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**THE J. L. B. SMITH INSTITUTE OF ICHTHYOLOGY**

Rhodes University, Grahamstown

OCCASIONAL PAPER NO. 18

Issued June, 1972

ACKNOWLEDGMENTS

**STUDIES IN CARANGID FISHES**

**No. 6**

KEY TO THE WESTERN INDIAN OCEAN SPECIES OF THE GENUS  
CARANGOIDES BLEEKER, 1851, WITH A DESCRIPTION OF  
CARANGOIDES NITIDUS SMITH (WITH PLATES 30, 31 AND 44)

by

Margaret M. Smith

(Published by the Publications Department, Rhodes University,  
Grahamstown, South Africa)

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### ACKNOWLEDGMENTS

I am indebted to Jørgen Nielsen and Erik Bertelsen, Copenhagen, Frederick H. Berry and William F. Smith-Vaniz, Miami, and Victor G. Springer, Washington, for assistance in examining specimens, and for help and facilities when I worked on material in Denmark and the U.S.A., to Thomas H. Fraser, for reading the manuscript, and to the South African Council for Scientific and Industrial Research for continued and generous financial assistance.

# STUDIES IN CARANGID FISHES

## No. 6

KEY TO THE WESTERN INDIAN OCEAN SPECIES OF THE GENUS  
CARANGOIDES BLEEKER, 1851, WITH A DESCRIPTION OF  
CARANGOIDES NITIDUS SMITH (WITH PLATES 30, 31 AND 44)

by

Margaret M. Smith

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Rhodes University, Grahamstown.

Fishes in the family Carangidae commonly known as Jacks or Kingfishes are generally characterised by a silvery ovate body with small insignificant cycloid scales, a lateral line with a curved anterior portion and a posterior straight portion bearing scutes, a moderate mouth usually with feeble teeth, no dorsal and anal finlets, and a deeply forked caudal with a slender peduncle. A horizontally forwardly directed spine from the dorsal pterygiophore visible in front of the dorsal fin in shrunken or dried specimens, and the first two anal spines separate from the third and the rest of the fin are more pronounced in juvenile specimens.

Some workers have placed all these fishes in the genus Caranx Lacépède, 1802, but the difference in dentition combined with other characters indicates at least three distinct groups. Gnathanodon Bleeker, 1851 (without teeth and with papillose lips) is closely related to Carangoides (fine villiform teeth in bands in each jaw) in body shape, and feeble scutes. Few Carangoides species have breasts entirely scaly. Caranx with relatively well-developed canine teeth, those in the top jaw being in a single series, has strong, well-developed scutes and very few species with breast entirely naked.

Below is a key to the fourteen Carangoides species known from the western Indian Ocean and the Red Sea.

CARANGOIDES Bleeker , 1851

- 1 a. Lower surface of breast entirely scaly. There may be a small naked area in front of the pelvics at the symphysis of the cleithra ..... 4
- b. Lower surface of breast naked. There may be a small central patch or continuous band of scales before the pelvic base ..... 2
- 2 a. Naked area scarcely extends up on sides of chest ..... 3
- b. Naked area extends distinctly up on sides of chest especially in front..... 5
- 3 a. A small patch of scales before the pelvic base (Pl.30,B) D rays 30-32. A rays 24-25. Gill-rakers 9+22 =31. Scutes moderate 25-27. Max. length about 500mm ..... nitidus  

nov.
- b. A band of scales in front of pelvic base across naked area which scarcely extends up on sides (Pl.30,A) D rays 25-26, A rays (21-)23-24. Gill-rakers (2)+6-8 + 21-22 = 28-31, 20 feeble scutes. Golden spots on body..... auroguttatus  

Ehrenberg in C.&V. , 1833

(has been confused with fulvoguttatus Forsskal , 1775)
- 4 a. Breast scaly, spinous dorsal fin at least as high as front of soft fin. Pectoral length less than body depth. A rays 21-23. D rays 23-25. Gill-rakers 7-9+20-22 = 28-30. Scutes, weak, 23-24. Max. length about 450mm ..... equula  

Temminck & Schlegel 1844
- b. Breast scaly, spinous dorsal fin lower than front of soft fin. Pectoral length in adults not less than body depth. A rays 18-19. D rays 23-24. Gill-rakers (3-1)11-12+26-27 = 37-39. Scales minute



and inconspicuous. Scutes feeble, 14-15. Max.  
length about 500mm ..... plagiotaenia  
Bleeker, 1857  
(Junior synonyms are brevicarinatus Klunzinger, 1871,  
compressus Day, 1870, and vomerinus Playfair, 1866.)

