

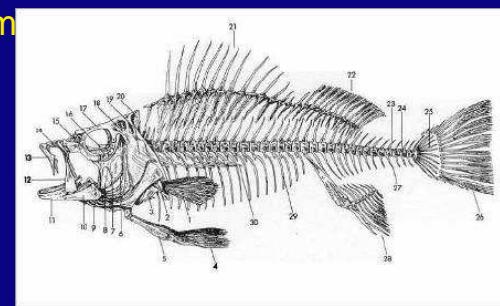
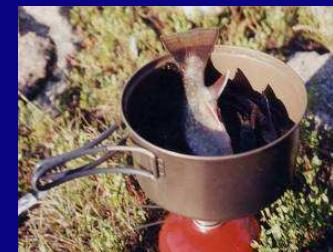
*The archaeology of fish and  
fishing: analysis of the Later  
Stone Age marine fish remains  
from Blombos cave*

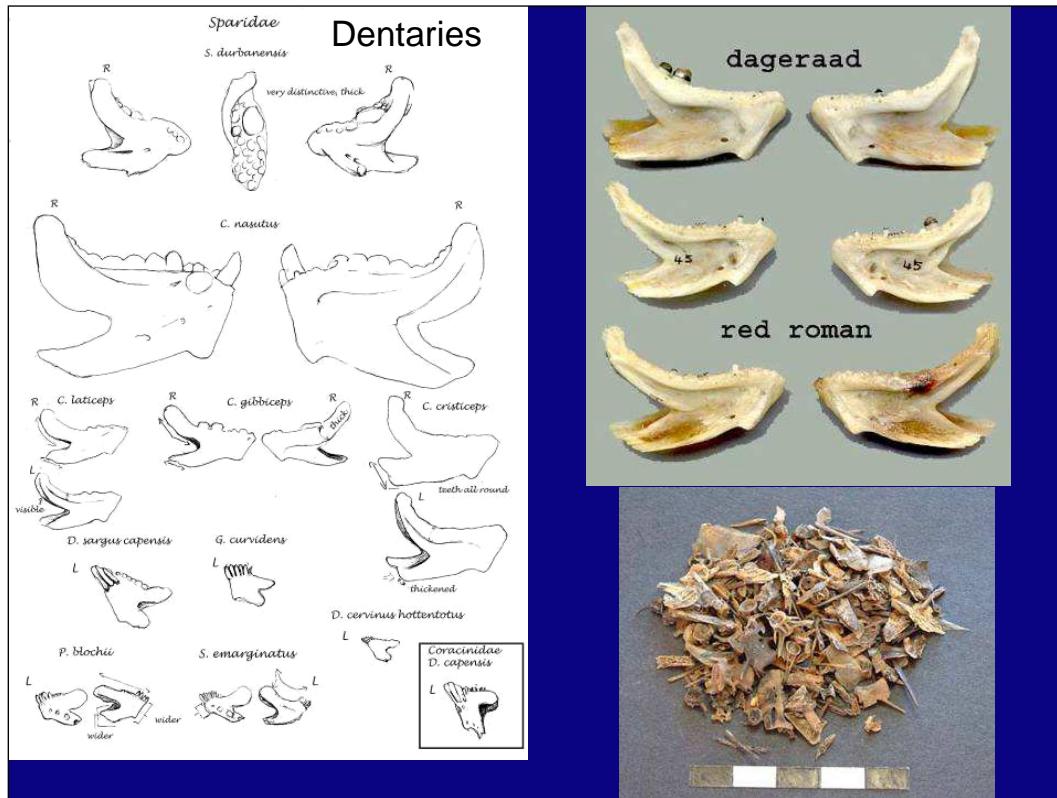
Karen L. van Niekerk

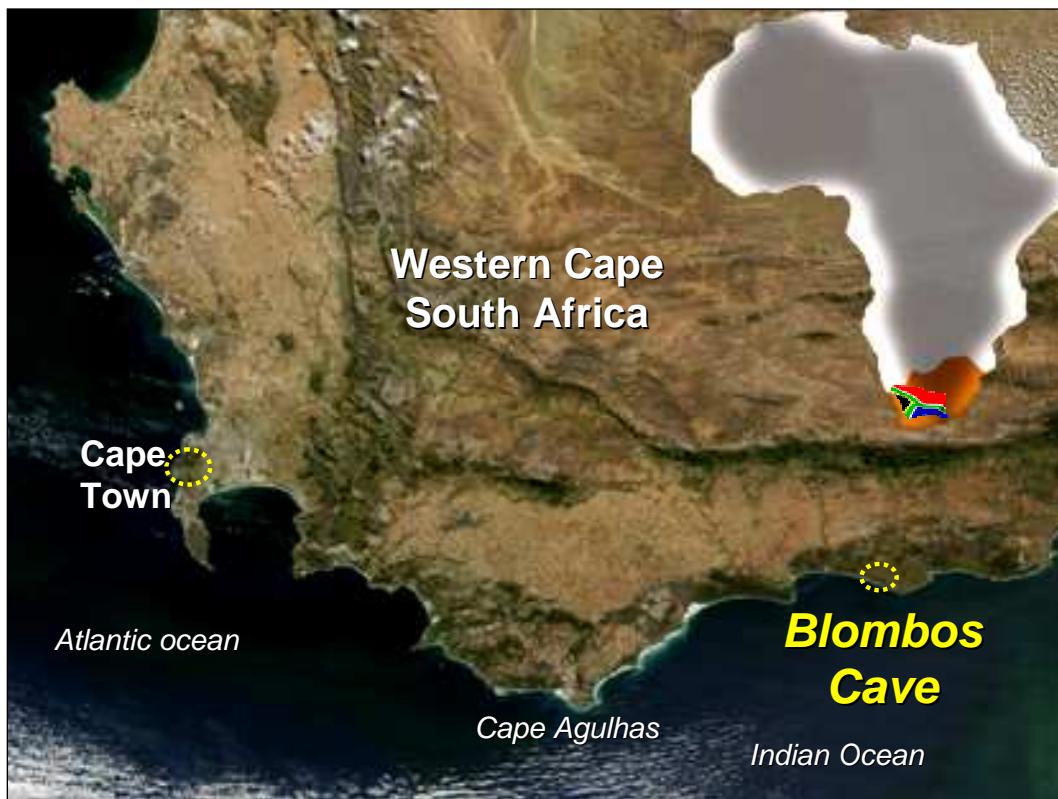
