic eel shape, with an extended snout which contains the nostrils. The head is also long and pointed. The dorsal, caudal and anal fins adjoin one another, but are not linked by a fin membrane. The soft-rayed dorsal fin is preceded by fourteen or fifteen isolated spines. No pelvic fins. *Color*: chocolate to tan, often with stripes on the back. The three to ten peacock's-tail spots on the dorsal fin are sometimes absent. *Size*: up to 6 in (15 cm). *Sexual differences*: females essentially stronger, becoming very stout at spawning time.

Environment Fresh and brackish waters. *Temperature*: 72–82 °F (22–28 °C). Fish kept permanently at too high a temperature are more susceptible to infections and are shorter-lived. *pH and water hardness*: not important. *Substrate and furnishings*: the chief requirement is for cover. The tank should be thickly planted. A particularly deep layer of sand should be provided.

Feeding All types of live food. The fish can suck up their prey.

Biology *Behavior*: peaceable; active at twilight and in darkness. *Reproduction*: not yet achieved in an aquarium. *Compatibility*: best suited to a species tank.



89

ELECTRIC CATFISH

Malapterurus electricus

Family Malapteruridae.

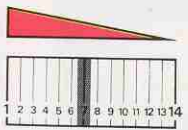
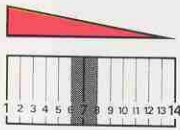
Distribution Africa.

Description *Shape*: long but thickset; thick head with small eyes that glow in the dark. No dorsal fin; adipose fin far back near the tail; no spines in pectoral fin. Three pairs of barbels; fleshy lips. *Color*: back grayish brown; sides flesh-colored to gray; belly reddish or yellowish white, with numerous irregularly arranged dark spots. *Size*: up to 3 ft 3½ in (1 m). *Sexual differences*: unknown.

Environment *Temperature*: 73–86 °F (23–30 °C). *pH and water hardness*: no particular requirements; neutral, fresh water is preferable. *Furnishings*: well-planted tank with plenty of cover.

Feeding A predator. Live food; first earthworms and lean meat in strips for young fish, later exclusively fish.

Biology *Behavior*: it possesses electric organs, arranged in pairs along its sides. Electrical discharges can be produced at will; they are used for self-defense and to stun the fish's prey. They also serve as a means of orientation in turbid waters. *Reproduction*: unknown. *Social life*: must be kept singly. *Compatibility*: only fishes intended as food should be put in the same tank.



90 **BLACK-BANDED SUNFISH**
Enneacanthus chaetodon

Family Centrarchidae.

Distribution U.S.A., New Jersey to Maryland.

Description *Shape*: thickset, short and deep body, flat-sided. *Color*: grayish yellow to greenish yellow with numerous but partly indistinct black vertical bars, often with irregular dark speckles in between. The first two spines of the dorsal fin are black; the following two, bright orange-red or red. The first two rays of the pelvic fins are orange; the next two, black. *Size*: up to 4 in (10 cm); sexually mature at 2 in (5 cm). *Sexual differences*: scarcely distinguishable; the females have brighter coloring during the spawning period.

Environment Still and gently flowing waters. *Temperature*: cold—39–72 °F (4–22 °C). The fish keep well in outdoor pools. *pH and water hardness*: medium-hard to hard water with occasional replacement of a portion by fresh water. *Illumination, substrate and furnishings*: good lighting; deep, sandy bottom; ample vegetation.

Feeding Live food.

Biology Behavior: relatively nonaggressive and peaceable. *Reproduction*: the father tends the young. *Social life*: form loose schools. *Compatibility*: may be mixed with peaceable surface-inhabiting fishes that are not too large, but a species tank is even better.



91 **GLASS TETRA**
Moenkhausia sanctaefilomenae

Family Characidae.

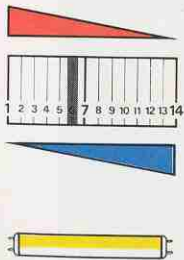
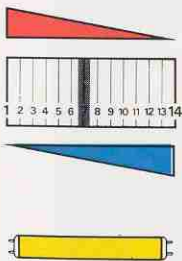
Distribution Rio Paraguay and Rio Paranaiba.