- 5 a. Naked area on sides low, more or less triangular,  
highest part in front, not halfway up to pectoral  
base..... 6
- b. Naked area on sides extends up more than halfway  
to pectoral base ..... 7
- 6 a. Hind apex of naked area well behind pelvic origin  
(Pl.30,G) D rays 25-29. A rays 22-24. Straight  
part of lateral line usually more than depth of body.  
Gill-rakers 6-7+18-20 = 24-26. Scutes feeble  
15-20. Max. length about 1000mm ..... fulvoguttatus  
Forsskål, 1775  
(Junior synonym is bleekeri Klunzinger, 1871)
- b. Hind apex of naked area about at pelvic origin  
(Pl.30,D). D rays 25-29. A rays 21-23. Spinous  
dorsal low, spines very short, soft dorsal lobe  
about equals head. Straight part of lateral line not  
longer than depth of body. Gill-rakers 7-8+18-19=  
25-26. Scutes 24-26. Max. length about 600 mm ferdau \*  
Forsskål, 1775  
(Junior synonym is bajad Forsskål, 1775)
- 7 a. Naked area on side does not reach the naked pectoral  
base<sup>+</sup> ..... 8
- b. Naked area on side reaches and joins the naked  
pectoral base<sup>+</sup> ..... 9

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\* Among Forsskål's fishes, no. 48a is not the type of ferdau as described by Forsskål. It has a scaly breast, 21 instead of 28 D rays and 18 instead of 23 A rays. A strongly curved portion of the lateral line which is less than the straight, the dentition and the powerful lateral line scutes, indicate a Caranx. No. 46 labelled S. bajad agrees with Forsskål's description of ferdau.

<sup>+</sup> In very large specimens of gymnostethus the naked area may be divided by scales at constriction below pectoral base.

- 8 a. Naked area on side broadly rounded above, extends to above pelvic origin (Pl.30,F). Straight part of lateral line shorter than curved part. D rays 18-19. A rays 16-17. Gill-rakers  $9+15-18(+0-3) = 27$ . Scutes 24-27. Darker than most Carangoides. Max. length about 760mm ..... dinema Bleeker, 1851.  
(Fowler's 1929 chrysophryoides (non Bleeker) from Natal is this species)
- b. Naked area on side triangular, higher in front and with angle above pelvic base (Pl.30,E). Straight part of lateral line as long as, or slightly longer than, curved part. D rays 21-22. A rays 18-19. Gill-rakers  $7-8+17-18+(1-2) = 25+(1-2)$ . Scutes strong 37-45. Max. length about 350mm ..... oblongus Cuvier, in (C. & V.), 1833.
- 9 a. Naked area extends above the pectoral base nearly to lateral line origin as a triangular area bordering the pectoral base and the operculum (Pl.31,N). D rays 20-23. A rays 17-18. Gill-rakers  $9-11+23-27 (0-1) = 32-36$ . Scutes 24-28. Preserved specimens often have a brilliant silver patch in the dark opercular blotch. Max. length about 260mm ..... malabaricus Bloch-Schneider, 1801.  
(Junior synonyms are talamparah Bleeker, 1852, impudicus Klunzinger, 1884, rectipinnis Williams, 1958 and possibly micraspis Kner, 1868 and gibber Fowler, 1904.)
- b. Naked area including<sup>1</sup> but not extending above the pectoral base (Pl.31,L) ..... 10
- 10 a. A rays 23-26. D rays 27-30. In all but early juveniles the pectoral is longer than the body depth. Gill-rakers  $7+19-20 = 26-27$ . Scutes feeble, 15-20. Max. length about 900mm ..... gymnostethus Cuvier in C. & V. 1833.  
(Junior synonym: gymnostethoides Bleeker, 1851.)

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\* In very large specimens of gymnostethus the naked area may be divided by scales across the constriction below pectoral base.