## Identify to species

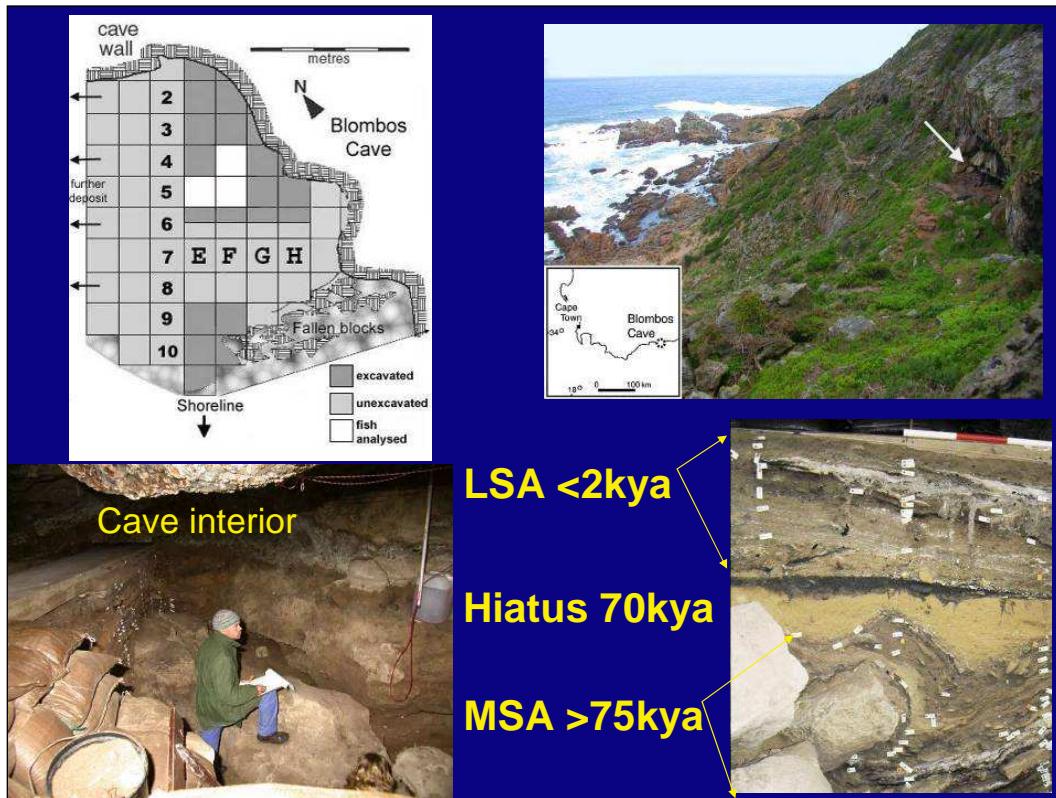
- environmental reconstruction
- technology/method of capture
- Determine which bones are useful indicators of species and survive well
  - Some bones are very distinctive but do not survive well
  - Shape and size determine how survives, rather than density