Description *Shape*: deep-bodied, elongated and very compressed. No adipose fin, and an incomplete lateral line. *Color*: sides of the body bright silver, darker toward the back, slightly yellow toward the belly. A broad black vertical band on the tail preceded by a yellow field with a metallic sheen. Eyes bright and luminous, with the upper part of the iris red. Smoky, mud-colored fins, with white tips to the dorsal and first anal fin rays. *Size*: up to 2 3/4 in (7 cm). *Sexual differences*: in females the line of the belly is more curved in profile.

Environment *Temperature*: 72–77 °F (22–25 °C). *pH*: 5.5–6.5. *Illumination and furnishings*: one-third vegetation, two-thirds swimming space; also one or two floating plants. Lighting should not be too bright.

Feeding Omnivorous.

Biology Behavior: lively, undemanding schooling fish. *Reproduction*: see *H. pulchripinnis*. *Compatibility*: good to mix with other peaceable tetras.



92 **LEAF FISH**
Monocirrhus polyacanthus

Family Nandidae.

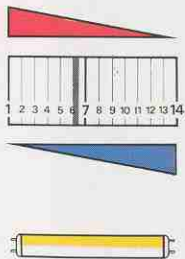
Distribution Amazon basin, Rio Negro and western Guyana.

Description *Shape*: egg-shaped, thickset, very pointed head, mouth forming an extensible tube. The lower lip has a strong barbel. *Color*: very strong marbled coloring which varies in relation to mood; streaked, and yellow or brown; can resemble a dead leaf. Three thin dark lines extend from the eye suggesting the veins of a leaf. *Size*: up to 3½ in (8 cm). *Sexual differences*: unknown.

Environment *Temperature*: 72–77 °F (22–25 °C). *Water hardness*: very soft. *Furnishings*: large, well-stabilized tank with thick vegetation.

Feeding Exclusively a fish-eater, eating almost its own weight of food per day. Great care needed to avoid upsets.

Biology *Behavior*: extremely interesting. It imitates the movements of a dead leaf, sneaks up on its prey and at the last moment sucks it in and swallows it. *Reproduction*: very simple display. Eggs are laid on plants, glass or stone and are looked after by the male. The female should be removed. The young hatch after 3–4 days. *Compatibility*: keep only a few individuals in a species tank.



93 **ONE-STRIPED AFRICAN CHARACIN**
Nannaethiops unitaeniatus

Family Citharinidae.

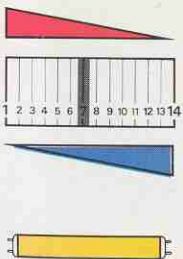
Distribution The whole of tropical Africa from the White Nile to the west coast.

Description *Shape*: medium-long body. Small mouth. Large adipose fin. Complete lateral line. *Color*: brown to brownish-olive back; belly and throat yellowish or whitish with a silver sheen. A dark narrow band extends from the mouth over the eye to the end of the caudal fin. This is topped by an iridescent metallic band, colored a brilliant copper to gold. *Size*: up to 2½ in (6.5 cm). *Sexual differences*: male slender, brilliantly colored. During the mating season the front part of the dorsal fin and the lobes of the tail fin become a brilliant blood red.

Environment *Temperature*: 73–79 °F (23–26 °C). *pH and water hardness*: neutral reaction and medium hardness will suffice. *Illumination, substrate, furnishings*: bright lighting, occasional sun. Fine sand on the bottom is essential. Vegetation not too thick.

Feeding Live and dry food; plenty of insects.

Biology *Behavior*: a lively fish living near the bottom. *Reproduction*: The fish is very productive. Large spawning tank needed—10–12 gal (40–50 l). After spawning the breeding fish should be removed. *Social life*: a schooling fish. *Compatibility*: Can be mixed with fishes living near the surface, such as *Epiplatys* species.