- b. Fewer than 20 anal and than 25 dorsal rays. Pectoral less than depth of body ..... 11
- 11 a. Dorsal lobe not distinctly longer than head, at most a trifle longer ..... 12
- b. Dorsal lobe distinctly longer than head..... 13
- 12 a. 15-17 anal rays. Naked area widens out below pectoral base (Pl.31,H). D rays 18-20. Gill-rakers 5-7+15-16 = 23-24. Scutes feeble, 20-25. Max. length about 500mm..... chrysophrys Cuvier in C. & V. 1833  
(Junior synonyms are chrysophryoides Bleeker, 1851 jayakari Boulenger, 1887 and typus Gilchrist & Thompson, 1917.)
- b. 18-19 anal rays. Naked area much constricted immediately below pectoral base (Pl.31,M). D rays 22-23. Gill-rakers 5-8+14-18(+1-3) = 23-27. Scutes feeble, 16-23. Max. length about 450mm .. caeruleopinnatus Rüppell, 1830  
(Junior synonym altissimus Jordan & Seale, 1907 and frequently malidentified as malabaricus non Bloch-Schneider, 1801).
- 13 a. A rays 18(-19<sup>1</sup>). D rays 22-23. Naked area constricted close below pectoral base, hind margin of area convex forwards (Pl.31,Q). Gill-rakers 7+16-17 = 23-24. Scutes feeble, 19-20. Max. known length 230mm ..... uii Wakiya, 1924
- b. A rays 16-17. D rays 19-21. Naked area hardly or slightly constricted below pectoral base, hind edge more or less straight down and back (Pl.31,K). Gill-raker 12-14+21-22=33-36. Scutes feeble, 14-20. Adult males develop filamentous mid-dorsal and anal rays, and a prominent forehead. Max. length about 500mm ..... ciliarius Rüppell, 1830.  
(Previously known as armatus Forsskal, 1775 and plumbeus Quoy & Gaimard, 1824, both considered nomina dubia (Smith, M.M. in press). Junior synonyms are armatus Rüppell, 1830, citula and ruppelli, both Cuvier in C. & V., 1833, cirrhus Ehrenberg in C. & V., 1833 and schlegeli Wakiya, 1924)

<sup>1</sup> Wakiya's paratype has 19 A rays

Note: caeruleopinnatus has a markedly smaller eye than ciliarius.  
In both species the pelvics of juveniles are dark, becoming paler with growth.

