

SYNOPSIS AND DESCRIPTIONS OF THE AMERICAN RHINOBATIDÆ.

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RHINOBATIDÆ.

Trunk broad, flat; tail long, strong, continuous with the body; dorsals and caudal well developed; pectorals not reaching the end of the snout (except species of *Discobatidae*); covered with shagreen; with spines in a vertebral row and on the shoulders; generally viviparous.

RHINOBATUS.

Nasal valves not extended upon the space between the nostrils;
 two folds on the spiracle; rostral cartilage
 medium, the ridges
 separate;
 snout pointed.....*leucorhynchus*
 confluent half their length;
 snout rounded on the end.....*productus*
 produced, narrow; groove short, small; ridges
 confluent more than half their length.....*spinosus*
 long; ridges straight, confluent
 less than half their length;
 four patches of spines on the shoulders;
 color uniform.....*horkelii*
 more than half their length;
 two patches of spines on shoulders;
 clouded or blotched.....*undulatus*
 close together, narrowly separated at the base;
 rarely with spines on the shoulders;
 freckled with whitish.....*lentiginosus*
 one fold on the spiracle; snout blunt, rounded;
 head flat.....*planiceps*

SYRRHINA.

Nasal valves extended on the internarial space;
 a fold on the hinder margin of the spiracle;
 rostral ridges meeting.....*brevirostris*
 no fold on the spiracle;
 rostral ridges not meeting.....*exasperata*

PLATYRHINOIDIS.

Labial fold distinct;
 no fold on the spiracle;
 posterior lobe of nasal valve rudimentary.....*triseriata*

RHINOBATUS.

Rostral cartilage rather slender, pointed, ridges meeting or close together in front; dorsal fins far behind the ventrals; nasal valves not extending between the nostrils; disk, without the ventrals, subtriangular; claspers slender, pointed.

Rhinobatus leucorhynchus.

Günther, 1866, Proc. Zool. Soc. Lond. 604.

Length of disk, including ventrals, $11\frac{1}{2}$, width $7\frac{3}{4}$, snout from mouth to tip $3\frac{3}{4}$, and total length 23 inches. Anterior margins very slightly undulating, posterior broadly curved. Posterior margin of ventral nearly straight. Head moderately broad, slightly concave; width between the eyes three and one-half times in the length of the snout. Rostral cartilage strong, moderately long; ridges separate in their entire length, approaching each other regularly toward the end of the snout, which they do not reach. Tip of the snout more pointed than in other species. Eyes moderate, larger than the spiracle. Spiracle with two folds on its posterior border. Anterior nasal valve small, not dilated, extending over little more than half the length of the nostril. Mouth slightly arched in the middle.

Body covered with shagreen above and below. A row of small spines along the vertebræ, a pair on each shoulder, one above each eye, and a row of smaller ones along the orbital ridges. Tail depressed, with a fold on each side. Dorsals equal, second distant from the caudal the length of its base, and from the first by the length of its anterior border.

Light reddish or olivaceous brown. Translucent spaces in front of the head white. White beneath.

Panama.

Rhinobatus productus.

Girard, 1854, Proc. Acad. Nat. Sci. Phila. 196.

Disk having the form of that of *planiceps*. Snout shorter than that of *undulatus*, rounded at the end. Rostral ridges confluent half or more of their length. Head slightly concave between the orbital ridges. Spiracles with two folds on the posterior border. Fins as in *planiceps*. Young with a dorsal row of compressed hooked spines commencing immediately behind the head, a pair on each shoulder, a series of smaller ones in front and above each eye, and a row of small ones on each of the ridges of the rostrum.

Color a clouded brown, white on the translucent spaces in front of the head, a black spot beneath the end of the snout. The brown is grayish and somewhat dull, rather than rich and dark, as in the flat-headed species. Large specimens have small, indistinct spines in dorsal and orbital series, rostral ridges confluent for a greater portion of their length, and uniform coloration. Distinguished from *R. planiceps* by the folds on the spiracle, confluence of the ridges, and color; from *R. undu-*

latus by the stoutness of body, shortness of snout, and color. Thirty-eight specimens were collected at San Diego, Cal., by the Hassler expedition.

Rhinobatus spinosus.

Günther, 1870, Cat. Fish. Brit. Mus. viii, 518.

Anterior nasal valve not dilated laterally. Snout much produced, the distance between the outer angles of the nostrils being one-half of that between the mouth and the end of the snout. The rostral ridges are confluent, very narrow, with a very small and short groove at the base, and in their entire length provided with spines. Mouth nearly straight. Compressed spines with dilated base along the median line of the back, on the shoulder, and above the eye and spiracle; the entire upper surface rough. Snout white. (Günther.)