94 **THREE-BANDED PENCILFISH**
Nannostomus trifasciatus

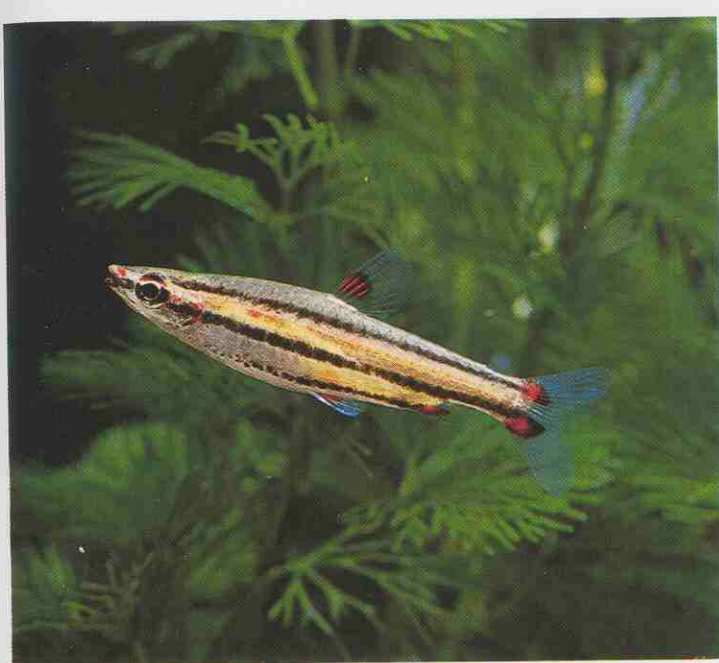
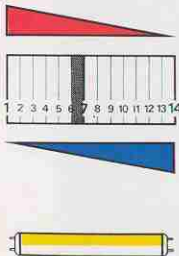
Family Lebiasinidae.

Distribution Central Amazonian region, Rio Negro and western Guyana.

Description *Shape*: small, long and slim; slightly flattened sides. *Color*: olive-brown back, white belly; a black horizontal stripe extends from the tip of the snout to the underside of the tail-fin base, with a second, narrower one above it, starting from the eye. A third, faintly visible, runs from the pectorals to the anal fin. By night the coloring appears different—green to yellowish gray, with three broad, dark vertical bars. *Size*: up to 2½ in (6 cm). *Sexual differences*: females more rounded, with paler coloring.

Environment In their native habitat they inhabit small, gently flowing streams that are well shaded with thickly growing water plants. *Temperature*: 72–82 °F (25–28 °C). *pH and water hardness*: very soft, allowed to stand for some time; light to medium acidity (filter through peat). *Furnishings*: as in natural surroundings.

Feeding Chiefly live food; fruit flies should be given. **Biology** *Behavior*: a schooling fish. The swimming motion is characteristic—scurrying alternating with sudden long pauses. *Reproduction*: not very prolific. *Social life*: must have company, preferably of the same species. Place a strong cover over the tank, as they are good jumpers.



95 **EMPEROR TETRA**
Nematobrycon palmeri

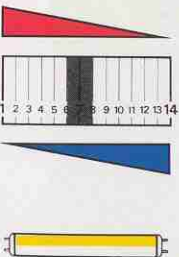
Family Characidae.

Distribution Rio San Juan and its tributaries, Colombia.

Description *Shape*: club-shaped body, laterally compressed. Caudal fin cleft in the middle. No adipose fin; very long anal fin. Lateral line incomplete. *Color*: in males: brownish, shot with green or blue particularly on the forepart of the body. A broad black horizontal stripe extends from the hind edge of the gill cover to the elongated central rays of the caudal fin. The coloring of the smaller female is less brilliant, the central rays of the caudal fin only slightly elongated. *Size*: up to 2¼ in (5.5 cm).

Environment *Temperature*: 72–75 °F (22–24 °C); for breeding 79–82 °F (26–28 °C). *pH and water hardness*: not important. *Illumination and furnishings*: medium, angled lighting and dark water plants.