# Establishing the comparative collection









## RESULTS

**5276 diagnostic bones found:**

- 2802** identified to family/species (53%)
- 2326** vertebrae (44%)
- 148** indeterminate species due to fragmentation (3%)
- 6** bones of unknown species

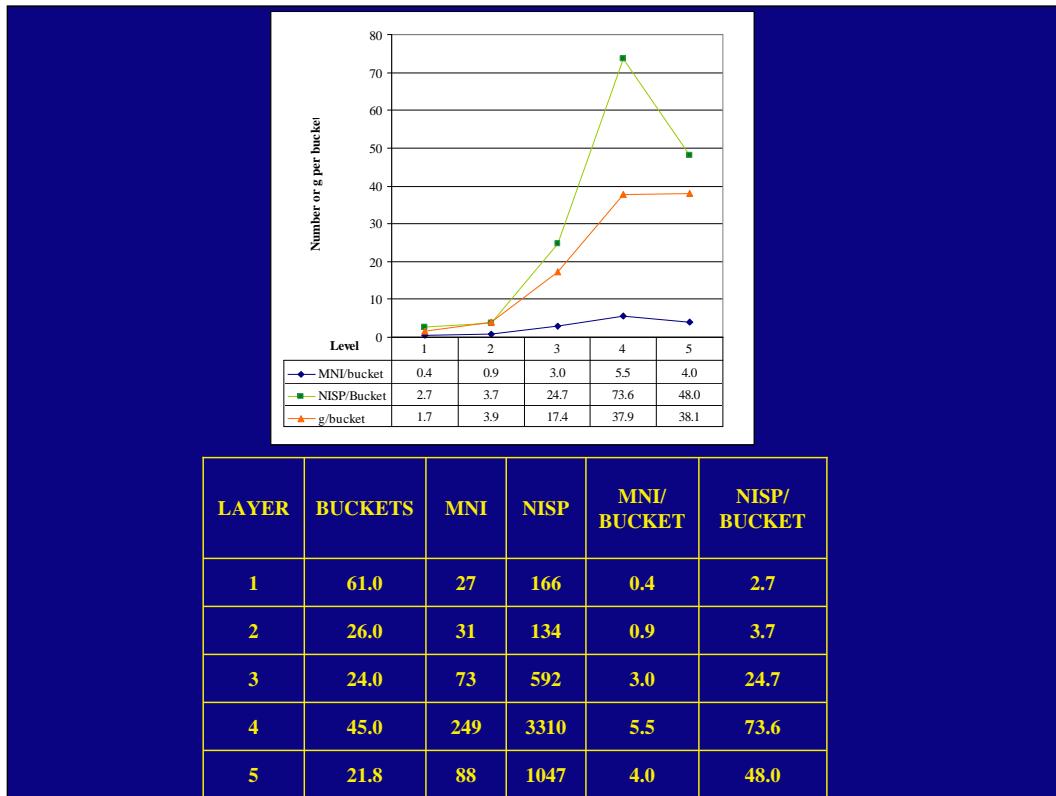


**11 species from 3 Families:**

- Sparidae* (9), *Serranidae* (1), *Mugilidae* (1)
- 2 shark vertebrae

LEVEL	1	2	3	4	5	TOTAL
SPECIES	MNI/NISP	MNI/NISP	MNI/NISP	MNI/NISP	MNI/NISP	MNI/NISP
<i>C. cristiceps</i> (dageraad)	2/3	5/6	1/7	15/108	6/31	29/155
<i>C. laticeps</i> (roman)	1/1	2/3	4/13	13/72	6/27	26/116
<i>C. cristiceps/laticeps</i> (dageraad/roman)	1/1	2/4	7/11	16/60	4/26	50/102
<i>C. nasutus</i> (black musselcracker)	2/3	1/1	3/5	6/24	2/9	14/42
<i>Sparidae</i> sp 1	4/10	4/10	11/43	25/166	9/56	53/285
<i>Sparidae</i> sp 2	2/2	3/3	6/7	25/53	5/15	41/80
<i>D. sargus capensis</i> (dassie)	-	-	-	2/3	2/9	4/12
<i>G. curvidens</i> (john brown)	-	-	-	2/8	1/3	3/11