Mexico.

Rhinobatus horkelii.

Müller & Henle, 1841, Syst. Besch. Plagiost. 122.

Rhombic. Disk, including ventrals, 19, width 11.62, tip of snout to mouth, 6.87, and total length 35.5 inches. Head broader than that of *R. undulatus*; crown flat. Anterior margins slightly sinuous. Angles and posterior margins of pectorals broadly rounded. Margins of ventrals nearly straight. Snout long, rather less than four times the width of the head between the eyes. Rostral cartilage strong; ridges distant at base, close together somewhat less than half their length, expanded near the extremity. Eye smaller than the spiracle. Spiracle with two folds on the posterior border. Anterior nasal valve not dilated, not extending half the length of the nostril. Mouth nearly straight; a pair of concave curves meet to form a low arch on the symphysis. Covered with shagreen above and below. A row of hooked spines along the vertebræ, a row of several near the middle of each half of the shoulder-girdle, and a few smaller ones on the orbital ridge and in a group upon the end of the snout. Tail depressed, with a fold on each side. Second dorsal distant from the caudal less than the length of its base, and from the first less than the length of its anterior border.

Uniform light grayish or olivaceous brown, without cloudings or spots. Whitish below. Translucent spaces on the snout white in young, darker in old. Sometimes a small patch of brown under the tip of the snout.

Bahia; Rio Grande; Rio Janeiro and northward.

Rhinobatus undulatus.

v. Olfers, 1831, Die Gattung Torpedo, 22.

Rhombic. Disk, including ventrals, 18, width 10.75, from tip of snout to mouth 5.75, and total length 33 inches. Anterior margins nearly straight, slightly concave. Angles and posterior margins of pectorals broadly rounded. Posterior margin of ventral straight a portion of its length; posterior angle blunt. Head moderate; crown concave.

Snout long, about four and one-half times the width of the head between the eyes. Rostral cartilages narrow, ridges close together more than half their length, expanded near the extremity. Eye moderate, larger than the spiracle. Spiracle with two tubercles on the hinder margin. Anterior nasal valve not dilated, extending over little more than half of the length of the nostril. Mouth straight or slightly arched forward. Covered with shagreen above and below. A row of small spines in a vertebral series to the caudal, a row of several near the middle of each half of the shoulder-girdle, and several above each eye and spiracle. No spines on the snout. Tail depressed, with a fold on each side. Second dorsal distant from the caudal more than the length of its base, and from the first by the length of its anterior border.

Claspers long, slender, but little swollen at the end.

Olivaceous brown, transversely clouded with darker. A few small round spots of white above the gills and behind the shoulder-girdle. Translucent spaces of snout white; below there is a lozenge-shaped spot of dark, from each side of which a dark line passes to the anterior rays of the pectorals. Old specimens more uniform in color; dark marks of snout sometimes faded.

Rio Janeiro and southward.

Rhinobatus lentiginosus.

Garman, 1880, Bull. Mus. Comp. Zool. 168.

Outlines of body and fins similar to those of *horkelii* and *undulatus*. Rostral cartilage long and narrow, a small groove near the head; ridges close together from base to extremity. Eyes large. Spiracles half as large as the eyes, with two folds. Head narrow, concave between the eyes. The width of the interocular space equals that of the nostrils or their distance apart. Half the length of the snout is less than the distance between the outer angles of the nostrils. Mouth nearly straight, a little less than twice the width of the head between the eyes. Scales small, smooth. Spines of the dorsal series and the three in front of each eye very small; those above the eye and spiracle not noticeable. The largest spines on the body are a group of five on the top of the end of the snout, a pair of which resemble small horns. Shoulders smooth or with a single small spine.

Color a light grayish brown, densely freckled with small spots of lighter; uniform brownish below. On the lower side of the snout there are faint indications of markings similar to those of *undulatus*.

Distinguished from *horkelii* and *undulatus* by the colors, the horn-like spines on the end of the snout, the absence of spines on the shoulders, the narrowness of the head as compared with the width of the mouth, the shorter distance from snout to mouth, and the greater distance from mouth to vent. Total length 22.9, snout to mouth 4.1, snout to vent 9.9, and width of pectorals 7.4 inches.

Florida; South Carolina.

Rhinobatus planiceps.

Garman, 1880, Bull. Mus. Comp. Zool. No. 11, 168.