Feeding Live and dried food. Also a little plant food. **Biology** *Behavior*: peaceable, hardy and undemanding. *Reproduction*: not very productive. Eggs laid on water plants. *Social life and compatibility*: must live in schools; also with other peaceable fishes.



96 **GUENTHER'S NOTHO**
Nothobranchius guentheri

Family Cyprinodontidae.

Distribution Zanzibar, Mozambique, Mombasa (Kenya), Pangani River (Tanzania).

Description *Shape*: deep body, rounded fins. *Color*: males have a red tail fin, and each scale on their body is blue or greenish blue outlined in red, producing a network pattern. Females dull in appearance, with dark spots or rows of spots on body and fins. *Size*: up to 2½ in (7 cm). *Sexual differences*: only in body color.

Environment Normal habitat consists of temporary pools and mudholes. *Temperature*: 64–72 °F (18–22 °C) is normally sufficient. *pH and water hardness*: soft to very soft and slightly acid water (pH 6.5) are sufficient. *Illumination*: strong lighting. *Substrate*: cover the bottom with a layer of sterilized peat. *Furnishings*: feathery water plants such as *Myriophyllum* are quite suitable.

Feeding Both live and dried foods. Insects (mosquito larvae) are essential for breeding.

Biology *Reproduction*: The eggs are laid in the bottom mud. The mature fish live for little more than a year. The eggs survive through the dry season buried in the mud. With the return of the rainy season, development is resumed, and the young hatch out and grow rapidly. *Social life and compatibility*: a schooling fish, but best kept with members of its own species.



97 **FEATHERBACK**
Notopterus chitala

Family Notopteridae.

Distribution *N. chitala* and three other species in Southeast Asia.

Description *Shape*: elongated, very compressed body. The anus is very far forward. The anal fin is very long and forms a continuous fringe with the very small caudal fin. Its great mobility makes the anal fin the main organ of propulsion. *Color*: varies according to species, especially among the younger fish. Photo shows a *Notopterus chitala*, which has a fine peacock marking. *Size*: differs according to species, from 8 in to 2 ft 7½ in (20–80 cm) in length; *N. chitala* is one of the largest. *Sexual differences*: unknown.

Environment Quiet overgrown backwaters of large rivers with underwater roots and half-submerged undergrowth. *Temperature*: 73–81 °F (23–27 °C). *pH*: slightly acid to slightly alkaline. *Water hardness*: unimportant. *Illumination*: subdued. *Substrate*: sand with a little humus. *Furnishings*: richly planted.

Feeding Predatory; may catch quite large fishes.

Biology *Behavior*: At dusk the fish streak constantly around the tank in search of prey. Very large tank is needed. *Reproduction*: little information. *Social life*: loosely-grouped schools. Adults particularly aggressive and live alone. *Compatibility*: not with small, peaceable fishes.



98 **GOURAMI**
Osphronemus goramy

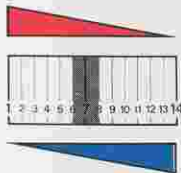
Family Osphronemidae.

Distribution The greater Sunda Islands.

Description *Shape*: oval, strongly compressed sides. Head very small; thick, protruding lower jaw. Pelvic fins have threadlike elongations. Young fish slimmer, with more pointed head. *Color*: adult specimens brownish, with dark back and lighter belly. *Size*: 1 ft 1½ in (60 cm), often up to 3 ft 3½ in (1 m) and 22 lb (10 kg). *Sexual differences*: females have rounded anal and dorsal fins. **Environment** In quiet waters, preferably clean with plenty of vegetation, but also in slimy ponds and mudholes. *Temperature*: 63–81 °F (17–27 °C). *pH and water hardness*: no specific requirements. *Furnishings*: large tank with some floating plants for cover.

Feeding Omnivorous.

Biology *Behavior*: breathes atmospheric air using its respiratory organ called a labyrinth. *Reproduction*: bubble-nest builder. The male guards the young. *Social life*: very peaceable. Suitable for indoor aquaria only when young, as they grow very fast. *Compatibility*: very suitable for community tanks.