<i>P. blochii</i> (hottentot)	-	-	-	4/9	3/6	7/15
<i>P. rupestris</i> (red steenbras)	-	-	1/1	-	1/1	2/2
<i>S. durbanensis</i> (white musselcracker)	-	-	-	-	2/3	2/3
<i>S. emarginatum</i> (steenjje)	2/2	2/2	3/7	12/68	5/21	24/100
<i>Sparidae</i> sp	8/39	7/31	16/123	40/812	12/287	83/1308
<i>E. marginatus</i> (rockcod)	1/1	-	2/2	4/16	2/2	9/21
<i>L. richardsonii</i> (haarder)	2/13	4/10	7/55	41/374	10/96	64/548
<i>Shark</i> sp.	-	-	1/2	-	-	1/2
<i>Species Indeterminate</i>	2/6	1/5	11/24	44/69	18/44	76/148
Total excluding vertebrae	27/79	31/76	73/300	249/1856	88/639	468/2950
No. unidentified vertebrae	87	58	292	1454	435	2326
<b>TOTAL</b>	<b>27/166</b>	<b>31/134</b>	<b>73/592</b>	<b>249/3310</b>	<b>88/1074</b>	<b>468/5276</b>

Total MNI (Minimum Number of Individuals) and NISP (Number of Identified Skeletal Parts) per species and level found in the LSA units of BBC.



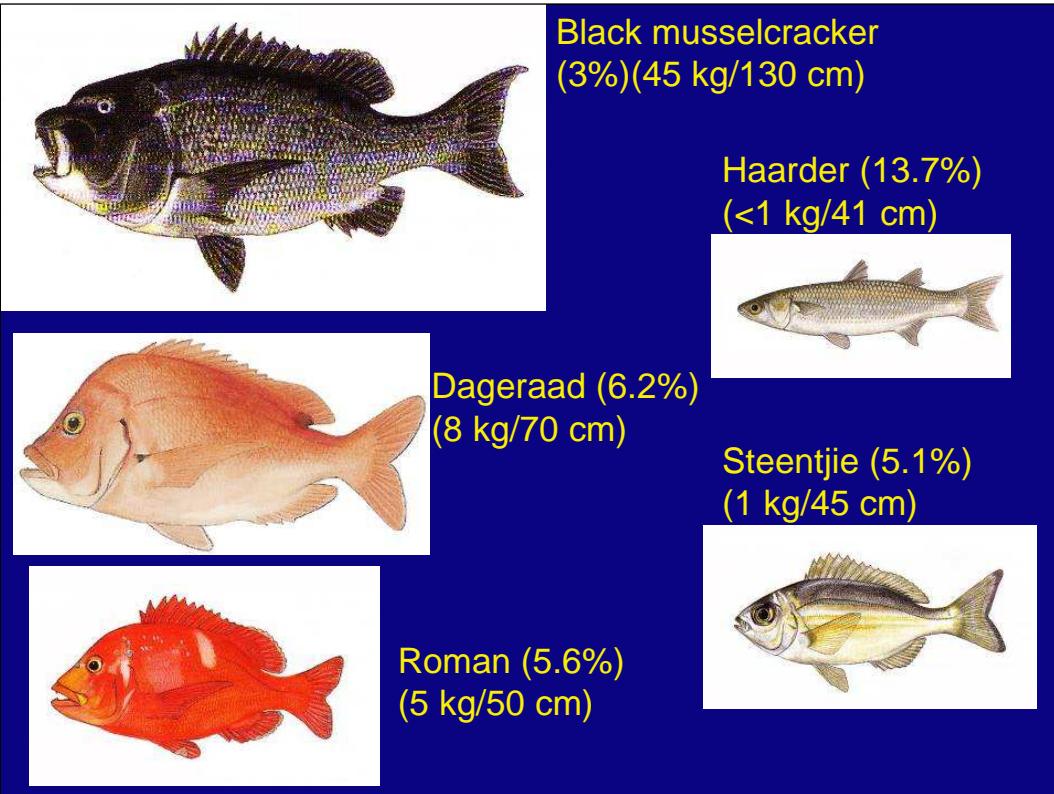
## Processing – vertebrae vs other (cranial, lateral facial and appendicular bones)