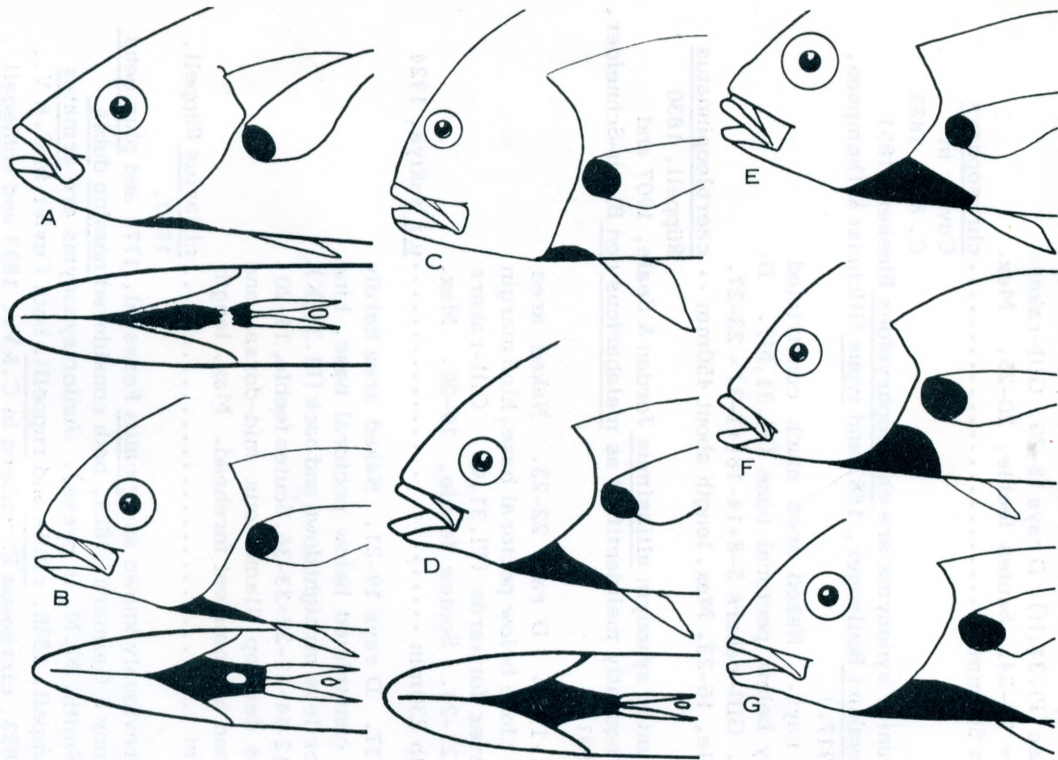


Plate 30

Naked areas shown in black. Total length is stated in each case.

- A. **C. auroguttatus** C & V. 180mm. B. **C. nitidus** sp.nov. 250mm.  
 C. **C. ignobilis** (Forsskal). 600mm. D. **C. ferdau** (Forsskal). 275mm.  
 E. **C. oblongus** C & V. 310mm. F. **C. dinema** Blkr. 280mm.  
 G. **C. fulvoguttatus** (Forsskal). 400 mm.

All belong to genus Carangoides except C. Caranx ignobilis.



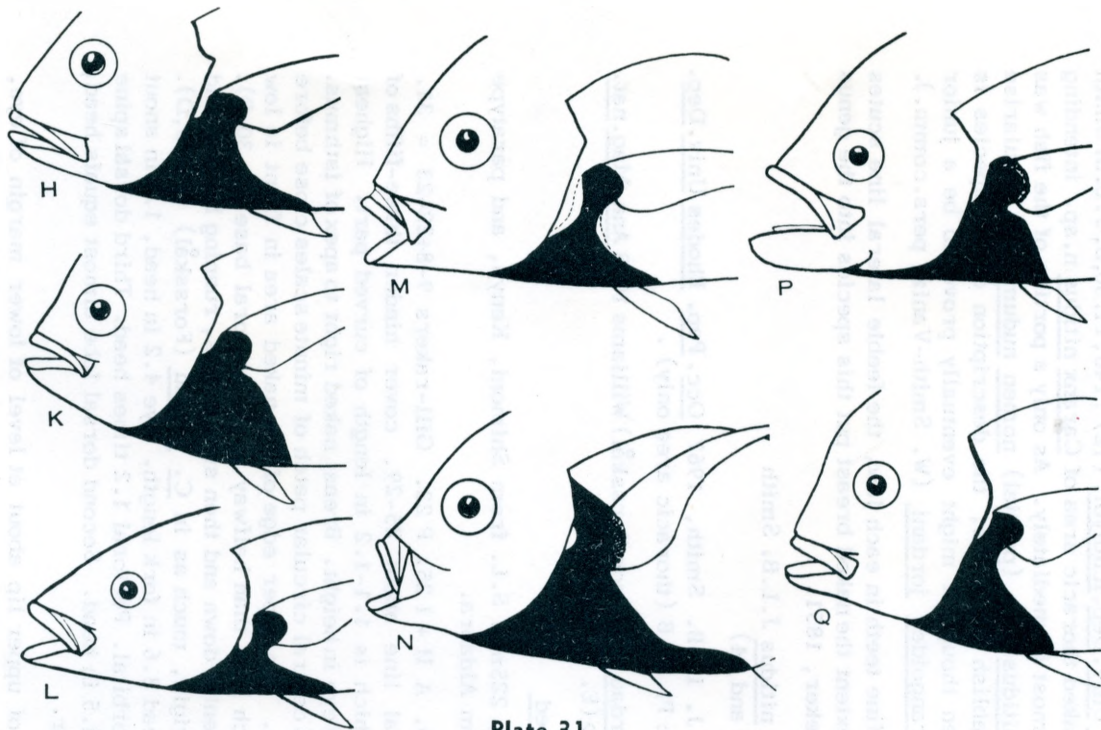


Plate 31

Naked areas shown in black. Total length is stated in each case.