99 **SCLEROPAGES**
Scleropages formosus

Family Osteoglossidae.

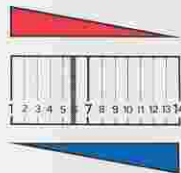
Distribution Malay Archipelago and Thailand.

Description *Shape*: thin, straplike, very compressed body. Keel-shaped underside. Very large mouth, strongly oblique. Two downswept barbels on the chin. Very long dorsal and anal fins standing opposite each other and forming a fringe. Huge scales. *Color*: silvery yellow, iridescent; barbels can become blue or green; fins yellow-green with reddish shading. *Size*: up to 4 ft (120 cm) long. *Sexual differences*: sexually mature females larger in body circumference. Males have an elongated lower jaw and larger anal fins.

Environment In stagnant river backwaters and shallow pools with rich and overgrown vegetation. *Temperature*: circa 77 °F (25 °C). *pH*: 5.5–6. *Water hardness*: soft water. *Furnishings*: plenty of vegetation.

Feeding Live food only; dried food will be taken only in exceptional cases by young fish.

Biology *Behavior*: forms schools when young, tends to be territorial when older and at times is very aggressive. *Reproduction*: the male carries the eggs in his mouth until development is complete. *Compatibility*: to be kept only with larger but peaceable fishes. The tank should be well covered, as they are very good jumpers.



100 DWARF SUCKERMOUTH CATFISH
Otocinclus affinis

Family Loricariidae.

Distribution Southeast Brazil.

Description *Shape*: slender catfish with sucking mouth. Narrow-based but fairly high dorsal fin, no adipose fin. Twenty-three or twenty-four bony plates arranged in a row along each side of the body. *Color*: ground color a light greenish gray to muddy yellow; darker back; whitish or light yellow underside. Fins are colorless or slightly green. *Size*: up to 1½ in (4 cm). *Sexual differences*: mature females much bulkier.

Environment Inhabit running water. *Temperature*: 68–73 °F (20–23 °C). *pH and water hardness*: unimportant. *Furnishings*: ample vegetation with plenty of weeds and opportunities for cover.

Feeding Mainly vegetarian, but also small worms. Useful as a consumer of algae in community aquaria.

Biology *Behavior*: remains under cover during the day, feeding at dusk and at night. Mostly stays attached vertically to slabs of rock or plants. *Reproduction*: breeds like *Corydoras*. The small eggs hatch after 2–3 days. The young must be fed with small *Artemia* nauplii, micro-worms or egg yolk powdered as fine as possible. *Social life and compatibility*: territorial but harmless. Quite at home in a mixed aquarium, if there is enough room.



101 BUTTERFLY FISH
Pantodon buchholzi

Family Pantodontidae.

Distribution Tropical West Africa.

Description *Shape*: surface fish; flattened head and back, the belly smoothly curved. Wide mouth pointing upward. Protruding pipelike nostrils. Pectoral fins broad with long winglike rays. Small pelvic fins. *Color*: back and sides brownish or greenish with a silver sheen; a variable pattern of lines and spots. *Size*: up to 6 in (15 cm). *Sexual differences*: males: hind edge of the anal fin deeply cleft, with the middle rays forming a tube.

Environment Mainly in largish, well-grown still or slow-flowing water or backwaters; occasionally in pools and ditches. *Temperature*: 77–86 °F (25–30 °C); for breeding circa 86 °F (30 °C). *pH*: slightly acid; filter through peat. *Water hardness*: soft water. *Illumination*: medium lighting. *Furnishings*: shallow tank. Sparse, individually planted vegetation, some floating plants.

Feeding Live food.

Biology *Behavior*: is not a flying fish but is an excellent jumper. *Reproduction*: fairly difficult. The young fish float just under the surface, and feeding them is very difficult as they will take only food that floats past their noses. The best foods are springtails (*Collembola*), aphids and small flies, as well as *Artemia* nauplii. *Social life and compatibility*: aggressive; keep species alone.