LEVEL	Total vertebrae	MNI from vertebrae	Non-vertebral MNI	Vertebrae expected	Shortfall	% shortfall
1	94	3.9	28	672	578	86
2	65	2.7	31	744	679	91
3	323	13.5	73	1752	1429	82
4	1535	64.0	249	5976	4441	74
5	466	19.4	86	2064	1598	77
TOTAL	2483	103.5	467	11208	8725	78

Table 12 . Expected and actual MNI's derived from vertebrae compared to non-vertebral MNI

SPECIES	LEVEL					TOTAL
	1	2	3	4	5	
<i>Shark sp.</i>	0	0	1.4	0	0	0.2
<i>P. rupestris</i> (red steenbras)	0	0	1.4	0	1.1	0.4
<i>S. durbanensis</i> (white musselcracker)	0	0	0	0	2.3	0.4
<i>G. curvidens</i> (john brown)	0	0	0	0.8	1.1	0.6
<i>D. sargus capensis</i> (dassie)	0	0	0	0.8	2.3	0.9
<i>P. blochii</i> (hottentot)	0	0	0	1.6	3.4	1.5
<i>E. marginatus</i> (rockcod)	3.7	0	2.7	1.6	2.3	1.9
<i>C. nasutus</i> (black musselcracker)	7.4	3.2	4.1	2.4	2.3	3
<i>S. emarginatum</i> (steenjje)	7.4	6.5	4.1	4.8	5.7	5.1
<i>C. laticeps</i> (roman)	3.7	6.5	5.5	5.2	6.8	5.6
<i>C. cristiceps</i> (dageraad)	7.4	16.1	1.4	6	6.8	6.2
<i>C. cristiceps/laticeps</i>	3.7	6.5	9.6	6.4	4.5	6.4
<i>Sparidae sp 2</i>	7.4	9.7	8.2	10	5.7	8.8
<i>Sparidae sp 1</i>	14.8	12.9	15.1	10	10.2	11.3
<i>L. richardsonii</i> (haarder)	7.4	12.9	9.6	16.5	11.4	13.7
<i>Sp Indet</i>	7.4	3.2	15.1	17.7	20.5	16.2
<i>Sparidae sp</i>	29.6	22.6	21.9	16.1	13.6	17.7
Total	100	100	100	100	100	100

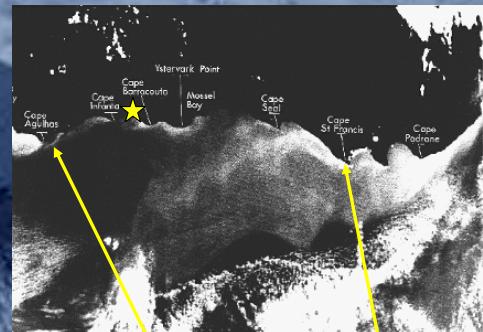
**% Frequency of each species per level based on MNI of species per total MNI of level**



# Methods of capture

Scavenging

- Cold water upwelling events
  - Large variety of species and sizes affected
  - 5/15 occur in LSA
  - Usually in summer



## Hook and line technology

Many historical accounts of fishing with hook and line

Bone hooks only found at inland sites

Bone gorges date to 8500 – 10 000 BP

Grooved pebble sinkers 4300 – 3300 BP

Acacia thorns



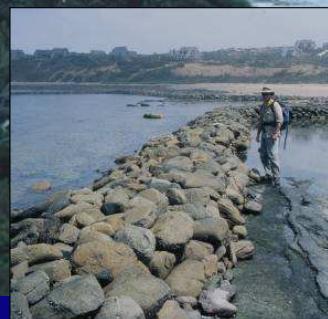


## Spearfishing

- Historical accounts
- Sharpened wooden sticks,  
barbed bone points on bamboo  
shafts
- bow and arrow with line  
attached to arrow
- No barbed bone points in South  
Africa, but smooth points are  
common in coastal LSA sites