Disk, including ventrals, rhombic, about one and a half times as long as wide. Anterior borders of pectorals straight, more than twice as long as the convex posterior margins. Angles of pectorals rounded, the hinder not extending farther than to the vent. Outer angle of ventrals rounded, posterior acute. Head broad, flat. Rostral cartilage medium, dilated at the extremity, with the ridges close together in the anterior third of their length. Snout rather broad, with rounded extremity. Eyes moderate. Spiracle immediately behind the eye, smaller than the orbit, with a single fold on the posterior side. Anterior nasal valve not dilated, posterior two-lobed. Mouth nearly straight. Body covered with shagreen above and below. Tail appearing as if continued on the posterior portion of the abdomen, much depressed, with a fold on each side, bearing two elevated dorsals behind the ventrals and a caudal with convex border at its extremity. Second dorsal distant from the caudal the length of its base. Bases of the dorsals distant from each other the length of the anterior borders. Scales larger over the central portions of the disk. Compressed hooked spines in a median row on back and tail, in two patches on each shoulder, and a series above each eye. On the young these spines are much more prominent and regular in size than in the adult. Color brown; light between and on each side of the rostral ridges; white below. Young specimens with a number of small, round, white spots on each side of the dorsum.

The following measurements are taken from a young male:

	Inches.
Total length	19.0
Snout to end of ventrals.....	10.2
Snout to mouth	3.5
Width of pectorals.....	6.9

Payta, Callao, and Galapagos Islands.

SYRRHINA.

Characters in general those of *Rhinobatus*. Disk somewhat shorter and broader. Nasal valves dilated and extending upon the internarial space.

Syrrhina brevirostris.

Müller & Henle, 1841, Syst. Besch. Plagiost. 114.

Disk, including the ventrals, rhombic, longer than wide; width about seven-eighths of the length. Anterior margins nearly straight, slightly indented opposite the gill-openings, at the end of the snout forming an angle of less than ninety degrees. Angles and posterior margins of pectorals rounded. Ventrals rounded. Posterior angle rather blunt. Head moderate; crown concave. Snout short, slightly rounded at the tip; length about twice the width of the head between the eyes. Rostral ridges distant at the head, meeting at the end of the rostrum. Eye

moderate, rather larger than the spiracle. Spiracle with one tubercle on the hinder margin. Anterior nasal valves dilated, extending across about one-third of the space between the nostrils. Mouth arching forward slightly. Body rough with shagreen above and below. Small hooked spines scattered over back and tail. A row of tubercular spines along the vertebræ to the second dorsal. Two or three similar tubercles over each extremity of the shoulder-girdle and a pair a short distance from these toward the vertebral row. A couple of spines above each spiracle and one or two in front of each eye. Tail depressed, with a fold on each side. Dorsals equal, second distant from the caudal the length of its base and from the first the length of its anterior border.

Light grayish or olivaceous brown; margins lighter; whitish below. Sometimes clouded with brown.

The claspers, as far as may be judged from young specimens, are similar to those of *R. undulatus*.

Total length $18\frac{1}{2}$, length of disk, including ventrals, 10, and width of disk $8\frac{3}{4}$ inches.

Rio Janeiro.

Syrhina exasperata.

Jord. & Gill. 1880, Proc. U. S. Nat. Mus. 32.

Disk, including the ventrals, rhombic, longer than wide. Anterior borders of pectorals nearly straight; posterior convex. Snout truncated, as wide on the end as the space between the eyes. Rostral cartilage wide and strong, deeply grooved on its upper surface. Rostral ridges prominent, widely separated, nearly or quite parallel from base to extremity. Spiracles large, equal in diameter to the orbit, without a fold on the side. Fin-angles rounded, except the obtuse posterior angles of the dorsals. Dorsals elevated, behind the ventrals, the length of the base of the first less than the length of its posterior border, base of the second equal to its posterior margin. The base of the first is equal to its distance from ventral or from second dorsal. Anterior nasal valves dilated, continued a little beyond the inner angles of the nostrils; posterior two-lobed. Anterior extremities of the pectorals widely separated from the rostral cartilage, extending very little in advance of the eyes. Mouth wide, forming a low arch, regularly curved from the corners. Labial fold distinct for a short distance at the symphysis. Teeth small, blunt, in a hundred and ten series in the upper jaw. Claspers long, slender, knobbed at the ends. Tail with a thick fold on each side; caudal fin rounded, without indentation. Back thickly covered with small scales, among which are scattered larger ones. A median row of large, blunt tubercles on the back and tail, and two short rows parallel to this on each shoulder. The bases of the tubercles are so covered by the skin and small scales that they appear as rounded prominences with a small spine on the summit.

