Order Lyopromi

Body slender, compressed, tapers behind. Abdomen rounded. Head partly emic. Mouth inferior. Bones of jaws, palatines and pterygoids complete, normal. Teeth small, villiform. Preopercle entirely detached from suspensorium, rudimentary, connects only with lower jaw. Opercle normally connected. Subopercle enlarged, partly replaces usual position of preopercle, together with suborbital chain, which extended backward to opercular edge. Cranium with condyle confined to basioccipital. Gills 4, slit behind fourth. No pseudobranchial. Branchiostegals 14. Air vessel

on latter; upper section of lateral line with 28 tubular scales, lower section with 10, of which one on caudal base (tubes irregular in sequence); 4 scales above lateral line, 12 below; 17 predorsal forward above nostrils, 4-rows on cheeks and one narrow preopercle border naked. Supracapula entire. Scales with 23 basal radiating stride; apical denticles ?, conic, rather slender; circuli very fine.

D. $\frac{III}{\equiv}$, 27, $\frac{I}{\equiv}$, third spine 3 1/8 in total head length, twenty second ray 2 4/5 in combined head and body to caudal base; A. $\frac{III}{\equiv}$, 15, $\frac{I}{\equiv}$, third spine 3 1/5 in total head length, tenth ray 3 in combined head and body to caudal base; caudal 2 3/5, deeply lunate, with expanded filamentous tips; ventral 2 1/3; least depth of caudal peduncle 1 4/5 in total head length;

large, simple. Stomach coecal.
Pyloric coeca in moderate number.
Intestine short. Ovaries not closed.
Scapular arch formed by proscapula,
posterotemporal and posttemporal, latter
discrete from side of cranium and
impinging on supraoccipital. Hypercoracoid
and hypocoracoid plate like, foramen
in upper edge of latter. No mesocoracoid.
Vertebral 60 or more, front ones separate.
Actinosts normal. Scales small, deciduous.
Lateral line present. Dorsal fin short,
high. No adipose fin. Anal extremely

long, extends from vent to end of tail. No caudal fin. Pectoral placed high. Ventrals advanced.

Deep sea fishes, included in the single family.

2827

Family Halosauridae

Body elongate, long slender tail narrowed into sort of filament. Head depressed in front. Snout flattened, protrudes beyond mouth. Eye rather large. Mouth horizontal, moderate, front edge formed by premaxillary, limb edge by maxillary, which moderately wide. Teeth in bands in jaws, on rudimentary palatines and pterygoids, none on vomer and tongue. Facial bones with large mucriferous cavities. Bones of head unarmed. Gill rakers short. Gill membranes free from isthmus. Scales cycloid, present on trunk and sides of head. No axillary scales. Lateral

pectoral 1'/5.

Brown, little paler on lower sides of head and abdomen. Each scale on body with paler brown spot than body color, formed regularly to make longitudinal pale bands through scale courses medially, most distinct on back and sides above. Head bare & uniform or without very distinct pale spots. Iris neutral gray. Dorsals and anals & caudal brown, diminishing posterior rays whitish in each fin; rest of dorsal area on dorsal with about 5 series of small, mid contrasted white spots, variable, above tending to form streaks, though margin of fin above slightly paler and rather broadly uniform; anal with large dark area immaculate. Caudal dull brown, paler posteriorly.

line low, extends along sides of belly, its scales enlarged, each in pouch of black skin with luminous organ at base. Dorsal inserted behind ventral, before vent. Anal rays about 200. Pectoral long, narrow. Ventral moderate.

Analysis of genera

a'. Head without prominent lateral ridges; scales in lateral line scarcely enlarged.

Halosaurus.

a². Head with prominent lateral ridges; scales in lateral line enlarged.

Halosauropsis.

2829

Genus Halosauropsis Collett

Halosauropsis Collett, Rés. Camp. Sci. Monaco, vol. 9, 1895, p. 143. Type Halosaurus macrochir Günther, orthotypic.

Aldrovandia Goode and Bean, Oceanic Ichth., 1895, p. 132. Type Halosaurus rostratus Günther.

(Aldrovandium Chiaje 1844 not involved.)

Head with prominent lateral ridges. Snout pointed. Vertex scaleless. Scales of lateral line enlarged, provided with photophores. No second dorsal fin. Anal moderate, high, third to fourth of dorsal. Ventrals normal.

Analysis of species

a.' Orbit moderate, more than 6 in head.

b.' Maxillary not reaching orbit or eye; postocular scaly.

c.' Orbit 7 1/4 in head; enlarged scales 29 to ventral; 12 above lateral line.
affinis.

c.² Orbit 11 3/4 in head; enlarged scales 24 to ventral; 13 above lateral line.
rostratus.

b.² Maxillary reaches orbit or eye.

d.' Dorsal inserted over or close behind ventral base, not posterior to first fifth of space between ventral and anal origins.

e.' Enlarged scales 22 to 27 to ventral.

f.¹ Head naked above; 14 scales above lateral line. verticalis.

f.² Head scaly above; 17 scales above lateral line. hawaiensis.

e.² Enlarged scales 29 to ventral; 11 scales above lateral line; proboscideus.

head scaly above.

e.³ Enlarged scales 36 to ventral; 14 scales above lateral line; head naked above. macrochir.

d.² Dorsal inserted well behind ventral posterior to first fifth of space between ventral and anal origins.

g.¹ Dorsal origin at first fourth between ventral and anal; enlarged scales 27 to 30 to ventral; 10 above lateral line. gracilis.

g.² Dorsal origin at first third between ventral and anal; enlarged scales 18? to ventral; 14 above lateral line. mediorostris.

a.² Orbit large, less than 6 in head.

b.¹ Orbit 5 1/4 in head; lower gill rakers 11; scales 25? to ventral; head naked above. phalacrus.

b.² Orbit 4 1/8 to 4 1/3; lower gill rakers 9; scales 40 to 50 to ventral; head scaly above. ridgewayi.

f. ' Head naked above. verticalis.

f.² Head scaly above. bahaiensis.

e.³ Enlarged scales 29 to ventral; 11 above lateral line, ' head scaly

2633

Halosauropsis affinis (Günther)

Halosaurus affinis Günther, Ann. Mag. Nat. Hist., ser. 4, vol. 20, 1877, p. 444. South of Japan; Rep. Voy. Challenger, vol. 22, 1887, p. 241, pl. 54, fig. B (type). — Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1890, p. 309 (Laccadive Sea, 100 fathoms); Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 335 (reference). — Gilchrist, Marine Investig. South Africa, vol. 4, 1906 (1908), p. 171 ( ). — Gilchrist and Von Bonde, Fisher. Marine Biol. Survey South Africa, Rep. no. 3, 1922 (1924), no. 7, p. 10 (off South Africa, 580 to 1400 fathoms).

Aldrovandia affinis Goode and Bean, Oceanic Ichth., 1895, p. 130 (diagnosis in key). — Barnard, Ann. South African Mus., vol. 21, pt. 1, June 1922, p. 167 (off Cape Point and Table Bay, 500 to 1400 fathoms).

Halosaurus anguilliformis Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1889, p. 453. N. 6°32'E. 79°37'; 675 fathoms, Gulf of Manaar; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 336 (reference); Cat. Deep Sea Fishes Indian Mus., 1899, p. 184 (Andaman Sea, off Laccadive Islands, 1000 fathoms; Gulf of Manaar, 675 fathoms).