H. *C. chrysophrys* C & V. 270mm. K. *C. armatus* (Forsskal). 280mm.  
 L. *C. gymnostethus* C & V. 600mm. M. *C. caeruleopinnatus*  
 Ruppell. 270mm. N. *C. malabaricus* (Bl-Schn). 140mm. P. *Ulua*  
*mentalis* (Ehrenberg in C & V) 440mm. Q. *C. uii* Wakiya 160mm.

All belong to genus Carangoides except P. Ulua mentalis.

CARANGOIDES NITIDUS J.L.B. SMITH

In 1967 "Studies in carangid fishes no.1. Naked thoracic areas" Occ.Pap.Rhodes Univ.Dep.Ichthyol. (12) : 140, Pl.30,B, J.L.B. Smith illustrated the naked thoracic area of Caranx nitidus n.sp. intending to describe it almost immediately. As only a portion of the fish was illustrated C. nitidus is a (partial) nomen nudum. To regularise matters and establish the name, the description of the species is given below even though it might eventually prove to be a junior synonym of Carangoides jordani (W. Smith-Vaniz, pers.comm.).

The band of fine teeth in each jaw, the feeble lateral line scutes and to a lesser extent the naked breast put this species into the genus Carangoides Bleeker, 1851.

Carangoides nitidus J.L.B. Smith  
(Plates 30,B and 44)

Caranx nitidus J. L. B. Smith, 1967 Occ.Pap. Rhodes Univ.Dep. Ichthyol. (12) : Pl.30,B (thoracic area only) .

?Carangoides ferdau (p.p. non Forsskal) Williams 1958 Ann.Mag.nat. Hist. (13) 1 : 392 (E. Africa).

Material examined

Holotype RUSI 1, 225mm S.L. from Shimoni, Kenya, and paratype 220mm S.L. from Aldabra.

D VIII + I 30. A II + I 25. P 23. Gill-rakers 9-8+22-23 = 31. Scutes in lateral line about 25-29, cover hinder three-fifths of straight part which is 1.1-1.2 in length of curved part. Highest scutes about half eye in height. Breast naked right to apex of isthmus. There is a small central circular patch of minute scales close before the pelvic bases. The upper edge of the naked area in front is low and extends much less than halfway to the pectoral base (Pl.30,B). It curves very gently down and then straightens, running back to end at the pelvic origin, much as in C. ferdau (Forsskal) (Pl.30,D). Depth 2.9-3, head 3.6 in fork length. Eye 4.2 in head, 1.3 in snout and 1.3 in interorbital. Pectoral 1.2 times head. Third dorsal spine slender, about 4.5 in head. Second dorsal lobe almost equals head, anal lobe similar.

Lower edge of upper lip about at level of lower margin of eye, jaws subequal, the maxilla extends below the front of the pupil. Fine teeth in bands in each jaw, a few of the outer series round the front



of each jaw slightly enlarged. Similar fine teeth on vomer, palatines and tongue. Live colour not recorded: as preserved brownish, no special marks.