Color grayish brown. Near the ends of the rostral ridges there is a

band of dark brown; between this and another dark band which crosses the bases of the ridges there is a light band. A dark band across the head between the eyes is somewhat confluent with the band in front of it, which makes the fore part of the head dark, but leaves the prominences in front of the eyes light colored. The remainder of the upper surface is more or less clouded by faint indications of transverse bands. These are more distinct in the young. With the exception of a dark spot on the posterior angle of each pectoral, the lower surface is white.

Total length 33.4, snout to end of ventrals 18, snout to mouth 4.1, and width of disk 15.5 inches. Specimen described an adult male. The kindness of the officers of the National Museum has enabled me to satisfy myself of the identity of *Trigonorhina alveata*, described from old, and *Platyrrhina exasperata*, from very young specimens.

Southern California.

PLATYRRHINOIDIS, gen. nov.

Disk broad, flat, rounded. Tail moderate, depressed, caudal fin broad. Dorsals posterior. Tubercular spines in vertebral series and on anterior margins of pectorals. Labial fold well developed. Nasal valves not reaching the mouth, posterior lobe rudimentary. Viviparous.

Distinguished from *Syrrhina* and *Trigonorhina* by the labial fold, nasal valves, and marginal series of spines, and from *Platyrrhina* by the fold, valves, separation of pectorals, and viviparity.

Platyrrhinoïdis triseriata.

Jord. & Gilb., 1880, Proc. U. S. Nat. Mus. 36.

Disk, including ventrals, subrhomboid, a little longer than broad, anterior borders convex, anterior and lateral extremities forming broad curves. Snout broad, rounded in front, length from upper jaw equal to distance between outer borders of nostrils. Rostral cartilage stout, ridges approaching rapidly and meeting near the end to form an acute point. Spiracles moderate, larger than the eyes and close behind them, without folds on the sides. Eyes small, distant from the end of the snout one and one-fourth times the distance between the spiracles. Crown broad, concave. Nostrils broad, narrower than the distance between, which is nearly four times the space between them and the mouth. Nasal valves medium, hardly reaching upon the space between the nostrils, outer lobe narrow, posterior rudimentary. Mouth not large, moderately curved, distant from the end of the snout about one and one-third times its width. Teeth small (82 series in the upper jaw of the adult female described), subhexangular on the base, smooth or with a low, blunt cusp. Pectorals separated from the rostral cartilage by a translucent space. Dorsals similar, longer than high, separated by one and one-half times the length of their bases, insertion of anterior a little in advance of the middle of the tail, posterior reaching a little behind the insertion of the caudal. Tail strong, more distinct from body than

in species of *Syrrhina*, length from vent little more than that from snout to extremity of ventrals, with a broad cutaneous fold on each side below, which extends to the ventrals and is continuous with the lower lobe of the caudal. Caudal rather large, somewhat more than twice as long as wide, margins entire. Covered with shagreen above and below. Several (three to four) series of sharp, erect, immovable spines along the anterior margin of the pectoral, a group of several above the extremity of the rostral cartilage, and several on the orbital ridge. A vertebral series of larger spines on back and tail extending to the second dorsal, a pair near the middle and on each end of each branch of the shoulder girdle, and a series on each side of the upper surface of the tail parallel with the median.

In fetal specimens the lateral series on the tail are not developed, and the inner pairs on the shoulder-girdle are represented by single spines. The upper portion of each spine is long, narrow, subfusiform, depressed, and, resting upon a low, narrow support, appears as if merely applied to the skin by a portion of its lower side.

Disk to end of ventrals 12, width of disk 11.2, vent to end of tail 12.6, and total length 22 inches.

Uniform olivaceous brown, whitish beneath.

Specimens described from U. S. Nat. Museum. Hab. Southern California.

DISCOBATIDAE, fam. nov.

Form intermediate between that of the *Rajidae* and *Rhinobatidae*; nearer the latter. Tail less distinct from the body than in the former, to which there is also less similarity in dorsals, ventrals, caudal, and nasal valves. Oviparous. Provisionally placed as a subfamily of the *Rhinobatidae*.

DISCOBATUS.

Platyrrhina, preoccupied.

Disk broad, flat, subcircular. Pectorals approximating in front of the head. Ventrals separate, entire. Dorsals and caudal as in *Syrrhina*. Nasal valves resembling those of the *Rhinobatidae*; anterior lobes united across the internarial space. Egg-cases similar to those of certain *Scylliidae*.

D. schönleini, sp. Müller & Henle, India.

D. sinensis, sp. Lacépède, China.

The species recently described as *Platyrrhinæ* having been withdrawn, the genus contains no American representatives at present.