Aldrovandia anguilliformis Goode and Bean, Oceanic Ichth., 1895, p. 130 (diagnosis in key).

2835

Halosaurus hoskynii Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1890, p. 309. Off Chilapeni Banks, Laccadive Sea, in N. 11° 12' 47" E. 74° 25' 30", 1000 fathoms; 3 Illustrat. Zool. Investigator, Fishes, pt. 1, 1892, pl. 7, fig. 3; Journ. Asiatic Soc. Bengal, vol. 65, p. 2, 1896, p. 336 (reference). — Goode and Bean, Oceanic Ichth., 1895, p. 130 (reference).

Depth 7 1/3 to vent; head 2 1/4, width 3 1/3. Snout 2 1/4 in head; eye 7 1/4, 3 1/4 in snout, equals interorbital; maxillary not reaching front eye edge, length 2 2/5? in head; palatine band of teeth not wider than premaxillary, only slightly separated from that

of other side and somewhat distant from pterygoid teeth; interorbital 7 1/4, low.

Scales 29 enlarged to vent; 12 above, 2 below. Scales on postocular. Scales very caducous, most all fallen.

D. I, 11, first branched ray 2 2/5 in head, fin origin over ventral base close behind ventral origin; pectoral 1 4/5 in head; ventral 3 1/4.

Light colored. Head, vent and hind part of tail black. Length 422 mm. (Günther.

Pacific and Indian Oceans.

2837

Halosauropsis rostratus (Günther)

Halosaurus rostratus Günther, Ann. Mag. Nat. Hist., ser. 5, vol. 2, 1878, p. 251. Mid Atlantic, 2750 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 241, pl. 59, fig. d (type).

Aldrovandia rostrata Goode and Bean, Oceanic Ichth., 1895, p. 133, pl. 41, fig. 154 (compiled). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 609 (copied).

Halosauropsis rostratus Roule, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 29 (N. 15°17'W. 23°1'45", 1311 meters, off Cape Verde).

Depth 6 to vent; head 2 3/5 to vent, width 4. Snout 2 in head; eye 11 3/4, 5 3/4 in snout, 1 2/3 in interorbital; maxillary reaches 9/10 to eye, length from snout tip 2 1/8 in head; palatine teeth in crescentic bands, rather widely separated from pterygoid band; interorbital 6 2/5, low.

Scales 24 enlarged in lateral line to vent; 13 above. Postocular scaly. Fins scaleless. Nearly all scales lost, only some in lateral line remain.

D. 10, third ray 3 in head, fin origin at first 2/5 between ventral and anal origins; first anal ray 4 4/5 in head; pectoral 2 1/8; ventral 3 1/2, rays 9 or 10.

Light colored, lower part of head and gill cover black. Abdominal region blackish. Length 500 mm.

(Günther.

Atlantic Ocean.

2840

Halosauropsis verticalis (Gilbert)

Halosaurus verticalis Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 611. Near Kauai, 437 to 632 fathoms; off Bird Island, 318 to 800 fathoms. — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (Hawaii).

Aldrovandia verticalis Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), pl. 75.

Depth 23, 6 1/5 to 6 4/5 to anal; head 6 4/5 in total, 2 to 2 1/6 to anal, width 3 7/8 to 4. Snout 2 1/3 in head; orbit 6 1/5 to 6 2/5; eye 7 to 9 1/4, 4 1/4 to 4 1/3 in snout, 1 1/8 to 1 1/5

in interorbital; maxillary reaches
1/5 to 1/3 in eye, length from snout
tip 2 1/4 in head; teeth in villiform
bands in jaws, palatine bands
closely approximated, pterygoid
bands much longer and narrower;
interorbital 7 to 8 1/2, with median
depression widening and deeper
on occiput. Gill rakers 6 + 18,
finely and slenderly lanceolate,
nearly equals orbit; gill filaments
2/5 gill rakers.

Scales 25 enlarged to vent;

14 above, 40 to 45 predorsal.
Postocular scaly, top of head
scaleless. Fins scaleless. Scales
very caducous, most all fallen.

D. I to III, 9, I, first branched
ray 2 1/8? to 2 1/5 in head, fin
origin at first fifth between
ventral and anal origins; first
anal ray 3 4/5 to 4 in head;
pectoral 1 3/5; ventral 2 4/5 to 3.

Brownish blacks on backs and
sides with contrasted blacks
median streaks behind dorsal

fin, less conspicuous posteriorly. Head, belly and lower parts black, also inside mouth and gill openings. Fins dusky brown, variably paler terminally.

Pacific Ocean. Known by its finely lanceolate gill rakers, black median postdorsal band and long pectorals reaching ventral bases.

51645 U.S.N.M.
Vicinity Kauai. In 437 to 632 fathoms.
Albatross Station 4141. Length 283 mm.

Type.
51674 U.S.N.M.
Albatross Station .
Length 112? to 190? mm. 2 examples.

2844

Halosauropsis kauaiensis (Gilbert)

Halosaurus kauaiensis Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 611. Kauai Island, 724 to 804 fathoms; off Molokai; Bird Island; 376 to 385 fathoms.

— Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (Hawaii).

Aldrovandia kauaiensis Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), pl. 74.

Depth 14 1/2 to 18 1/3, 5 1/5 to 6 to anal; head 6 1/3 to 7 1/3 to end of tail, 2 1/8 to 2 3/5 to anal, width 3 2/3 to 3 3/4. Snout to eye 2 1/4 to 2 3/5 in head; eye 8 to 9 4/5, 3 1/4 to 4 in snout, 1 1/5 to 1 2/3 in interorbital;

maxillary reaches to or 1/5 in eye, length from snout tip 2 1/5 to 2 2/5 in head; teeth villiform, premaxillary band half length maxillary band, palatine band posteriorly nearly wide as premaxillary and closely approximating, pterygoid band very narrow; interorbital 5 1/2 to 6 3/5, convex. Gill rakers 5 or 6 + 17 to 19, lanceolate, little longer than gill filaments or 1 4/5 in eye.

Scales 22 to 27 enlarged in lateral line to vent; 17 above, 4 below, 35 to 40 predorsal to occiput. Top of

head naked, postocular scaly. Dorsal and anal scaly. Scales fairly adherent. Scales with 11 or 12 long basal radiating striae; circuli very fine and well crowded apically so only rather narrow apical border entire.

D. I, 8, I or I, 9, I, second branched ray 2 to 2 1/3 in head, fin origin at first eighth between ventral and anal origins; anal height anteriorly 4; tail extended in long filament; pectoral 1 3/5 to 1 2/3; ventral 3 1/10 to 3 1/4.

Dark brown, many of scales with light pearly median spot. Under parts, including snout, sides of head, subpectoral region and gill openings black; more bluish well within latter. Iris gray. Under surface of head neutral violaceous black. Dorsal and pectoral dusky basally, paler terminally. Anal dusky, lighter basally. Ventral dusky. Young with black vertebral band behind dorsal fin.

Pacific Ocean. This species greatly

suggests Haloxaurus maeracher,
especially in its long pectorals,
scaleless vertex, though its dorsal
apparently lower and gill rakers
more numerous.