## **Stone walled fish traps in Still Bay, southern Cape**

- 20 km east of Blombos**
- Only works at Spring tide**
- Best during winter on dark nights**
- Large variety and size range of species caught**



## Nets/baskets

- Nets suitable for smaller fish
- Net fragments have been found in cavesite near Bredasdorp
- Historical accounts of basket traps refer only to river fishing
- Some rock art at inland sites depict woven fish traps



## Piscicides

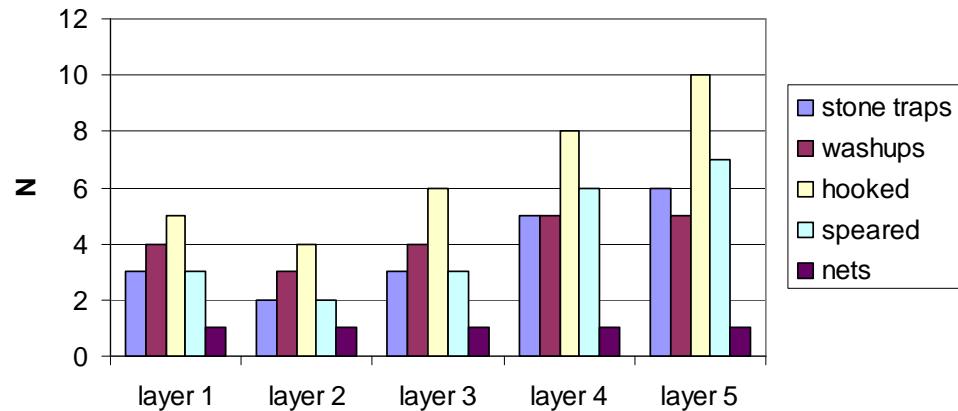
- Historically used in Africa and elsewhere
- Usually with freshwater fishing
- No such plants in southern Cape



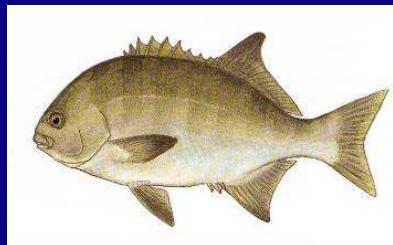
## Method of capture at Blombos Cave during the LSA

SPECIES	1	2	3	4	5	stone traps	upwelling washups	hooked	spearling	nets
<i>C. cristiceps</i> (dageraad)	x	x	x	x	x			x		
<i>C. laticeps</i> (roman)	x	x	x	x	x		x	x	x	
<i>C. nasutus</i> (black musselcracker)	x	x	x	x	x	x	x	x	x	
<i>D. sargus capensis</i> (dassie)				x	x	x	x	x	x	
<i>G. curvidens</i> (john brown)				x	x			x	x	
<i>P. blochii</i> (hottentot)				x	x	x		x	x	
<i>P. rupestris</i> (red steenbras)			x		x			XX		
<i>S. durbanensis</i> (white musselcracker)					x	x		XX	x	
<i>S. emarginatum</i> (steentjie)	x	x	x	x	x		x	x		
<i>L. richardsonii</i> (haarder)	x	x	x	x	x	x				x
<i>E. marginatus</i> (rockcod)	x		x	x	x	x	x	x	x	
Total number						6	5	10	7	1
XX= need very strong tackle for large specimens (shark excluded)										

### Number of species present per layer per method of capture

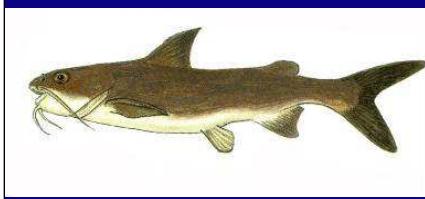


## Species not present



### *D. capensis* (galjoen)

- occurs all along South African coast
- tolerant of wide range of temperatures
- susceptible to cold water upwelling
- mostly caught in winter



### *G. feliceps* (white sea catfish)

- common species, easily captured
- mostly caught at night, but also during day
- poisonous dorsal and pectoral fins
- scaleless