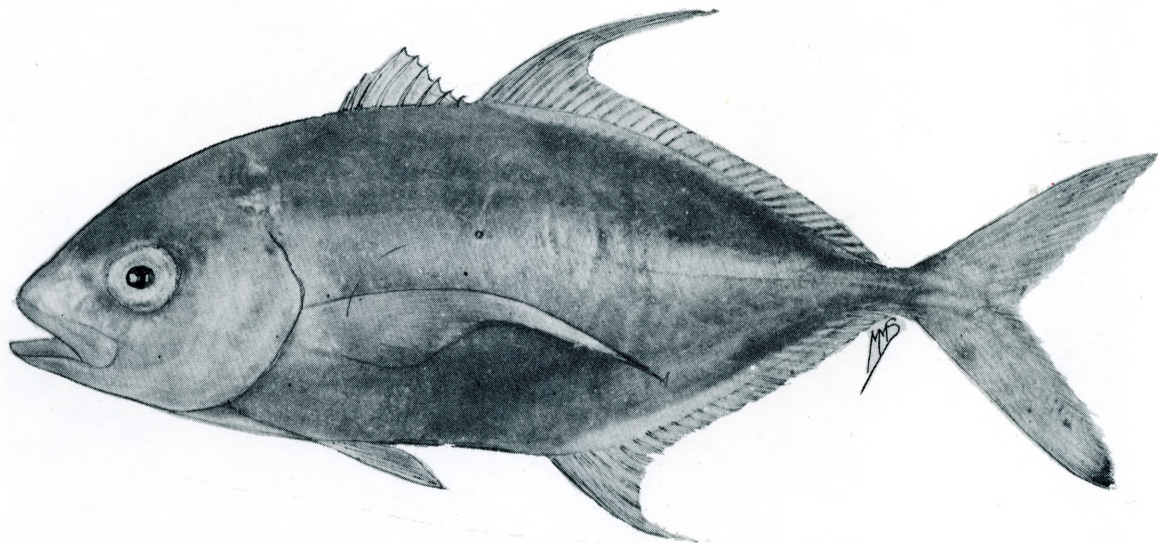
The two specimens, 265 and 270mm total lengths, 230 and 235mm fork lengths and 220mm and 225mm standard lengths respectively, from Aldabra and Shimoni, Kenya, were identified in the field at sight as half grown Carangoides ferdau. The patch of scales in the naked area on the breast is not easily seen until dry. This species is very closely related to the Pacific C. jordani Nichols, 1922, the type from Hawaii. Woods (1953 : 518) has named (Pacific specimens of) that species as a subspecies of C. ferdau Forsskal. By kindness of Dr. V.G. Springer of Washington a 230mm specimen, No. R.S.N. M. 142047, from Marshall Islands was examined and compared with C. ferdau. From this and other data it appears that C. jordani merits distinction from C. ferdau (Forsskal) at full specific rank. C. jordani is a more slender fish and the mouth cleft begins at the level of the lower edge of the eye, whereas that of C. ferdau is distinctly below the level. For C. ferdau, Forsskal (1775 : 55) states  $D \frac{6}{8} - \frac{1}{1} - \frac{1}{29}$  (i.e. VII+I 28) and  $A \frac{2}{2} - \frac{1}{24}$  (i.e. A II+I 23). Western Indian Ocean specimens of C. ferdau have D2 I 25-29, A II+I 21-23, and 7-8+18=25-26 gill-rakers, whereas C. jordani has D2 I 29-32, A II+I 24-26 and 9-10+22-23=32-33 gill-rakers. (Williams 1958 : 392 quotes for 6 specimens of C. ferdau, D2 I 27-31, and gill-raker count only 7+1+18=26. He has probably confused specimens of C. nitidus with C. ferdau.) C. nitidus has a different body shape from C. jordani, and the spinous dorsal is somewhat higher. The naked area on the side of the chest is a slightly different shape. In C. jordani this area extends more than one third of the way to the pectoral base, and its posterior end is above the ventral profile at the pelvic base curving sharply down there. In C. nitidus the naked area is lower and the hind end runs straight to the pelvic base. The western Indian Ocean fish differs chiefly in the presence of a distinct central patch of scales median on the lower surface of the naked breast.

Descriptions of C. jordani all state the breast to be entirely naked and Dr. Springer, who kindly examined other specimens of C. jordani, reports none has a scaly patch on the naked breast. This feature has not been found to be variably absent in species which it characterises, so that the present form cannot be accepted as C. jordani Nichols. It is merely a question whether it merits more than subspecific rank. In view of the wide divergence of the localities where the two are found, the western Indian Ocean form is here accorded full specific rank.



Since the above description was written, W.F. Smith-Vaniz and F.H. Berry have examined the holotype of Carangoides jordani AMNH 8104 of S.L. 202mm. They report D VIII+I 30, A I+I 26, P.I 22. Gill-rakers 8+22, 1.1. scutes (36+)35(L) and (38+)32(R), and a small patch of scales before pelvics in naked area.

All specimens of ferdau examined by Smith-Vaniz and myself have completely naked breasts. The presence of this small patch of scales in some specimens of jordani (Smith-Vaniz pers. comm.) throws some doubt on the validity of nitidus. There are other small differences, but a large number of specimens of both species will have to be examined to decide this matter.



**Plate 44**

Carangoides nitidus J.L.B. Smith Holotype RUSI 1,  
S.L. 225 mm (Retouched photograph with reconstructed  
spinous dorsal.)