51612 U.S.N.M.

Vicinity of Kauai. In 724 to 804 fathoms.
Albatross Station 4018. Length 648
mm. Type.

51703 U.S.N.M.

Albatross Station .
Length 283 to 628 mm. Paratypes.

2849

Halosauropsis proboscideus (Gilbert)

Halosaurus proboscidea Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 612. Kauai Channel, between Molokai and Oahu, 460 to 470 fathoms; Kaiwi Channel and Kauai, 438 to 476 fathoms. — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (compiled).

Aldrovandia proboscidea Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 612, pl. 76.

Depth 18, 6 1/4 to anal; head 7 2/5 in total, 2 4/5 to anal, width 3 1/2. Snout to eye 2 1/3 in head; orbit 7; eye 8, 3 3/4 in snout, subequal with interorbital; maxillary reaches to eye, length from

snout tip 2 1/4 in head, without spine; teeth rather finely villiform bands in jaws; crescentic palatine bands fully confluent anteriorly on median line, wider than premaxillary bands, pterygoid bands very narrow; interorbital equals eye, low. Gill rakers 4+11, little longer than gill filaments or 1 3/5 in orbit.

Scales 29 large scales in lateral line to vent, continued along above anal base first third its length; 11 scales above. Entire top of head

and postocular scaly. Fin scaly basally. Scales very caducous, most all now fallen. Scales with 14 or 15 basal radiating striae, circuli fine.

D. II, 8, first branched ray 2 4/5 in head, fin origin nearly at first seventh between ventral and anal origins; anal height anteriorly 4 1/2; pectoral 1 4/5; ventral 2 3/4.

Brown, nearly uniform. Head dark neutral gray, blackish on branchiostegal membrane. Inside

mouth and gill opening blackish.
Iris dark gray. Fins brownish.

Pacific Ocean.

5-1614 U.S.N.M.

Kaiwi Channel, between Molokai and
Oahu. In 460 to 470 fathoms.

Albatross Station 4111. Length 4 1/2 mm.

Type.

1853

Haloxaurops̀is macrochir (Günther)

Haloxaurus macrochir Günther, Ann. Mag. Nat. Hist., ser. 5, vol. 2, 1878, p. 250. Atlantic, 1090 fathoms; midway between Cape of Good Hope and Kerguelen's Land, 1375 fathoms. — Miner, Rep. U. S. Fish Comm., pt. II, 1883 (1885), p. 195 (N. 38° to 39° W. 70° to 72°, 1091 to 1451 fathoms). — Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 237, pl. 59, fig. A, pl. 60, figs. 1–2 (type; off Gibralter, 1090 fathoms; near Marion Island, 1375 fathoms). — Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 170, pl. 16, fig. 2 a–e (coasts of Morocco; Azores; 2200 to 2995 meters). — Jordan and Evermann, Bull. U. S. Nat. Mus.,

no. 47, pt. 1, 1896, p. 609 (copied).

Aldrovandia macrochira Goode and Bean, Oceanic Ichth., 1895, p. 133, pl. 41, fig. 155 = a (N. 17° to 41° W. 65° to 76°, 647 to 1434 meters).

Aldrovandia macrochir Barnard, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 68, pl. 8, fig. 4 (off Cape Point and Table Bay, 800 to 1400 fathoms).

Halosauropsis macrochir Collett, Rés. Camp. Sci. Monaco, vol. 10, 1896, p. 146, pl. 5, figs. 23 — b (N. 39° 18' 5" W. 33° 22' 15", 1372 meters). — Zugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 12 (N. 43° 45' 30" W. 9° 41', 320 meters). — Murray and Hjort, Depths of the Ocean, 1912, p. 396, fig. 103 b (between Gan Canara

and Cape Bojador, from Gran Canara 2455
to Fayal, Newfoundland to Glasgow,
1797 to 3120 meters). — Roule, Rés. Camp.
Sci. Monaco, vol. 52, 1919, p. 29 (N. 38°40' W.
26°00'45", 1805 meters; N. 38°45'30" W. 28°7'
45", 1095 meters; off Azores). — Vaillant,
Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 130
(N. 38°27' W. 26°30'15", 1165 meters; N. 39°11' W.
30°44'40", 1846 meters; N. 37°40' W. 26°26'15",
1919 meters).

Halosaurus goodei Gill, Proc. U. S. Nat.
Mus., vol. 6, 1883 (1884), p. 257. N. 38° to 39°
W. 69° to 70°, 1098 to 1731 fathoms, — Miner,
Rep. U. S. Fish Comm., pt. 11, 1883 (1885), p.
195 (N. 39°26'16" W. 70°2'37", 1362 fathoms).

Aldrovandia goodei Goode and Bean, Oceanic Ichth., 1895, p. 133 (type; west Atlantic materials; 1098 to 1362 fathoms). — Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 610 (compiled). Halosaurus niger Gilchrist, Marine Investig. South Africa, vol. 4, 1908, p. 170, pl. 51. Off Cape Point, 800 to 730 fathoms. — Gilchrist and Von Bonde, Fisher. Marine Biolog. Survey South Africa, Rep. no. 3, 1922 (1924), no. 7, p. 101 off South Africa, 1400 fathoms).

Depth 11 1/8 to 19 1/5, 4 2/3 to vent;
head 7 1/6 to 7 1/4 in total, 2 1/3 to 3 to
anal, width 2 4/5 to 3 3/4. Snout to eye
2 1/6 to 2 2/5 in head; orbit 7 4/5; eye 9
to 11 3/4, 3 1/4 to 5 1/5 in snout, 1 1/4 to 2 4/5
in interorbital; maxillary reaches
9/10 to or 1/4 in orbit, or to front edge,
length from snout tip 2 1/4 to 2 3/4 in
head; teeth finely villiform, premaxillary
band broader than maxillary band,
palatine patches oval and separated,
pterygoid in very narrow band;
interorbital 4 2/5 to 7 3/4, below, broadly

convex. Gill rakers 4 or 5 + 10 to 14, lanceolate, rather robust, 1/5 in orbit; gill rakers 3/4 gill filaments. Scales 36 enlarged in lateral line to anal, then about 28 to first third of anal; 14 above, 7 below, 31 predorsal to occiput. Top of head naked, posterior scaly. Fins scaly. Scales very caducous, mostly all fallen. Scales with 5 to 7 short marginal basal radiating striae; circuli very fine, numerous, not extended apically.

D. I, to III, 9, I or 10, I, first

branched ray 1 2/3 to 2 1/8 in head, fin origin nearly over ventral with age, in young at first eighth between ventral and anal origins; first anal ray 2 4/5 to 4 1/5; tail long slender tapering filament, caudal very short; pectoral 1 9/10 to 1 1/6; ventral 2 1/5 to 2 2/5.

Dark brown to brownish black.

Head black. Iris neutral black.

Inside mouth and gill openings black.

Large scales of lateral line often neutral-dusky. Fins dark brownish.

Atlantic and Antarctic Oceans.

The most abundant species in the collection, variable, though the characters such as the long pectoral, advanced dorsal and short snout. are more pronounced with age.

33281 U.S.N.M.

Length 650 mm.

33312 U.S.N.M. N. 39° 41' W. 69° 20' 20".
Sw 1106 fathoms. Albatross Station 2051.
Length 350 to 455 mm. 4 examples.

33329 U.S.N.M.

Length 528 to 704 mm. 6 examples.

33336 U.S.N.M.

Length 624 to 711 mm. 3 examples.

33338 U.S.N.M.

Albatross Station

~~Length 430 to 713 mm.~~ Length 430 to 713 mm.
9 examples. Sub as Aldrovandia goodei.

33365 U.S.N.M. N. 41° 9' 10" W. 66° 2' 20".
In 1255 fathoms. Albatross Station
2077. Length 227 to 690 mm. 2 examples.

33585 U.S.N.M. N. 39° 22' 20" W. 70° 52' 20".
Albatross Station.
Length 632 mm.

35500 U.S.N.M.
Albatross Station
Length 504 mm.

35501 U.S.N.M.
Albatross Station
Length 616 to 658 mm. 2 examples.

35551 U.S.N.M. N. 39° 47' W. 70° 30' 30".

Albatross Station

Length 290 to 395 mm. 2 examples.

38098 U.S.N.M.

Albatross Station

Length 464 mm.

38101 U.S.N.M.

Albatross Station

Length 628 mm.

38138 U.S.N.M.

Albatross Station

Length 660 mm.

38139 U.S.N.M.

Albatross Station

Length 730 mm.

38144 U.S.N.M.

Albatross Station 2727.

Length 482 to 514 mm. 2 examples.

35599 U.S.N.M.

Length 368 to 716 mm. 17 examples.

38098 U.S.N.M.
Albatross Station.
Length 464 mm.

38101 U.S.N.M.
Albatross Station
Length 628 mm.

38138 U.S.N.M.
Albatross Station
Length 660 mm.

38139 U.S.N.M.
Albatross Station
Length 730 mm'.

38144 U.S.N.M.
Albatross Station 2727.
Length 482 to 514 mm'. 2 examples.

2863

39196 U.S.N.M.

Albatross Station

Length 617 mm.

39198 U.S.N.M.

Albatross Station 2748.

Length 643 mm.

44329 U.S.N.M.

Albatross Station 2111.

Length 295 to 350? mm. 2 examples.

44330 U.S.N.M.

Albatross Station 2074.

Length 359 mm.

44331 U.S.N.M.

Albatross Station 2116.

Length 394? to 433 mm. 2 examples.

44334 U.S.N.M.

Albatross Station 2550.

Length 261 mm.

44335 U.S.N.M.

Albatross Station 2533.
Length 290 to 422 mm. 2 examples.

44860 U.S.N.M. N. 35°45'23" W. 74°31'25".
Albatross Station 2116.
Length 692 mm.

46806 U.S.N.M.
Albatross Station 2682.
Length 555 mm.

84529 U.S.N.M.
Albatross Station 2677.
Length 165? mm. As Halosaurus johnsonianus.

2 examples U.S.N.M.
Albatross Station 113.
Length 534 to 675 mm. 1883.

2865

Halosauropsis gracilis (Goode and Bean)

Aldrovandia gracilis Goode and Bean, Oceanic Ichth., 1895, p. 134, pl. 42, fig. 167. Blake Station LXX, off Guadeloupe, 769 fathoms; N. 28° 2' 30" W. 87° 43' 45", 1430 fathoms; N. 28° 5' W. 87° 56' 15", 1330 fathoms. — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 610 (compiled).

Depth 20 2/3 to 21 1/4, 7 to 7 1/8 to anal; head 8 1/3 to 8 2/3, 2 7/8 to 3 to anal, in total, width 3 to 3 1/8. Snout to eye 2 1/10 to 2 1/3 in head; orbit 6 7/8 to 8 1/2; eye 9 4/5 to 10, 4 1/3 to 4 1/2 in snout, 1 3/4 to 1 7/8 in interorbital; maxillary reaches orbit or eye, length from

snout tip 2 1/8 to 2 1/5 in head;
teeth on maxillary in somewhat
narrower bands than on premaxillary
and mandible, palatine patches
broader, well separated in front;
interorbital 5 1/4 to 6 7/8, equals eye,
low, broadly convex. Gill rakers 4+
11, 1 2/5 in eye, twice gill filaments.

Scales 27 to 30 enlarged in lateral
line to anal, then 23 along front of
anal; 10 above, 4 below. Top of
head scaleless, few scales on
postocular. Fins scaly.

D. II, 9, I, second branched ray 2 1/8 to 2 1/5 in head, origin about first fourth between ventral and anal origins; first branched anal ray 3 1/5 to 4 in head; tail tapers in long filament; pectoral 2 to 2 1/8; ventral 2 3/4 to 3.

Body pale brown. Head pale, with whitish or silvery tints. Iris gray. Fins pale brownish or whitish.

Atlantic Ocean.

2568

44327 U.S.N.M.

Albatross Station 2381.

Length 423 mm.

44328 U.S.N.M.

Albatross Station 2380.

Length 494 mm.

1 example U.S.N.M. N. 28° 2' 30" W. 87° 43' 45". In 1430 fathoms. Albatross Station 2380. Length 490 mm.

2869

Halosaurops is mediorostris (Günther)
Halosaurus mediorostris Günther, Rep.
Voy. Challenger, vol. 22, 1887, p. 239, pl. 59,
fig. C. N. 12°21' E. 122°15', west of Philippines,
700 fathoms. — Alcock, Journ. Asiatic
Soc. Bengal, vol. 63, pt. 2, 1894, p. 136
(S. of North Maldive atoll, 719 fathoms);
vol. 65, pt. 2, 1896, p. 336 (reference);
Cat. Deep Sea Fishes Indian Mus., 1899,
p. 185 (Arabian Sea between Maldives
and Cape Comorin, 719 fathoms).

Aldrovandia mediorostris Goode and
Bean, Oceanic Ichth., 1895, p. 130
(diagnosis in key).

depth 7 3/3 to vent, head 2 3/4, width 3 3/5. Snout 2 1/5 in head, eye 1 2 1/2, 6 in snout, 3 1/8 in interorbital; maxillary reaches nearly, but not quite, to eye, length from snout tip 2 1/5 in head; interorbital 5 4/5, low, convex. Gill rakers 3 + 14, lanceolate, equals gill filaments, 1 1/2 in eye.

Scales (pockets) about 44 along lateral line to vent, enlarged ones lost, possibly 22? in same extent; 10 scales (pockets) above lateral line.

D. II, 10, I, first branched ray 2 7/8 in head, origin about first third between ventral and anal origins; third branched anal ray 4 in head; pectoral 2; ventral 3 1/10.

Brown, scale pockets all deeper or darker colored. Head with silvery gray below - on underlaid neutral black. Gill openings and inside mouth and pharynx neutral black. Iris gray. Fins all pale brownish.

Indian Ocean, China Sea. My single example seems to agree with Günther's figure, especially in its maxillary not reaching the eye and the position of the dorsal fin.

10246. D.5610. Batu Daka Island (S.), N. 87° W., 20.9 miles (S. 0° 36' E. 122° 1'), Gulf of Tomini, Celebes. In 678 fathoms. November 19, 1909. Length 598 mm.

Halosauropsis phalacrus (Vaillant)

Halosaurus phalacrus Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 185, pl. 15, fig. 3, pl. 16, figs. 1a-c. Off Morocco, Soudan, Azores, 1103 to 2220 meters. — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 253 (N. 1°48'2" E. 45°42'5", 1644 meters, off northeast coast of Africa). — Zugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 11 (N. 43°45'30" W. 9°41', 2320 meters). — Roule, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 28 (N. 27°41' W. 17°53'45", 1786 meters; N. 16°34' W. 23°3'15", 1477 meters). — Vaillant, Rés. Camp. Sci. Monaco,

vol. 52, 1919, p. 130 (N. 39° 21' 20" W. 31° 5' 45", 1360 meters).

Aldrovandia phalacrus Goode and Bean, Oceanic Ichth., 1895, p. 134, pl. 41, fig. 156 (compiled).

Depth 24 1/5, 9 to anal; head 8 in total, 3 to anal, width 3 3/5. Snout to eye 2 1/3 in head; orbit 5 1/4; eye 7 3/5, 3 1/5 in snout, 1 in interorbital; maxillary reaches eye, length from snout tip 2 1/4 in head; interorbital 7 3/5, low, nearly level. Gill rakers 5+11, rather robust, lanceolate, 1/2 in eye; gill filaments 3/4 of gill rakers. Scales 25? enlarged in lateral

line to anal and at least dozen more along front of anal base. Top of head scaleless, postocular scaly. Fins scaleless. Scales very caducous, most all fallen.

D. II, 9, I, first branched ray 2 3/4 in head, origin at first eighth between ventral and anal origins; third anal ray 4 2/5.? in head; tail long, slender, tapering to slender filament; pectoral 3; ventral 3.

Body pale brown. Head neutral dusky. Iris grayish. Inside mouth

2875

and gill openings blackish. Fins pale brownish.

Atlantic Ocean.

42105 U.S.N.M.

Museum Hist. Nat. Paris 85+387.

Length 443 mm.

Halosaurus ridgewayi new species
of Fish
Depth 12 1/4 to 16, 5 2/3 to 6 3/5 to
vent; head 6 9/10 to 7 in total, 3 to 3 1/8
to vent, width 3 1/5 to 3 1/2. Snout to
eye 2 1/2 to 2 3/4 in head; orbit 4 1/4 to
4 1/3; eye 5 1/5 to 5 2/3, 1 7/8 to 2 in snout;
greater than interorbital in young;
maxillary reaches orbit, length from
snout tip 2 3/4 to 2 7/8 in head;
teeth in villiform bands in jaws
and on palatines, on latter closely
approximated or scarcely interrupted;
bony interorbital 12 1/4 to 14, narrow,

nearly level or depressed. Gill rakers 4 + 9, lanceolate, rather robust, 3/4 of gill filaments, which 1/2 of orbit.

Scales 40 to 50 in lateral line to vent, not enlarged; 12 above, 3 below, 33 to 35 predorsal forward to snout tip. Head scaly over all upper surface and postocular. Fins all more or less scaly basally, Scales with 12 to 16 long basal radiating striae; circuli moderate, not extended apically.

D. I, 9, I, first branched ray 1 4/5 to 1 9/10 in head, inserted at first fifth between ventral and anal origins; C. 140, longest front rays 2 2/3 to 2 4/5; tail long, slender, forming fine filament; pectoral 1 1/2 to 1 3/5; ventral 2 1/6 to 2 2/5.

Back and upper surfaces brown, little paler below, evidently silvery white in life. Head comparatively pale, under surface whitish. Iris gray. Inside mouth and gill opening blackish. Gray tints on opercle.

fins all pale brownish, paired ones little paler.

Diagnosis. Related to Halosaurus guntheri but with much larger scales, longer maxillary and lower surface of head and belly uniformly pale. Similar in physiognomy and scales well adherent.

Type. No. U.S.N.M.

For Robert Ridgeway, with pleasant memories of by gone days in ~~to~~ his department in the old Smithsonian Institution.

1722. D. 5527. Balicasag Island (C.), N. 14° W., 8.2 miles (N. 9° 22' 30" E. 42' 40"), between Siquijor and Bohol. 3 m 392 fathoms. August 11, 1909. Length 354 mm. Type.

2365. D. 5508. Camp Overton Light, Iligan Bay, S. 6° E., 4.9 miles (N. 8° 17' 24" E. 24° 11' 42"), northern Mindanao and vicinity. 3 m 270 fathoms. August 4, 1909. Length 328 mm.

10139. D. 5511. Camp Overton Light, S. 80° E., 15.3 miles (N. 8° 15' 20" E. 123° 57'), northern Mindanao and vicinity. 3 m 410 fathoms. August 7, 1909. Length 302 to 371 mm. 2 examples.

10270. D. 5513. Camp Overton Light, S. 67° E., 10.3 miles (N. 8° 16' 45" E. 124° 2' 48"), northern Mindanao and vicinity. 3 m 505 fathoms. August 7, 1909. Length 354 mm.

10172. D. 5501. Macabalan Point Light (Mindanao), S. 35° E., 8.2 miles (N. 8° 37' 37" E. 124° 35'), northern Mindanao and vicinity. Dn 214 fathoms. August 4, 1909. Length 328 mm.

D. 5504. Macabalan Point Light (Mindanao), S. 31° E., 7.7 miles (N. 8° 37' 15" E. 124° 36'), northern Mindanao and vicinity. Dn 220 fathoms. August 5, 1909. Length 172 mm.

3537. D. 5348. Point Trabonan, S. 89° E., 33.5 miles (N. 10° 57' 45" E. 118° 38' 15"), Palawan Passage. Dn 375 fathoms. December 27, 1908. Length 365 mm.

Genus Halosaurus Johnson

Halosaurus Johnson, Proc. Zool. Soc. London, 1863, p. 406. Type Halosaurus ovenii Johnson, monotypic.

Halosaurichthys Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 4, Nov. 1889, p. 454. Type Halosaurichthys carinicauda Alcock, monotypic.

Head without angular ridges. Snout obtusely rounded. Top of head scaly. Scales of lateral line scarcely enlarged. No second dorsal. Anal high. Ventrals normal.

Analysis of species

a.' Halosaurus. Orbit large, less than 7'/4 in head.

b.' Maxillary not reaching orbit, or only to front edge of orbit.

c.' Lower gill rakers 9; scales 14 to 16 above lateral line.

d.' Anal 126; head 7 to 7'/4. guntheri.
d.² Anal 188; head 7 4/5. oveni.

c.² Lower gill rakers 11 or 12; scales 9 to 14 above lateral line.

e.' Pectoral 1 3/5 to 2 in head; scales 30 to 45 to vent.

f.' Scales above lateral line 11; depth 14 4/5; head 6'/6. radiatus.
f.² Scales above lateral line 12; depth 19 7/8 to 21'/5; head 7'/6 to 7 2/3. parvipennis.

f.[3] Scales above lateral line 14; depth 18 to 18 1/4; head 5 1/5 to 6 2/5. pallidus.

e.[2] Pectoral 2 1/5 to 2 4/5 in head; scales 52 to 59 to vent; head 7 1/5 to 8.

g.[1] Pectoral 2 1/5 in head; orbit 7 1/4; 12 scales above lateral line. attenuatus.

g.[2] Pectoral 2 1/3 to 2 4/5 in head; orbit 5 3/4 to 6; 9 scales above lateral line. johnsonianus.

c.[3] Lower gill rakers 17; 14 scales above lateral line; scales 55? to vent; head 6 1/5. pectoralis.

b.[2] Maxillary reaches opposite pupil; 10 scales above lateral line; scales 30? to vent; head 7. nigerrimus.

a.[2] Haloxenichthys. Orbit small, 10 in head; maxillary not to orbit; lower gill rakers 7 or 8; head 7 2/5. carinicauda.

Halosaurus guntheri Goode and Bean

Halosaurus guntheri Goode and Bean,

Oceanic Ichth., 1895, pp. 131. N. 39°13' W. 70°1',

594 fathoms. — Jordan and Evermann,

Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p.

608 (copied).

Depth 12 3/4 to 19, 7 to 8 1/2 to vent;

head 7 to 7 1/4 in total, 3 1/3 to 3 3/5 to

vent, width 3. Snout to eye 2 2/5 in

head; orbit 4 1/2 to 5; eye 5 1/2 to 7 3/5,

2 2/5 to 3 in snout, subequal with

interorbital; maxillary reaches 4/5 to

9/10 to orbit, length from snout tip

2 3/5 to 2 3/4 in head; teeth in jaws villiform, also 2 palatine bands closely approximated; interorbital 5 1/2 to 7 3/5, low or bout slightly convex. Gill rakers 3+9, rather robust, equal gill filaments or 2 1/3 in eye. Scales 67 to 70 in lateral series to vent; 47 large scales in lateral line to vent; 14 or 15 above, 3 below, 40 to 48 predorsal to occiput. Entire top of head and postocular scaly. Fins all more or less scaly, especially basally.

Scales with 9 to 11 basal radiating striae.

D. I, 9, I or I, 10, I, origin opposite first eighth in space between ventral and anal origins, first branched ray 1 4/5? to 2 in head; A. I 26, third ray 3 to 3 1/2?; caudal 2; pectoral 1 2/3 to 2; ventral 2 1/4 to 2 3/5.

Brown generally, nearly uniform. Iris gray. Inside mouth and gill openings blackish. Fins brown, pectorals paler.

Western Atlantic.

38070 U.S.N.M. N. 39°13' W. 70°1';
In 594 fathoms. Albatross Station
2722. Length 515 mm. Type.

35418 U.S.N.M.

Albatross Station 2181.

Length 487 to 518 mm. 2 examples.

47620 U.S.N.M.

Blake Station LXVII.

Length 325 mm. As Haloxaurus
owenii.
(see B. & B. p. 131)

2868

Haloxaurus oweni Johnson

Haloxaurus oweni Johnson, Proc. Zool. Soc. London, 1863, p. 406, pl. 36, fig. 2. Madeira.

Haloxaurus owenii Günther, Cat. Fishes Brit. Mus., vol. 7, 1868, p. 482 (type); Rep. Voy. Challenger, vol. 22, 1887, p. 236 (type). — Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 175, pl. 14, fig. 5a–f, pl. 15, fig. 1 a–c, pl. 16, fig. 3–a (coasts of Morocco, Canaries, Soudan, Banc d'Arguin, Azores, 830 to 1617 meters).

Halosaurus oweni Goode and Bean, Oceanic Ichth., 1895, fr. 150, pl. 40, fig. 152 (N. 39° 29' W. 71° 46'; 693 fathoms); Blake Station LXVIII, 243 to 458 fathoms, off Guadeloupe and Santa Lucia). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, fr. 607 (compiled). — Gilchrist and Von Bonde, Fisher. Marine Biol. Surv. South Africa, Rep. No. 3, 1922 (1924), No. 7, fr. 10 (off Table Bay, 600 fathoms). — Barnard, Ann. South African Mus., vol. 21, pt. 1, June 1925, fr. 166 (compiled).

2890

Depth 13 1/5 to 18, 5 4/5 to 6 7/8 to anal; head 7 4/5 in total, 3 2/5 to anal, width 3 3/5. Snout to eye 2 1/3 in head; orbit 4 7/8 to 5; eye 7 to 7 4/5, 3 1/4 to 3 2/5 in snout, greater than interorbital; maxillary from snout tip reaches 4/5 or to orbit, length 2 1/8 to 3 in head; teeth in villiform bands in jaws, on palatines bands little narrower and closely approximated in front; interorbital 7 to 8; low, very slightly convex. Gill rakers 2+9, short points, equal gill filaments 2 1/2 in eye.

Halosaurus owenii Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 607 (compiled). — Gilchrist and Von Bonde, Fisher. Marine Biol. Survey South Africa, Rep. no. 3, 1922 (1924), no. 7, p. 10 (off Table Bay, 600 fathoms). — Barnard, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 166 (compiled).

Scales 60 in lateral line to vent, not especially enlarged; 16 above, 4 below. Snout, head above and postocular scaly. Fins scaly. Scales caducous, most all fallen.

D. I or II, 8, I to 10, I, first branched ray 2 to 2 1/8 in head, origin at first eighth between ventral and anal origins; A. 188, longest front ray 2 3/4 in head; tail tapers into long slender filament; pectoral 1 2/3 to 2; ventral 2 1/2 to 3.

Nearly uniform brownish. Under surface of head usually pale. Iris grayish. Inside mouth and gill opening blackish. Lower sides of head whitish. Fins uniform pale brown.

Atlantic Ocean.

33379 U.S.N.M.

Albatross Station 2072. 1884.
Length 110 to 383 mm., smaller with tail broken off.

35418 U.S.N.M..

Albatross Station 2181. 1884.
Length 543 mm..

2693

Halosaurus radiatus (Garman)

Halosaurus radiatus Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 298, pl. 60, fig. 2, pl. 84, figs. 3–6. N. 7°W. 75° to 80°, 259 to 511 fathoms, Panama Gulf.

Depth 14 4/5, 6 1/2 to vent; head 6 1/6 in total, 2 7/8 to vent, width 3 1/2. Snout 3 in head; eye 6 3/4, 2 1/6 in snout, nearly subequal with interorbital; maxillary reaches nearly to eye, length from snout tip 3 in head; teeth minute, villiform, in narrow bands in jaws, on palatines and pterygoids; interorbital 5 1/8, low, depressed. Gill rakers 5 + 11, 3/4 of gill rakers, which 1 1/2 in eye.

Scales 175.? in median lateral series to caudal base; 45 scales in lateral line to vent; 11 above, 4 below. Top of head and postocular finely scaly. Fins more or less scaly. Scales very caducous, most all fallen.

D. $\frac{I}{=}, 9, \frac{I}{=}$, first branched ray 2 in head, origin at first sixth in space between ventral and anal origins; third anal ray 2 3/5 in head; tail tapers to very slender filament, caudal 4; pectoral 2; ventral 2 4/5.

Brown, sides and under surfaces

2895

paler, likely silvery white when fresh. Iris grayish. Inside mouth and gill opening black. Fins rather pale brownish.

Eastern Pacific. Garman gives the increased branchiostegal rays, 21 to 23, as a character of distinction.

57890 U.S.N.M.

Albatross Station 3354.
Length 240 mm.

1896

Halosaurus parvipennis Alcock

Halosaurus parvipennis Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 10, 1892, p. 362. Laccadive Sea, 865 to 880 fathoms; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 336 (reference); Cat. Deep Sea Fishes Indian Mus., 1899, p. 186 (Arabian Sea, off Malabar coast, 459 to 880 fathoms).

Halosaurus parvipinnis Alcock, Illustrat. Zool. Investigator, Fishes, pt. 7, 1900, pl. 33, fig. 1.

Depth 19 7/8 to 21 1/5; 7 1/8 to 7 3/5 to vent; head 7 1/6 to 7 2/3 in total, 2 3/4 to vent, width 2 3/4 to 3 2/5. Snout to eye 2 1/4 in head; orbit 5 to 6 1/4; eye 7 1/3 to

to 8 1/4, 3 1/4 to 3 2/5 in snout, 1 to 1 2/5 in interorbital; maxillary reaches orbit, length from snout tip 2 2/5 in head; villiform teeth in band in each jaw, rather short closely approximated band on each palatine; interorbital 6 2/5 to 8 1/4, low, depressed. Gill rakers 3 + 11 or 12, rather robust, lanceolate, 1 1/2 in orbit; gill filaments 3/4 gill rakers.

Scales 30? enlarged to vent; 42 to 44 scales close along above lateral line to vent; 12 above to dorsal origin, 2 below, 33 to 38 predorsal forward

to occiput. Top of head naked; postocular scaly. Fins scaly basally. Scales very caducous, most all fallen. Scales with 7 or 8 long basal radiating striae; circuli extend well apically, though not to edge of scale.

D. I to II, 9, I, first branched ray 2 1/8 to 2 2/5 in head, fin origin about first eighth to tenth between ventral and anal origins; front anal height 3 to 3 2/3 in head; caudal extended in filament; pectoral 1 3/5 to 1 7/8; ventral 2 2/3 to 3 1/10.

Brown. Head neutral gray to slate, snout pale brownish. Iris dark gray. Inside mouth and gill opening blackish. Iridescent luster on opercle. Fins all pale brown.

Indian and Pacific Oceans.

. 2928. D. 5470. Atulayan Island (E.), S. 68° W., 6.7 miles (N. 13° 37' 30" E. 123° 41' 9"), east coast of Luzon. In 560 fathoms. June 18, 1909. Length 274 mm., tail broken.

10216. D. 5607. Binang Unang Island (E.) S. 36° E., 5 miles (S. 0° 4' E. N. 21° 36'), Gulf of Tomini, Celebes. In 761 fathoms. November 18, 1909. Length 420 mm.

2900

4232. D.5655. Cape Tabako, N. 7° E., 13 miles (S. 3° 34' 10" E. 120° 50' 30"), Gulf of Boni. Sn 608 fathoms. December 18, 1909. Length 253 mm.

3495. D.5647. North Island (S.), S. 87° E., 11.6 miles (S. 5° 34' E. 122° 18' 15"), Buton Strait. Sn 519 fathoms. December 16, 1909. Length 378 mm.

2121. D.5460. Kialat Point Light, N. 24° E., 8.2 miles (N. 13° 32' 30" E. 123° 58' 06"), east coast of Luzon. Sn 565 fathoms. June 10, 1909. Length 277? mm., tail broken.

10286. D.5582. Si Amil Island (N.), S. 82° W., 6.2 miles (N. 4° 19' 54" E. 118° 58' 38"), vicinity of Darvel Bay, Borneo. Sn 890 fathoms. September 26, 1909. Length 266 mm.

Halosaurus pallidus (Goode and Bean)

, Aldrovandia pallida Goode and Bean,

Oceanic Ichth., 1895, p. 135, pl. 42, fig. 158.

N. 24°36' W. 84°5', 955 fathoms; N. 28° to 41° W.

65° to 87°, 679 to 1430 fathoms. — Jordan and

Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1,

1896, p. 611 (copied).

Depth 18 to 18¼, 7 to 8½ to vent;

head 5 1/5 to 6 2/5 in total, 3 to 3⅛ to

vent, width 3 to 4½. Snout 2 to 2 2/5

in head, preoral portion 1 3/4 to 2 ¼

in snout length to eye; orbit 4 3/5

to 7¼ in head, eye 7¼ to 9 1/5, 3 2/3

to 4 in snout, 1¼ to 1 3/4 in interorbital;

maxillary reaches ⅞ to eye, length

from snout tip 2 to 2 1/4 in head;
teeth in broad villiform bands
in jaws, narrower closely approximated
bands on palatines; interorbital
6 to 6 1/5, low depressed. Gill
rakers 1/2 or 3 + 12, lanceolate, 1 4/5
in eye; gill filaments 2/3 gill
rakers.

Scales 5 6 in lateral line to vent;
30 enlarged scales in lateral line
to anal, followed by others to middle
of tail; 14 above, 3 below, 36 predorsal
to occiput. Top of head naked,

rather robust, equal gill filaments or 2 1/3 in eye.

Scales 70 in lateral series to vent, more or less adherent; 15 transversely at vent. Fins all more or less scaly, especially basally. Entire top of head and postocular regions scaly. Scales with 9 to 11 basal radiating striae.

D. I, 10, I, origin opposite first eighth in space between ventral and anal origins, first branched ray 2 in head; A. 126, third ray 3; caudal 2; pectoral 2; ventral 2 3/5.

Brown generally, nearly uniform. Iris gray. Inside mouth and gill openings blackish. Fins brown, pectorals paler.

postocular scaly. dorsal and anal scaly, scales caducous, most all fallen.

D. I, 9, I, first branched ray 2 to 2½? in head, origin close behind ventral origin or over ventral base; A. with second ray 3 2/3 to 4 1/8?; tail ends in slender filament; pectoral 1 4/5 to 1 7/8; ventral 2 3/4 to 3 1/3?

Pale brown. Head neutral gray to slaty, blackish underneath. Iris gray. Inside mouth and gill opening black.

Atlantic Ocean.

35638 U.S.N.M.

Length 492 mm.

38140 U.S.N.M. N. 24° W. 74°

Albatross Station.

Length 230? mm. to end of broken tail.

44832 U.S.N.M.

Albatross Station.

Length 167 mm.

Halosaurus guntheri Goode and Bean

Halosaurus guntheri Goode and Bean,

Oceanic Ichth., 1895, p. 181. N. 39°13' W. 70°1',

594 fathoms. — Jordan and Evermann, Bull.

U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 608

(copied).

Depth 12 3/4 to caudal base, 7 to vent; head

7 to caudal base, 3 3/5 to vent, width 3.

Snout 1, 2 2/5 to eye in head; 1, eye 7 3/5; orbit 5;

subequal with 1, interorbital; maxillary reaches

9/10 to 1 orbit, length from snout tip 2 3/4 in

head; teeth in jaws rather coarsely

villiform, 1 bands, similar on 4 rows and 2

bands closely approximated; interorbital

7 3/5, slightly convex. Gill rakers 3 + 9,

2905

Halosaurus attenuatus Garman

Halosaurus attenuatus Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 296, pl. 60, figs. 1-a. N. 2° 37' W. 92° 06', 1360 fathoms, north of Culpepper Islands. — Townsend and Nichols, Bull. Amer. Mus. Nat. Hist., New York, vol. 52, art. 6, May 16, 1925, p. 11 (off Port San Juanico, Lower California, Lat. 26°, 645 fathoms).

Depth 16, 6 1/4 to vent; head 8 in total, 3 to vent, width 2 4/5. Snout 2 1/3 in head; eye 7 1/4, 3 1/8 in snout, more than twice interorbital; maxillary reaches 7/8 to eye, length from snout tip 2 1/3 in head; teeth

small, in villiform bands, -in jaws, on palatines and pterygoids; interorbital 16, low, depressed. Gill rakers 11, tubercular, shorter than gill filaments.

Scales 59 in lateral line till opposite vent; 12 above, 5 below.

D. $\frac{I}{II}$, 9, second branched ray 3 in head, origin at first fourth between ventral and anal origins; second anal ray 4 3/4 in head; tail taper in long slender filament; pectoral 2 1/5, rays 15; ventral 2 4/5 in head.

Gill membranes, throat, intestines and linings of body cavity black. Sides of head blackish, except mucous canals and luminous organs. Muscular portion of body light reddish brown. Length 410 mm.

(Garman.)

Eastern Pacific Ocean.

~908

Halosaurus johnsonianus Vaillant

Halosaurus johnsonianus Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 181, pl. 15, fig. 2. Off Morocco, Canaries, Soudan coasts, Banc d'Arguin, 834 to 2115 meters. — Goode and Bean, Oceanic Ichth., 1895, p. 131 pl. 40, fig. 153 (compiled). — Vaillant, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 130 (N. 37°42'40" W. 25°5'15", 1385 meters).

Depth 25 to 28, 9 1/5 to 11 to anal; head 7 1/5 to 8, in total, 2 7/8 to 3 1/5 to anal, width 4 1/5 to 4 3/5. Snout 2 1/3 to 2 1/2 in head; eye 5 3/4 to 6, 2 1/4 to 2 2/3 in snout, greater than interorbital; maxillary reaches 7/8 or to eye, length

from snout tip 2 1/3 in head; teeth
in jaws rather coarse, sharp pointed,
palatine bands separated; interorbital
9 1/4 to 10, low, slightly depressed
medially. Gill rakers 4 + 11,
lanceolate, rather robust, 1 3/4 in
eye, twice gill filaments.

Scales 52 in lateral line to
anal origin; 9 above, 3 below. Top
of head, postocular and opercle
scaly. Scales very caducous, most
all fallen.

D. I, 9, I, first branched ray 2 1/8

in head, fin origin slightly behind first fourth between ventral and anal origins; first anal ray 3 1/5 to 3 3/5 in head; tail tapers in long slender point; pectoral 2 1/3 to 2 4/5; ventral 2 1/2 to 2 4/5.

Body brown. Inside mouth and gill openings, also most of lower surface of head blackish. Iris gray. Fins uniformly pale.

Atlantic Ocean.
42094 U.S.N.M.
Museum Hist. Nat. Paris 85+374. Length 270 mm.
42109 U.S.N.M.
Museum Hist. Nat. Paris 85+364. Length 375 mm.

Halosaurus pectoralis Inc Cullock

Halosaurus pectoralis Inc Cullock, Biol. Res. Endeavour, vol. 5, pt. 4, June 8, 1926, p. 171, pl. 43, fig. 3. Great Australian Bight, south from Eucla, 350 to 450 meters.

Depth 17, 7 3/4 to vent; head 6 1/5 in total, 2 4/5 to vent. Snout 2 1/5 in head; eye 6 1/2, 3 in snout; maxillary not quite reaching eye, length from snout tip 2 1/8 in head; teeth in villiform bands in jaws, on palate and tongue; interorbital low, flat. Gill rakers +17, 1/3 of eye.

Scales about 55? in lateral line to vent; 1 1/2 above.

D. I, 9 to 12, first branched ray 2 1/4 in head, fin origin close behind ventral origin or little behind first seventh between ventral and anal origins; A. 158, third ray 3 1/4; caudal 1 1/2; pectoral 1 2/5; ventral 2 3/5.

Whitish after long preservation. Scale pits margined brown on upper parts. Eye and gill covers black. Hind third of anal and caudal with brown edges. Length 545 mm.

(McCulloch.)

Australian Seas.

2913

Halosaurus nigerrimus (Alcock)

Halosaurichthys nigerrimus Alcock, Ann. Nat. Hist., ser. 7, vol. 2, 1898, p. 149. Off Maldives, 459 fathoms; Illustrat. Zool. Investigator, Fishes, pt. 7, 1900, pl. 33, fig. 2. Halosaurus nigerrimus Alcock, Cat. Deep Sea Fishes Indian Mus., 1899, p. 188 (type).

Depth 13 3/4, 5 7/5 to anal; head 7 in total, 3 to anal. Snout 2 1/4 in head; eye 6 1/2, 2 4/5 in snout, greater than interorbital; maxillary reaches pupil, length 2 in head; interorbital 1 1/2 in eye, rather low. Numerous long close set gill rakers on outer side

of first arch.

Scales 30? in lateral line to vent; 10 above, 2 below. Temples and cheeks scaly. Low median fold with some enlarged scales behind dorsal fin. Scales deciduous.

D. 12, first branched ray 1 3/4 in head, fin origin first seventh of space between ventral and anal origins; first anal ray 4 1/3; tail ends in long slender point; pectoral 2 1/10, rays 9; ventral 2 1/3 in head, rays 8.

Uniform jet black. Length 191 mm.

(Alcock.)

Indian Ocean. Branchiostegals 12.

2916

Halosaurus carinicauda (Alcock)

Halosaurichthys carinicauda Alcock, Ann. Mag. Nat. Hist., ser. 6, vol. 4, Nov. 1889, p. 454. Andaman Sea 7½ miles east of North Cinque Island, 490 fathoms; Illustrat. Zool. Investigator, Fishes, pt. 1, 1892, pl. 7, figs. 2-a. — Goode and Bean, Oceanic Ichth., 1895, p. 136 (reference).

Halosaurus carinicauda Alcock, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 336 (Andaman Sea, 490 fathoms).

Halosaurus carinicauda Alcock, Cat. Deep Sea Fishes Indian Mus., 1899, p. 187 (type; error).

2917

Depth 1 3/4, 6 1/2 to vent; head 7 2/5 in total, 3 1/2 to vent. Snout 2 3/4 in head; eye 10, 3 2/3 in snout, less than twice in interorbital; maxillary not quite reaches eye, length 2 2/3 in head; pterygoid band of teeth narrow, scarcely separated from palatine band; interorbital low. Gill rakers + 7 or 8, also some smaller ones.

Scales 60 in lateral line to vent; 14 above, 2 below to anal origin. Head and snout scaly. Some scales medianly behind dorsal enlarged

and slightly elongated, in posterior part of tail set in low median fold of skin.

D. 11, first ray 2 in head, fin origin near first seventh between ventral and anal origins; first anal ray 6 3/4 in head; tail tapers to long slender filament; pectoral 1 3/5, rays 14 or 15; ventral 2 1/4 in head, rays 10.

Sepia brown, greater part of head blackish. Length 395 mm.

(Alcock.)

Andaman Sea. Alcock's figure shows an adipose fin, not mentioned in his description, about first 1/11 of tail, its length 2 3/5 in snout. He says the species differs from Halosaurus parvipennis chiefly in having the ventral fins united with one another. Branchiostegals 12 to 13.